A longitudinal study exploring student nurses' perceptions of the impact of a simulated clinical environment on their clinical learning experience and transfer of learning

Maureen A. Crowley

A Thesis submitted in partial fulfillment of the requirements of Edinburgh Napier University, for the award of Doctor of Philosophy

September 2013

Acknowledgements

This Thesis is dedicated to the memory of my dad, Graeme Crowley

(1933 – 2010)

Declaration

I, Maureen Crowley, confirm that I conducted the research study detailed in this thesis. No portion of the work referred to in this document has been submitted in support of an application for another degree or qualification at this or any other university or institute of learning.

Signed_____

Date _____

Abstract

Nurse education has evolved from an apprenticeship model to one with a graduate focus. However, numerous factors have resulted in less opportunity for students to practice clinical skills in practicum (Scholes *et al.,* 2004). Simulation was introduced to address this (NMC 2007) and research has shown that simulation is effective in the acquisition of skills over the short term (Alinier *et al.*, 2006; Ironside *et al.,* 2009). However, no research had looked at the student experience of simulation over an extended period of time.

The aim of this longitudinal qualitative study was to explore the progressive nature of the student nurses' experiences of learning within a simulated clinical environment (SCE) and the impact it had on their learning and transfer of skills to practicum.

A purposive sample of twelve students was recruited from two different intakes. Cohort one comprised four students. Cohort two comprised eight. Students consented to being interviewed five times, from entry into the branch programme to registration. Each cohort participated in an initial focus group, one observation in practicum and four semi-structured one–to–one interviews over the course of the two–year branch programme.

Data were thematically analysed (Colaizzi 1978), with existing literature used to support or counter emerging themes. A recurring focus was how well students were able to participate in the SCE. What was apparent was that those able to fully engage with the simulation events appeared to get the most out of it. Findings revealed many factors, which facilitated or inhibited student engagement. The categories that emerged were: learning in the simulated clinical environment; authenticity of the simulated clinical environment; concrete experiences in the simulated clinical environment; visual mental model; and practicum experiences. An important recurring factor that was unforeseen was the impact students' preferred learning style could have on their skill development and subsequent transfer to practicum. Findings were returned to participants for verification of accuracy.

	Contents	**Page**

List of Appendices

List of Tables

List of Diagrams

List of Illustrations and Figures

Abbreviations

BLS/ILS	Basic Life Support/ Immediate Life Support
BSc	Batchelor of Science Degree
BEME	Best Evidence Medical and Health Professional Education
CPR	Cardiopulmonary resuscitation
CSMEN	Clinical Skills Managed Educational Network
CA	Content Analysis
CDM	Clinical Decision Making
CoP	Community of Practice
DipHE	Diploma on Higher Education
HEI	Higher Educational Institute
HPS	Human Patient Simulator
INACSL	International Nursing Association for Clinical Simulation and Learning
ISD	Information Services Division
LREC	Local Research Ethics Committee
LPN	Licensed Practice Nurse
LPP	Legitimate Peripheral Participation
LS	Learning Style
NES	NHS Education Scotland
NHSS	National Health Service in Scotland
NMC	Nursing and Midwifery Council
ODE	Oxford Dictionary of English
OSCE	Objective Structured Clinical Examination
PBL	Problem Based Learning
PEG	Percutaneous Endoscopic Gastroscopy
RCN	Royal College of Nursing
RCT	Randomised Control Trial
RGN	Registered General Nurse
RMN	Registered Mental Nurse
RN	Registered Nurse
SAQ	Self Administered Questionnaire
SCSS	Scottish Clinical Skills Strategy
SCQF	Scottish Credits and Qualifications Framework
SEHD	Scottish Executive Health Department
UK	United Kingdom
UKCC	United Kingdom Central Council

UG	Undergraduate
UWS	University of the West of Scotland
VH	Vaginal Hysterectomy

Glossary of Terms

Affective Domain Educational domain concerned with feelings, attitudes, perspectives and behaviour

Andragogy The theory of adult learning – developed by Malcolm Knowles

Audit Trail The systematic documentation of material that allows the reader of a qualitative study to draw conclusions about trustworthiness

Blackboard/ WebCT Web-based educational tool used to facilitate and support student learning

Cognitive Apprenticeship An educational framework based on the learner watching and practicing skills with guidance from those with expertise. Key elements are observation and social context

Community of Practice Group of people who share a common interest, craft or profession, who deepen their knowledge and expertise by interacting and sharing information and experiences.

Concrete Experience The act of doing - having an experience

Cognitive Domain Educational domain concerned with knowledge, theories and understanding

Debrief The process of critically reflecting and analysing a previous experience in order to enhance learning. See 'Feedback'

Educational Domains Three types of learning, related to psychomotor, cognitive and affective skills and abilities

Engagement Active participation of the student with the learning activities related to simulation

Experiential learning Learning in concrete activities that enable the learner to experience what they are learning about and to reflect on those activities

Facilitator An individual responsible for leading or co-ordinating the work of a group.

Feedback An interactive process between learner/teacher, whereby teacher provides constructive appraisal and facilitates the learner to critically reflect and analyse learning experiences in order to enhance learning. See 'De-brief'

Fidelity A measure of the realism or complexity of a model or simulator

Human Patient Simulator Life-size mannequin with the software capabilities to realistically mimic a range of physiological states, which allow learners to acquire and develop a range of clinical skills

Learning Style The different ways individuals prefer to take in and assimilate new information.

Learning Style Inventory	Tool used to identify the learning style preference of the learner. Takes the form of a questionnaire.
Legitimate Peripheral Participation	Contains aspects of apprenticeship model. Novice learns while working in the professional community. First, observing from the periphery, then as knowledge and skills improve they become more involved.
Mannequin	Generic name for the life size human patient simulators used with the SCE. Medium to high fidelity.
Member Checking	A method of validating the accuracy and credibility of qualitative research. Can be achieved through debriefings and discussions with participants and by returning a description of the findings to the participants in order to assess authenticity.
Mental Imagery	Imagined rehearsal of a psychomotor task in the absence of physical movement
MIND	Mental Health Charity
Mis-education	Any experience that has the effect of arresting or distorting the growth of further experience
Nvivo ©	Software programme which facilitates the management and analysis of qualitative data
Part-task trainer	Simulated body part or system, used to teach and develop isolated skills. Learners can develop procedural skill before moving onto application on HPS or patient. Classed as low fidelity
Practicum	The practical element of a course of study
Psychomotor Domain	Educational domain concerned with skills, practical abilities, manipulation
Reflexivity	Critical self-reflection on the part of the qualitative researcher on personally held biases, preferences and preconceptions
Simman ™	Registered Trade name for the Human Patient Simulation mannequin from Laerdal
Simulated Clinical Environment	Authentic replica of a real clinical area (ward, clinic, community or domestic setting). Authenticity relates to setting, equipment and layout.
Transfer of Skills	Ability to apply skills learned in one area to another setting. For example: from the SCE to practicum
Visual Mental Model	Visual frame of reference, constructed from a previous concrete experience
WebCT/ Blackboard	Web-based educational tool used to facilitate and support student learning
Wet Lab	A laboratory dedicated to hands on clinical skills training and development

Chapter I Introduction

1.0 Introduction to the study

This chapter will begin by providing a rationale for this study. Then, in order to contextualise simulation within nurse education, the following areas will be discussed: the historical perspective of simulation and the simulated clinical environment in nurse education; skills development within nurse education; and finally the educational theories behind simulation. Simulation has a long and expansive history and in order to examine it in relation to contemporary nurse education one must first look at its emergence and explore the educational theories, which facilitate the use of simulation as a teaching and learning strategy. It is intended that this chapter, although lengthy, will set the scene for chapter two, which will focus on a critical review of research literature specific to the use of simulation within nursing and midwifery education.

The catalyst for undertaking this research was my move from acute clinical practice to nurse education at a time when immersive simulation, using automated mannequins and simulated clinical environments, was becoming popular in pre-registration nursing programmes. The college of nursing where I was an employee had invested heavily by building and equipping authentic simulated clinical environments on each campus site and purchasing high-fidelity simulation mannequins. I was actively involved in this and incorporated immersive simulation into my teaching in Year 3.

Because of my new role I was aware of the literature supporting the efficacy of simulation in relation to skills acquisition (Issenberg *et al.,* 2005) but noticed that some students in Year 3 still found simulation difficult, whilst others took to it more readily. I was intrigued to understand how students perceived simulation.

A longitudinal qualitative approach was taken because existing evidence from both quantitative and qualitative perspectives whilst largely supportive was based on short-term studies. There were no longitudinal studies, which had looked at the progressive nature of simulation as a learning experience or from the perspective of the student nurse. Hermeneutics is a way of interpreting the human existence [Being] of an experience in context [Time] (Moran 2000).

As a method of enquiry it allows everyday life experiences to be examined from the perspective of the individual. It acknowledges how the uniqueness of the individual can shape their interpretation of an experience. It requires the individual to reflect on experiences and due to the reflective practice inherent within nursing practice was well suited to exploring the perceptions of the sample in order to understand the very nature of the phenomenon.

The aim of this two-year longitudinal qualitative study was to explore the progressive nature of the student nurses' experiences of learning within a simulated clinical environment and the impact it has on the transfer of skills to practice. In order to achieve this it was necessary to look first at the development of nurse education.

1.1 Historical perspective of simulation.

Nurse education has developed a more robust academic profile over the past 30 years and simulation as a teaching methodology has become embedded within the academic structure. In order to gain a better understanding of how simulation may be experienced by learners, it was necessary to look first at the development of nurse education and the learning and teaching theories, which shaped it, before exploring the concept of simulation. This section will consider the historical significance of simulation, map its development and discuss how it has influenced healthcare in this present era.

Simulation has a long and expansive history, which can be traced back to medieval times, where knights used jousting contests to practice and hone their skills in preparation for combat and used games of chess to develop battle plans (Bradley 2006). Anatomical models have long been used to teach medical students about anatomy and physiology over the centuries (Bradley 2006). In more recent times, the latter half of the last century specifically, simulation has been well chronicled within the aerospace industry, the armed forces and the nuclear industry (Leitch *et al.,* 2002; Maran and Glavin 2003; Issenberg *et al.,* 2005; Bradley 2006).

Simulation is also widespread across disciplines and industries such as environmental agencies (Mensink and Cosemans 2008) to calculate emissions and air quality, using computer simulated traffic flow systems; and emergency planning and the emergency services as a means of testing systems and processes (Langran and Carlin 2006; Albores and Shaw 2008). Government agencies use simulation in many forms, from computer-based exercises through to tabletop paper exercises and live simulation events, as a way to help future environmental planning, or to prepare a response to emergency incidents. These can range from single to multi agency or site events and many, as reported by Albores and Shaw (2008) are designed to test plans put into place in the event of a catastrophic event such as a terrorist attack.

Having personal experience of participating in a number of multi-agency table top and live simulation exercises to test major incidence procedures in my own department, I am aware of the value they have from both a strategic and a personnel perspective. Similarly, Byers (2003) describes a personal account of participation in a 36-hour disaster simulation exercise.

Byers recounts how, due to the authenticity of the event participants were tested physically, emotionally and ethically. Although aware that the event was role-play, participants were able to suspend disbelief and fully engage with the unfolding scenario. Skills tested included decision-making, team working, communication and prioritising care, as well as the more technical skills of assessment and management of trauma patients while under extreme stress - a result of the adrenaline charged nature of the experience.

More recently, simulation has been introduced into the curriculum of medical faculties. It is used to teach basic and advanced skills to medical practitioners and undergraduates (Issenberg *et al.,* 2003; Salas *et al.,* 2005). Medical students are finding it increasingly difficult to get the necessary exposure to clinical experiences and skills due to changes in healthcare policy and provision (Beyea and Kobokovich 2004; Bradley 2006; NES 2007).

Within the nursing arena, simulation developed to address the undergraduate theory-practice gap with regards to clinical skills (McCallum 2006; Bremner *et al.,* 2006; Haigh 2007) and the postgraduate need for advanced practice skills and application (Wilson *et al.,* 2005). Simulation in its current form has been used in nurse education for over 15 years (Seropian *et al.,* 2004). However, UK nursing students in the 1970's, myself included, were taught the technique of administering injections using an orange as a crude simulated version of human anatomy. Simulation in this simple form has a long history in nursing and continues to gain ground, albeit in a more sophisticated form. Since the turn of the century there has been a steady increase in the use of fidelity simulation, which is now well received as a teaching methodology (Seropian *et al.,* 2004).

Bradley (2006) identified three major drivers, which have been instrumental shaping the development of clinical simulation from the latter half of the 20th century. They were: the resuscitation movement; anaesthetic simulators; and the medical education reforms. The first two saw the development of the renowned Resusci – Anne™ part task trainer developed by Asmund Laerdal.

Laerdal, a Norwegian doll maker worked in conjunction with anaesthetists' to produce Resusci-Anne, a tool widely used to teach resuscitation skills and rudimentary by today's standard of simulator. Since then simulation mannequins have become more complex with sophisticated features and capabilities. For example, Nursing Kelly™ also by Laerdal has a range of heart; lung, bowel and some basic vocal sounds, whilst Sim Man 3G™ (Laerdal Ltd) is a more advanced wireless version of the Nursing Kelly with advanced technology to enable a wider range of the aforementioned specifications. In addition, Sim Man 3G™ has advanced capabilities that enable eye movements, diaphoresis, cyanosis and can be programmed to respond appropriately to a range of drugs and gases.

The computer technology involved permits the operator to feign a range of disorders, including cardiac arrest, pneumothorax, anaphylaxis, hypovolaemic shock. For each a range of simple or complex interventions can be applied, such as IV access and fluids; catheterisation; nasogastric tube insertion; basic and advanced life support (Laerdal 2010).

Another wireless simulation mannequin, iStan™, has a skeletal framework with true to life articulated motion of joints, lifelike skin, bodily secretions and diaphoresis (Medical Education Technologies Inc. (METI) 2007). In addition, Noelle™ (Gaumard 2009) is a human patient simulator (HPS) pregnancy model, complete with newborn baby and placenta, with a programmed capability to give birth, thus allowing midwives to train for normal births and emergency procedures such as shoulder dystocia.

Although not one of the drivers highlighted by Bradley (2006) it is worth noting that this technology would not be possible if it were not for the arrival of computer technology (Cohen *et al.,* 2000). It has allowed access to the virtual world in which simulation sits.

The third driver, the medical education reforms, was a worldwide recognition that undergraduate doctors needed to be better prepared for the role of junior doctor on graduation. In particular, there was general acknowledgement that clinical skills and communication training was insufficient (Beyea and Kobokovich; 2004 Bradley 2006).

The Clinical Skills Strategy (CSS) launched by NES (2007) is the fourth driver. Although a Scottish initiative there are strong links between a number of educationally focused networks across Europe – Scottish Clinical Skills Network (SCSN); Association for the Study of Medical Education (ASME); Association for Simulated Practice in Healthcare (ASPiH); Society in Europe for Simulation Applied to Medicine (SESAM) and globally with the Human Patient Simulator Network (HPSN).

The drive now is towards interprofessional learning whereby non-technical 'human factor' skills such as communication, team working, problem solving, situation awareness and decision-making can be learned and developed (Bradley 2006; NES 2007). This will help multidisciplinary professionals develop shared universal skills and impact positively on patient safety (Seropian *et al.,* 2004; Davis 2005; Hogg *et al.,* 2006; NES 2012).

Creating interactive learning environments that mirror real clinical areas can help prepare the learner for their role in the real world work environment. It does this by identifying and managing their individual learning needs, supporting their development (Maran and Glavin 2003; Murray *et al.,* 2008) and providing them with the necessary skills needed to be fit for practice.

Simulation however, is not without criticism. First of all the simulated world will never be the same as the real world on anything other than a basic level (Cohen *et al.,* 2000) and should not be viewed as a replacement for learning in the real world (Ker and Bradley 2007). Although it has been shown to help prepare learners for practice (NMC 2007) there is still some question of skills competence (Clark and Holmes 2007) and the issue of how well students transfer the skills learned in simulation to practicum (Schoening *et al.,* 2006).

Secondly the human factor can be hugely influential – human behaviour is often unpredictable and context bound, so how someone behaves in a controlled environment may not be how they behave in the real world, as illustrated in Bendall's (1975) landmark study. Bendall's study examined the correlation between what a student purports their actions/behaviour will be in relation to actual observed behaviour. This UK mixed method study used a sample of 321 student and pupil nurses across each year of training from 19 UK hospital sites. Students were observed participating in normal clinical practice and then asked to provide verbal descriptions of the same task.

Findings revealed that only 27% (n=73) could be classed as 'correlators' who focused on doing things correctly and could be relied upon to apply what they recalled (they did what they said they did). In comparison, 63% (n=170) were 'non-correlators'. This type, whilst possessing the intention to help the patient tended to be less concerned with doing things correctly. The remaining 10% consisted of either 'appliers' (6.7%: 18) who applied the correct behaviour [but did not accurately describe it], or 're-callers' (3.3%: 9) who described the correct behaviour [but did not necessarily apply it]. Bendall highlighted disparity between the 'ideal' [taught in college] and the 'real' of nursing practice from the perspective of the skills of student nurses' as the majority of the students' (63%; n=170) did not transfer 'ideal' care to an acceptable standard.

Although Bendall's study was not directly related to simulation it had relevance because the students would initially have been taught the correct procedures in college. At the time of this study (1975) simulated clinical environments (SCE) were not embedded within nurse training. However, anecdotal evidence and personal experience of having trained in the mid to late 1970's informed that student nurses were taught to adhere to acceptable procedural standards using some of the less complicated simulation techniques highlighted earlier. Practical rooms were set up as wards and students wore uniforms to practice key skills, such as injection technique (on oranges), bed bathing and aseptic dressing techniques. Further anecdotal sources suggest student nurses practiced some skills on each other.

Some limitations, in relation to Bendall's study were evident. First of all, data collection involving observed behaviour was gathered by a number of researchers in various clinical areas. Many of the interactions with patients occurred behind screens (for example: bed bathing, toileting, aseptic dressing techniques) with some activities scored at the discretion of the researcher. This left scope for inaccuracies or inconsistencies, known as inter-rater reliability and also potential observer bias as qualitative researchers bring personal strengths and limitations to the activity (Polit and Beck 2008; Holloway and Wheeler 2010).

The quality of the recorded observation becomes the measure of what was seen, rather than what may or may not have occurred unseen (Angrosino and Perez 2003: in Denzin and Lincoln 2003). In addition, people under observation often alter their behaviour as a consequence of being watched. This phenomenon known as the Hawthorne effect occurs as a consequence of the observed attempting to be viewed more favourably or as a result of anxiety brought on by being observed (Polit and Beck 2008).

Furthermore, despite the fact that a number of sites were utilised, the sample size (n=321) and the qualitative element of Bendall's (1975) mixed method study render the findings context specific and therefore not generalisable to the wider population of nursing students in the UK. All hospital sites (n=20) were in and around London and represented only 22.5% of the 88 hospitals in that geographical region. The sample of students specific to each site was consequently too small to be representative (Polit and Beck 2008). Despite the fact that in order to make contemporary comparisons Bendall's (1975) study would need to be replicated, it illustrated that concerns with skill competency and transfer have spanned a generation (Clark and Holmes 2007).

Ker and Bradley (2007) speculated that there was the potential for abnormal risk taking due to the safety of the simulated environment. They suggested that learners may fail to recognise their own limitations due to the risk free aspect of simulated experiences and that this may transfer to the real world. They proffered it may be impossible to eradicate risk altogether, but that it can be minimised by ensuring that systems and processes are rigorously tested.

Simulation in its many forms can be useful for that purpose. There are a number of identified benefits to simulation in healthcare education (see Table 1.1 below).

> **Benefits of simulation**
>
> Decreases the risks to patients and learners;
>
> Scenarios/Tasks can be created to address learning outcomes;
>
> Learner's needs are the main focus;
>
> Learning environment can be controlled;
>
> Enables repeated and deliberate practice;
>
> Enables tasks to be structured in staged chunks;
>
> Can set standards;
>
> Facilitates transfer of skills to practice.
>
> (Adapted from Maran and Glavin 2003; Ker and Bradley 2007)

Table 1.1 Benefits of simulation

1.2 The acquisition of skills in nurse education

Over the past twenty or so years, nurse education has moved from a hospital-based apprenticeship model to one which, since the mid 1990's has become firmly embedded within Higher Education, with the introduction of Diploma of Nursing and BSc programmes (Burke 2003; Bradshaw and Merriman 2008).

The nursing curriculum is now much more academically focused and based on a competency framework (Bentley 1996; Longley *et al.,* 2007; NMC 2010b). On reflection, the more traditional apprenticeship style training, whereby student nurses learned their 'trade' primarily in clinical ward settings, from hospital staff was weighted heavily in favour of the acquisition of clinical skills'. In its favour, students learnt quickly and gained confidence from observing and modelling the practicing nurses in real clinical areas – rather than in a lecture theatre (Glen in Glen and Parker 2003; Longley *et al.,* 2007).

However, whilst the apprenticeship model often produced registrants with wide ranging clinical experience and skills, which equipped them to join the workforce, they did not always possess the underpinning theory (UKCC 1986; Clark *et al.,* 2002; Scholes *et al.,* 2004). This manifested in a lack of the critical thinking skills needed to meet the holistic needs of patients (Longley *et al.,* 2007).

Subsequent refinement of the theory/practice balance resulted in the current correlated theory practice model, whereby 50% of the total 4,600 hours of learning is undertaken in placement and the remaining 50%, the theoretical component, in university (NMC 2010b). This serves to provide the student nurse with equitable exposure to both theory and practice. The intended outcome being that the modern day student nurse graduates with a much broader and deeper understanding of the theoretical aspects surrounding nursing practice.

However, contemporary students, having spent more time in the classroom and less time in the clinical area than previous nursing students, are often lacking the fundamental clinical skills, in which they are expected to be proficient once qualified (Scholes *et al.,* 2004; McCallum 2007; Bradshaw and Merriman 2008; Cooper *et al.,* 2010). Reasons for this include the fact that the curriculum has been extended to include additional subjects such as life sciences, public health policy, sociology and psychology (Glen in Glen and Parker 2003).

Consequently, less classroom time is available to students to gain practical experience in fundamental clinical skills such as oral care, vital signs monitoring and aseptic techniques (Clark *et al.,* 2002; Clark and Holmes 2007; Cooper *et al.,* 2010). Although the additional topics provide students' with a broader view of the determinants of health, there is less classroom time available to practice key clinical skills, such as those aforementioned. Additionally, many practice placements vary with regards to clinical skills availability, due to reduced bed numbers and advances in healthcare provision resulting in earlier mobilisation and shorter lengths of stay for the patient.

Modern-day procedures are less invasive and many interventions are not carried out to the extent they once were (Maran and Glavin 2003). Patients necessitating longer lengths of stay tend to be sicker, requiring more intensive treatment and therefore not appropriate for involvement in student nurse education in the early stages (NES 2007). There is also limited availability of clinical placements and students increasingly find themselves competing with their peers for the chance to practice necessary skills (Seropian *et al.,* 2004; Murray *et al.,* 2008).

Consequently, there are many students who, because of the lack of exposure to

clinical skills and the subsequent lack of opportunity to practice them, lack confidence in both their ability and their competence to carry them out, resulting in a theory–practice gap (McCallum 2007; Clark and Holmes 2007; Lauder *et al.,* 2008).

Findings from Clarke and Holmes' (2007) exploratory study revealed that newly qualified nurses lacked competence in many key clinical skills required to work independently. Their aim of was to obtain participants' (n=105) perceptions of the competence of newly qualified nurses and the factors influencing its development. The sample was purposefully selected because they had experience of the topic under study (Polit and Beck 2008) and involved newly qualified nurses (n=34), experienced nurses (n=55), practice development nurses (n=11) and ward managers (n=5) over three NHS Trusts in the South of England.

Ward managers were interviewed individually due to issues of access. However, data collection was generally through homogenous focus groups - a good strategy where issues of hierarchy may have a bearing (Happel 2007). Newly qualified nurses may have felt intimidated by the more senior staff and less willing to speak openly about their experiences in case it jeopardised potential job prospects. Likewise, experienced staff may not have spoken freely about the competencies of newly qualified staff if they were in the same group (Kitzinger 1995; Kvale 2006). Ritchie and Lewis (2003) add that homogenous groups can become too 'cosy' and issues may not be disclosed of discussed in any depth, as members believe others to know what they mean.

The 12 focus groups each comprised between six to 10 participants. This is within the recommended parameters and less likely to interfere with the group process. More than 10 make it difficult for all participants to contribute, whilst less than six can often result in more restricted data (Ritchie and Lewis 2003). As a result, focus groups demand strict moderation to be successful, dynamic and free from researcher bias (Kitzinger 1995; Kvale 2006).

Thematic analysis revealed that experienced staff, practice development staff

and managers expressed low expectations of the skill level of new registrants. New registrants in turn lacked self-confidence in their own skills competence, feeling that their needs were secondary to those of the ward. This finding supported the assertion within the literature that learning skills in a simulated environment put the needs of the learner first (Maran and Glavin 2003).

Whilst findings support the fact that students were not exposed to a wide menu of skills experience during their undergraduate education, there were limitations in the study design. In addition to those surrounding focus groups, there was disparity in representation between new registrants (n=34) and experienced staff (n=71). Representative views would have been more even-handed had there been similar numbers in each staff category. Secondly, findings were representative of that particular group only and not generalisable to a wider population (Dobson 2004: in Becker and Bryman 2004). The South of England does not represent the wider nursing population within the UK. However, findings do provide an interesting snapshot of what is happening in other areas.

1.3 Competence

There has been some criticism levelled at the lack of clarity of the term 'competence' (Clark and Holmes 2007) introduced at the time of the move to Diploma level education. Criticism was also levelled at the less structured andragogical approach of the new curricula, which expected students to take responsibility for their own learning (Bradshaw and Merriman 2008).

By the turn of the century, many Higher Education Institutions' (HEIs') responsible for the education and training of nurses and other healthcare professions had developed skills laboratories. They had been encouraged to introduce or increase the use of simulation by reports such as Scholes *et al.,* (2004) and more recently the Nursing and Midwifery Council's (NMC) 'Simulation and Practice Learning Project' (NMC 2007). The aim of this project (NMC 2007) was to develop a set of standards by which to audit simulated practice placements that could be used to replace up to 10% (2300 hours) of practice placement hours. These in turn, would be piloted across a range of programme providers'.

The sample for this study was taken from 13 HEI sites across the UK (England

– 10 sites; Scotland – 1 site; Wales – 1 site; N. Ireland – 1 site) and involved 6361 students from both the CFP and the four branches (adult, mental health, midwifery and learning disability). The selected sites represented the full range of simulated areas, from the highly sophisticated to the more basic and all were tested using the same standards.

Pilot sites were expected to replace seven practice days with simulation over a 12 - week period and whilst they were encouraged to be innovative they were expected to map the simulated sessions to the students' programme outcomes. At the end of the 12 - week period each site was required to evaluate their achievement of the five practice principles (see Table 1.2 below).

NMC Principles for simulated practice learning in pre-registration nursing programmes

1. Maintaining partnership for simulated practice learning
2. Managing simulated practice learning safely and effectively
3. Promoting competence through simulated practice learning
4. Learning through simulated practice
5. Enhancing quality of simulated practice learning

NMC (2007) Simulation and Practice Learning Project

Table 1.2 NMC principles for simulated practice learning in pre-registration nursing programmes

This was a mixed method study conducted by the NMC. For the quantitative element each principle (see Table 1.2 above) had a number of indicators attached (37 in total) requiring a response on a rating scale: (5) – fully achieved to (1) – not achieved. The qualitative element afforded all the participating HEIs' the opportunity to comment on the simulation experience. The resultant scores were significantly positive, with the lowest score of 3 (meaning less than 80%) being assigned to only three questions. The overall qualitative and quantitative findings of the project are supportive of simulated learning stating that it:

- Helps students achieve clinical learning outcomes.
- Provide learning opportunities not available in clinical practice settings.
- Helps increase confidence in approaching clinical situations.

The NMC was rightly proud of both the impressive sample size (n=6361) and the geographical spread, believing that the results could not be dismissed due to the large sample (Gerrish and Lacey 2010). Whilst this may be true it is worth considering the limitations.

Firstly, the qualitative element relied solely on the participants, particularly the student participants', subjective assessment of their achievement of clinical outcomes and their levels of confidence. From both an educational and a patient safety perspective it may have been more reliable to have a more independent evaluation of outcome achievements and competence as well as confidence (Gerrish and Lacey 2010).

A further limitation concerned how representative the results were to the whole of the UK nurse education population. The three smaller, but no less important countries that make up the United Kingdom only had one representative site in the study, while England had 10, suggesting that the results were more specifically representative of simulation in nursing HEI's in England. Scotland, Wales and N.I may have had specific issues due to demographic and geographic influences so more sites in each country may have made the results more widely representative (Becker and Bryman 2004).

Nonetheless, the results were seen as a general representation of simulation in nurse education in the UK 'as a whole'. As a result of this study the NMC recommended that 'provision for learning through simulation in a practice suite be incorporated into the pre-registration nursing curriculum' (NMC 2007). They proposed that up to 300 of the 2,300-practice placement hours could be used in this way and this has been reiterated more recently within the revised *Standards for pre-registration nursing education* (NMC 2010b). However, to do this the NMC recommended that simulated areas be audited using the principles they developed and tested.

Clinical areas are audited to assess their suitability for students. Therefore, if some of the practice hours are to be replaced by simulated practice learning it seems fair that those simulated environments be judged similarly (Crowley 2008).

The NMC acknowledged the inequity of resources – some HEIs' have highly sophisticated simulated clinical environments, whilst others may have a more modest arrangement. However, the principles do not demand that all simulated learning environments (SLE's) are furnished with sophisticated high fidelity equipment rather that those facilities available help students to achieve clinical outcomes and are appropriate to the activity being undertaken. My HEI for example, consists of four campus sites across a wide geographical area, each one having different levels of simulated clinical areas and staff expertise but all can be audited using the same set of principles to ensure they are fit for purpose.

In addition to and supportive of the NMC recommendations, the Scottish Clinical Skills Strategy (SCSS) (NES 2007) was launched in September 2007 in response to two papers – *Building a Health Service Fit for the Future* (NHSS 2005) and *Better Health, Better Care (NHSS 2007)* - to support workforce development in Scotland. The aims of the SCSS are:

- For Scotland to become a leading player in quality assured clinical skills education in both the UK and internationally;
- For consistent standards for clinical skills education to be practised safely to meet clinical diagnostic and governance requirements.

The SCSS states that 'skills training and the use of simulation should be integrated into core educational programmes and curricula' (NES 2007: 7). In addition, they noted at that time, that clinical skills' training in Scotland was haphazard, inconsistent and uncoordinated and recommended 'multi professional access' and 'consistency of standards'.

As previously mentioned Scotland has specific demographic and geographic factors, which influence healthcare in terms of access to services for users and also access to training for staff. Around one million (19%) people in Scotland live in remote and rural areas, where a greater proportion (20%) of the population is aged over 65 years of age (Scottish Government 2011). Rural populations are growing at a faster rate than the rest of Scotland and residents experience greater difficulty accessing hospitals (Scottish Government 2011).

A key objective for the SCSS is to address the inequity of access to high quality multi-professional education across both geographical and professional boundaries. One innovation, a mobile clinical skills unit, was developed by the Clinical Skills Managed Educational Networks (CSMEN) in response to the issue of inequality in remote and rural areas, in terms of access to clinical skills training (NHSS 2007). The mobile unit provides space and an array of simulation equipment to allow a broad range of clinical skills education to be delivered (CSMEN 2009).

With two years funding provided by NHS Education Scotland (NES), the unit was piloted from January 2009 – December 2010 in remote and rural environments in Scotland in order to test feasibility. It was anticipated that steps such as these would serve to address some of the inequities and inconsistencies, which were highlighted in terms of clinical skills training.

Evaluation by CSMEN of the usage of the facility revealed that 663 healthcare professionals accessed the facility in eight remote and rural venues, from Orkney in the North to Stranraer in the South West and Kelso in the South East. Usage was 71% from a wide range of multidisciplines with the biggest user group being nursing and midwifery (47%; n=388). The questionnaire response rate was 98% (n=650), which substantiated the generalisability of the findings of the evaluation. Evaluation research is useful for gauging the worth of the thing being evaluated (Robson 2004: in Becker and Bryman 2004). Seventy percent (70%: n=464) rated the experience as 'excellent', whilst 28% (n=186) rated it as 'good'.

All areas requested a return visit. The mobile unit is now a permanent service and can be requested by any health board wishing to provide clinical skills training to staff (CSMEN 2009).

To attempt to address the oft-limited menu of experience available to pre-registration nursing students in practicum, many HEIs' have developed teaching methodologies geared to providing students with the necessary clinical skills (Bradley 2003; Seropian *et al.,* 2004; McCallum 2007; NES 2007). These range from simple absorbable flesh coloured pads for injection techniques, part task trainers, life size low to high fidelity mannequins and real people. However, many of the skills taught in schools of nursing have been taught in unrealistic non-clinical environments, which were not always fit for purpose and this has been recognised by the NMC (2007) as discussed earlier. In a move to combat this, there has been a steady growth in the development of simulated clinical environments (SCE). The concept and emergence of SCE will now be discussed in the next section.

1.4   Simulation and the simulated clinical environment

To simulate is to *"imitate the appearance or character of something"* whilst a simulator is *"a machine designed to provide a realistic imitation of the controls and operation of a vehicle, aircraft or other complex system, used for training purposes"* (Oxford Dictionary of English (ODE) 2005: 1650).

The popularist view of simulation involves advanced technologies such as virtual reality and hi-tech computer – controlled human patient simulators, replicating advanced technical skills scenarios such as in flight simulation. However, whilst there is an element of this in some simulation, it is also widely used to develop non-technical skills in the cognitive and affective domains (Ker and Bradley 2007). A more generic definition adapted from Gaba (2004: 2) has been formulated to define simulation within the context of this study:

> *"Simulation is a technique that can replace or amplify real experiences with guided experiences set within an authentic simulated environment that can evoke or replicate substantial aspects of the real world in a fully interactive manner"*.

The wide-range of simulation utilised within healthcare education is designed to mimic some aspect of the clinical event and ranges from low to high fidelity. See Table 1.3 below for 'Classifications of simulators used within nursing and medical education'.

Table 1.3 Classification of Simulators		
Simulator Type	**Teaching Uses**	**Examples**
Part-task trainers – **Lo-fidelity**	**Psychomotor and procedural skills** **Development of mastery** **Can help the development of communication skills and patient safety issues**	**Skin and tissue pads for injection and suture removal practice.** **Male / female pelvic models for urinary catheterisation** **Upper alimentary tract models for naso gastric tube insertion** **Venepuncture pads and arms** **Partial manikin for BLS training – Resusci- Anne™**
Computer-based systems	**Decision-making & performance in relation to pre-set scenarios.** **Programmed to give feedback.** **Students can progress at own pace**	**MicroSim™ – Emergency care**
Virtual reality (VR) and **Haptic (H) Systems**	**VR generates images and is designed to respond to user interactions.** **H provides kinaesthetic/ tactile sensation. Helps psychomotor and procedural development** **Generates detailed feedback on user performance**	**Second Life™** **Virtual Veins™ – Venepuncture trainer**
Integrated Simulator Models – Medium to Hi-fidelity	**Computer driven.** **Facilitates scenario - based simulation, testing a wide range of fundamental and advanced technical and non-technical skills in psychomotor, cognitive & affective domains**	**Medium-fidelity – VitalSim™ - simulates an array of core vital signs** **Hi-fidelity - SimMan™ - has more complex physiological features. Pre-set physiology that responds appropriately to interventions.**
Simulated patients	**Assessment, examination, communication skills, non-invasive procedures, Professionalism.**	**Well people, taught to simulate an illness in a standardised way**

(Sources: Maran and Glavin 2003; Ker and Bradley 2007)

Fidelity relates primarily to the level of technical sophistication and accuracy of the system being used, but also refers to the degree of authenticity, that is, how the behaviour and/or appearance of the simulator/simulation correspond with the appearance/ behaviour of the characteristics of the real system (Farmer *et al.,* 1999; Ker and Bradley 2007). There are three categories of fidelity: low, medium and high and simulations can incorporate each category either separately or as a combination, depending on the purpose of the simulation. (see Table 1.4 below)

Table 1.4. Classification of Fidelity	
Level of Fidelity	**Features**
Low-fidelity	**Unsophisticated, lacking in detail and animation and most suited to the acquisition of psychomotor skills, such as injection technique or suture removal.**
Medium-fidelity	**A level of sophistication that permits reproduction of physiological features, such as breath and heart sounds and a pulse but no corresponding chest wall movement. In addition to being suited to the development of psychomotor skills, also useful for facilitating development and assessment of underpinning knowledge.**
High-Fidelity	**Possess human characteristics: breath, bowel and heart sounds, pupil response, speech, and chest wall movement. High level of authenticity due to realistic appearance (cosmetic fidelity) and realistic response to interventions (response fidelity). Can produce highly authentic experiences that test all domains.**

Source: Seropian *et al.,* (2004)

To quote Seropian *et al.,* (2004:165) 'simulation attempts to achieve a high enough fidelity to convince users that they are using something that resembles what they would encounter in real life'. In other words, the level of fidelity used can affect how authentic the learners find the simulation.

Authenticity does not always require the use of hi-fidelity simulation - a high level of authenticity can be achieved with low and medium fidelity simulation and Ker and Bradley (2007) proffer a number of influencing factors, such as learning outcomes; equipment; environment; psychological or clinical aspects and debrief/feedback.

As stated earlier, the NMC (2007) want clinical skills to be taught in areas that are fit for that purpose. These areas are commonly known as simulated clinical environments (SCE) or simulated learning environments (SLE). For the purposes of this discussion the term simulated clinical environments (SCE) will be used. The SCE is a replica of a real clinical area such as a general ward and high dependency area, clinic or community and domestic setting. These simulated areas are equipped similarly with regards to layout and clinical equipment (see Illustration 1.1 - reproduced with permission of the participants).

Illustration 1.1
An example of a Simulated Clinical Environment (SCE)

In these environments students can practice an array of technical and non-technical skills in realistic settings, using equipment similar to that which they will encounter in real clinical areas. Simulated clinical environments (SCE) are believed to facilitate the development and subsequent transfer of skills to practice, by allowing students to practice in contextually authentic settings. Ker and Bradley (2007) posit that learners are better able to *suspend disbelief* if the simulated environment has a high degree of authenticity.

By way of illustration, Simones (2008) reported on the development of a home care environment set up to prepare US nursing students for a home care placement. Home care is akin to community nursing in the UK but due to the different healthcare systems it is currently more prevalent in the US, where average hospital lengths of stay are shorter: 4.9 days (Kalra *et al.,* 2010) compared to Scotland: 5.3 (ISD 2010).

Simones (2008) reported that nursing students (n=40) found the transition from an acute hospital setting to a home care setting very testing. Skills such as drug management, wound care, infection control and maintenance of a safe environment were all challenging. The SCE was furnished in the style of an older couple's home with attention to detail in order to help make it as authentic as possible and to provide clues to actual and potential problems. The students practiced making home care visits to the patients (two life size puppets or members of faculty), assessing and managing care issues as they arose. Skills, both technical and non-technical, including critical thinking and decision-making were practiced, followed by a debrief session.

The following semester, after the students had experienced the home care placement, they were asked to evaluate the simulated environment, using a Likert scale and additional free text comments. Results identified that the SCE had addressed the learning outcomes and resulted in students being more confident going into home care environments.

Whether or not this was a research based study is unclear, it is more likely it was an evaluation exercise to judge the value of the exercise to the students (Robson 2004: in Becker & Bryman 2004). More robust findings would have been valuable, perhaps by way of mentor feedback or observation of the students in real home care environments. Nonetheless, it does serve to illustrate the benefits of using an authentic simulated environment in relation to preparation for practice.

A range of complimentary teaching and learning approaches are used within nursing, with simulation being one of those. The underpinning education theory will now be discussed in relation to active participation in the SCE.

1.5 Educational perspective

From an educational perspective, there are a number of learning theories aligned to simulation within healthcare. These will now be discussed in turn, starting with Andragogy (Adult Learning Theory) before moving on to discuss experiential learning; situated learning and communities of practice and finally the cognitive apprenticeship model; the approach upon which simulation within my HEI is based.

The average age of a nursing student in the 21st century has increased considerably: almost half are over 30 years of age (RCN 2008) and like any adult in society they differ widely in terms of personal histories and characteristics, such as age, gender, education, life experience and culture - all factors which are acknowledged to be influential in how adults learn.

Malcolm Knowles (1984) the originator of andragogy (adult learning) stipulated that first and foremost adult learners like to know why they need to know something. They learn experimentally, through trial and error, adopting a problem solving approach. They are goal orientated - seeing the relevance of a topic is a strong motivator; they are self-directed and autonomous, preferring to know what a specific learning experience will give them (Knowles 1984; Race 2005).

Race (2005) described how, over a number of years he questioned tens of thousands (exact numbers not documented) of students and lecturing/ teaching staff. They answered four standardised and pre-determined questions, the answers to which helped identify five factors, both intrinsic and extrinsic that Race believed were the foundation to successful learning. They were: Learning by doing - through repeated practice or experience; Learning from feedback - from the reactions or praise from other people; Wanting / or needing to learn - for own self actualisation or in order to gain something; Making sense – through development of understanding or competence (Race 2005). This links with simulation, where students learn skills and accompanying knowledge through 'doing' skills repeatedly in simulation. Subsequent feedback from lecturers helps them to make sense of the new knowledge/ skills.

Simulation, within the context of a Simulated Clinical Environment (SCE), and as an andragogical approach exposes the learner to an experience as close to the real thing as possible (Jarvis *et al.,* 2003) but at the same time posing no threat to either the student or the 'patient' (Issenberg *et. al.,* 2005; Bradley 2006; Haigh 2007). Simulation experiences can be tailored to suit the individual needs of the learner (Baillie and Curzio 2009), unlike clinical practice where patient needs always come before the learning needs of the student (Haigh 2007). In addition, time can be manipulated in simulation to allow the same scenario or task to be repeated until the learner has achieved competence, mistakes have been rectified and skills mastered (Cannon and Newbie 2000). The learning experience can be aided by reflection and feedback (Race 2005).

Simulation is a student centred approach, in that it is able to put the learning needs of the student first and is generally well received and enjoyed by the majority of students (Alinier *et al.,* 2004; Mole and McLafferty 2004; Crowley 2005; McCallum 2006; Morgan 2006; Baillie and Curzio 2009). For a few students however, participation can be uncomfortable (McCallum 2006). Reasons included awkwardness at communicating with the mannequin or being observed.

Northcott (2002) advised caution with some simulated 'role play' as it may prove, not only embarrassing for the student, but also detrimental to their wellbeing as it could evoke unpleasant past experiences. Any simulated learning experience should be tailored so that it serves the best interests of the student and as Northcott (2002) stressed 'does no harm' a tenet at the heart of the NMC (2008). Nurse lecturers are primarily registered nurses and accordingly, the safety of our 'clients' (in this case students) is paramount.

Simulation by its very nature is a participative and hands-on approach which can facilitate 'learning by doing' - a method acknowledged as being an effective way to learn, particularly for adults (Ellington *et al.,* 1994; Race 2005; Quinn and Hughes 2007). It facilitates the process of learning from experience, rather than vicariously through attendance at lectures or reading about the topic (Quinn and Hughes 2007). During the enlightenment period of the 18th Century the philosophes regarded knowledge based on experience as the pre-eminent form of knowledge, in contrast to knowledge gained simply from authority, intuition or faith (Smith 1998).

Experiential learning is well supported throughout the educational literature: from Immanuel Kant (1724 - 1804) who was adamant that all knowledge began with an experience; through to Lave and Wenger (1991) and more recently Race (2005). Boud *et al.,* (1985) in support of Knowles (1984) asserted that all learning, be it formal or informal, was based an experience.

> "*Knowledge is experience – everything else is just information*"
> Albert Einstein (cited in Race 2005)

As Dewey (1910: 31) reminds us, all of life's creatures, animal and human, are naturally curious and spend their days 'exploring and testing' the world and its objects. The concept of experiential learning will now be discussed in more detail.

1.5.1 Experiential Learning

Experiential learning, of which simulation is an example, has been embedded within nursing and midwifery education for over 30 years (Quinn and Hughes 2007). By encouraging the active participation of the student in the learning process it fosters facilitation of a deeper understanding of theory (Jarvis *et al.,* 2003; Quinn and Hughes 2007; Silberman 2007). Jarvis *et al.,* (2003) and Moon (2004) also emphasised the holistic nature of experiential learning, encompassing the cognitive, physical, emotional and spiritual domains.

Experiential learning grew from the work of Dewey (1910 & 1938) and can be defined as:

"The process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience"

(Kolb and Kolb 2005: 194)

It is easy to see how comfortably this theoretical concept sits with Race's 'Ripple' model of learning. Race (2005) emphasised the importance of 'doing' (practice, repetition and trial and error) in order to facilitate learning. Experiential learning supports this tenet.

Before looking at this approach in more detail it is important to make a clear distinction between the terms 'experiential learning' and 'learning from experience'. At first the two terms appear interchangeable – Dewey (1938) believed, like Kant, that all learning is learning from experience - but on reflection it is apparent that there is a distinct difference, as Moon (2004) advised. 'Learning from experience' relates to everyday informal learning where learning has not been the pre-determined outcome, but a by-product. 'Experiential learning' in comparison is a more formal approach whereby learning 'something' is the pre-determined intention. An example of this would be the simulated clinical environment where intended learning outcomes would be formulated in advance to fit in with the curriculum aims.

A major contemporary proponent of this approach was Kolb (1984) who believed learning through experience resulted in the creation of knowledge, transformation and self-growth. Kolb (1984), like Dewey (1910) recognised that previous life experiences and prior learning would be influential, helping the learner develop deeper understanding; Moon (2004) supports this view. Kolb theorised that humans learn by thinking about (reflecting upon) personal experiences, which can be categorised into two types - lifelong and episodic.

'Lifelong' experiences relate to day-to-day encounters requiring little thought - 'learning from experience'. On the other hand 'episodic' experiences are more meaningful, requiring reflective analysis in order to give meaning to them - 'experiential learning'. Further to this, episodic experiences have two phases; the direct encounter (with the situation) and the mediated experience.

Experiences are a subjective phenomenon, influenced by a number of intrinsic and extrinsic factors. These include: personal histories of the individuals; social and cultural contexts within which they occur; previous experiences; prior learning; learning environment; support; and learner engagement (Dewey 1910 and 1938; Andresen *et al.,* 2000, cited in Moon 2004; Jarvis *et al.,* 2003). Further to this, they can influence whether or not an experience will be educative or not and this in turn can negatively impact on both the current and any future experiences, acting to halt or interfere with learning (Dewey 1938). In short, experiential learning episodes need to be carefully planned and the learner prepared and supported if necessary in order that the learning experience has a positive outcome and does not result in 'mis-education' (poor learning).

An essential requirement in order that the learners may process and make sense of the learning experience, either by consolidating good learning or unlearning negative experiences is the action of reflection. As previously stated, Kolb (1984) has reflection embedded into his learning theory. See Diagram 1.1 below for an illustration of the experiential learning model, often referred to as 'Kolb's cycle', but based on Lewin's cycle of Adult learning (Kolb 1984). Note how reflection is embedded within the cycle.

Concrete experience

Test new
concepts/theories
in practice

Observations &
reflections of
concrete experience

Analysis & formation of
Abstract concepts &
generalisations
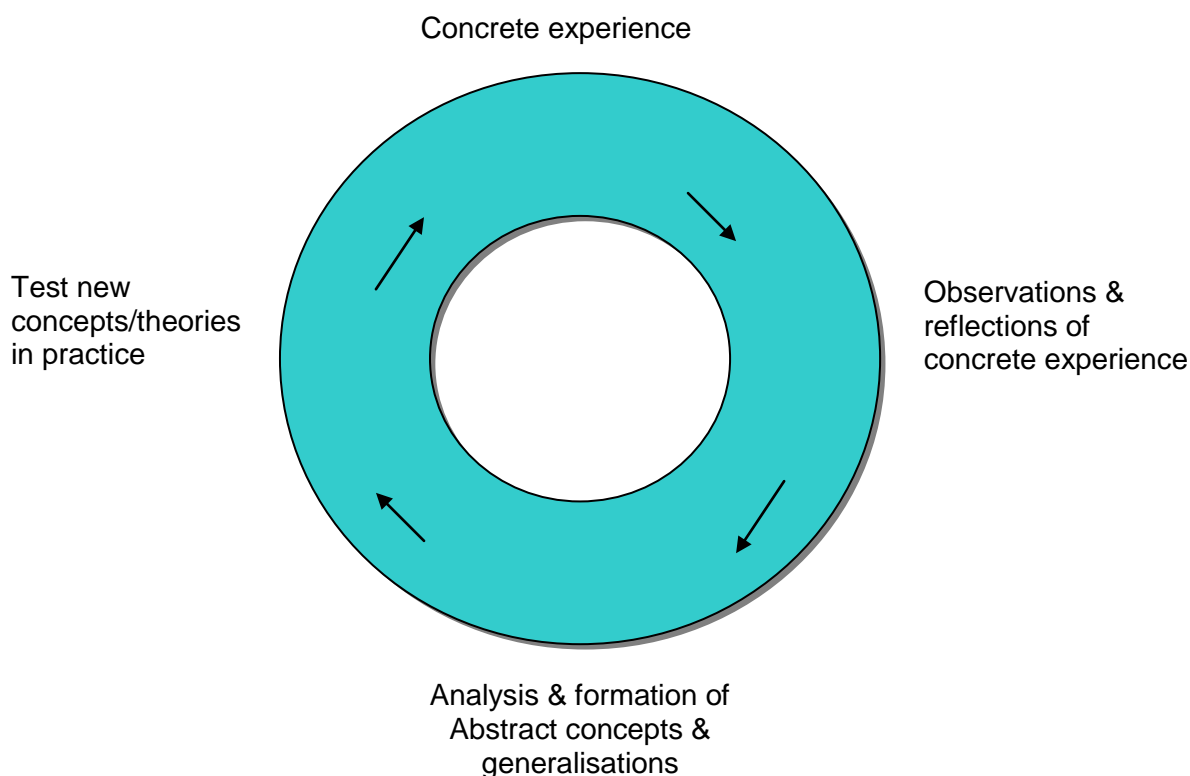
Diagram 1.1 Kolb's Cycle   (Adapted from Quinn and Hughes 2007)

1.5.2 Learning through reflection

Three types of reflective learning have been identified; pre-reflective, whereby the learner thinks about what they are going to do before doing it, and this may be based on theoretical knowledge or previous experience (reflection before action) (Greenwood 1998); reflective cognitive, which requires reflection during the experience (reflection in action); and contemplative - thinking deeply about a concrete experience post event (reflection on action). Knowledge gained from this learning cycle results in affective change, that is, to the way the individual thinks and behaves (Kember *et al.,* 2001; Sewchuk 2005).

Reflection has been used in nurse education for over 20 years as a way to aid learning and develop practice (Quinn and Hughes 2007). Benner (1984) asserted that nurses' had been very poor keepers of evidence of clinical learning, believing that their knowledge base would not develop until they documented what their experiences had taught them. This documentation process however, necessitates the action of reflection in order to facilitate assimilation of the experience by the learner.

An ethnographic study by O'Donovan (2007) set out to gauge the perceptions of a small purposive group (n= 5) of final year student nurses in Eire introduced to reflection in their final year. In-depth one to one interviews were utilised to gather data, which were subject to constant comparative analysis (Charmaz 2006). Findings demonstrated that generally the students found reflection useful. They understood the 'deliberative thinking process' of reflection, needed in order to make sense of it. They found the process of reflection quite challenging initially, but with guidance and support from preceptors and placement co-ordinators and the use of a reflective model, (such as Gibbs, 1988 or Kolb, 1984) they believed they were able to develop their skills of reflection.

The sample reported that the action of reflection increased their self – awareness, an aspect also identified by Bulman *et al.,* (2012). However, the written reflections of O'Donovan's (2007) sample tended to be superficial due to a reluctance to document deeper, more personal feelings. Students' preferred to discuss more the significant reflections on a one to one basis with their preceptor/ placement co-ordinator. Timmins and Dunne (2009) found similarly, when they undertook an evaluation of 840 portfolios which revealed that 84% (n=402) of reflective accounts were descriptive and superficial in nature.

Students in O'Donovan's study (2007) believed they would have benefited from more practical guidance earlier on at the start of year three. In fact they believed it would have been more beneficial to them to have reflection from first year, rather than as a distinct topic in third year. Certainly, within my HEI, and throughout nurse education in the UK, reflection is embedded within the programme from year one in the format of portfolios (NMC 2008; UWS 2011).

Whilst O'Donovan's study was valuable in revealing students' perceptions towards reflection and supported to some extent the benefits of reflective practice, the small sample size (n=5) and the fact that reflection was only introduced to the students in their final year, as a distinct module, render the findings representative of only that specific group (Lewis and Ritchie 2003: in Ritchie and Lewis 2003; Holloway and Wheeler 2010). The study was set in Eire, with a different professional body than the UK.

The inherent value and use of reflection within UK nursing and non-nursing education is well documented within the literature (Greenwood 1998; Moon 2004; Quinn and Hughes 2007; Silberman 2007; NMC 2008). It could be argued that the nursing programme in O'Donovan's study (2007) is lagging behind other nursing programmes in Eire (Timmins and Dunne 2009) and the UK. It is difficult to reconcile why they would not have reflection embedded more fully into their nursing programmes when O'Donovan stated that recommendations to that effect have existed since 2000.

The quality of the reflections could also be questioned as students stated that they tended to keep documented reflections to a superficial level, suggesting that any analysis/ synthesis could be likewise. Reflection therefore may not have provided the same educational benefit to O'Donovan's (2007) sample due to the limited period they were exposed to it.

Skills of reflection need to be developed over time in order to get beyond superficial description (Moon 2004). Bulman *et al.,* (2012) revealed that students in their study reported that their skills of reflection developed over time. It would also have been more revealing if O'Donovan's data had been gathered over a longer period to ascertain if reflective reasoning skills improved. Students themselves felt that reflection would have helped them more if they had been introduced to it from first year.

Timmins and Dunne (2009), undertook an exploratory study concerning the use and benefit of student nurses' portfolios. A sample of 619 student nurses from Years one to four was recruited from a nursing programme in Eire. Students participated in an online survey, which asked for responses to 44 standardised, predetermined Likert statements related to portfolios. Results were generally positive but revealed confusion regarding what to document in the portfolio. Findings also suggested that although guidance and support were available it was not utilised. However, the response rate of 12% (n=100), rendered these findings limited to those respondents only (Polit and Beck 2008; Burns and Grove 2010).

In addition to the questionnaire, 840 portfolios (54%) were examined for structure and content. Within those, 84% of reflections were of a superficial nature. However, in fairness it should be noted that 69% (n=329) of the sample was from years one and two. Years three and four (32%: n=141) produced reflections of greater depth. It is probable that the greater percentage of junior students skewed the results (Polit and Beck 2008). However, had the sample in O'Donovan's study (2007), who were in year three, been exposed to reflection from year one they may have developed their skills of reflection and been able to produce less superficial and descriptive reflections.

To return to Bulman *et al's,* (2012) ethnographic study, aimed at understanding how reflection was perceived by a purposive sample of post-registered students (n=11) and teachers (n=9). Students in this UK based post-registered course compiled reflective learning contracts (RLC), which were reviewed as a source of data and participated in one – to – one interviews, whilst teachers were observed in teaching and learning situations. Data were thematically analysed.

Findings revealed that students valued reflection. They saw it as a way to help them make sense of experiences (Dewey 1938), using phrases like 'getting better' and 'moving on' and appreciated the importance of 'feelings' within the reflective process. Skills of reflection took time to develop and students saw this as valuable.

Data transcripts from the observations illustrated how the teachers facilitated the development of reflective skills. The students were post-registered nurses so perhaps they had previous experience of reflection. Bulman *et al.'s*, (2008) study was small so findings are limited to that context (Holloway and Wheeler 2010). However, they do support the value of reflection as an aid to learning. What was clear was that reflection, if carried out well, could be a valuable learning tool. However, robust facilitation is required from the outset to help learners develop understanding of the process. Coward (2011) opined that students often saw reflection as a laborious task and suggested this was due to poor understanding resulting from poor preparation.

Within nurse education another learning strategy linked to experiential learning and the SCE is 'situated learning', introduced by Lave and Wenger (1991) in the 1990s'. Lave and Wenger believed that the key to situated learning lay in the relationship between learning and the social context. This theory will now be introduced and discussed.

1.5.3 Situated Learning

Lave and Wenger (1991) tendered that the key to 'situated learning' was the relationship between learning and the social situation or community. They proffered that learning did not occur in isolation, but was influenced by co-participation with more experienced individuals within the social context. Earlier Wenger *et al.,* (2002) highlighted the benefits of 'communities of practice' where people with common interests could interact and share knowledge and expertise.

In the case of nursing students, the experienced individuals refer to educationalists and clinicians in equal measure, because learning takes place in academic and clinical environments (NMC 2010b). Situated learning has similarities to the apprenticeship model in that experienced practitioners in the form of academics and clinicians teach the learner. The students start by acquiring theoretical knowledge in the form of lectures and tutorials in the university setting, followed by exposure to the practical component through a mix of observation and application in a clinical simulated environment (SCE).

This mix of theory and practical application is particularly suited to the learning style of nursing students (Sewchuk 2005). The concept of learning styles will be discussed in greater detail later on in this chapter.

Following on from learning within the university setting the students' progress to participating in clinical placement on a peripheral level; observing and working with an expert, in the form of the clinical mentor. The social interactions encountered provide the right environment for further learning to occur. Participating regularly with a group of like-minded individuals can help the learner to deepen and expand their knowledge base and expertise (cannon and Newbie 2000). There are links between this and the 'novice to expert' theories (Benner 1984) and 'Social Learning Theory' (SLT) (Bandura 1986).

Learning within an environment is the basis for Bandura's Social Learning Theory (SLT) which purports that a person's behaviour is the result of their interaction with the environment in terms of observing and modelling the behaviours, attitudes and reactions of others (Bahn 2001). It is believed that this is a much safer way to learn than mere 'trial and error'. The learning development comprises four processes (Quinn and Hughes 2007), starting with 'attentional', which involves the learner observing practice followed by self-directed exploration of the observation by the observer.

The second component, 'retention' necessitates the learner remembering the modelled behaviour. There are a number of ways to do this such as reflection or practice, although knowing that performance of the behaviour is expected is a good motivation and is known to help in the retention process (Bahn 2001). Following on from this is the process of 'motor reproduction' whereby the learner must re-enact the observed behaviour. The final component is the 'motivational process' – there is more likelihood of modelled behaviour being learned if the learner feels there is some value to it; for example a reward of some kind; positive feedback or personal fulfilment. Bahn (2001) and Quinn and Hughes (2007) state the worth of 'vicarious reinforcement' whereby the learner is motivated to retain and adopt observed behaviour as a result of witnessing others who reproduce the observed behaviour receiving praise.

It is important to acknowledge the significance of the 'expert'. It is recognised that the linchpin in progression from novice status sits with the clinical mentor (Gray 1997; Field 2004; Lauder *et al.,* 2008). It is however crucial that mentors have the willingness, capability and time to facilitate the apprenticeship, to model good practice and to assess competence. These very issues can leave student's feeling isolated and in danger of mis-education (negative learning).

On this issue, Aston and Molassiotis (2003) reported on a small UK evaluation exercise to judge the value of a student peer support supervision programme, introduced to improve the professional responsibility of senior students. The final year students were charged with providing supervision and support to junior students. Duties included helping them while they developed fundamental skills; understand the rationale for basic interventions and help them to reflect on their experiences. Mentors supervised senior students, participated as appropriate and provided feedback to the final year students.

Findings from the evaluation questionnaire, which included closed and open-ended questions, demonstrated that both groups of students derived benefit from this approach. Senior students (n=31) were able to develop skills in teaching and mentoring, which they may not otherwise have had an opportunity to do until qualified. Meanwhile, junior students (n=27) felt more supported and less anxious about placement. Free text comments suggested they really appreciated the help the senior students gave them. Of interest was that many of the negative issues raised by the student mentors such as lack of time to reflect with the junior student and lack of preparation for the role of mentor, were similar to those faced by qualified [RN] mentors (Lauder *et al.,* 2008).

Despite 38.7% (n=12) of student mentors receiving excellent support and 45% (n=14) good feedback, mentor input was an issue, as 45% (n=14) of the student mentors received no support or feedback from their clinical mentor. Only 25% (n=3) of the mentors recruited to supervise the senior students completed the questionnaire. This may be related to the same issues that influence mentorship currently such as workload (Lauder *et al.,* 2008).

However, the low response rate excluded their feedback from the evaluation (Robson 2010: in Gerrish and Lacey 2010). Student response rate was vague as only the respondent figure was provided. The findings, from an evaluation perspective, were incomplete due to absence of feedback from mentors who were charged with supervising and supporting senior students. Although senior students valued the opportunity, 58% (n=18) reported being unprepared or unclear about the role they were taking on.

Almost half (45%: n=14) received no support or feedback from mentors so would be unclear of what they had achieved from the process. Mentoring is an important role in the growth of competence and this could have implications for the students' development due to the lack of 'expert' (Gray 1997; Field 2004). Aside from lack of mentor feedback, the findings of this small study (n=58) may be unique to that study site (Ritchie and Lewis 2003). A larger study inclusive of mentor feedback on their observations and reflective discussions with the senior students would have provide more robust findings to substantiate or refute the value of peer mentoring to a wider population.

Whilst SLT has its roots in behaviourism in terms of reinforcement, there is emphasis on the cognitive process through the use of reflection and critical analysis of observed behaviours. This notion links to Lave and Wengers Situated Learning Theory and the principle of 'Legitimate Peripheral Participation' (Lave and Wenger 1991).

Legitimate peripheral participation (LPP) is the core tenet of situated learning and can be described segmentally as follows:
- Legitimate: all parties accept the position of "unqualified" people as potential members of the community of practice.
- Peripheral: unqualified people hang around on the edges of the important stuff, do the peripheral jobs and gradually get entrusted with more important ones.
- Participation: it is through doing knowledge that they acquire it. Knowledge is situated within the practices of the community of practice, rather than existing "out there" in books' (Atherton 2005: 1).

Lave and Wenger (1991) support the notion that understanding involves the whole person and that in order to be meaningful it must be specific to the situation in hand. Legitimate peripheral participation (LPP) relates to the relationship between "newcomers and old timers" and the skills, knowledge and identities resulting from the interaction (Lave and Wenger 1991:29). As can be seen LPP also stemmed from the notion of apprenticeship where the novice learned at the feet of a master.

Benner's (1984) 'novice to expert' theory was based on Dreyfus' earlier theory of skill acquisition. Dreyfus' model - developed from a study of chess players and pilots performance - starts with the learner as 'novice' – with no experience of the situation they are in and reliant on rule-governed behaviour. Dreyfus (1996) proffered that although the novice follows the rules, it does not always equate to good performance. At this stage they lack any understanding of the complexities associated with the task and rely heavily on supervision and guidance.

The 'advanced beginner' stage sees the development of understanding and at stage three, 'competence' understanding deepens and decision-making starts to develop along with emotional responsibility for decisions made. 'Proficiency', the penultimate stage is where integration of new knowledge occurs although there is still deliberation over choices. Finally, stage five sees the emergence of 'expertise'. The practitioner is able to intuitively identify tasks and make decisions based on a sound body of knowledge, experience of problem solving and development of decision-making skills. At this ultimate stage of the novice to expert continuum, however, the expert often lacks the language to describe their decision-making process to the non-expert (Benner 1984).

Benner's (1984) phenomenological study aimed to determine if Dreyfus' model of skill acquisition was applicable to the skills acquisition of nurses. She wanted to discover and comprehend the clinical judgement and performance differences between experienced and novice registered nurses. This US study, consisted of a mix of interviews and non-participant observation, with data collected and analysed by a team of researchers.

The sample (n=42), taken from multiple hospital sites in California consisted initially of newly qualified (n=21) and expert nurses (n=21) who undertook paired interviews. They were interviewed separately about shared clinical experiences, which had significant meaning to them and comparisons were made regarding descriptions of the events. Further group interviews and/ or participant observations were conducted with additional experienced nurses (n=51), newly qualified nurses (n=11) and senior nursing students (n=5) to enable the researcher to gain a sense of the characteristics of the nurses performance at the various stages of the skills development continuum.

A number of themes emerged from the data, which Benner categorised as domains: the helping role; the teaching-coaching function; the diagnostic and patient monitoring function; effective management of rapidly changing situations; administering and monitoring therapeutic interventions and regimens; monitoring and ensuring the quality of health care practices; organisational and work-role competencies. The supporting narratives of the participants (novice and expert nurses') show the different levels of thinking and acting which occurred respectively in the shared significant events.

Benner's findings, from the perspective of nurse education demonstrated that the development of expertise is dependent on various and numerous significant concrete experiences; without them it is difficult to advance. There was acknowledgement that nurses at point of registration rarely achieve more than 'competence'. Benner asserts that in order to advance this, rather than students learning vicariously from others experiences they need to have the opportunity to rehearse similar situations for themselves. Learning with simulation was suggested as an effective way of addressing this discrepancy.

The issue of lack of opportunity for nursing students to gain experience was discussed earlier within this chapter. Simulation can provide concrete experiences in a controlled and guided manner (Ker and Bradley 2007). However, in line with andragogical theory, the experience and the outcomes are influenced by external factors, some personal to the learner, such as previous learning experiences and education and some cultural.

Whilst acknowledging the influence this valuable research has had on the advancement of contemporary nursing there are some issues worthy of note. First, as the sample consisted of five (n=5) nursing students, the findings in relation to nursing students were not robust enough to represent student nurses outwith the study site (Polit and Beck 2008). This was a US study undertaken in one state. Differences in nurse education and healthcare practice may render the findings non-representative in the UK. Similarly as less than a quarter (n=26) of the entire sample of 109 was subject to participant observation the findings could not be considered characteristic of the experience. The qualitative findings are generally context specific (Polit and Beck 2008).

In addition, Dreyfus's model is constrained by the situation in which the 'expert' is based. Expert status is not always transferable to other areas. For example, a nurse clinician working as I did at advanced practitioner level in emergency trauma care, could be classed as an expert in that field. However, if that clinician moved to a coronary care unit they would in all likelihood not be able to work at that same level due to lack of expertise in that specific field and may have to work through the stages preceding 'expert' status.

Similarly, when a new learner joins a new learning environment, or community, as a new beginner they initially learn at the periphery by observing and discourse. As competence develops, through the acquisition of knowledge and skills, they move further into the community (Gray 1997). Eventually, as their knowledge and expertise increases and broadens they will become more participative, sharing their knowledge and expertise with new novices. As highlighted earlier, learners [nursing students included] are inevitably exposed to communities of experienced practitioners, both in the HEI and in clinical areas during the course of their journey from novice to expert. As in Dreyfus' model, the expectation is that they will gradually move from the peripheral participation stage of the novice to full participation under the guidance of old timers who have acquired mastery. It is believed that using LPP may help to illuminate the learning processes behind social learning because it places importance on the whole person and the social context (Lave and Wenger 1991).

Lave and Wenger (1991) emphasised that learning should take place in a number of educational situations and that it must be meaningful. In terms of undergraduate education, the population of students in the HEI where my study is based were exposed to a variety of educational situations such as classroom-based lectures and tutorials, participatory skills workshops and clinical practice in placement areas. For example, when the nursing students' were learning about the management of patients who have experienced trauma, they were exposed to wide and varied range of 'expert' multi-professionals.

Initially they attended lectures delivered by a lecturer experienced in trauma management; in placement they learned from experienced clinical practitioners; additional learning came from a simulated road traffic collision exercise with the Fire and Rescue Services and from a day spent with the Ambulance Paramedics'. As this illustrates, the student's were exposed to a number of different communities of practitioners, all of which entailed initially participating on a peripheral level.

Similarly, Andrews *et al.,* (2008) believe that communities of practice (CoP) facilitate dynamism in clinical practice and reasoning as they allow multifaceted involvement from research, education and clinical practice. It is vital that the university based knowledge and skills students are exposed to help prepare them for the 'real world' and are transferable (Lauder *et al.,* 2004) and it is believed that teaching in simulated environments facilitates this (Issenberg *et al.,* 2005).

As stated, legitimate peripheral participation (LPP) reflects aspects of the apprenticeship model with the premise that novices learn when working in the professional community, with time served professionals who have accrued expertise. This approach is well suited to nursing and similar in many ways to traditional nurse training. However, as previously discussed nurse education has progressed and now has a greater emphasis on underpinning theory and critical thinking skills, with nurses required to be 'knowledgeable doers' (UKCC 1986; Scholes *et al.,* 2004; Longley *et al.,* 2007; Bradshaw and Merriman 2008).

This chapter has thus far presented an account of the various educational theories, which have contributed to the development of nurse education over the past 30 years. All are relevant and applicable to the field of simulation, in particular to the simulated clinical environment (SCE). The theoretical underpinnings of many of them are concurrently evident in contemporary programmes. Further to this, an approach established with the HEI used within my study is that of the 'Cognitive Apprenticeship Model' (Collins *et al.,* 2004).

1.5.4 Cognitive Apprenticeship Model

The cognitive apprenticeship model (CAM) encompasses many of the aspects of the theories discussed in earlier. This model, developed in 1989 by Collins, Brown and Newman (Collins *et al.,* 2004) is based on the apprenticeship model but has the added dimension of equal emphasis being placed on the cognitive aspects – the thinking behind the skill.

The apprenticeship model, as discussed previously in relation to the 'novice to expert' and 'situated cognition' models involved the learner watching and practicing a skill or task with guidance from others. This traditional model has been used informally and formally within the blue-collar trades (i.e. joiners), the arts (i.e. sculptors) and the professions (i.e. nursing) for many years. However, learning in the traditional apprenticeship model was largely focussed on skills acquisition alone, which the learner was able to witness as they worked alongside and observed the expert performing the skill. However, softer cognitive skills such as problem solving and decision-making were largely invisible (Collins *et al.,* 2004).

The cognitive apprenticeship model works by bringing those two elements together with the overall aim of making the cognition (the thinking behind the action) visible to both learner and teacher. Essential elements for this are observation and social context, so that the learner acquires a conceptual 'mental' model to aid recall. The social context allows the learner to be exposed to a range of experts and contextual models. One can see how this model has been influenced by social learning theories, such as situated learning, discussed earlier (Lave and Wenger 1991).

The cognitive apprenticeship model has a sequence of progressive steps (see Figure 1.1 below) that facilitate progression from the novice beginner through to the competent reflective practitioner. The learning occurs as a result of actively using and applying knowledge, rather than the more passive practice of receiving knowledge (Collins *et al.,* 2004).

Components of Cognitive Apprenticeship

Modelling: expert performs skill while the learner observes & builds conceptual model

Coaching: expert observes learner performing skill, offers prompts, feedback & further modelling

Scaffolding: learning is supported according to skill level; activities designed to assist progression to next level. Support is gradually removed until fully independent

Articulation: learner articulates their knowledge, reasoning and problem solving processes.

Reflection: learner critically analyses their performance and compares with expert practice.

Exploration: learner engages in autonomous practice.

(From Collins *et al.,* 2004)

Figure 1.1: Components of Cognitive Apprenticeship Model

Collins *et al.,* (2004) offered direction to the teacher wishing to progress from the traditional apprenticeship model to the cognitive apprenticeship model. The requirements are:

1. Identify the processes of the task and make them visible to the students;
2. Situate abstract tasks in authentic contexts, so that students understand the relevance of the work;
3. Vary the diversity of situations and articulate the common aspects so that students can transfer what they learn.

This model is well suited to learning within a simulated clinical environment (SCE). It places the learner at the heart of the learning environment and task visibility is reciprocal between learner and teacher (Wooley and Jarvis 2007). The learners are afforded the opportunity to apply the cognitive knowledge in a realistic clinical context, to make their learning visible. In addition, by articulating their actions they are 'making visible' the thinking that precedes and accompanies the task (Collins *et al.,* 2004).

Within the HEI used for this study, the cognitive apprenticeship model is used within a spiral curriculum. This iterative approach as described by Harden and Stamper (1999) involves the following: topics are revisited; increasing levels of difficulty; new learning is related to previous learning; the competence of students increases. Students enter at level 7 (SCQF 2010) and on completion of level 9 are expected to be proficient in all domains: psychomotor, cognitive and affective (UWS 2011).

Collins *et al.,* (2004) believe that one of the strengths of the cognitive apprenticeship lies in the fact that it can complement more traditional learning and teaching methods such as reading textbooks or the more didactic and passive listening to lectures. Students have preferred modes of learning (Kolb 1984) and those with a preference for an active approach may benefit from the cognitive apprenticeship approach. Individual learning styles are influential in how people learn and the next section will discuss this important issue in relation to experiential learning and nurse education in more detail.

1.6 Learning Styles

There has been reference within the literature to the issue of learning styles in relation to experiential learning (Race 2005; Sewchuk 2005). The term *learning style* refers to the different ways individuals prefer to take in and assimilate new information (Race 2005). The main proponent of the concept of individual learning styles (ILS) – David Kolb – is renowned for his work on experiential learning in conjunction with ILS (Kolb 1984).

It is worth noting that learning style does not provide a measure of an individuals level of intelligence (Kolb and Kolb 2005) and no one learning style is superior to another (Myers and Briggs 2009). However, knowing one's learning style is useful for identifying preferred modes of taking in new information. It can help establish why students find some tasks easier than others (Alkhasawneh *et al.,* 2008).

Successful learning depends more on the synergy between the teaching style and the preferred learning style of the learner (Li *et al.,* 2008). People will tend to learn more effectively if learning / teaching strategies are orientated towards their preferred style (Myers and Briggs 2009). For example, someone who likes to watch and think may not learn effectively if they are asked to do and feel and have no plan to follow.

It is well documented that the demography of the modern day student nurse has changed. In the early 1980's almost 75% of nursing students were under 21 years of age; five percent were over 30 years of age and 10% were males UKCC 1986). They are no longer mainly young girls fresh out of the secondary school environment, but are more representative of contemporary society (RCN 2008). The sample of undergraduate student nurses (n=110) in Rassool and Rawaf's (2007) study, aimed at identifying preferred learning styles consisted of a similarly representative mix of gender, ethnicity and age range and this was reflected in other similar studies (Kapp and Fergason 2002; Alkhasawneh *et al.,* 2008; Meehan-Andrews 2009). The average age of today's student nurse, as noted earlier is much higher than twenty or thirty years ago, currently 47% are over 30 years of age (RCN 2008) with a wider cultural mix and greater ratio of male to female students than thirty years ago. Current available figures from NMC (2007) register show that 11% of students are male (RCN 2008). Sixty-five percent of today's student nurses were in paid employment prior to commencing nurse training (RCN 2008).

Consequently, students bring with them a range of antecedents in terms of life experience, cultural and educational background, values and beliefs. As a result of these factors teaching and learning approaches need to be tailored to meet the diverse educational needs of the equally diverse student population. Some prefer a passive didactic approach, whereby they listen to lectures, whilst others may prefer more practical hands on approach or a visual approach, with the use of images, videos or demonstrations (Fleming 1995).

Learning style is influenced by various factors from, for example childhood development, formal and social and cultural education and previous experience. All these factors can influence how an adult will approach learning new information and skills (Coffield *et al.,* 2004). Having an understanding of the various learning styles of students' means lecturers will be better placed to plan teaching and learning activities, which cater to these varying needs (Myers and Briggs 2009). Learning styles are identified via *learning style inventories (LSI),* of which over 70 exist (Coffield *et al.,* 2004)*.* One of the most globally popular, particularly in education, medicine, nursing and management training is Kolb's (1984) model.

Kolb's Learning Style Model

Kolb's (1984) two-stage model distinguishes between four distinct learning styles and is based on Kolb's learning cycle (1984), discussed earlier. Individual learning styles (LS) are categorised as: Diverging; Assimilating; Converging and Accommodating and are based on a preference for two opposing variables (see Diagram 1.2 below). The characteristics of each style are as follows (adapted from Kolb 1984).

Those with a Diverging LS learn by feeling and watching (concrete experience/reflective observation); are sensitive and creative, preferring to watch rather than do. They like to gather information and use their imagination, to problem solve. This individual is a team player - good at brainstorming and coming up with ideas.

Assimilating types have an inclination for watching and thinking (reflective observation/abstract conceptualisation) and will adopt an objective, logical approach, preferring ideas and models over people. The have the ability to understand a breadth of information and favour reading, lectures and having time to think things through.

Those with a Converging preference learn by doing and thinking (active experimentation/abstract conceptualisation) and are good at solving problems relating to practical issues. They are less interested in interpersonal issues, preferring the technical aspects of an assignment, where they have the opportunity to try out new ideas, to simulate. They prefer to test solutions through practical application.

Finally Accommodating types have a predilection for doing and feeling (active experimentation/concrete experience) and favour a practical 'hands on' approach. They are insightful rather than logical and prefer to rely on information from others. They are attracted to new challenges and action plans, and like to work as part of a team to complete objectives. See Diagram 1.2 below for a visual representation of Kolb's Learning Style Model.
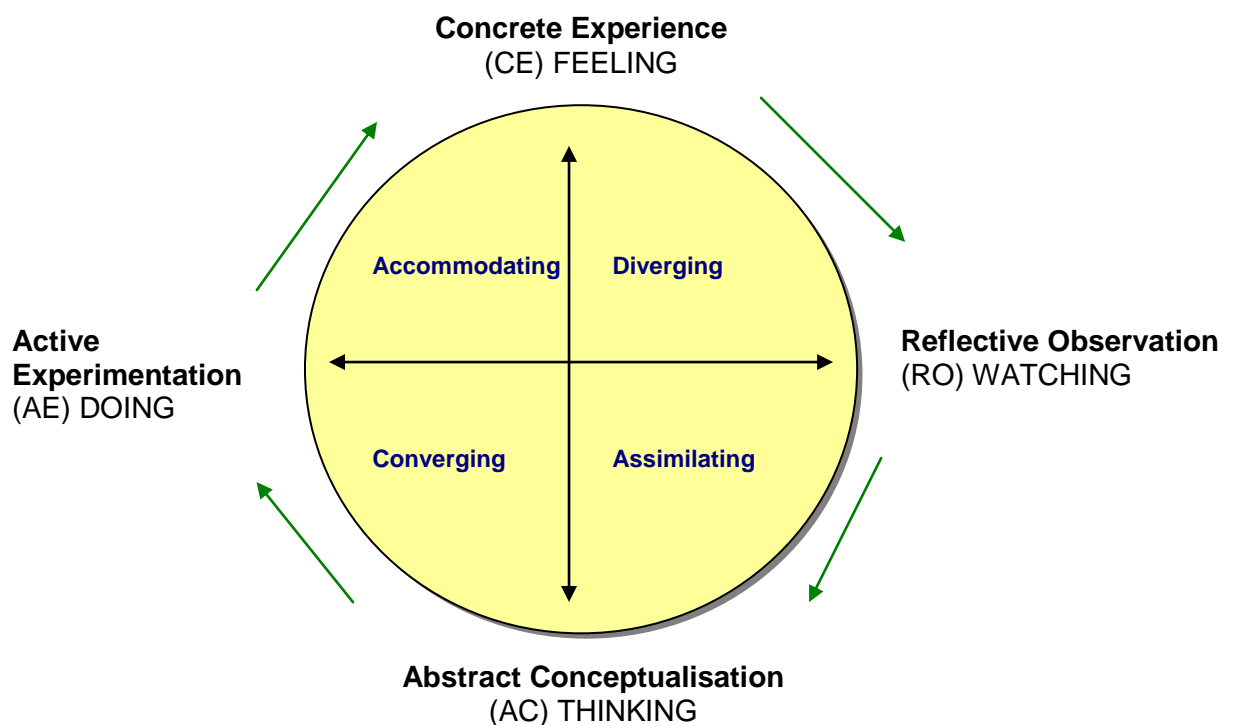
Diagram 1.2 Kolb's Learning Style Model   Source: Kolb (1984)

As previously mentioned, a large number of learning style inventories (LSI) are available. Alongside Kolb's LSI, the learning style questionnaire (LSQ) of Honey and Mumford is also widely used within the UK (Coffield *et al.,* 2004). In addition, a short description of four other commonly cited LSI's are presented.

Honey and Mumford

Honey and Mumford's LSQ is derived from Kolb's LSI but was further developed to respond to criticism of the low face validity of some aspects of Kolb's inventory. Honey and Mumford changed the labels of the learning styles to Activist, Reflector, Theorist and Pragmatist but retained the learning cycle (Coffield *et al.,* 2004).

The four learning styles identified by Honey and Mumford have similar characteristics to those of Kolb (1984) – Activist (Accommodating); Reflector (Diverging); Theorist (Assimilating); Pragmatist (Converging). The validity of this questionnaire has been questioned regarding how one instrument of 80 statements can effectively capture all the complexities surrounding learning (Coffield *et al.,* 2004). However, like Kolb's LSI, it is believed to be a useful self-development tool to help individuals understand how they learn. Another complex LSI, popular within the field of healthcare is the Myers-Briggs Type Indicator (Coffield *et al.,* 2004).

Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) is a well-utilised LSI, developed in the 1940's as an aid to learners (Coffield *et al.,* 2004). It was based on Jung's theory of human personality and focuses on normal non-pathogenic personality types. Jung proffered that individuals were capable of four psychological functions – Thinking, Feeling, Sensing and iNtuition – which are influenced by the individuals tendency to either Introversion or Extroversion. Personality types are based on how these four functions are utilised (Blutner and Hochnadel 2010).

MBTI is founded on the premise that individual personality types are fixed and stable (non-pathogenic). For example, pathogenic personalities including disorders such as schizophrenia or paranoia, can affect an individual's pattern of thinking, behaving of feeling and consequently their coping mechanism. The personality type indicator identifies 16 distinctive personality types, which can give an indication of how an individual will learn.

Each personality type can be calculated by the interaction of opposing preferences: Extroversion (E) or Introversion (I) – focus on either the outer world or own inner world. Sensing (S) or Intuition (N) – focus on either the basic information given, or interpreting the basic information further. Thinking (T) or Feeling (F) – will adopt a logical approach to decision making or will look at the people and specific circumstances first. Judging (J) or Perceiving (P) – when dealing with the outside world individuals with these preferences either like to make clear decisions or stay open to new options (Myers and Briggs 2009).

By way of illustration, individuals who prefer to focus on their own world like to interpret basic information and will approach decision making in a logical way before coming to a firm decision will be represented as INTJ. That is – Introversion; Intuition; Thinking & Judging. However, Coffield *et al.,* (2004) highlighted that the forced choice format of this questionnaire can often result in negative inter-correlations that are difficult to interpret.

Modality – specific Models

Modality – refers to specific models that view learning from a sensory perspective, based on modality theory (Fleming 1995; Coffield *et al.,* 2004). Modalities are the sensory pathways learners use to take in new information. Using a combination of memory (sensory) and perception learners receive information that comes in via their senses – Visual; Auditory; and Kinaesthetic (Felder and Silverman 1988; Coffield *et al.,* 2004; Tanner and Allen 2004). Uptake from sensory memory is very brief so if the information is in a form that suits the individual modality preference of the learner it will be more effective in registering with long term memory (Quinn and Hughes 2007).

Modality specific models include the Felder - Silverman model (1988) and variations of visual, auditory, kinaesthetic (VAK) (Fleming 1995). These will be described in turn.

Felder Silverman Model

Developed in the 1980's, Felder and Silverman's Model was a hybrid of older more established LSI's but introduced other aspects to form a new model. The model categories are: Active/Reflective, based on Kolb's model; Sensing/Intuitive from the Myers-Briggs model; Visual/Verbal and Sequential/Global (Felder and Silverman 1988). Visual learners remember information given to them in the form of images, diagrams and film or similar, whilst the verbal learner processes information given either in written and/or verbal format. Sequential learners prefer to take a step-by-step approach to learning and problem solving, whilst those with a global preference like to learn in large chunks and are capable of solving complex problems quickly (Felder and Soloman no date).

Like Kolb and Honey and Mumford, Felder and Silverman believed that while basic personality types are stable, individuals have the sovereign ability and flexibility to adapt their learning style to fit the circumstances, which can be influenced by career path choice and/or life experiences (Coffield *et al.,* 2004) and can adopt opposing strategies. For example the active learner can be reflective and likewise the verbal learner can also learn using a visual approach. The learning style preference ideally should be an even-handed mix of each opposing dimension and this is echoed by Race (2005).

Kolb and Kolb (2005) are also of the opinion that learning style can be influenced not only by personality type but also by the type of education or career choice one is immersed in. For example, in healthcare education a lot of hands on practical teaching strategies are employed and in nursing in particular 50% of the teaching is based in clinical areas (NMC 2010b).

VAK, VARK and Visual/Verbal

The VAK (Visual, Auditory and Kinaesthetic) model by Bandler and Grinder (1979: in Felder and Silverman 1988); VARK (Visual, Aural, Read/write and Kinaesthetic) model, adapted from VAK by Fleming (1995), used the three main sensory pathways; and the more simplified Visual/ Verbal model are derived from accelerated learning theory.

There are some similarities to Felder and Silverman's model: Visual learners prefer to learn new information from graphs, charts and diagrams. Aural learners often have difficulty with reading and writing tasks, preferring to talk or concentrate on what is being said, whilst Read/write learners (in VARK) prefer to learn by means of the written word. Finally Kinaesthetic learners (sometimes referred to as Tactile) learn best when they can touch and move things or have concrete experiences like role play, which stimulate their senses or real life examples, which help illustrate points being made (Fleming 1995; Tanner and Allen 2004; Chislett and Chapman 2005).

Race (2005), like Coffield *et al.,* (2004) argued that learning styles (LS) could pigeon - hole individuals. For example, Felder and Silverman (1988) noted that adults, college age and above tended to be visual learners. In order to be a successful learner, individuals should make use of all the LS and be encouraged to learn using different approaches. Kolb and Kolb (2005) also acknowledged this by stressing that LS's were dynamic and that individuals could change the way they learn. However, Fleming (1995) added that students often preferred to stick to using the learning style in which they were stronger because of pressure of essays and exams.

Sewchuk (2005) highlighted that certain professions attracted individuals with specific learning styles and identified that nursing attracted individuals with 'diverging' learning styles (concrete experience and reflective observation). A number of studies identified the preferred learning styles (LS) of student nurses using some of the aforementioned LSI's. In 1995, the most common LS among nursing students in Rakoczy and Money's three-year study was Assimilator (RO: observation and AC: thinking) (Kolb 1984).

This longitudinal study aimed to identify the LS of students over a three year Diploma programme. A homogenous sample of nursing students was followed from Year one (n=176) until Year three (n=144) and their LS was measured each year. On completion of the programme the students' LS mode was still Assimilator. At that time Rakoczy and Money proffered that, as nursing became more complex nurses would need to develop convergent and divergent skills.

More recent studies suggested this change in LS might have occurred. Apart from Sewchuk (2005), Suliman (2006) and Rassool and Rawaf (2007) identified the dominance of Converger and Diverger LS. Study samples, represented respectively, pre-registration nursing students in the Middle East and the UK. Converging and Diverging LS appear suited to learning with simulation as both involve the need for active participation in the learning process. Those with Converging LS benefit from concrete experience and observation (equates to a Visual LS), whilst those with Diverging LS like to apply what they have learned in hands on application (equates to Kinaesthetic LS).

As evidenced within this chapter, there are a great many learning style inventories (LSI) in circulation. Coffield *et al.,* (2004) noted 71, identifying 13 as major LS models and since then others have emerged, such as Jackson's (2009) neuropsychological hybrid model of learning in personality, which examines the processes that influence learning. Whilst some comparisons between LS types have been made within this chapter, a table illustrating this can be referred to within the appendices (see Appendix I). The literature specific to LS in relation to nurse education and simulation will be further explored in the following chapter.

Learning and teaching strategies within nurse education must also facilitate the transfer of knowledge and skills to practice. The hands on approach of simulation can help facilitate this transfer (Bradley 2006) by equipping students with the ability to participate confidently in clinical situations once in practice. Furthermore, experiential learning, particularly in the form of simulation, can facilitate nursing students' ability to articulate their knowledge, something which many students find difficult (Carr 2005).

1.7 Summary

In conclusion, this chapter has provided some background to skills acquisition within nurse education and in so doing has contextualised and justified the use of simulation within the curriculum (Haigh 2007). Nurse education has emerged from an era where nurses were primarily viewed as doctors' handmaidens, through to the development of a more formal training which followed a traditional apprenticeship model and was generally task based (Haigh 2007).

The current student nurse has emerged as a 'knowledgeable doer' who needs to be proficient in the psychomotor, cognitive and affective domains (Scholes *et al.,* 2004; NMC 2007). Criticisms about lack of clinical skills, ranging from technical tasks to non-technical cognitive decision-making have influenced the emergence of the simulated clinical environment and simulated 'systems' in the form of life size mannequins, through to haptic and virtual technology as a means of redressing the balance (Ker and Bradley 2007; NES 2007; NMC 2007; Bradshaw and Merriman 2008).

Secondly, the educational theories, which underpin simulation as a learning and teaching approach were described and discussed. It was made clear how simulation has been shaped by such theories as constructivism; experiential learning; situated learning; social learning theory and cognitive apprenticeship, which all require the learner to develop skills in critical reflection (Dewey 1910; Bandura 1986; Lave and Wenger 1991; Collins *et al.,* 2004; Kolb and Kolb 2005; Race 2005). These processes allow the learner to assimilate knowledge and experience and make sense of the learning that has occurred.

Finally, the influence of individual learning styles was introduced and discussed within the context of nursing. It was highlighted that there were similarities within the health professions regarding preferred learning styles (Sewchuk 2005; Suliman 2006) and that learning through simulation and SCE was an approach that could be aligned to a number of the learning styles. It is anticipated that this chapter has set the scene for chapter two, which focuses on a critical review of research specific to the use of simulation within nursing and healthcare education.

Chapter 2. Literature Review

2.0 Introduction

The previous chapter provided some background to nurse education within the UK. This chapter will focus on literature specific to the use of simulation within nursing and healthcare. The literature reviewed within this chapter is relatively small. This is due to the qualitative methodological approach utilised for this study and to the fact that as the focus of this study is nursing, only literature specific to that discipline was accessed.

In qualitative research the methodological approach adopted greatly influences the purpose and timing of the literature review, with some, such as Grounded Theory, requiring no in-depth literature review prior to data collection (Burns and Grove 2010; Holloway and Wheeler 2010). This approach is sometimes suggested as being appropriate in phenomenological research so the researcher is not unduly influenced by the findings (Gerrish and Lacey 2010). However, it is also acknowledged that some review of the literature is required in order to put any proposed new research into context (Polit and Beck 2008).

The starting point for any literature review is the literature search, in itself an iterative process, whereby the findings of the initial search inform the focus of the next stage and so on (Watson *et al.,* 2008). Generally speaking a literature search is carried out to identify what is already known about a particular subject and to critically appraise any existing research. Furthermore it can help to identify any gaps, which could be addressed by further research and strengthen the need for any proposed research (Silverman 2005; Parahoo 2006). Polit and Beck (2008: 105) proffered 'researchers rarely conduct research in an intellectual vacuum', it is context bound and shaped by existing knowledge.

At the commencement of this research study in April 2006, I had an existing knowledge base regarding the topic of simulation in nurse education. This experience was from the perspectives of both an educator, utilising simulation as a teaching and learning technique and as a learner, having undertaken training, which included a range of clinical simulation.

The literature review was undertaken in order to expand that knowledge base, uncover what was known about the subject and identify areas that needed to be strengthened or addressed (Parahoo 2006). The literature review referred to in this section was completed prior to commencement of individual interviews in February 2008. Where applicable to the context of simulation, some post 2008 references are presented in this chapter but the majority of the literature from 2008 onwards is used in the Findings and Discussion chapters.

2.1   Search Strategy

An initial search of the literature using OVID, CINAHL and ASSIA databases was undertaken with a timeframe of ten years (1996 – 2006). As the study progressed this time frame was updated to include literature up to 2008, when the data collection process started in earnest. This was done in order to keep abreast of new and emerging researched literature on the topic. Such is the interest in simulation as a learning approach in the field of social research that new studies were continually being unearthed. Other search techniques included sourcing older studies consistently cited in current research, accessing online journals and library database.

KEYWORDS: simulation; nursing; medical; education, clinical skills; transfer of learning; competence, confidence; learning style.

The result of these keywords was literally hundreds of thousands but the database only retrieved a small proportion of these - simulation (209 out of 468,404); nurse education (207 out of 53,355); medical education (205 out of 328,801); clinical skills (183 out of 81,873); transfer of learning (90 out of 11,884) and competence (195 out of 167,002). This does give some notion to the wealth of literature on the topics identified by the keywords although some were cross - referenced in each keyword search. A review of the abstract content of the results then led to the article either being read in full or discarded.

Inclusion criteria for each paper were that it should be research based and concerned with healthcare education from a clinical skills perspective through the use of simulation technology. Exclusion criteria were any article not translated into the English language, research relating to gaming and research where the focus was not simulation technology.

2.2 The evidence base for simulation: a review of the literature

There was evidence of a growing research literature concerning the use of simulation across a wide range of disciplines out with the healthcare arena and some of these were highlighted in Chapter 1 (Leitch *et al.,* 2002; Maran and Glavin 2003; Issenberg *et al.,* 2005; Bradley 2006; Langran and Carlin 2006; Correll *et al.,* 2007; Albores and Shaw 2008; Mensink and Cosemans 2008). However, within the healthcare setting this was equally so. As evidenced through the literature search, there has been a proliferation of research literature from both a quantitative and a qualitative position, which will now be discussed.

Simulation in much simpler forms has been used within nurse education for many years. In recent years however, due to changes in curriculum design and healthcare policy, nursing students have found it increasingly difficult to acquire exposure and competence in some key clinical skills (Scholes *et al.,* 2004; McCallum 2007; Clark and Holmes 2007; Bradshaw and Merriman 2008). As a consequence simulation, ranging from low to high fidelity specification and simulated clinical environments (SCE) have been introduced into UK nursing programmes (Seropian *et al.,* 2004; NMC 2007).

There are a number of benefits to learning within a SCE: it bridges the theory-practice gap; prepares learners for practicum; provides a safe learning environment; puts needs of learner first; and improves confidence and competence (Maran and Glavin 2003; McCallum 2006; Alinier *et al.,* 2006; Bremner *et al.,* 2006; Haigh 2007; Ker and Bradley 2007; Baillie and Curzio 2009).

From an educational perspective, simulation is an active learning approach, which facilitates experiential learning; is well suited to adult learners (Dewey 1910 and 1938) and the demography of contemporary nursing students (Quinn and Hughes 2007; Baillie and Curzio 2009). Adult learners bring personal antecedents to a learning experience, influencing the way they assimilate new knowledge and commonly, nursing students have a learning style (LS) aligned to the active learning and reflective nature of simulation (Sewchuk 2005; Suliman 2006; Rasool and Rawaaf 2007).

The majority of the research literature focused on the positive aspects of simulation. However, there was also evidence to suggest that simulation does not suit all learners. Some students found the experience of the SCE uncomfortable, intimidating and unrealistic and experienced anxiety, which impacted on their overall learning experience (Northcott 2002; Bremner *et al.,* 2006; McCallum 2006). On reviewing the literature it was clear that quantitative research approaches were more prevalent and focused on evaluating the effectiveness of aspects of simulation. The evidence base from a quantitative perspective will now be critically appraised and presented. This will be followed by appraisal and presentation of the findings from a qualitative perspective.

2.2.1   Quantitative evidence base

A number of quantitative studies have been undertaken within the field of healthcare education to measure the efficacy of simulation. In order to get a broad picture of existing research a systematic review undertaken by Issenberg *et al.,* (2005) was accessed. The purpose of the systematic review, classified as level one of the evidence hierarchy (Polit and Beck 2008), was to carry out a thorough search of the literature and critique, synthesise and summarise the findings of a large number of primary research studies, which met preset criteria (Polit and Beck 2008). Systematic reviews are normally carried out on experimental and quasi-experimental designs as they have by design, a low risk of bias (Rees 2003), although they have been utilised to provide a synthesis of qualitative studies (Gerrish and Lacey 2010).

Issenberg *et al.,* (2005) reviewed an extensive range of primary research relating to simulation over a 34-year period (1969 – 2003) in order to address the question "What are the features and uses of high-fidelity medical simulations that lead to most effective learning?" A team of academic, doctorate level representatives from eight medical institutions in the USA, UK & Israel, undertook the work. The team approached the preparatory stage methodically, providing a clear and unambiguous account of the process as suggested by Wolfe (2000): in Issenberg *et al.,* 2005) and similar to the steps outlined by Parahoo (2006).

There was a very clear statement regarding the research question and the literature search appears to have been extensive. The 91 key words demonstrated a wide range and included: simulator, simulation, virtual reality, critical care, trauma, nursing, medical student, patient safety, communication, education, outcome based, learning, behaviour, skills. Inclusion and exclusion criteria were clearly stated. These steps helped ensure transparency and reproducibility of the review (Parahoo 2006) and as a result 109 studies from a total of 670 were selected. Most were from the field of medicine but also from disciplines such as dentistry, nursing, veterinary medicine, paramedics, military and some multidisciplinary.

The literature review provided a broad overview of simulation in general and then specifically on medical education, outlining the drivers for change and the need to assess professional competence and promote team working in order to ensure patient safety. It also identified that there was a need for higher quality of research in the area of simulation in medical education.

A definition of terms was provided, in particular the term 'effective learning', which was related to Kirkpatrick's (1959) training criteria and Miller's (1990) assessment of competence framework (see Figures 2.1 and Diagram 2.1 below). Both stipulated the need for effective learning to be demonstrated by a lasting change in behaviour once back in the actual working environment.

Level 1	<u>Reaction</u> to training programme
Level 2	To what extent did <u>learning</u> in the 3 domains (psychomotor; cognitive and affective) improve after training?
Level 3	To what extent did <u>behaviour</u> change in workplace as a result of training?
Level 4	What benefits occurred as a <u>result</u> of the training?
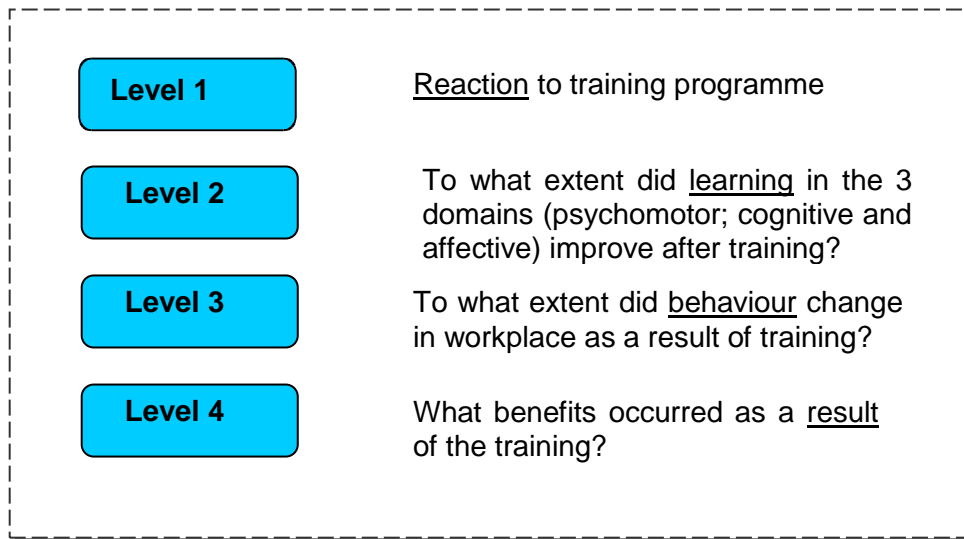
Figure 2.1 Kirkpatrick's (1959) Training Criteria (Alliger and Janak 1989; Bates 2004)

Miller's (1990) competency framework is illustrated in pyramidal form (see Figure 6 overleaf). The initial stage is that of 'knows' (knowledge) – the learner knows what needs to be done to carry out a task or they have the ability to recall facts; stage two 'knows how' (competence) – ability to use the knowledge they possess to problem solve and/or describe procedures; stage 3 'shows how' (performance) – the ability to demonstrate how knowledge/skills will be applied; and the ultimate stage 'does' (action) – the ability to perform/behave competently in clinical practice – to transfer what they have learned in an artificial setting to a real clinical setting (Miller 1990). Diagram 2.1 below depicts the stages of Millers Pyramid of assessing competence.
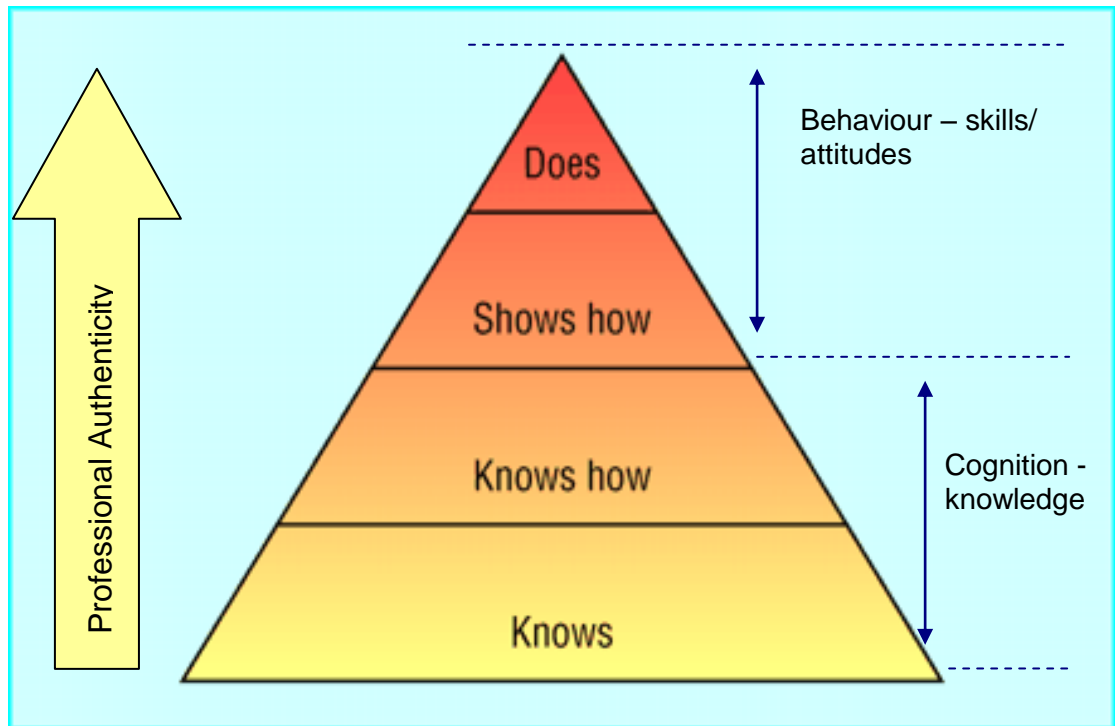
Diagram 2.1 Miller's (1990) competency framework (Source: Gupta *et al.,* 2010)

As per good practice for systematic reviews, two researchers appraised every article, each 'blind' to the coding decisions made by the other, using a standardised tool for which they had undergone training. Coding consisted of four categories by which studies were judged: design; implementation; analysis and strength of findings. Each category carried a numerical rated (1 – 5) with (1) being strongly disagree, (3) uncertain and (5) strongly agree. Open discussion of judgements was encouraged and the ultimate coding values were agreed within the group to maintain credibility.

Results identified the main focus of the research as acquisition of practical skills, with all the studies achieving at least one of Kirkpatrick's criteria for effectiveness. Ten features of simulation were ranked according to how often they were coded. The top three were 'feedback' – identified in 47% (n=51) of the studies; 'repetitive practice' – 39% (n=43) of studies; and 'integration into curriculum' – 25% (n=27) of studies. Others with 10% (n=11) or less included 'controlled environment'; 'individualised learning'; 'defined outcomes and goals'; 'range of difficulty level'; 'multiple learning strategies'; 'clinical variation'; and 'simulator validity'.

These findings were supportive of the integration of simulation into the curriculum of healthcare education and supported the belief that repetitive practice could facilitate retention and transfer of skills. The literature review identified a knowledge gap regarding effectiveness of skills transfer from the simulated area into practice (Kneebone 2003; Alinier *et al.,* 2004; Murray *et al.,* 2008).

As well as being generally supportive of the effectiveness of simulation Issenberg *et al.,* (2005) highlighted the amount of published work on the subject of high-fidelity simulation. Fifty-seven percent of the research was undertaken between 2000 and 2003. They did however question the strength of the findings, highlighting that less than 20% of the studies were able to provide findings that were clear and unambiguous.

The research question was addressed - a list of features desirable in simulators to facilitate effective learning was produced. The researchers also asserted that simulation-based [medical] education complemented, but did not substitute real clinical experience and was best employed to prepare students for real patient contact. This linked to the findings from the NMC (2007) Simulation and Practice Learning Project, which also recognised the value of simulation as a way of preparing students for clinical practice. Issenberg *et al.,* (2005) were clearly disappointed at the lack of unequivocal evidence and recommended that better research and scholarship was needed.

Issenberg *et al.*, (2005) provided an overview of quantitative studies carried out in the period up to 2003. Overall this was a useful review, however it was a secondary source and as such specific details of each study were not provided. That said, a list of the studies was available on the BEME website. Although researchers' will need to undertake rigorous critical appraisals first hand, systematic reviews show what the general consensus on a topic is. Studies since have evaluated the effect simulation as a teaching methodology had on the acquisition of clinical skills and knowledge following exposure to simulation (Freeth and Fry 2005; Wilson *et al.,* 2005; Alinier *et al.,* 2006; Lathrop *et al.,* 2007; Ironside *et al.,* 2009).

An experimental UK study, by Alinier *et al.,* (2006) tested the hypothesis that the experimental group would perform better in an Objective Structured Clinical Examination (OSCE) than the control group. They identified that little scientific evidence existed which proved simulation was better than traditional methods in helping undergraduate nurses acquire skills. One hundred and thirty-three (38.6%) from a population of 344 second year undergraduate (UG) Diploma nursing students volunteered to participate in this pre-test, post-test randomised control trial (RCT) using a standardised OSCE.

OSCE's have been used for assessing the clinical skills and competence of healthcare students for a number of years (Walters and Adams 2002; Alinier 2003; Brosnan *et al.,* 2006) and are considered a valid and reliable tool (Rushforth 2007). Reliability of the OSCE was maximised by the use of standardised and validated scenarios and marking grids (Rushforth 2007).

The study sample (n = 133) was randomly divided into two groups – control (n=50) and experimental (n=49). Both groups undertook an initial pre-test simulation exercise, in the form of a 15 station OSCE. Ninety-nine participants (74.4%) completed the second OSCE stage of data collection and the researchers speculated that this could have been due to the fact that as they were full-time students, data collection had to be carried out in their own time. The average age was 31 years and chiefly female (n=114: 85.7%) so many may have had family or other commitments, which may have taken precedence.

Involving students in educational research raises a number of ethical issues, such as informed consent, anonymity and coercion (Clark and McCann 2005; Northway *et al.,* 2005). However, full ethical approval was gained, ensuring participants rights were maintained (Burns and Grove 2010). Clark and McCann (2005) warned that students should only be used in research if the topic is directly relevant to their current role. In this case simulation was not an integral part of the curriculum. However they were not disadvantaged by being exposed to it as it was designed to test if simulation was an effective method, which may be included in future curricula.

After the first OSCE both cohorts followed the nursing course curriculum. However, the experimental cohort received two, three-hour simulation sessions, focused on communication, teamwork, situation awareness, decision-making and clinical skills. Six months after the first OSCE, both groups undertook a second OSCE. There was a six-month period between the two OSCE's in order to test retention of skills (Issenberg *et al.,* 2005) and to determine if simulation had affected levels of performance and confidence. Both cohorts completed a self-administered questionnaire (SAQ) prior to the second OSCE. Comparisons were made between the two groups concerning the use of simulation and levels of stress and confidence while using the technology (Alinier *et al.,* 2004).

There was improvement in both groups, however improvement was more statistically significant ($p < 0.001$) in the experimental group. The control group showed a 7.18% improvement compared to 14.18% in the experimental group, supporting the hypothesis that the experimental group would perform better in the test than the control group. The experimental group contained more participants with previous clinical experience (n=20: 40.8%) compared to the control group (n=16: 32.0%), however the average years of experience were greater in the control group (3.4 compared to 2.2 in the experimental). Whether this would significantly affect scores is difficult to say. There was no statistically significant correlation between levels of confidence and performance in either group. Students who lacked confidence also reported increased levels of stress, which could also be a normal emotion when one knows one is being observed and recorded (Gerrish and Lacey 2010). Also, it was their first experience of learning in a SCE with simulation mannequins.

In terms of limitations, the researchers themselves identified that the main limitation was the fact that the OSCE was not integral to the Diploma curriculum and that results may have been affected by experience gained by students in their clinical placements during the time between the first and the second OSCE. They only asked students about their current placements prior to the second OSCE and not all their placements since the first. Had some of them been in acute areas they may have gained experience which would have helped them in the second OSCE.

However, a further noted limitation was that this study provided data taken from an isolated episode of learning with simulation. Following a group of students over a longer period of time may have provided more data regarding development of confidence and reduction in stress in relation to simulation. Alinier *et al.,* (2006) identified both of these factors and it would be valuable to determine if either of these improved with regular exposure to learning with simulation in a simulated environment.

In support of the findings from Alinier *et al.,* (2006) were Lathrop *et al.,* (2007) and Ironside *et al.,* (2009). Subjects in both studies demonstrated improved post-test scores following simulation. The aim of Lathrop *et al.*'s, (2007) small pilot study was to evaluate the usefulness of simulation in providing students midwives with the skills needed to respond to an obstetric emergency. The sample composed of four, second year midwifery students and a pre-test, post-test study design. The intervention was a two-hour simulation workshop with four stations depicting the same obstetric condition but each one was progressively more difficult.

Prior to the workshop participants completed a pre-test self-evaluation questionnaire (SAQ) consisting of three Likert-type items - cognitive information, psychomotor skills and affective dimension of role attainment and included an open-ended question. The SAQ was piloted to evaluate their preparedness for fulfilment of the role of midwife. The study was evaluated and approved by the institute's research review board and consent was obtained from the sample (Rees 2003).

Results were favourable, with the mean scores from the pre and post-test questionnaires revealing an improvement in the three educational domains: psychomotor skills – 2.5 – 4.25; cognitive information – 3.75 – 4.25 and role attainment – 2 – 4.25. The small sample size however, precluded any statistical analysis of the results.

In terms of limitations, firstly the sample size was not adequate to assure validity of findings, although as previously acknowledged, this was a pilot study. Had this been a study proper, the recommended approach to calculate sample size is power analysis, which relates to the ability of the study to detect differences that are representative of those that exist in the population (Burns and Grove 2010). Although results were supportive of simulation, they could be due to other factors such as small numbers giving more opportunity for support; the age of the participants, and previous experience. Inclusion of a control group as used by Cioffi *et al.,* (2005) in a similar study would have allowed comparisons to be made and would have led to better evaluation of simulation.

A similar but slightly larger post-test pilot study by Cioffi *et al.,* (2005) investigated the effect of simulation on decision-making skills of a sample of Australian graduate diploma midwifery students (n=36). Students were randomly assigned to either a control or an intervention group. Whilst the control group received the normal lectures on two topics, students in the intervention received the same topics via simulation with a pregnancy simulator. Afterwards both groups participated in two post-test simulation OSCE's.

Results showed that the experimental group made decisions more promptly; collected more information from the patient; reviewed decisions less often; and reported higher levels of confidence. Although control groups were used to allow comparisons about the effectiveness of simulation (Polit and Beck 2008), the sample size (n=36) was too small to render findings representative - a larger study would have produced more robust findings (Polit and Beck 2008).

It cannot be definitively claimed that the poorer results were due solely to lack of decision-making skills. It could be due to their lack of familiarity with the simulator, which may also have influenced students' levels of confidence. It has been reported previously that students can find communication with simulation mannequins awkward (McCallum 2006) and this could hinder interaction. Had this study included a pre-test OSCE, as other studies assessing effectiveness had done (Alinier *et al.,* 2006; Lathrop *et al.,* 2007; Ironside *et al.,* 2009), performances from both groups could have been more equally compared.

The sample of final year student nurses in Ironside *et al.'s,* (2009) USA based pre-test post-test study assessing the effectiveness of learning with simulation scenarios in an SCE was considerably larger (n=413) and across eight campus sites. Sixty-seven students (16%) were evaluated on patient safety competencies. Results demonstrated improved scores on a validated scale measuring cognitive decision-making skills. Pre-test score was 11.48, compared to post-test score of 13.88. However, as those students evaluated represented only 16% of the population, the generalisability of the findings could be questioned (Polit and Beck 2008). In addition, this study was conducted only once, with six weeks between the pre and post-tests. It would have been valuable to know if the improvements were sustainable over a longer period and transferred to practicum.

Similarly, Parr and Sweeney (2006) undertook a study in the USA to evaluate the effectiveness of a Human Patient Simulator (HPS) in the acquisition of key skills in an undergraduate nursing critical care course. The accompanying literature review provided background to the introduction of simulation into the curriculum, citing patient safety and limited availability of clinical experience, a theme which is well acknowledged within the wider simulation literature (Maran and Glavin 2003; Wilson *et al.,* 2005; Bradley 2006; Reilly and Spratt 2007; Issenberg and Scalese 2008).

The sample consisted of 21 students in their final semester of a critical care course and the study involved groups of four or five students working in teams to manage a complex patient scenario. Reliability and validity of scenarios was judged to be satisfactory as they were evidence-based standardised scenarios produced by METI™ (2007), the manufacturers of the simulator and pioneers in the development of the HPS.

On completion of the scenario, participants were requested to complete a post-test survey, incorporating six Likert scale items with a five point rating scale and one open ended question. Response rate was good at 81% (n=17) meaning that the findings were representative of the views of the sample (Rees 2003). In addition of those 17, eight (47%) offered additional suggestions.

While the potential summary scores had a range of 6 – 30, the actual range was between 9 and 30. Scores were calculated using the Wilcoxin signed rank test, a nonparametric test, allowing data to be ranked according to measurements such as agree/disagree or higher/lower (Burns and Grove 2010). Mean score was 23.18 and S.D 5.13. The two highest-ranking Likert statements were "I was challenged in my thinking and decision-making skills by the HPS experience" and "I would recommend continued use of the HPS in this course" and the lowest "the HPS provided me with experience that will assist me in my clinical experience". This last statement implied that students did not see any value in simulation, or simply that the other items made more of an impact on them in the context of the study. At that time any response in relation to how simulation would impact on practice would be speculative. Perhaps a response to this question would have been more forthcoming if the question was repeated once students had been out into clinical practice and could make an informed judgement in relation to how simulation impacted on clinical practice.

Scores from the Likert scale indicated that the simulation exercise challenged students critical analysis and decision making skills, and suggestions such as: "great experience despite weaknesses"; "brief orientation to the simulation laboratory including location of supplies/equipment before start"; and "more instruction on how to prepare for laboratory including medication calculation" would suggest operational frustrations rather than clinical decisions had a greater impact. Although two respondents confided "experience in the laboratory made me realise how ill prepared I am to enter the nursing profession".

There is no mention of debrief, which is acknowledged as an important component to simulation in terms of learning from action (Medley and Horne 2005; Issenberg *et al.,* 2005; Massias and Shimer 2007) and to facilitate support for the student, as some students found simulation very stressful (Alinier *et al.,* 2006, McCallum 2006). Northcott (2002) warned that unless well managed, some students could find role-play, a participative learning approach similar to simulation scenarios, a negative and sometimes harmful experience.

All students, but particularly the two who reflected negatively would perhaps have benefited from discussion and exploration of their experience. It could help them make sense of it in order that issues raised could be resolved (Moon 2004). Freeth and Fry (2005) highlighted that with regards to simulation, senior students - as this sample were - tended to be less positive than junior students but could offer no reasons for that.

Limitations included the small sample size for reasons already discussed in previous studies. The questionnaire was brief and all the items were pre-determined and as such may have forced the respondents to chose an option which was not necessarily their own. It is unknown whether or not the questionnaire was piloted. Like Cioffi *et al.,* (2005) this study would have benefited from the inclusion of a pre-test questionnaire, as in Alinier *et al.,* (2006) and Lathrop *et al.,* (2007). It would have allowed a quantifiable measure of effectiveness to be made when compared to post-test scores and thus provided more robust findings. A longitudinal study following more junior students would also have helped examine if students opinions changed over time.

Like previous studies (Issenberg *et al.,* 2005; Henneman and Cunningham 2005; Alinier *et al.,* 2006) this study (Parr and Sweeney 2006) emphasised that whilst simulation could never replace real clinical settings and patients, it could supplement and help to prepare the student for the real world. This is also supportive of comments from nursing students in a study by Mole and McLafferty (2004) who believed that a ward simulation exercise gave them the opportunity to see how they would cope when they qualified.

Mole and McLafferty's (2004) study, carried out in Scotland aimed to simulate a busy ward to facilitate team working; to provide students with the opportunity to consolidate skills; and to encourage students to critically examine their clinical practice. The sample was 123 final year nursing students from two cohorts.

Students in Mole and McLafferty participated in a pre-planned ward exercise designed to replicate a typical busy shift in terms of both environment and clinical activities. They worked in teams to manage emergent situations and on completion were asked to complete a structured questionnaire incorporating a 4-point Likert scale with space for free text comments. Response rate was 100%, suggesting this was carried out in class time. They chose to evaluate the aims of the exercise rather than individual or group performances.

Results revealed that while the majority felt the exercise helped them develop and practice team working (72%: n=89) and decision making skills (83%: n=102), only 49% (n= 61) saw the ward environment as realistic. Why it was felt to be unrealistic by a marginal majority was neither clear nor reported. In relation to the second aim, consolidating skills, 67% (n=83) judged that the simulation exercise helped them hone organisational skills and 52% (n=64) reported they were able to work on clinical skill development. The most positive responses however related to the third aim - to encourage students to critically examine their clinical practice. Eighty-six percent felt it was beneficial (n=106); that it afforded them opportunity to appraise practice (84%: n=104); and to see how they would cope when qualified (81%: n=100). However, 39% (n=48) did not enjoy the experience, stating it was unrealistic and that they would have behaved differently in practice.

Results supported the value of a simulated environment. However, the fact remained that 51% (n= 62) felt it was unrealistic and 39% (n = 48) did not enjoy it. Bremner *et al.,* (2006) used a similar study design to determine the value of using a simulation mannequin from the perspective of the novice nurse (n=41). A minority (4.8%: n=2) of students found simulation an unrealistic experience. Mole and McLafferty (2004), like Bremner *et al.,* (2006) made use of a mannequin for some of the tasks in the ward exercise.

If the students who disliked simulation also performed badly then the experience was negative from an educational perspective and could result in mis-education; that is 'any experience that has the effect of arresting or distorting the growth of further experience' (Dewey 1938: 25). More exploration of these two factors from a qualitative perspective was warranted in order to determine why so many felt that way about the experience. Learning experientially is a subjective phenomenon, influenced by a host of personal antecedents and learners need to be prepared and supported according to their individual needs in order that they achieve a positive outcome (Dewey 1938; Jarvis *et al.,* 2003). Over half (51%: n=63) of Mole and McLafferty's (2004) sample felt the simulation experience was unrealistic, as did a small percentage (4.8%: n=2) in Bremner *et al.,* (2006) and this may have been influenced by the environment.

Wilson *et al.,* (2005) placed a low-fidelity simulator in an actual clinical ward in order to investigate the realism of the HPS mannequin. A varied sample of 70 was recruited from two Australian sites (n=34: n=36) and included division one (UK equivalent - level 1 RGN) (61.4%: n=43); division two (UK equivalent - level 2) (20%: n=14), level 3 (UK equivalent – level 1 RMN) (2.8%: n=2) and pre-registered students (15.7%: n=11). Using a standardised predetermined assessment tool, incorporating a 5-point Likert scale the sample was asked to assess the mannequin for user-friendliness and suitability for nurse education and training. Participants were encouraged to explore the components and functions of the mannequin and to practice the skills listed on the assessment form using authentic clinical equipment.

Generally positive results were reported by all the grades of nurses, nurse educators and clinical specialists included. Some aspects such as skin turgor, heart and lung sounds and pliability of the eyelids/eye irrigation were judged as requiring refinement but overall the mannequin was judged realistic and suitable for nurse education and training. In quantitative terms this was a relatively small sample (n=70) so findings are only representative of that sample's assessment (Parahoo 2006). The fact that the mannequin was placed in a real clinical environment rather than a simulated one may have helped with the realism.

However, unlike many of the participants in the other studies discussed in this review, the participants in Wilson et al., (2005) were not taking part in a simulated scenario. Had they done so it would have been a better measure of how realistic and suitable the HPS was as a learning and teaching tool.

Whilst simulation is reported to be effective in allowing new learners to acquire and practice new skills (Ker and Bradley 2007) it can also be effective in helping to test skills competency (Landry *et al.,* 2006). Landry *et al.,* (2006) undertook evaluation of a programme designed to test the competency of 75 licensed nurses in the US (registered nurses (RN) and licensed practice nurses (LPN), where demonstration of competency was an annual mandatory requirement in order to practice.

The programme involved an assessment of both psychomotor and cognitive skills by means of four skills stations designed to test a range of fundamental (i.e. hand washing, transfer, catheter care) and more complex skills (i.e. code, venepuncture, chest drain care, injections, nasogastric/PEG tubes, central lines). Each assessed skills station lasted 45 minutes and was followed by a written examination requiring a pass mark of 70%.

Success rate was 100% in both segments. Regarding skills stations, the least successful was assessment of code skills. Most (78.6%: n=59) rated the experience favourably with 76% (n=57) believing it to be a valid and reliable way to measure competency. However, LPN's were reluctant to participate in the 'code' station. As groups were mixed, it was thought they might be daunted by the presence of the more senior RN's. The realism of the simulated area may have resulted in them acting as they would in practice, where the RN would take charge.

It is important that learners are not prevented from participating due to anxiety or group dynamics as this may have impacted negatively on their learning experience (Northcott 2002; Race 2005). If all the learners were the same grade they may have been more willing to participate and consequently more effective learning would have taken place.

This is important because simulation is useful for practicing little used skills (Ker and Bradley 2007). It would have been valuable to explore further the feelings of the participants, particularly those who were less willing to participate. In particular there was one participant who did not enjoy the experience and did not believe it to be a valid and reliable way to measure competency.

Some of the student nurse participants in Bremner *et al.,* (2006) and Mole and McLafferty (2004) reported similarly and stated they would behave differently in practicum. In addition, in Landry's *et al.,* (2006), groups of 'up to' six had a maximum of 45 minutes at each station. Although not made clear, it is questionable how all participants could be judged equally with regards to assessment of competency. OSCE's that facilitated individual assessment would have been more efficacious.

Whilst Landry *et al.,* (2006) evaluated the effectiveness of simulation skills stations in testing competency in qualified nurses, other forms of simulation have been utilised to develop clinical skills. An earlier study by Roberts (2000) utilised video recordings of a simulated exercise as a tool to explore and compare problem-solving skills of final year undergraduate nursing students across three programmes (RGN, Dip HE and BSc). The purposive sample consisted of 253 (62%) students from nine HEI's (n=410) in one geographical area of England who responded to an invitation to participate in the study.

After watching a 12-minute pre-recorded admission and assessment interview between a registered nurse and client, students were instructed to formulate a care plan based on their observations. Care plans were graded against a standardised model care plan and scoring grid to ensure consistency and minimise bias (Polit and Beck 2008). Scores were based on students' abilities to identify problems, formulate goals and actions and identify evaluation criteria.

The results demonstrated mixed problem solving abilities amongst the students and across the three programmes. The highest scores related to their identification of problems, whilst the poorest scores related to evaluation.

Findings suggested students had little opportunity to practice these problem-solving skills and they needed to be further developed. This study was carried out prior to 2000. In all likelihood simulation in its current form was not available to them, so students would not have access to a simulated clinical environment in which to practice these softer skills of assessment. However, using videos gave students time and opportunity to focus solely on specific softer skills without being distracted by the physical needs of the patient.

The sample (n=253) represented 62% of the student nurse population, in the final three months of their programmes. A representative percentage is around 75%, which would have required this sample to be 307, so these findings may only be wholly representative of that group of students (Gerrish and Lacey 2010). Nonetheless, this study demonstrated how other forms of simulation i.e. video, could be useful for developing skills. It could be used in conjunction with other methods, which would allow a more concrete experience and cater for different learning styles (Kolb and Kolb 2005; Ker and Bradley 2007). The issue of learning style (LS) was not overt within the studies reviewed thus far but will revisited later in this chapter.

2.2.2 Summary of quantitative findings

The reviewed studies all show from a quantitative perspective, that simulation was an effective educational tool, which could be utilised either to facilitate the development of competence or to test competence (Alinier *et al.,* 2006; Landry *et al.,* 2006; Parr and Sweeney 2006; Ironside *et al.,* 2009). However, in the main, researchers tested the skills on one occasion and admitted that more work was needed to assess the long term retention (Parr and Sweeney 2006; Lathrop *et al.,* 2007). Likewise, Alinier *et al.,* (2006) only carried out one pre-test post-test comparison in one six-month interval.

Methodology utilised within these reviewed studies was generally in the form of 'pre-test/ post-test' or a questionnaire with Likert scale. Whilst these were appropriate for examining causality or exploring relationships between variables and characteristics, they provided data, which was objective and representative of one reality (Polit and Beck 2008). Where the study included opportunity for respondents to make free text comments, the data elicited from the comments often seemed superficial and incomplete and this hampered any issues from being explored further – a fact often acknowledged by the researchers.

Quantitative literature was generally positive about simulation-based teaching and learning. Findings also highlighted the importance of authenticity, in relation to the environment and the 'patient'. A limitation common to all the quantitative research concerned the somewhat one-dimensional view presented which, in line with the ethos of quantitative research, did not give consideration to all contributing factors (Streubert and Carpenter 2011). It could be argued that many important issues were not explored, such as how individual students' experienced simulation; what made simulation a meaningful educational tool; and how effective simulation was in assisting the retention of knowledge and skills and transfer into practice. In fairness however, these were not the aims of the studies reviewed.

Where the strength of quantitative research is the ability to collect large quantities of data from large numbers, there is reciprocal strength in the opposing approach taken within qualitative research. The qualitative forte is the gathering of large amounts of subjective data, which can facilitate development of deeper understanding of specific phenomena from an individual perspective (Holloway and Wheeler 2010). What follows is a critical review of the qualitative research uncovered as a result of the literature search.

2.2.3 Qualitative evidence base

Quantitative literature examined aspects of causality in relation to simulation as a teaching and learning approach. However, they were not able to substantiate any intrinsic effect simulation had on the individual student. From a qualitative perspective fewer studies were unearthed but they revealed how users of simulation, namely nursing and midwifery students at undergraduate and postgraduate levels, perceived simulation. They were from a wide geographical area within the UK and Eire, America, Canada, Australia and Scandinavia, demonstrating the presence of simulation within healthcare globally.

Generally the studies utilised either one-to-one or focus group interviews to elicit data, although non-participant observation was also included. All are widely used within social research (Streubert and Carpenter 2011). One-to-one interviews allowed the individual to talk at length and uninterrupted about their personal experiences, whilst focus groups gathered data from groups of individuals who shared a common experience.

One of the recurring aspects to emerge was in relation to levels of confidence, which Alinier *et al.,* (2006) recommended as an area worthy of further exploration as his findings were inconclusive in relation to confidence. Confidence is defined as "self-assurance arising from an appreciation of one's own abilities or qualities" (ODE 2005: 363) and is a difficult concept to measure as it is based on an individuals self-perception of their capabilities – a notion known as self - efficacy (Bandura 1995).

A number of studies exploring students' experiences of simulation reported improved confidence with regards to: skills proficiency (Rystedt and Lindstrom 2001; Bremner *et al.,* 2006; Schoening *et al.,* 2006; Reilly and Spratt 2007); preparation for clinical practice, having had opportunity to practice in a safe environment (Hogg *et al.,* 2006; Morgan 2006; Reilly and Spratt 2007); improved knowledge and understanding as a consequence of learning in the simulated environment (Bremner *et al.,* 2006; Morgan 2006; Lasater 2007; Reilly and Spratt 2007). On the other hand Freeth and Fry (2005) found senior students to be less positive than more junior ones in relation to simulation.

Reilly and Spratt's (2007) qualitative study aimed to explore the perceptions of year two student nurses of their first experiences of high-fidelity simulation-based learning. Participants in this Australian study reported feeling more confident specifically in relation to their clinical abilities when in their first placement following participation in a simulation scenario exercise. A purposive sample of 21 students, unfamiliar with high fidelity simulation was recruited for this study. Deliberately choosing students unfamiliar with high fidelity simulation helped the researchers address the research aim as previous experience of simulation may have influenced their perceptions (Streubert and Carpenter 2011).

Students worked in pairs to complete a 40-minute case-based scenario, using a high-fidelity simulator. Presumably, there was one group of three as there were 21 participants in stage one. The scenarios used were computer-based, using a storyboard technique familiar to users of the Laerdal Sim Man™ mannequin. This technique helped maintain rigour and credibility by ensuring that all participants were exposed to the same standardised scenario (Burns and Grove 2010). Participants were presented with a copy of the scenario the day before the simulation session, so they could familiarise themselves with it. On the day they were instructed to care for the mannequin as if it were a real patient.

Data collection was by non-participant observation and focused on communication skills and nursing interventions. Observation was undertaken by a lecturer and is common within simulation exercises as it facilitates feedback (Ker and Bradley 2007). Immediately post-simulation participants were given feedback on their performance from the lecturer with five minutes for questions and debrief. Following debrief participants went directly to clinical practice. Waxman (2010) advised allowing two to three times the length of the scenario for debrief, so the effectiveness of five minutes spent on debrief is questionable as debrief/feedback is one of the fundamental factors behind successful learning because it can help the student make sense of an experience (Race 2005; Silberman 2007; Waxman 2010). Jeffries (2005) highlighted that it is sometimes overlooked.

Three days later 20 of the original 21 participants took part in the first of two focus groups, where they discussed their perceptions of the simulated exercise and whether or not they felt it influenced their clinical practice. A second focus group (n=20) eight weeks later explored the same themes. All discussion was recorded, transcribed and thematically analysed. It was unclear how many participants were in each focus group. However, 20 were a large number to have in one group, with between six and 12 considered optimum (Polit and Beck 2008; Holloway and Wheeler 2010). Some researchers have used numbers outside those parameters, for example Rystedt and Lindstrom (2001) undertook five focus groups with three participants in each, but did not disclose any issues in relation to this low number of participants.

Group dynamics are hugely influential. Having too many can hamper all participants' voices being heard and too few may make it challenging for the researcher to keep the interaction and discussion going. Focus group discussion can produce rich descriptions of shared attitudes and experiences (Curtis and Redmond 2007) but strict group management is required to ensure all participants have opportunity to voice opinions (Gomm 2008). However, undertaking a second follow-up focus group was appropriate and added strength to the findings as it helped to determine if the skills learned were useful and transferable to practicum.

Results demonstrated generally positive feedback from the students. They reported increased confidence and felt more prepared for practice and appreciated the active involvement in learning that simulation provided. Findings from the vast majority of quantitative studies were not able to elicit this aspect. Participants also indicated that simulation encouraged them to actively seek out further knowledge about topics raised in the simulation event thus enhancing cognition; they believed that simulation would help them remember what to do in practice.

These results were supportive of similar findings by Morgan (2006), who also reported that students felt prepared for practice following active learning in a skills laboratory. In terms of limitations, Reilly and Spratt (2007) conducted a one-off exercise and although findings were supportive of the transferability of the skills to practice in the short term, a longitudinal study would have shown whether the benefits of simulation were sustainable over a longer period.

Likewise, Morgan's (2006) qualitative study (set in Eire), exploring the impact learning in a clinical skills laboratory had on first year student nurses' (n=6) first clinical placement, missed an opportunity to track the progressive nature of learning of this phenomenon. Each student undertook a one off interview to determine if simulation had prepared them for practicum and how transferable the skills were. In order to minimise bias caused by previous experience, any student repeating first year or who had been exposed to the researcher through clinical teaching was excluded from the study.

Data were collected via semi-structured interviews. Semi-structured interviews help maintain the focus of an interview by ensuring all participants are asked the same questions, thus helping to maintain rigour and credibility (Parahoo 2006). However, as words and phrases mean different things to different people the semi-structured interview allows the researcher a degree of flexibility in that they can clarify meaning or ask supplementary questions to probe further. Care must be taken though, to ensure the researcher does not unduly influence the participant (Parahoo 2006). Data were thematically analysed using Giorgio's method of analysis. Credibility and rigour was tested by a decision trail and returning the data to the respondents for verification (Burns and Grove 2010).

Findings supported the use of simulated learning as students revealed that being able to practice skills in the simulation skills labs prepared them for the practicum. This may also have a positive effect on confidence levels although this was not an area explored within this particular study. Limitations included the fact that the data were only gathered on one occasion. A longer study would have revealed if the positive effects of simulation were sustainable over a greater period. The study was carried out on one site and would have benefited from replication in other HEIs' in order to compare findings.

The small sample (n=6) mean the findings, whilst representative of their perceptions, were unique to them and could not be viewed as representative of other students in other HEI's. This however was in line with the philosophical underpinnings of qualitative research (Streubert and Carpenter 2011).

Finally, the researcher stated that ethical approval was not required from the hospital, but as the students are the responsibility of the HEI it could be argued that ethical approval from the institute's ethics committee was warranted. Students are a vulnerable group and could be exposed to a number of ethical issues if used in research. Problems surrounding coercion, abuse of power, lack of confidentiality and absence of informed consent have been highlighted and have potential to cause harm. Ethical approval would have ensured steps had been taken to guarantee consent was both informed and voluntary and confidentiality and anonymity were upheld (Clark and McCann 2005; RCN 2009).

Simulation was also judged to be useful for post-graduate skills acquisition. Rystedt and Lindstrom (2001) undertook a study, using focus group discussion to evaluate the worth of simulation in helping post-graduate learners gain proficiency in hard to master skills. The sample (n=15) consisted of six post-graduate students recruited from three, one-year acute care courses; and nine registered practitioners from three acute care areas. Participants attended a presentation where the capabilities of simulation were presented and discussed. Five focus groups, each with three participants from each course were carried out and they were asked to identify skills utilised in acute care critical which new staff were ill-prepared for; tasks which were hard to master and finally, critical skills for which they thought simulation could be utilised.

The researchers wanted to use the group dynamics of the participants and presumably this is the reason for only having three in each focus group. However, keeping discussion going could be difficult with so few respondents and resulted in an earlier end to the interview. More respondents may have resulted in more diverse data and could have produced comparable and contrasting data to enrich the findings (Denzin and Lincoln 2003; Kvale 2006).

Findings highlighted a number of skills the sample judged suitable for teaching via simulation and included patient assessment and management; clinical decision-making, team working and communication; and managing complexity. Results suggested that registered nurses, like students feel ill-prepared for some clinical situations due to lack of opportunity to apply certain skills regularly enough to maintain competence.

Unfortunately this study did not include a post-simulation evaluation, which it would have benefited from. However this study was conducted in 2001, when simulation in nurse education was just beginning to emerge. It served to highlight how learners believed simulation would provide the opportunity to build proficiency in skills, which are difficult to master due to the lack of frequency in which they are clinically used (Issenberg *et al.,* 2005).

Students in the previous studies (Morgan 2006; Reilly and Spratt 2007) believed that learning through simulation helped prepare them for practicum, whilst those in Rystedt and Lindstrom (2001) speculated that it would. A phenomenological study by Chesser-Smyth (2005) aimed at interpreting the lived experiences of a group of student nurses in their first clinical placement suggested that students often felt ill prepared for clinical practice. From a population of 52 student nurses in Eire, a purposive sample of 12 participants (23%) was recruited. Written consent was obtained and data were collected over a three-month period via in-depth interview. They were audio-taped and thematically analysed using Colaizzi's (1978) framework, which is appropriate for analysis of qualitative narrative (Parahoo 2006).

A number of themes emerged: self-awareness, confidence, anxiety, facilitation and professional issues. Self awareness related to personal qualities, maturity, self esteem and communication skills, and revealed that older students seemed to 'fit in' more easily due to the fact that they were more self confident in terms of communicating with other healthcare professionals. Participants with previous experience in healthcare also had more confidence than those with no previous experience and this was also true of levels of anxiety.

Confidence increased and anxiety reduced as they became familiar with their surroundings and became active participants. They valued experiential 'hands on' learning. The theme of facilitation highlighted that supernumerary status and support from mentors was crucial in enabling application of theory to practice. Finally, clinical skills acquisition was highlighted as an essential element, with a number of the participants feeling that they were ill prepared.

Findings were supportive of the need for students to be well prepared for clinical areas in relation to skills such as communication and basic technical nursing skills. The issue of basic skills was found to be relevant to other nursing and midwifery students as well (Schoening *et al.,* 2006; Waite 2006). Morgan (2006) had highlighted the link between lack of confidence and increased anxiety and feeling ill prepared for clinical practice. Participants described the benefits of learning by doing and the need for greater skills acquisition prior to placement.

However, a limitation of Chesser-Smyth's study (2005) was the sample size (n=12), which represented less than a quarter of the total population. Whilst sample size is less of an issue in qualitative research it does make the findings representative of only those 12 students at that moment in time and not the 40 students who did not participate (Parahoo 2006). In addition, the study was carried out on one site and some of the themes, which emerged may have been directly linked to that particular clinical environment.

Many of the issues identified concerned aspects of socialisation for students in clinical placements. Students can feel ill prepared and anxious in a new clinical area (Gray 1997). Although Chesser-Smyth (2005) discussed briefly how changes to nurse education had resulted in more theory and less emphasis on clinical skills there was no mention of how skills were taught to the students in this study. As there was no direct mention of this and being mindful of the date (2005) it was probably not in a simulated clinical environment (SLE).

This study reflected the feelings of students who were lacking in skills acquisition and therefore was supportive of learning in a SLE. It also mirrored the claim made by the Scottish Clinical Skills Strategy that clinical skills' teaching was inconsistent throughout the UK and Eire (NES 2007). The findings from Waite (2006) are also supportive of Chesser-Smyth (2005).

A qualitative study by Waite (2006) aimed to describe and explore the experiences of newly qualified psychiatric nurses and their educational preparedness for clinical practice. The purposive sample of 15 participants was taken from an undisclosed total population of first level RN's who worked at various hospitals and mental health facilities within a 60-mile radius of the researcher in north east of USA. Inclusion criteria were a minimum of two years postgraduate experience but less than one year's psychiatric nursing experience.

Data were collected via in-depth one to one interviews. Three questions were put to each participant to elicit responses and were concerned with descriptions of the participants' academic experiences and how they felt that those prepared them for clinical practice once graduated. Whilst standard questions are a way to assist issues of validity (Parahoo 2006) they can also lead to misinterpretation by individual participants. The researcher must ensure clarity whilst and avoid exerting influence on the respondent (Parahoo 2006).

Data analysis (Colaizzi 1978) revealed that, amongst other things one of the biggest hurdles for recent registrants (n= 15) new to psychiatry was the inability to develop the skills taught in the classroom and integrate them into practice. They struggled with professional boundaries and communication and would have valued more active participation and the use of role-play to help develop communication skills and build confidence. This was a small study, so findings may only be representative of the study population (Ritchie and Lewis 2003). Although the remit of Waite's (2006) study was not to explore the use of clinical simulation, the findings were supportive of it. Of equal importance was that it demonstrated there is a place for simulation in psychiatric nurses' education.

Previous studies demonstrated the part simulated learning played in preparing them for their first clinical placement. Waite (2006) suggested that newly qualified nurses would have benefited from opportunities to learn key skills in an authentic environment. Similarly post-graduate students in Rystedt and Lindstrom (2001) also felt it would help them learn hard to master key skills needed in acute areas.

Students who were exposed to learning in a clinical skills lab reported that their confidence was enhanced due to active participation, which provided them with concrete experiences they were able to refer back to in practicum (Freeth and Fry 2005; Morgan 2006; Schoening *et al.,* 2006; Reilly and Spratt 2007). They felt more prepared for practice than those students in Chesser-Smyth (2005) and Waite's (2006) studies, who had not.

A number of studies revealed the positive impact that simulation had on students 'team working' skills (Hogg *et al.,* 2006; Schoening *et al.,* 2006; Lasater 2007). Novice students often feel on the periphery in their first placement as they try to fit in and gain confidence in their abilities (Gray 1997). In a report of the work by Gray (1997), Gray and Smith (1999) revealed the first placement experiences of a purposive sample of ten first year student nurses in a 3-year longitudinal Grounded Theory (GT) UK based study.

In relation to going into their first clinical placement, the students cited fear of the unknown as cause for anxiety. They did not know what to expect and once there, reported that the reality did not match their expectations. Students wanted to fit in and be useful. Although Gray's (1997) study was undertaken before the emergence of simulated environments it supported the need for preparation focused on familiarising students with what to expect in practicum and teaching skills, such as team working, which would be useful. Learning in a SCE involves working with peers to complete tasks. It is intended to replicate clinical practice where students will work as part of a multidisciplinary team.

A mixed method study by Schoening *et al.,* (2006) utilised a Likert scale questionnaire and reflective logs to explore perceptions of first year student midwives (n=57) to a pre-term labour simulation exercise, undertaken in semester two of an obstetric rotation in the USA. Quantitatively, simulation was well evaluated with a mean score of 3.75 (out of a possible 4) from the four-item Likert scale. From a qualitative perspective, the reflective logs were subject to content analysis; a method used to study the content of human communication, in forms other than verbal i.e. keeping diaries and logs (Silverman 2001).

Findings revealed that the students enjoyed team working with peers and appreciated learning in a non-threatening environment. They saw the link between refining technical and non-technical clinical decision making skills and the impact on patient safety and like students in Haigh (2007) and Lasater (2007), learned from making mistakes. Most comments related to the increased confidence felt by the students as a result of the simulation experience.

However, unlike Morgan (2006) and Reilly and Spratt (2007) the students in this study were not interviewed face to face about their perceptions. Students were asked to keep reflective logs, which meant that first and foremost the content was dependant on the students' completing them regularly. Further to this, the 'mute' narrative of the reflective logs may have been open to misinterpretation by the researcher or the participant due to, for example misunderstanding the question, language use, grammar, and vocabulary. Participants were first year students and as such their skills of reflection may still have been under developed, resulting in possible lack of reflective depth (Moon 2004).

The nature of content analysis whereby the researcher identifies a set of categories and counts how often textual narratives fall into each category relies on a shared common language (Silverman 2001). Written documentation gives no opportunity to the researcher, or participant to clarify meaning (Silverman 2001; Denzin and Lincoln 2003). Follow up focus group may have encouraged discussion of common experiences, or one to one interviews could have provided scope to explore participants' perceptions in greater depth, and facilitated clarity of meaning (Denzin & Lincoln 2003; Curtis & Redmond 2007).

It would also have been helpful if the sample had been interviewed post-practicum. This action, undertaken by Morgan (2006) and Reilly and Spratt (2007) may have served to establish if the knowledge and skills learned were transferred to practicum

A qualitative study by Lasater (2007) undertook a focus group to elicit perceptions of a sample of junior level pre-registration student nurses (n=8) to learning using high fidelity simulation. The focus group constituted part of a larger study (n=39) but only eight (20%) participated in the follow up focus group. The students had previously participated in an observed simulation exercise, but that aspect was not presented. The aim of the focus group was to establish the opinions of the students towards simulation. The simulation exercise; part of a module focused on 'Care of the Acutely Ill patient', was intended to help students develop clinical judgement skills.

A number of findings emerged from the focus group narrative. Team working with peers was a valuable experience. Learning emerged from working with and observing peers actions (and omissions) and students reported learning most from mistakes. These findings are in line with other studies (Schoening *et al.,* 2006; Haigh 2007). The simulation exercise helped consolidate learning; students had to think about what they were doing and saw the consequences of their actions (or omissions). These factors suggested students had opportunity to develop and test clinical judgement skills.

The study identified that simulation exposed students to experiences not readily available in practicum - highlighted previously by Rystedt and Lindstrom (2001). However, participation caused anxiety for some students, leaving them 'feeling like an idiot' (p: 273) and previously highlighted in the literature (McCallum 2006). A limitation was identified in relation to the simulation mannequin in that there were reports that the lack of non-verbal cues, for example cyanosis, pale, clammy skin texture made it more difficult to suspend disbelief. This was also the experience of one novice student in Bremner *et al.,* (2006: 172) who found the mannequin quite scary initially and in terms of realism felt that "bottom line he's still a dummy".

Lasater's (2007) study was useful because it highlighted the benefits of simulation in relation to the development of clinical decision-making skills. These 'softer' skills referred to as 'Human Factors' are hugely important but more challenging to teach (Ker and Bradley 2007). However, one issue worthy of note was identified which could potentially have introduced bias.

The researcher stated that participants received a small cash reward and gift voucher for taking part. The participants were junior level students and this could potentially be viewed as coercion (Clark and McCann 2005). Having accepted the reward they may have felt obligated to evaluate favourably. However, the fact that they put this information into the public domain would suggest that they were demonstrating transparency.

More precise limitations and one, which was common to many of the studies included within this review was the fact that having gathered data regarding the students' perceptions, this was not followed up by exploring how transferable the new self-assessed knowledge and skills were to practicum. As highlighted earlier in this Chapter, a measure of learning is when skills can be applied in the workplace (Miller 1990). Again, this was a one off study of one short epoch, which would have benefited from an additional focus group, post practicum, to explore how effectively the participants put this new knowledge into practice.

They were junior level students so their journey could have been mapped over a longer period of time. This would have been useful for exploring the progressive nature of learning in a simulated learning environment, particularly with regards to those students who had reservations about simulation.

The aim of Bremner *et al.,* (2006) was to evaluate student responses (n=56) to the use of a simulation mannequin in simulated clinical scenarios as preparation for first placement. Most of the students (95%: n=39) in this mixed method study felt it was a positive learning experience. They believed learning through simulation events using the mannequin helped them prepare for exams by identifying areas in need of further development.

The response rate of 72% (n=41) could be classed as representative of the views of that whole population of students (Gerrish and Lacey 2010). The majority (61%: n=25) reported increased self-efficacy concerning their assessment skills and reduced anxiety about going into practicum for 42% (n-17). There was one negative comment about the realism of the mannequin.

The sample size (n=56) in quantitative terms means that whilst the findings were representative of that particular population of nurses (due to the response rate of 72%) they may not be representative of wider populations of nursing students. In addition, a more robust method of gathering the qualitative data, such as a focus group would have helped to elicit more rigorous qualitative findings, which were gathered from free text comments in the questionnaire. There would be limited space in which to write comments and novice students may not have had the vocabulary to properly represent their views.

The use of focus groups would have encouraged students to share views, verbalise experiences and help them identify common/ differing opinions (Curtis and Redmond 2007). Despite these limitations this study utilised measurable quantitative as well as subjective qualitative approaches and demonstrated a positive evaluation for learning with simulation.

Like the studies reviewed thus far, a mixed method study by Hogg *et al.,* (2006) also reported that a ward based simulation scenario they carried out was a positive learning experience for learners. The study aimed to provide a realistic learning environment to promote safe blood transfusion practice and to evaluate the exercise, which was a pilot for an educational tool. Data were collected from a sample (n=6) of registered nurses' (RN's) via Likert scale questionnaire and focus group.

The participants believed the simulation exercise would impact positively on clinical practice and that it facilitated team working. This finding has been highlighted in other studies (Schoening *et al.,* 2006; Lasater 2007). However, as this was a pilot for a proposed educational tool carried out with a small sample results are significantly context bound (Ritchie and Lewis 2003).

In addition, although the sample felt it would help in practice, this was speculative. Like other studies (Schoening *et al.*, 2006; Haigh 2007; Lasater 2007; Reilly and Spratt 2007;) the robustness of findings would have been enhanced if the sample had been interviewed again after return to the clinical areas to elicit whether or not simulation had impacted positively on practice.

In a not dissimilar study, Haigh (2007) took an action research approach to explore the case for the simulated clinical experience and to address the question 'In what ways could the current programme of midwifery education be improved?' A purposive sample of six (30%) self selected from a class of 20 midwifery students nearing the end of their third year. The study involved the students participating in a simulated exercise based on a problem based learning (PBL) approach. On completion this was followed by a focus group interview. In addition, three lecturers participated in a semi-structured interview to elicit their views on the value of simulated practice.

Findings revealed that the students like those in other studies, perceived simulation to be an effective way to learn and to rehearse and refine skills (Issenberg *et al.,* 2005; Morgan 2006; Parr and Sweeney 2006; Schoening *et al.,* 2006). They stated that they liked and benefited from working with peers and this was a finding common to a number of studies (Hogg *et al.,* 2006; Morgan 2006; Lasater 2007; Schoening *et al.,* 2006). The students felt simulation provided them with time to reflect on and in practice, (Greenwood 1998; Ker and Bradley 2007) which they are not able to do in practicum, where the needs of patients took priority over the learning needs of the student. Lecturers in this study perceived that the students valued the opportunity of repeated practice.

The findings from this (Haigh 2007) and other studies suggested that learners at both pre and post registration level found comfort and ultimately benefited from learning with peers. On a similar vein, Landry *et al.,* (2006) found that non-licensed nurses did not participate as fully as licensed nurses in a joint simulation event and speculated that this was due to issues of hierarchy.

Intentionally or otherwise individuals can dominate groups whilst others may lack confidence to participate (Race 2005; Streubert and Carpenter 2011). It is important therefore that learners are not prevented from participating due to group dynamics; perceived or otherwise and working with peers who are all at the same level may help to overcome this.

In terms of limitations, whilst the findings from Haigh (2007) supported simulation within midwifery education, the sample size of six (n=6) coupled with the fact that this was an isolated focus group carried out at one site rendered findings pertinent to this sample alone. In addition, the focus of the research question was not overtly aimed at simulation. The students were asked how the programme could be improved; what their understanding was of PBL; the strengths and weaknesses of PBL; and how it contributed to their personal development. The inclusion of more questions specifically related to simulation may have provided responses that were more robust and aimed at simulation, which the students had participated in first hand.

On the other hand, the three lecturers, who did not participate in the scenarios, were asked to comment on the value of simulation. Their response that the students valued the opportunity for repeated practice was both speculative and anecdotal on their part. That question should have been asked to the students participating whereby a more robust assertion of the value would have been elicited. However, despite these issues, this study supported the use of simulation, the students enjoyed it and expressed that they wanted more simulated practice experience in the midwifery programme.

2.2.4 Summary of qualitative findings

Findings from the reviewed qualitative studies provided subjective perspectives of students' perceptions of their experiences of simulation. The majority of studies, in keeping with the philosophical underpinning of the qualitative paradigm utilised small samples (n=6 to n=21) and used the interview, mainly focus group but also one to one, to gather data (Streubert and Carpenter 2011).

The mixed method studies utilised larger samples in most cases. Data were gathered using the quantitative questionnaire but additionally used tools suited to gathering subjective data, such as a reflective log and free text comments within a questionnaire or focus group (Polit and Beck 2008).

Generally, research demonstrated from a qualitative perspective, that simulation was an effective educational tool for the acquisition of a range of clinical skills. Students' perspectives informed of the value of learning using simulation in relation to the practice and refinement of skills at both a fundamental technical level and with regards to more complex skills, including softer non-technical skills such as communication and decision-making (Morgan 2006; Schoening *et al.,* 2006; Haigh 2007).

Learning from mistakes, either one's own or others was helpful to students', particularly because many realised they were safe to test out theories in the non-threatening environment that simulation generally conveyed (Schoening *et al.,* 2006; Haigh 2007; Lasater 2007). Some learners reported that being able to apply theories and knowledge helped their understanding and subsequent preparation for exams (Bremner *et al.,* 2006; Morgan 2006; Lasater 2007).

A number of the studies highlighted the liking that students had for team working, particularly with same level peers (Hogg *et al.,* 2006; Schoening *et al.,* 2006; Haigh 2007; Lasater 2007). Simulation was recognised by some as being potentially useful for hard to master tasks and those not readily available in practicum (Rystedt and Lindstrom 2001; Lasater 2007), due in part to changes in healthcare provision and education and shorter lengths of stay (Maran and Glavin 2003; NES 2007).

There was a suggestion that learning in simulation would help the learner in practicum, but as neither Hogg *et al.,* (2006), nor Morgan (2006) tested this assumption there was no conclusive finding. However, Reilly and Spratt (2007) did establish that simulation provided students with a concrete experience they could refer to in practicum. Students in this study identified that active engagement with simulation was key to this.

Finally, a few students revealed that there was anxiety for some during participation, although for some this dissipated over time; whilst others felt that there was a lack of realism, particularly where the mannequin was used (Bremner *et al.,* 2006; Lasater 2007). Nevertheless, many participants expressed that taking part in simulation exercises had increased their confidence and whilst participants in other studies did not directly state this, the findings would suggest this to be the case for many of them.

What became apparent during review of the qualitative literature was that, like the quantitative studies reviewed, there was no overt signposting of the impact simulation could have on the LS of the students. However, inherent within the findings was the fact that students liked the active participation with their learning that simulation facilitated. Students highlighted that they felt the hands on application fostered by simulation, be that in the development of technical skills, team working skills or communication skills helped them learn and prepare for practicum. They also benefited from observing peers and undertaking pre-reading in preparation for participation in skills. These activities relate to LS and this issue will now be further explored in the following section.

2.3 Learning Style

The literature in relation to learning style and nursing students was explored. As highlighted earlier in Chapter 1, Sewchuk (2005) proffered that nursing attracted individuals with 'diverging' learning styles (concrete experience and reflective observation) and this was supported by Suliman (2006) and Rassool and Rawaf (2007).

A quantitative study by Suliman (2006), utilising a self administered questionnaire (SAQ) examined the preferred LS of two cohorts of pre-registration nursing students (n=200) in Saudi Arabia, and the effect this had on students' critical thinking abilities. Kolb's LSI model was used alongside a validated Critical Thinking Disposition Inventory. A convenience sample of 130 students participated in the study. Cohort I consisted of 80 (64% response rate) conventional entry BSc students and cohort II of 50 students (66% response rate) on a two - year accelerated nursing programme for science graduates.

The dominant variable, from Kolb's (1984) learning cycle across both cohorts was active experimentation (AE), the least popular being concrete experience (CE). In terms of actual learning style preference, there was a marginal difference. Cohort I, (conventional programme) demonstrated a preference for a Diverging learning style (experience and observation), whilst cohort II (accelerated programme) had an overall preference for the Converging learning style (abstract conceptualisation and experimentation). Critical thinking skills were found to be marginally better in cohort II than cohort one. Whilst the students in cohort I were primarily high school graduates, cohort II were post-degree graduates, so more mature and perhaps more academically experienced in terms of independent, self - directed learning.

Suliman (2006) highlighted that a gap existed between secondary and higher education. Consequently younger students may have found the transition to higher education and the emphasis on independent learning more difficult to manage than those with previous experience of adult education. The Converging learning style is linked to maturity and self confidence and cohort I, being less academically experienced than cohort II, and showing a preference for experience and observation demonstrate the valuable role experience can play in the learning process.

Suliman's view was supportive of Sewchuk (2005) regarding the preferred learning style of nurses'. There were however, some limitations in Suliman's study (2006). In the first instance, the reductionist nature of questionnaires provided rather one-dimensional responses to complex phenomena (Burns and Grove 2010). Learning preferences are complex and subject to multifaceted influences and therefore the forced response of the questionnaire did not provide any explanation for the selected response. Response rates, (Cohort I 64% n=80; Cohort II 66% n=50) although above average for a questionnaire (Jones and Rattray 2010: in Gerrish and Lacey 2010) point to the fact that the views of those who did not participate may differ from those who did and therefore the results could misinform (Polit and Beck 2008). It is unclear if there was ethical approval and as students are classed as vulnerable, this area should have been transparent (Clark and McCann 2005).

Despite the limitations, this study related to my sample of students. First of all my sample (like Cohort I) followed a conventional BSc programme and was new to higher education. The dominant LS in cohort I of Suliman's study was Diverging (equivalent to Visual LS), which is linked to lack of experience, which again resonate with my study sample. The relationship between LS and nurse education, specific to simulation will be explored during the course of this study.

Rassool and Rawaf (2007) used the Honey and Mumford LSI to identify the preferred LS of 110 undergraduate nursing students from three schools of nursing in the UK. Reflector was the preferred LS of 44% (n=48) of the sample while 30% (n=33) demonstrated a dual preference, with Reflector/Theorist being the main combination. Pragmatist was the least represented at 5% (n=5). Honey and Mumford's Reflector LS is based on the Diverging LS in Kolb's model, who are sensitive and creative, preferring to observe and analyse before taking action. These both equate to the modality specific Visual LS.

The dominance of the Reflector LS in this study is supportive of some aspects of Suliman's (2006) study, which found that cohort I (conventional students) had a preferred LS of Diverging (sensitive and creative; preferring to observe and analyse before doing). Meanwhile, the academically more experienced cohort II revealed a marginal preference for the Converging LS, They problem solve and prefer technically oriented tasks to people centred ones. Kolb's (1984) Converging LS can be matched to the Honey and Mumford's, Pragmatist LS, which in this study was the least popular with five percent (n=5).

It is difficult to pinpoint why there was a difference between study findings regarding Converging and Pragmatist because whilst there was a good age range in Rassool and Rawaf's (2007) study (mean age: 33 years), the results suggested that age may not have been a significant factor in this case. The findings suggested that LS preference was linked to the students' level of education and academic self-confidence, rather than age and/or maturity. Sixty percent (n=65) of the sample in Rassool and Rawaf (2007) were black African Caribbean (45%: 49) and Asian (15%: 16). Cultural and educational differences could have influenced the way they preferred to learn.

Rassool and Rawaf's participants, whilst possessing a mix of academic attainment levels, ranging from GCSE O and A levels (45% n=49) to Degree level (25% n=27) perhaps lacked the academic experience and ability for independent study that the post-graduate fast track students in cohort II of Suliman's (2006) study possessed. Although the age range of my sample spans almost 20 years and they have associated life experience, all are inexperienced in higher education. The longitudinal nature of my study may allow the relationship between LS and nurse education, specific to simulation to be explored further.

There was evidence within the literature to suggest that nursing students liked the hands on approach favoured in experiential learning. Studies have explored the learning preferences using the modality specific LS models, such as VARK (Alkhasawneh *et al.,* 2008; Meehan-Andrews 2009) or the more simple visual/verbal model (Effken and Doyle 2001) where students with a Visual LS preference proved better at solving computer based clinical problems. This had bearing to my sample because within the nursing progamme, students practice clinical skills using computer-based systems such as MicroSim™ (Laerdel 2010).

Effken and Doyle (2001) compared the LS of a group of 18 undergraduate nursing students (n=18). Students with a Visual LS (n=10) were compared with students with a Verbal LS (n=8). Collectively the two groups were given three physiological problems to solve. The Visual group solved more problems scoring 79% compared with the Verbal group score of 60%. Visual learners like images, pictures and graphics as a way of taking in information (Fleming 1995).

Effken and Doyle's (2001) findings demonstrated that computer simulation seemed to better suit those students with a Visual LS. However, thais can only be a tentative assumption given the small sample size of their study. Effken and Doyle's findings also suggested that students with a non Visual LS might be disadvantaged and supported the notion that teaching approaches must be varied in order to encourage active participation in the learning process from all students, irrespective of preferred learning style (Kapp and Fergason 2002). Rassool and Rawaf (2007) also highlighted this.

Both Alkhasawneh *et al.,* (2008) and Meehan-Andrews (2009) found that the most prevalent LS in their respective samples were Kinaesthetic, where effective learning takes place with concrete experiences such as role-play. This has a bearing to my study, where the sample is exposed to role-play within the simulated environment. In Meehan-Andrew's (2009) study 54% (n=46) of the sample of 86 Australian nursing students had a sole preferred LS, with the majority (68% n=31) favouring Kinaesthetic and even in those students who demonstrated a bi-modal preference (20% n=17) Kinaesthetic was the most featured (61% n=16). Student's found practical sessions helped aid understanding of lectures (90%) and increase confidence (98%). The findings are similar to those of Alkhasawneh *et al.'s.* (2008) study, which also found Kinaesthetic to be the most favoured by nursing students.

The student nurse sample in Alkhasawneh *et al.'s,* (2008) Jordanian study consisted of 61 females and 31 males with a mean age of 21 years. Fifty-eight percent (n=53) demonstrated a preference for a multimodal LS approach and 42% (n=39) for a single dominant LS preference. Whilst Kinaesthetic featured in them all it was particularly favoured as the single preferred LS. In the multimodal preference, read/write was marginally the dominant preference.

Those students' with the multimodal LS achieved higher grades supporting the view that adopting a mixed approach will result in more effective learning (Kolb and Kolb 2005; Race 2005) and is characteristic of adult learners. In terms of linking into Kolb's LS model, those with a Kinaesthetic preference like a hands on approach so link to Accommodating, whilst those with a Read/write preference have links within the Assimilating category.

As mentioned earlier learning style is influenced by factors such as education, previous experience and cultural background (Kolb and Kolb 2005; Race 2005). Li *et al.,* (2008) identified the preferred LS of a group of 415 student nurses from three nursing programmes in Taiwan using the MBTI questionnaire. The MBTI consists of 16 personality types determined by a combination of four specific preferences (Myers-Briggs 2009). All 415 participants were female.

The most common LS among the Taiwanese students' was ISTJ – Introversion, Sensing, Thinking and Judging. This type tends to focus on their inner world. They take in the basic information given, have a logical approach to decision making and like to get things finalised. Second most common was ISFJ, with students with this LS preferring 'Feeling' rather than 'Thinking'. In terms of decision making 'Feeling' types like to look at the wider issues, such as the people or circumstances before reaching a decision. Forty-one percent of the sample was SJ and although these two characteristics are popular preferences in nursing, Introversion is not. Western students tend to be Extroverted so this may be a cultural or gender specific anomaly as these combinations suggested they might have a cultural passive approach to learning. Zhang and Lambert (2008) found similarly in a study of Chinese nursing students.

The aim of Zhang and Lambert's study (2008) was to identify the preferred LS of the sample (n = 100) and examine the relationship between LS and critical thinking abilities. Felder and Silverman's LS Model was employed to determine the LS of the sample of female nursing students, with a mean age of 22 years, from across all years of two nursing programmes.

Results showed the most prevalent LS to be Sensing (86% n=86) and then Visual (76% n=76); Global (63% n=63) and Reflective (57% n=57). Apart from Global, the results were not surprising as culturally Chinese students are passive as learners (Zhang and Lambert 2008). The main teaching method is didactic in nature and students' are neither expected nor encouraged to engage in discussion with the lecturer (Zhang and Lambert 2008).

The preference for Global was not expected because nursing colleges in China have a very ordered approach to teaching, whilst Global learners like to learn things in large chunks and are adept at solving complex problems quickly (Felder and Soloman undated). Not surprisingly the results revealed that the sample had poor critical thinking skills. The researchers stressed the importance of using teaching strategies that develop critical thinking and cited the use of case studies, role play, simulations and problem based learning (PBL) as examples.

It has been acknowledged that ideally students should adopt a multimodal approach to learning as a balanced mix of LS can help students adapt to the various teaching approaches used within higher education (Race 2005). Some research has shown that many nursing students have multimodal LS and linked this to exam success (Alkhasawneh *et al.,* 2008; Meehan-Andrews 2009). What these and other studies have shown is that nursing students seemed to prefer an active approach to learning, regardless of whether it was doing, watching, reflecting or feeling. What seemed to be the key factor was that they were taking part in the process, rather than being passive bystanders. Learning using simulation can facilitate this active-hands-on process (Collins *et al.,* 2004). The didactic approach of a lecture, where learners concentrate on what is said by lecturers and favoured by those with an Aural preference, would seem to be the least favoured overall (Zhang and Lambert 2008; Meehan-Andrews 2009).

Despite the aforementioned evidence relating to learning styles there has been some criticism of some of the most favoured LSI's from Coffield *et al,'s* (2004) systematic and critical review of learning styles. They suggested that very few robust studies have been undertaken on the subject of LS, with most being on a very small scale. Coffield *et al.,* (2004) echoed the discussion of others regarding LS and reiterated the point that whilst learning style was not an indication of intelligence, knowing one's learning style preference could make students' more self aware of strengths and weaknesses and could help both the student and the teacher approach teaching and learning in a more organised and effective manner.

The literature specific to learning styles (LS) revealed that LS may have some bearing on how well students take in and process information. It also highlighted the relationship between the LS of the learner and the teaching and learning approach used. The longitudinal nature of my study will provide the opportunity to explore the issue of LS further; specifically in relation to nurse education and learning within the simulated clinical environment (SCE).

2.4 Summary of Literature Review Findings

In conclusion, a literature review has been undertaken and relevant studies from both a quantitative and qualitative perspective have been presented and critically appraised. The focus of the quantitative studies was on evaluating and measuring the effectiveness of simulation, testing competency and exploring relationships between variables (Polit and Beck 2008). Qualitative, in turn focused on the student experience of learning with simulation. The literature informed that from both objective and subjective perspectives, simulation when used as a teaching and learning approach was an effective way to facilitate both the acquisition and development of skills competence (Issenberg *et al.,* 2005; Alinier *et al.,* 2006) and also to test competency (Landry *et al.,* 2006).

Students generally valued the benefits, finding that it helped build their confidence before going into practicum (Bremner *et al.,* 2006; Morgan 2006; Reilly and Spratt 2007). Simulation allowed students at both pre and post registration level to test their knowledge, practice new or unfamiliar skills, including the softer skills of team working and communication in a safe environment (Hogg *et al.,* 2006; Morgan 2006; Schoening *et al.,* 2006; Haigh 2007; NES 2007).

Unfortunately, the studies were generally completed over one relatively short period in time. Alinier *et al.,* (2006) was the lengthiest at six months and even then just one simulation experience was tested. There was wide acknowledgement that more research was needed to assess the long-term retention of skills learned using simulation (Alinier *et al.,* 2006; Parr and Sweeney 2006; Lathrop *et al.,* 2007).

However, the literature also revealed that for a few students there was anxiety attached to participating in simulation. This was due in part to the participatory process required of the students. Some felt awkward whilst others felt that there was a lack of realism, particularly where the mannequin was used (Bremner *et al.,* 2006; Lasater 2007).

Finally, although not overt within the simulation literature reviewed, there was the subliminal suggestion of a relationship between learning with simulation and the learning style (LS) of the student. The literature on LS revealed a number of LS theories, which purported that essentially, learners utilise various means of taking in and processing information - hands on; watching/thinking; reading/listening; experimenting. Although LS is no indicator of intelligence, having an awareness of one's LS preference could help the student maximise their learning potential and lecturers adopt appropriate teaching strategies (Coffield *et al.,* 2004). Given the increasing use of simulation within nurse education, there is value in exploring this issue further in relation to how student learning within the three domains.

Gap in the Literature

The studies presented within the review supported the value of simulation with regards to efficacy in teaching. Simulation facilitated the acquisition of varying degrees of competence in skills, ranging from technical through to non-technical and finally behaviour change.

However, what the literature does not inform is exactly how simulation is able to achieve this and if and how it changes over time. One way to elicit this information and to gain a deeper understanding would be to follow a group of students over an extended period of time. This was not done by any of the studies reviewed. Most were one-off studies and those that were not were executed over a very short time frame. Alinier *et al.,* (2006) informed that clinical performance was improved in students who had additional learning with simulation. However, the sustainability of these results was not established and remains unknown.

Learners bring complex and individual learning experiences to educational environments; all learn in different ways, having individual preferred learning styles (LS) and at different paces. Adult education (Andragogy) is student centred and reputed to put the needs of the learner first (Knowles 1984; Jarvis *et al.,* 2003). It could be argued that simulation does not achieve this but rather it puts the needs of the majority uppermost.

The findings revealed some negative perceptions regarding simulation with regards to actively engaging with aspects of the skills scenarios and also with regards to the lack of realism of the mannequin, which also had the potential to affect student participation (Bremner *et al.,* 2006; Lasater 2007). Little cognisance was afforded those students in this category and I believe there is value in exploring this further to establish if the view of simulation changes over time. There is also value in mapping the effect this can have on the student's skill development in the three educational domains (psychomotor; cognitive and affective) and subsequent transfer to practicum, if indeed it does.

To address the gaps in the knowledge base uncovered through this literature review a group of students was followed over an extended period of time. This facilitated exploration of the lived experience of the undergraduate nurse over the two-year adult branch programme and mapped their holistic educational journey – in all three domains. Participants were only followed for the duration of the two-year branch programme because during their first year they were not exposed to simulation using fidelity simulation or within the context of the SCE. They had their first introduction to simulation on progression to the branch programme in year two. Within the literature, students' reported increased levels of confidence and improved skills competence after learning in a simulated setting (Issenberg *et al.,* 2005; Schoening *et al.,* 2006; Hogg *et al.,* 2006; Reilly and Spratt 2007). However, there was no evidence that this was anything other than a short lived improvement and in some cases improvement was from the perspective of the student and at times speculative.

The literature reviews regarding nurse education and clinical simulation presented in this and the previous chapter, led to the formulation of the following research questions and provided the focus for the research study.

Research Questions

1. How does learning through simulation facilitate individual student learning and influence preparation for practice?

2. How does simulation support the development of the student's clinical skills proficiency in the psychomotor, cognitive and affective domains?

3. What factors facilitate or inhibit student engagement with the simulated clinical experience?

4. In what manner are students' able to transfer skills gained in the simulated setting to practicum?

Using the research questions as a guide, the following chapter contains details relating to methodological choices made in order to select an approach, which would effectively address the research questions. It was anticipated the longitudinal nature of the study would provide opportunity to explore the progressive nature of skills development from an individual perspective in relation to psychomotor, cognitive and affective domains and in so doing, address the gap in the literature.

Chapter 3: Research Methodology

3.0 Introduction and overview

While drawing on supporting literature this chapter describes and discusses the methodological choices made in order to address the aim of this research study. Using a phenomenological approach, a purposive sample of 12 students was used to gather data. Students, from two cohorts were recruited on the commencement of the Branch programme in Year two of their three-year undergraduate-nursing programme.

Data collection involved an initial focus group to elicit students' impressions of their first experience of learning within a simulated clinical environment (SCE), followed by a non-participant observation in practicum to see how students transferred skills. Finally four, one – to – one interviews with each participant was conducted over a two - year period to gain an individual perspective of the experience over an extended period of time.

Data were thematically analysed in accordance with Colaizzi's (1978) framework. Interview transcripts were read repeatedly in order to identify and give meaning to significant words and statements, before being arranged into themes.

Rigour and trustworthiness was facilitated throughout by the use of member checking, investigator triangulation, an audit trail and reflexivity of the researcher.

3.1 Research Aim and Research Questions

Research Aim

The aim of this research study was to explore the progressive nature of the student nurses' experiences of learning within a simulated clinical environment and the impact this had on the transfer of skills to practice and to address the following research questions:

Research Questions

1. How does learning through simulation facilitate individual student learning and influence preparation for practice?

2. How does simulation support the development of the student's clinical skills proficiency in the psychomotor, cognitive and affective domains?

3. What factors facilitate or inhibit student engagement with the simulated clinical experience?

4. In what manner are students' able to transfer skills gained in the simulated setting to practicum?

Development of the research questions was an iterative process and evolved as the study progressed. The research aim provided a broad starting point and as more information on the topic became available, the questions became more focused and refined (Parahoo 2006; Polit and Beck 2008).

3.2 Research Design

An essential step was selection of a methodological approach that would enable me to address the research questions (Silverman 2005; Polit and Beck 2008). Because of the subjective focus of the research, a qualitative approach was deemed to be the most suitable for addressing the research questions (Streubert and Carpenter 2011).

I wanted to look beyond simple causality and explore the inherent nature of how a similar experience (learning in a simulated clinical environment) was influenced by the unique perceptions of each student. Individual traits and histories would have influenced how each student interacted with the phenomenon of learning in a simulated clinical environment (SCE) and may have impacted on their learning experience (Dewey 1910; Kolb 1984; Moon 2004). Quantitative research is interested in hard facts, stipulating that only that which can be seen can be called fact (Parahoo 2006; Polit and Beck 2008) and as such would not have captured the intrinsic perceptions of individuals.

3.3 The Post-positivist Paradigm

Post-positivism, known as qualitative takes an alternative view from the rigid core features of the positivist (quantitative) paradigm. Qualitative research, described as reflective and experiential (Davies 2007) is interested in the nature of multiple realities (Denzin and Lincoln 2003; Streubert and Carpenter 2011). It is useful for exploring not only the experiences of participants, but also their perceptions, motivations, intentions, actions and behaviours (Parahoo 2006).

The word 'Quali' means 'whatness', therefore qualitative research asks 'what is it...?" in an attempt to understand human life by giving voice and meaning to how human beings exist in the world (Van Manen 1990). Unlike quantitative research, the holistic and interactive approaches of qualitative research facilitate active participation by participants, which provides rich subjective data.

Qualitative research has its roots in philosophy, anthropology and the social or human sciences and is centred round how humans make sense of their realities and how they give meaning to them (Holloway and Wheeler 2010). Qualitative research is an interpretative process, whereby the researcher accesses the world of the participant in order to study them within the social and cultural context of their existence. It is interested in the uniqueness of individuals with credence given to the everyday experiences often overlooked as insignificant (Denzin and Lincoln 2003; Holloway and Wheeler 2010).

Context is an important factor as humans do not exist in isolation. Their beliefs and behaviours are influenced by previous and current interactions with the world (Kolb 1984). Weber, a proponent of this introduced the term *Verstehen* – understanding something in its context through the actions of reflection and interpretation (Holloway and Wheeler 2010). Qualitative researchers use inductive approaches; concepts emerge from interactions with participants and also from their own reflective viewpoint (Parahoo 2006).

Qualitative research is useful when little research exists on a topic. It can be the precursor to quantitative research, by identifying themes, which can be tested using quantitative means (Smith and Biley 1997; Streubert and Carpenter 2011), or like this study, the successor to earlier quantitative research.

Although much research existed within the area of simulation, none looked at it from a longitudinal perspective, or from the uniquely individual perspective of the learner over time. The literature informed that simulation worked (Issenberg *et al.,* 2005; Alinier *et al.,* 2006) but what the qualitative approach would illuminate is the nuances of "What is it about simulation that makes it work?"

In short, qualitative approaches allow researchers to enter the participants' world and share their everyday experiences. Positivist approaches do not.

3.4 Choice of Approach

Within the qualitative paradigm, a number of approaches exist, such as Ethnography, Grounded Theory and Phenomenology. Selection was driven by the research questions, with each approach reviewed in order to elicit suitability.

3.4.1 Ethnography

Ethnography concerns the study of groups of people in naturally occurring settings, in order to gain an understanding of their day-to-day lives. Data are gathered through fieldwork. The researcher enters the world of the participants, immersing themselves in their culture and spending extended periods within the study environment participating in everyday interactions (Burns and Grove 2005; Holloway and Wheeler 2010). First hand observations of the influence that culture has on behaviour provide more meaningful understanding of social meanings and actions (Denzin and Lincoln 2003; Pellatt 2003; Cudmore and Sondermeyer 2007).

Ethnography was not adopted on numerous grounds. Firstly, the immersive nature required was not feasible. As a qualified nurse with over 30 years experience I did not believe I could realistically enter the student world. Also, time constraints and workload issues related to my job as a lecturer meant I could not spend extended periods of time away from my other duties. Other drawbacks included data management if the study is longitudinal; researcher bias and possible tension and conflict if undertaking fieldwork in one's own workplace (Denzin and Lincoln 2003; Cudmore and Sondermeyer 2007).

Furthermore, ethnography is concerned with the natural environment of the participants. This study focused on participants' lived experiences of an unnatural environment [the SCE]. Students were first exposed to the SCE for only two to three hours each week for five weeks, before going into clinical areas where they spent five weeks. Integration into new clinical placements is hard enough for students (Gray and Smith 1999) without being under constant observation for research purposes. For these reasons, ethnography was deemed not appropriate. A further approach, Grounded Theory was also considered.

3.4.2 Grounded Theory

The focus of Grounded Theory (GT) is human interaction and behaviour within social contexts (Holloway and Wheeler 2010). Glaser and Strauss developed this approach in the 1960s as a systematic way of generating theory from observations of the minutiae of everyday real life, through a process of induction, deduction and verification (Finlay 2000; Charmaz 2006; Grbich 2007). GT is unique because it affords the researcher the opportunity to use research to generate new theory rather than undertake research based on theory (Charmaz 2006; Grbich 2007). It is believed to have more relevance to twentieth century values and to be particularly useful when little research has been conducted in a subject area and the researcher wants to understand what is happening and how participants manage their roles (Smith and Biley 1997). However, it has been highlighted that researchers often failed to generate a theory and merely described the phenomenon (Holloway and Wheeler 2010). It has been suggested that researchers focused too much on the complex method; that the terminology could be confusing; and that theoretical explanations were often inadequate (Grbich 2007).

As the main aim of this study was to explore the nature of a specific phenomenon, embedded within a larger experience, GT was believed not to be the most appropriate. The research questions were meaning questions – intended to explore the nature of a specific event (Van Manen 1990).

GT required the researcher approach the study with an open mind, free from preconceptions about the topic (Charmaz 2006). As previously discussed, I have many years experience in nursing and in education and have been involved with simulated learning both as a user and a provider for over 15 years. I believed it would be impossible to ignore these personal aspects. The aim of this study was to explore the perceptions of a precise group of people about a specific experience they have lived through over an extended period. The qualitative approach concerned specifically with the study of lived experiences was Phenomenology (Burns and Grove 2005).

3.4.3 Phenomenology

Phenomenology is rooted in philosophy and focuses on the 'lived experience' (Sokolowski 2000; Burns and Grove 2005). Derived from the Greek words *phainomenon* and *logos;* it means literally "*an account of what appears*" (Lewis and Staehler 2010: p7). Phenomenology was developed to describe human experiences without looking at causality and as a way of resolving conflict between natural and human sciences (Jones 2002; Burns and Grove 2005). The *'lived experience'* refers to experiences that portray the immediate pre-reflective consciousness one has about an experience (Kleiman 2004). Phenomenology demands that those involved in the experience reflect and describe the experience as it appears in their consciousness (Jones 2002).

Philosophically, the individual is seen as an integral part of the environment, with both the individual and the world having a fundamental and reciprocal role in how each is shaped (Burns and Grove 2005). Central to phenomenology is the tenet that there is no one reality - every individual has a unique perspective of reality – things are as they appear (Burns and Grove 2005; Streubert and Carpenter 2011). Phenomenology acknowledges the difference between appearance and essence (Van Manen 1990) and opposes the positivist view that reality and human perspective is separate (Holloway and Wheeler 2010).

As an inquiry method, phenomenology examines everyday experiences in order to understand the nature of that phenomenon. It provides opportunity to study and characterise details of an experience from the consciousness of those who lived through it (Polit and Beck 2008; Streubert and Carpenter 2011).

There is significant focus on the study of consciousness because it is only through consciousness that humans are able to connect to the world. Everything that humans know is directed towards consciousness and without consciousness there is no awareness (Van Manen 1990; Moran 2000). The nature of the phenomenon is a reflection of the nature of the person as a human being within the phenomenon as they live through and try to make sense of it. In so doing, that which is often overlooked as irrelevant is made visible and can show, through the personal reflections of the individuals, how these experiences influenced behaviour (Holloway and Wheeler 2010; Lewis and Staelher 2010).

The philosopher Franz Brentano (1838-1917) laid the foundations to this branch of philosophy, however, the term 'phenomenology' was used by Kant (1724 – 1804) in the context of how things appear to us (Moran 2000). Edmund Husserl (1859-1938) however is credited as the founder of phenomenology (Moran 2000; Sokolowski 2000). Other major proponents are Martin Heidegger (1889-1976); Hans-Georg Gadamer (1900-2002); and Maurice Merleau-Ponty (1907-1960). Three main schools exist: Transcendental, Hermeneutic and Existential.

Transcendental

Husserl, a major proponent of the German phase founded the transcendental movement, often referred to as 'descriptive'. Transcendental phenomenology aimed to gather first hand knowledge of phenomena in order to describe experiences (Dowling 2004). Husserl a mathematician and positivist believed hard facts alone were insufficient to allow understanding. He developed phenomenology as a means of addressing the shortfall of positivism (Burns and Grove 2005). He proffered it was not possible to explain experiences by testing causality; they should be examined for their own merit. In order for a phenomenon to have occurred it needed to be described by those who experienced it. He opined that if no one was there to experience and describe the phenomena, it failed to exist (Burns and Grove 2005).

Three notions form the basis of Husserl's approach. The first, *intentionality* is the core doctrine of phenomenology (Koch 1999). Described as 'a 'consciousness of' or an 'experience of' something or another' (Sokolowski 2000: 8), *intentionality* is a way of describing how in consciousness the mind directs its thoughts to an object, helping the human to connect to and become part of the world (Van Manen 1990; Jones 2002). For example, one cannot see without seeing something, even if that 'something' is an image in the mind, the consciousness has awareness of it (Koch 1999; Sokolowski 2000). *Intentionality* in the phenomenological sense is the conscious relationship individuals have to something (Sokolowski 2000). If a long distance runner was asked "what is it like to run a marathon?" they would need to focus their consciousness *back to the thing itself* - to the actual experience of running the marathon - in order to describe the nature of that experience (Lewis and Staehler 2010).

'*Essence'* refers to the true meaning of an experience, a common theme, uncovered in the accounts of participants (Van Manen 1990). For example: perceptions, emotions or judgements recounted by participants (Moran 2000). '*Phenomenological reduction'* also referred to as *'epoché'* or 'bracketing' emerged as a result of the objective approach of Husserl, who believed that in order to effectively describe the phenomena under study the researcher had to hold [bracket] all previous experiences, personal beliefs or preconceptions about the subject in abeyance in order to create distance. The researcher could then take a more naïve approach and avoid interference with interpretation of the data (Wall *et al.,* 2004; Holloway and Wheeler 2010; Lewis and Staehler 2010).

In the true phenomenological sense of bracketing the researcher is required to transcend all interpretation and bias in order to reveal the true essence of the experience (Beech 1999; Moran 2000;). With bracketing the researcher can look at phenomena as it occurred from a state of pre-reflection, from the minds of those who experienced the phenomenon, rather than as they [researchers] conceived it (Beech 1999).

To reiterate, I have over 15 years experience of simulation as a learner and a provider. In applying bracketing, I would have to set aside those experiences and any subsequent assumptions I may have as a result and see it as it is; from the perspective of one with no experience of it. This would be difficult to achieve.

Whilst the principles of intentionality and essence can be applied to all phenomenological approaches, phenomenological reduction is associated primarily with the transcendental approach and is criticised for being very difficult to do well and sometimes impossible to orchestrate (Van Manen 1990; Corben 1999; Grbich 2007). In response to this, Martin Heidegger, a pupil of Husserl advocated a more interpretative form of phenomenology.

Hermeneutic

Hermeneutic phenomenology opposed the concept of phenomenological reduction. Phenomenology is concerned with the study of people and of giving credence to the uniqueness of each person, which Heidegger recognised. He understood that factors such as past experience, education and psychosocial influences determined how individuals experience and interpret phenomena (Burns and Grove 2005; Lewis and Staehler 2010). He recognised that this tenet also applied to the researcher and that their past experiences contributed to the interpretive process by giving meaning to the findings (Moran 2000).

Gadamer (1976) a contemporary of Heidegger developed Heidegger's main ideas further by recognising the importance of language, particularly 'conversational speech' in order to interpret and understand human experiences within the world. He believed language was a key element (Moran 2000) and that understanding was *the* central tenet, seeing the process of understanding as continuous and infinite. He also recognised that the background knowledge of the researcher played an integral part of the interpretive process of the research (Koch 1999).

The Hermeneutic approach acknowledges that human behaviour can really only be fully understood if both the behaviour and the thought processes behind the behaviour are examined in the context in which it took place (Parahoo 2006). Heidegger developed the notion of Being and Time. Being – 'Dasein' refers to the concept of human existence and is viewed as the *most universal concept* (Heidegger 1962). Heidegger was interested in examining human life and in so doing questioned the nature of Being and '*temporality*'; he saw all human existence as temporary, as taking place in time, between the past and the future and limited by death (Moran 2000).

He put forward the notion that a person is 'situated' as a result of being shaped by their world, by subjective life experiences, personalities, or emotions unique to them. Often people don't notice their world until some experience impacts on their daily existence and Hermeneutics is a way of interpreting the human existence [Being] of an experience in context [Time] (Moran 2000).

Heidegger believed that because our lives are influenced by the past, we can, through the art of reflection, make sense of those events and use them constructively, to influence the future – to become aware of 'possibilities' (Jones 2002). This is known as *'authenticity'* whilst an unwillingness or inability to self-awareness and reflection, a state known as '*inauthenticity*' will lead to failure to recognise possibilities and therefore deny self growth (Jones 2002; Lewis and Staehler 2010;). This whole concept is a rejection of the Cartesian philosophy favoured by Husserl that believed the mind and reality were two separate entities and that everything had a cause and originated from God (Moran 2000).

Hermeneutics focuses on the subjective nature of an experience, taking Husserl's concept of intentionality a step further. Heidegger criticised Husserl's earlier interpretation, stating that it failed to take the person's practical engagement with the experience into account. He argued that the nature of the experience was captured and revealed through the use of language and that the concept of Dasein was more relevant (Moran 2000).

Van Manen (1990:13) discussed the importance of language in phenomenological research referring to it as a 'poetizing activity' – reflecting on an original experience. He proffered phenomenology was a writing activity, with the researcher writing in order to convey authentic thought.

The thoughts of the researcher are of equal importance and a number of sources advise the researcher to keep a reflexive diary in order to acknowledge and record thoughts about experiences, the research process, personal assumptions and beliefs (Silverman 2005; Parahoo 2006; Grbich 2007). Parahoo (2006) in particular insists that this process, known as reflexivity, is continuous and although not an easy undertaking will help to ensure rigour and minimise the likelihood of previous experiences and preconceptions of the researcher adversely affecting the interpretative process. It is believed impossible to shut out past knowledge and experience, but acknowledging and reflecting on it can help sensitise the researcher to meanings which may otherwise be neglected and which may add depth to the findings. It can also add distance between the researcher and the participants if they share similar experiences (Todres and Wheeler 2001).

Existentialism

Heidegger's influence helped shape a new school of phenomenological thought known as Existentialism, heralding the beginning of the French phase. Consciousness was not a separate entity but linked to human existence, or *Being*, as in Hermeneutics but the notion of 'free choice' was presented (Grbich 2007). It was postulated that people were morally free agents who created their own values and rules and accepted full responsibility for actions taken (Holloway and Wheeler 2010). This approach cast doubt on Husserl's notion of essences and the part conscious awareness played in the lived experience, arguing that it was merely a process of intellectual re-enactment (Grbich 2007). One of the most influential proponents of this phase was Jean-Paul Sartre (1905 – 1980) who believed that people have an inseparable connection to their world. He was an atheist and as such rejected the notion of creationism.

Sartre offered the notion of *contingency and* cast off the view of any great plan for human existence, believing that we exist, events happen and that's the sum of it. Life essentially is meaningless, unless man makes it such by his actions, which are driven by free will – what man becomes is not pre-ordained (Grbich 2007; Lewis and Staehler 2010). Sartre believed that the greatest challenge for mankind was to live authentically – to use self-awareness and reflection to shape future actions (Moran 2000).

Existentialism was not chosen for this study due to the complex underpinnings. Although Sartre rejected the notion of epoché [bracketing] he also believed that previous experiences should be left in the past and that there was always a choice, which man could use free will to make (Lewis and Staehler 2010). I found this notion to be similar to bracketing and was not confident that, as a novice researcher I had the skills to follow this approach.

The role of researcher in Phenomenology

Regardless of the approach taken, the researcher is the main data collection tool (Grbich 2007). Data collection methods are participative in nature, encompassing interviews, observation and documents such as diaries, poetry, personal histories and media materials (Denzin and Lincoln 2003). All are designed to meet the diverse needs of the participants and allow the researcher to explore the experiences of the participant in order to build up a picture of the lived experience. Communication and language are vital (Van Manen 1990) and the researcher must be able to build a trusting and relaxed relationship with the participants and not act as a detached observer.

In conclusion, a phenomenological approach can "document changes in feelings and experiences in depth and over time" (Grbich 2007, p85). It exposes multifarious human experiences and permits the researcher to explore what a specific phenomenon is like from the lived experience of those at the heart of the experience, using their own language and allowing meanings to be explored (Todres and Wheeler 2001).

The literature advised caution (Corben 1999; Paley 2004) as phenomenological researchers must give due diligence to issues such as: clarification of the specific school of phenomenology, in terms of philosophical underpinnings, in order to demonstrate understanding and avoid method slurring; posses clear understanding of the language and terms used; expertise of the researcher with regards to interviewing skills; and awareness of potential researcher bias and thus the importance of reflexivity (Corben 1999; Dowling 2004; Grbich 2007).

3.5 The Study – a Hermeneutic approach

After due consideration Phenomenology was chosen as the most appropriate approach to address the research aim and questions. Phenomenology was chosen because I wanted to explore the nature of a particular phenomenon from the perspective of a specific group of people over an extended period of time. Phenomenology is well suited to the examination of phenomena from the experiential perspective of the individual (Silverman 2005; Grbich 2007; Holloway and Wheeler 2010; Lewis and Staehler 2010; Streubert and Carpenter 2011). However, Corben (1999) highlighted that there was often misinterpretation of the term 'phenomenon', with many researchers failing to appreciate that the term included the phenomenon itself [simulation] and not simply the subject's experience of it. See Table 3.1 below for an illustration of how Corben's view was applied in my study please.

Describing the phenomenon

    Phenomenon 'particular' (simulation)

\+   Phenomenon as perceived (lived experience of 'doing' simulation)

\=   Total description of the phenomenon
                        (adapted from Corben1999)

Table 3.1 Describing the phenomenon

Van Manen (1990) advised that although the main priority in selection of a methodology is that it will address the research questions he also advised that it should be in accordance with the interests of the researcher, particularly with respect to their role as an educator. Van Manen believed quite strongly that phenomenology has an affinity to teaching. Epistemologically, phenomenology is concerned with the theory of knowledge and the relationship of the learner and the knowledge – 'how we know' (Holloway and Wheeler 2010).

More specifically, a Hermeneutic approach was utilised because I felt it would not be possible for me to hold in abeyance, the 15 years experience I had of simulation, as a user and a provider. Bracketing is a mainstay of Transcendental phenomenology (Moran 2000) and it is well documented how difficult it is to 'bracket' personal assumptions (Corben 1999; Dowling 2004; Grbich 2007). Heidegger denounced 'bracketing' (Moran 2000) and I believed that my experiences and any associated personal assumptions would help me to make sense of the students' experiences of simulation.

In addition, the reflective element within Hermeneutics enabled participants to reflect upon their experiences of 'simulation' as a teaching methodology and the experience of 'doing' simulation (Corben 1999). The reflective nature of hermeneutics linked into the reflective nature of nursing whereby students were required to reflect on their own practice experiences and show what they have learned from it. Annells (1999) believed that this reflective process showed how the past could shape the future - a concept relevant to both nurse education and hermeneutics, and this links to *authenticity* as previously discussed. Reflection brought experiences back to consciousness and helped reveal the fundamental significance of the experience (Wong and Lee 2000).

3.6 The study sample

A purposive sample of 12 student nurses' was recruited for this study. Purposive sampling, also known as selective sampling, involved the deliberate and conscious selection of participants who matched specific criteria and would be able to provide the necessary data required to help address the research question (Parahoo 2006; Holloway and Wheeler 2010).

Diligence is required to outline sampling procedures in order to avoid criticisms of lack of transparency (Higginbottom 2005). It has been suggested that all samples in qualitative research are purposive because participants are selected from specific populations in order to gather and interpret subjective data (Higginbottom 2005). However, it has been critically highlighted that purposive sampling and theoretical sampling, which is specific to grounded theory, are often used interchangeable and incorrectly (Smith and Biley 1997; Grbich 2007).

Purposive sampling was appropriate for this study. Participants were deliberately chosen because they had experience of the phenomena being studied (Silverman 2005; Holloway and Wheeler 2010). Inclusion and exclusion criteria ensured that only those with the required attributes applied and are listed in Table 3.2 below.

Inclusion Criteria	Rationale
Must be an adult nursing student	Only adult nursing students are exposed to teaching in simulated clinical environments
Must be based on Main Campus	Eliminates bias if known to researcher who is based at another campus
Must be student in Semester 3 at commencement of study	Teaching using simulation commences in semester 3
Exclusion Criteria	**Rationale**
Previous experience as healthcare assistant	Previous experience of working within a healthcare setting either as HCA or student and practicing basic clinical skills may give them an unfair advantage (Chesser-Smyth 2005) and impact on the accuracy of determining how useful students felt exposure to simulated learning had been.
Previous experience as nursing student on another course	
Previous or current personal, academic or link contact with researcher	May introduce bias if known to researcher

Table 3.2 Inclusion and exclusion criteria

Letters of invitation, with an accompanying information sheet (see Appendices II and III) were sent out to all students in the identified cohort in August 2007, at the start of Year two. No responses were received, so I took the step of speaking face to face with the class. I outlined the rationale for the study; stipulated inclusion and exclusion criteria; explained what participation in the study would entail and answered any questions students had. Four students volunteered and informed consent was obtained (See Appendix IV). I repeated this process with the next cohort who commenced four months later (January 2008) and recruited a further eight participants (see Diagram 3.1 on the following page for an outline of the recruitment and data collection process).

The recruitment process was repeated with a second cohort because I was concerned that a sample of four was too small, especially if any students dropped out over the course of the two years (Poilt and Beck 2008). Small sample sizes are common in qualitative research and Holloway and Wheeler (2010) advised that there were no hard and fast rules in relation to this issue. However, they asserted that for homogeneous groups, such as my sample of student nurses, six to eight were viewed as sufficient to ensure that information gleaned was of ample quality and richness (Parahoo 2006; Holloway and Wheeler 2010).

A review of phenomenological studies highlighted that sample size ranged from five to 21 (Stanley 2003; Wilkin and Slevin 2004; Chesser-Smyth 2005; Coyle-Rogers and Cramer 2005; McNamara 2005; Hogg *et al.,* 2006; Lasater 2007; Reilly and Spratt 2007; Pike and O'Donnell 2009). The final sample size of 12 in my study fell within the parameters required to address the research questions (Holloway and Wheeler 2010). Almost immediately however, this was reduced to 11, after one student withdrew prior to the one – to – one interview. The sample remained at 11 until just before the last interview, when two students dropped out (see Diagram 3.1 below).

Face to face info session & invitation following poor response to letters

August 2007 Letter of invitations to population of Year 2 students (n=120)

February 2008 Letter of invitations to population of Year 2 students (n=91)

7 ineligible

11 Responses

4 Fitted inclusion criterion

12 Responses

4 ineligible

November 2007 **Focus Group Cohort 1** **n = 4**

8 Fitted inclusion criterion

January 2008 **Observation** **1:1 Interview 1** **n = 4**

March 2008 **Focus Group Cohort 1** **n = 8**

1 withdraws

April 2008 **Observation** **1:1 Interview 1** **n = 7**

April 2008 **1:1 Interview 2** **n = 4**

January 2009 **1:1 Interview 3** **n = 4**

January 2009 **1:1 Interview 2** **n = 7**

July/Aug 2009 **1:1 Interview 3** **n = 7**

2 withdraw

June 2009 **1:1 Interview 4** **n = 4**

January 2010 **1:1 Interview 4** **n = 5**

Diagram 3.1. Flow chart illustrating recruitment and data collection process

3.7 Ethical considerations

Three main ethical issues must be addressed before any research involving human subjects can proceed and they are; gaining a valid informed consent; protecting confidentiality; and assessing risks and benefits (RCN 2009). To ensure that these areas had been considered and addressed, ethical approval was sought from the Local Research Ethics Committee (LREC) (Punch 2006; SEHD 2006).

My research proposal was submitted to LREC electronically on a standard proforma issued by the Central Office for Research Ethics Committees (COREC) where it was reviewed (Woods and Roberts 2005). In addition, I attended the ethics committee in person where I was able to clarify any issues with the panel and seek advice if necessary. Ethical approval was granted (see Appendix V)

In addition, approval was granted from the Ethics Committees of the HEI where I was employed and where the participants were students and from the Ethics Committee of the university where I was undertaking my PhD. These actions protected the rights of the participants and helped to ensure academic rigour (SEHD 2006) (see Appendices VI and VII)

3.8 Study Site

The initial focus group discussions, undertaken to elicit the students' initial thoughts following their first experience of learning within the SCE took place in the university, prior to the students' first clinical experiences in Year two. Subsequent one – to - one interviews were carried out in the students' clinical placement areas across a range of healthcare sites in Lanarkshire.

Each of these sites was chosen to avoid inconvenience for the student. I did not want them to have to make a special journey solely for the purpose of interview. The focus group took place while they already were in university and likewise, the interviews were scheduled to take place in practicum on days they were already rostered to be on duty.

3.9 Access

The Research Governance Framework (SEHD 2006) stipulated that good research is dependent on co-operation from all stakeholders; therefore, prior to the commencement of the proposed study permission to access the various health board sites where students would be based was obtained. This was particularly important because students would be accessed during the course of their working day.

Letters, with an accompanying information sheet, detailing the purpose of the research and an outline of what my access would entail were sent the Director of Nursing and the Director of Practice Development of the appropriate NHS Trusts, as well as individual ward managers for individual wards and departments. In addition, an honorary contract was granted to the researcher to allow access to the site in a professional capacity.

3.10 Data Collection

Phenomenological data collection, described by Grbich (2007: 87) as 'intuiting and disclosure' gains the researcher entry to the life world of the participant in order to extrapolate the essence of the lived experience. They also provide opportunity to the participants to describe the meanings of their experiences in their own words, (Holloway and Wheeler 2010). Focus group discussion, non-participation observation and semi-structured, one – to – one interviews were employed to gather data from and about the participants, whilst documentation in the form of field notes and my reflexive diary were utilised (Clancy 2007).

Actual data collection for this study took place over a two and a half year period, owing to the use of two cohorts (September 2006 and January 2007), although data collection for each cohort only spanned the two-year period they were in the branch programme (years two and three). The process commenced in November 2007 and concluded in January 2010. See Table 3.3 below for a timeline of the interview schedule.

Interview	Year /Semester of programme	Time Frame Sept 06 Cohort	Time Frame Jan 07 Cohort
Focus Group	Year 2 – Semester 3	November 2007	March 2008
Individual Interviews			
1	Year 2 – Semester 3	January 2008	April 2008
2	Year 2 – Semester 4	April 2008	January 2009
3	Year 3 – Trimesters 1 & 2	January 2009	July/August 2009
4	Year 3 – Trimester 3	June 2009	January 2010

Table 3.3 Timeline of Interview schedule

3.11 Triangulation of data sources

Triangulation concerns the use of more than one source of data collection and is helpful for strengthening internal validity when used in qualitative research (Burns and Grove 2005; Holloway and Wheeler 2010). The data collection triangulation approach in this study involved non-participant observation and interview. It was anticipated that using both would strengthen understanding and provide rich, diverse data (Denzin and Lincoln 2003; Clarke and Iphofen 2007).

3.12 Focus Groups

An initial discussion, by focus group was held at the end of the participants' five-week theory block, during which time they were exposed to teaching and learning within the simulated ward environment. Because participants were recruited from two cohorts of students, one focus group was undertaken with each cohort (cohort 1 n=4; cohort 2 n=8). See Table 4.2 above for schedule.

A focus group was utilised for two reasons. First of all, as a means of addressing one of the research questions related to how simulation facilitated preparation for practice. Secondly, I felt the participants who were all student nurses and to whom I was a stranger, would find comfort and support in the group culture. Thirdly, that coming together to discuss a shared experience would help to stimulate discussion of their feelings and experiences, whereby data produced could be directly linked to the interaction between the group participants (Gibbs 1997).

Subsequent one – to – one interviews shifted the focus onto individual perspectives of the phenomenon under study. Individual students were free to talk only about their own experiences (Holloway and Wheeler 2010).

In preparing for the focus groups, the same format was followed for each, to ensure consistency. Students were contacted to arrange a mutually agreeable time. Focus groups occurred at the end of an academic day and as students were already in college they did not accrue additional travel costs.

A classroom was booked for the interview and I arrived an hour before the scheduled start time in order to prepare the venue. The literature offered sound advice regarding necessary preparations (Gray 1994; Dearnley 2005; Casey 2006). The room was arranged so that all the students and myself were seated around one table, which was positioned away from the window to avoid draughts; refreshments were available. Although a digital recorder was used for the one – to – one interviews, at the time of the focus groups I only had access to an audiocassette recorder (ACR). Undertaking a sound check ensured that whilst it was unobtrusively located, near to hand, normal conversation was clearly audible. I took the opportunity to recheck all functions of the ACR and ensured that I had additional audiotapes. Finally, for privacy a 'Do not disturb' notice was posted to the outside of the door.

Each cohort was greeted with preliminary introductions, some informal 'chit chat' to put them at ease and the offer of refreshments. The rationale for the study was recalled and students were given opportunity to ask any questions. They were reminded of their rights to withdraw and ground rules were set, including that all discussion which took place should be treated as confidential and not disclosed outside the room (RCN 2009). Students then signed two copies of a consent form, one for my records and one for them. I also took demographic details such as name and address, age range and contact details.

Each focus group commenced with an initial general question; used to generate discussion. A topic guide was used, which acted as an aide memoir and as a relatively inexperienced researcher I found this to be a useful strategy. It helped to keep the discussions focused on the research topic (Polit and Beck 2008).

Focus groups were initially designed to enable researcher's to ask particular questions about a specific topic and having grown in popularity since the 1950's, are now widely used within social research (Denzin and Lincoln 2003; Curtis and Redmond 2007; Neale 2009). The premise is that participants with a shared common experience are brought together to recall events and to explore views, feelings and experiences about the event (Denzin and Lincoln 2003; Kvale 2006). According to focus group theory we are all products of our environment and as such are influenced by those with whom we interact. One of the key characteristics of the focus group is that data produced is directly linked to the interaction between the group participants (Kitzinger 1995; Polit and Beck 2008).

The dynamic nature of the focus group is useful for eliciting insight into phenomena and if well moderated can produce rich descriptions of shared experiences that are cumulative and complex because they allow participants to discuss, clarify, differ and share attitudes and experiences (Curtis and Redmond 2007; Neale 2009). They are relatively inexpensive and are highly adaptable (Denzin and Lincoln 2003). Focus groups are useful in the initial stages of research to evaluate particular issues, such as in the case of this study to explore student's perceptions or equally at the end to evaluate or generate further research. They can also be used as the sole mode of data collection or used in partnership with other methods, again as in this study (Kitzinger 1995; Neale 2009).

There are disadvantages cited and these centre round group dynamics and culture, which can interfere with individuals' free expression. Dominant personalities can override other participant contributions. There is also the danger of 'group think'. Focus groups are not appropriate where there are issues of hierarchy among the participants, for example nurse managers and junior nurses or where sensitive issues are to be discussed (Happel 2007). Neither was applicable in this case.

Group dynamics and management within the focus groups was relatively problem free. Cohort one consisted of four students and my field notes revealed that the atmosphere was relaxed and there was a good flow of discussion. Students interacted well and had a good relationship. Although two students were slightly more vocal, no one overtly dominated the conversation, which was peppered with good humour. I made a point of asking each student about specific aspects if they had not contributed. I had anticipated that it might prove challenging to keep the conversation going with four but this was not the case. In the literature, between six and ten participants was considered optimum (Polit and Beck 2008; Streubert and Carpenter 2011), although Holloway and Wheeler (2010) cited examples where six was too large and three just right. They suggested this was influenced by both the topic and the characteristics of the participants.

Cohort two comprised eight students, so greater diligence was needed to moderate effectively. Although not so relaxed as the previous cohort, one or two students spoke confidently and freely initially. As the interview progressed others contributed to the discussion, agreeing with comments and acknowledging shared common experiences (Polit and Beck 2008). The group culture in focus groups can bolster participants and help them to explore feelings, attitudes and experiences in a supportive way that could be lacking in a one to one interview. People with shared experiences often find solace from being with others who have had similar experience (Curtis and Redmond 2007). The participants in my focus groups all had a new-shared experience in common.

My role, as moderator involved monitoring group dynamics, ensuring all students had opportunity to express their thoughts and feelings (Holloway and Wheeler 2010). Two incidents stood out with cohort two and remain fresh in my mind. One student, Sue (a pseudonym) disagreed with an aspect of what had been taught in simulation – she did not see the point of it. As an experienced clinician and a lecturer involved in the programme (albeit on another campus) I knew the rationale behind it. However, in my moderator role I opted to not comment because I wanted, as suggested by Kitzinger (1995) to use the interaction between group members to generate data.

To return to Sue's comment – almost all of the group disagreed with her and were able to justify why they did. However, whilst this provided good data, Sue was left feeling uncomfortable. In my role as moderator I was able to use my interpersonal skills to counter any potential hostility by pointing out the value of all opinions and reiterating that all comments were welcome, valid and respected (Holloway and Wheeler 2010). This episode could have resulted in Sue disengaging from discussion, but she continued to contribute.

Another incident involved Jen (pseudonym) who sat quietly throughout the interview. I made several attempts to draw her into the discussion, asking her directly about her experiences and feelings regarding simulation. Although able to articulate when asked, she made minimal voluntary contribution. As I got to know Jen during the one –to –one interview process, which occurred later, she spoke very freely, I realised that she lacked confidence in group situations. A focus group was perhaps not the best medium for her to share experiences (Parahoo 2006; Happel 2007).

Controversy exists regarding the use of the focus group interview within a phenomenological research framework (Webb and Kevern 2001). Phenomenology is interested in the nature of the individual experience, whilst focus groups rely on group interaction to stimulate conversation and produce data based on shared perceptions (Polit and Beck 2008; Holloway and Wheeler 2010).

Webb and Kevern (2001: 780) asserted that the goal of phenomenology was discovery of the essence of the phenomenon and that to do this the participant needed to "describe their experiences in a relatively uncontaminated way". They believed focus groups with their reliance on group interaction were in direct opposition to this and the literature advised that certain topics were unsuitable for focus group discussion (Denzin and Lincoln 2003; Happel 2007). However, Bradbury-Jones *et al.,* (2009) counter argued that focus groups had a place within a phenomenological framework.

A number of studies within nursing and midwifery have utilised the focus group interview method of data collection within an interpretive phenomenological structure. The aims of these studies focused on perceptions of participants in order to extract understanding or meaning of what it was like to experience a specific phenomenon. Some utilised the focus group as the sole method of data collection (Darbyshire 2003; Alexis *et al.,* 2007; Kooken *et al.,* 2007) whilst others used it with another data collection method (Carr 2004; Howatson-Jones 2007).

As previously stated, sometimes group culture can bolster participants and help them share experiences and explore feelings and attitudes in a companionable way lacking in the one to one interview. People with shared experiences often find solace from others who share similar experience (Curtis and Redmond (2007). Kooken *et al.,* (2007) acknowledged that focus groups were not consistent with the philosophical underpinning of phenomenology but was able to provide justification for adopting it by applying the 'group as a whole' theory and because it suited the research question. Similarly, Alexis *et al.,* (2007) believed the group processes helped elicit participants' attitudes and beliefs and Howatson-Jones (2007) used the focus group environment to draw out participants understanding and meaning. With regards to my study, the students always undertook simulation using a team approach and I had anticipated that perhaps the focus group would foster a similar 'team' approach.

Each focus group (one with each cohort) lasted an average of one hour, by which time the discussion drew to a natural close. The students were thanked for their valuable contribution and reminded of the need for confidentiality. Whilst a one off focus group interview was undertaken, the main method of data collection was semi-structured, one-one interview. This was preceded on one occasion by non-participant observation, used as a means of witnessing the students' application of skills in clinical practice.

3.13 Non-participant observation

Observation is an effective and highly valued method of data collection (Caldwell and Atwal 2005). Various forms exist, from the researcher as complete participant (participant observation) to the researcher as complete observer (non-participant observation). The latter was adopted for this study.

Non-participant observation permits researchers observe what people do rather than what they say they do (Caldwell and Atwal 2005); or are unwilling to talk about (Cohen *et al.,* 2000). In this case it allowed me a 'first hand' glimpse into the lived experience of the participant within the practice setting (Cohen *et al.,* 2000). Students often insist they are competent at clinical skills when they are not (Bendall 1975).

Cohen *et al.,* (2000: 305) highlighted that observation provided multiple sources of information about an event. These include the physical setting (e.g. environment); human setting (e.g. individual or group characteristics, gender); interactional setting (e.g. interactions that take place, formal/informal; verbal/non-verbal) and the programme setting (e.g. resources and their organisation, pedagogic styles, curricula and their organisation).

Non-participant researchers try to adopt a 'fly on the wall' approach to capture spontaneous and natural actions and interactions (Holloway and Wheeler 2010). Traditionally non-participant observers exist outside the phenomenon, having no or minimal interaction with the observed (Denzin and Lincoln 2003).

Observation can be structured or unstructured, with structured being quite systematic and guided by specific predetermined categories (Casey 2006). Skills required for good observation include a good memory as well as a good method of recording the observation (Caldwell and Atwal 2005). Methods of recording the observation include video recording and field notes to solely field notes (Holloway and Wheeler 2010). Field notes record additional information from the observation such as student's manner, attitude and aid synthesis of data (Denzin and Lincoln 2003; Casey 2006).

Limitations of this form of data collection concern the lengthy practice of observing (Parahoo 2006); the amount of data produced, particularly in unstructured observations, which can make analysis lengthy (Casey 2006); and the 'Hawthorne Effect". This refers to the theory that participants may alter their behaviour to show themselves in a more favourable light or to please the researcher (Casey 2006; Parahoo 2006). However, it is suggested that participants cannot maintain an unnatural performance for an extended period of time and maintaining a discrete distance and taking time to develop a trusting relationship can help minimise this effect (Holloway and Wheeler 2010). During my observations two students commented that they had forgotten I was there and the relaxed manner in which they conducted themselves would support this assertion. It also suggested that they were acting 'normally'.

The observation process in this study involved participants being observed while in their first clinical placement [in practicum] following exposure to learning within the SCE. Non-participant observations were on a one – to – one basis and took place in the final week of the five-week placement, in order that students had the full five weeks to become familiar with both the clinical area and the menu of clinical skills. Naturalistic observation such as this takes place in the 'natural' environment of the participants in order that observed actions and behaviours can be contextualized and authenticated.

Dates for observations were arranged in advance and took place across four sites in Central Scotland. Prior to the observation session, I contacted the ward manager by letter the week before and a follow up telephone call the day before to ensure that access was still appropriate. I also wanted to ensure that the patients the students would be accessing were able to give informed consent (Moore and Savage 2005).

It was generally not feasible to schedule more than three non-participant observations into one day, because I also followed the observation with the first one – to – one interview. Trying to co-ordinate shifts across a number of different clinical areas over four hospitals and give recognition to my academic and personal commitments proved challenging. In an attempt to minimise bias, I deliberately chose to recruit participants from another campus within my HEI.

This resulted in reducing the amount of time available for data collection in this manner, as each clinical area was a minimum of 60 miles from my base.

I arrived at each clinical area about 30 minutes ahead of the scheduled time in order to introduce myself to the nurse in charge. I also spoke to the patients who would be involved, explained the purpose of the observation and obtained informed consent as per ethical approval (RCN 2009) (see Appendix VIII).

Because I would be observing students interacting with patients Scholes *et al.'s,* (2004) Protocol for observing nurses working with patients was followed. The basic premise of this protocol being that if the rights or safety of the patient become compromised, the observation would be abandoned.

Primacy must be given to patient safety and therefore if dangerous practice or an emergency situation occurred the observation would halt. Scholes *et al.,* (2004: 262) asserted, "*When in practice I am also a nurse as well as a researcher*" and developed a protocol for observing nurses working with patients, which provides clear guidance (see Table 3.4 below). A negative response to any of the questions detailed in the protocol would have resulted in the observation being abandoned.

Protocol for observing nurses working with patients

1. Has the nurse given the patient information that research is being conducted on the unit? Does the nurse feel that the patient is appropriate for the study?
2. Has the nurse asked the patient if they would assent to inclusion?
3. After the researcher has outlined the study do the patients give their assent for the observation?
4. Does the nurse believe that the patient's condition is still conducive to proceed?
5. Does the shift leader consent to the observation proceeding? i.e. there are no sensitive circumstances on the unit.
6. Has the patient been given time to reflect upon that decision?
7. Does the shift leader feel that the situation is still appropriate for the researcher to observe the interaction?
8. Has the situation changed during the interaction? – is there a request by either the shift leader or the patient for the researcher to withdraw from the situation?

Source: Scholes *et al.,* (2004)

Table 3.4 Protocol for observing nurses working with patients

In keeping with non-participant observation traditions I was *out with the phenomenon,* so not involved in any aspect of the delivery of care and not permitted to interfere with the people involved (Denzin and Lincoln 2003). I wore a white coat and a name badge. Observations were from a distance, which afforded detachment but permitted visual and auditory access (Punch 2009). Students moved about the ward from room to room or stayed in one four-bedded ward. It was sometimes difficult finding a good vantage point, which allowed me to fully observe, but remain invisible. Observation was usually from the corridor but on two occasions I was in the room or behind the curtain with the student as a dressing was renewed. It depended on the time of day and the business of the ward.

One of the strengths of non-participant observation was that it allowed me to witness interactions between the individual, the environment and any associated actions (Cohen *et al.,* 2000). It was believed this would help to provide evidence regarding the student's prowess concerning transfer of skills. This approach also helped minimise researcher or participant bias (Holloway and Wheeler 2010).

Because observation was not the main data collection tool a more semi-structured approach was taken whereby actions and events were observed as they naturally unfurled and I could 'see what there was to see' (Casey 2006). However, I also wanted a focal point regarding what would be observed and this was based on the first research question *In what manner are students' able to transfer skills gained in the simulation setting to practicum.* Observer notes, based on skills undertaken in relation to professionalism, confidence, competence and communication were taken during the observation and formal field notes completed after each observation (Denzin and Lincoln 2003).

Skills undertaken by the students were relevant to their stage of training, and involved skills practiced in the SCE. Video recording of observations was not adopted for this study because of concern about protecting the privacy and anonymity of patients as well as the technical aspects (Holloway and Wheeler 2010). It would also have been difficult to adopt a 'fly on the wall' approach, whilst walking about with a video camera.

In total, ten out of a possible 11 non-participant observations were undertaken. One participant was unable to accommodate this within the final week due to the last minute timing of a night shift experience. Each observation lasted between 25 and 45 minutes. As the observed action was part of the daily routine rather than an atypical event it was believed that this was an acceptable length of time. The literature advised that observations should last long enough to capture an event but short enough to keep the attention of the observer (Casey 2006).

I had some initial concerns about the length of the observation as longer observations may have elicited more data. However, this was not feasible due to a number of constraints already highlighted and also the time of day and the nature of the nursing care available. However, the observations afforded a 'snapshot' of how students transfer skills in practicum.

Non-participant observation of students was conducted once. Firstly, to allow a glimpse of the students' world when in practicum and to see if they were able to transfer the skills they had learned in the SCE, to practicum. What the one-off observation illustrated was that all those observed (n=10) seemed able to do this. Whilst some were more confident than others, all did so with seeming competence, although the observation provided a picture of the psychomotor skill, rather than the underlying cognition (Benner 1984).

Secondly, 50% of student learning takes place in practicum by mentors and other registered staff (NMC 2010b) and students are summatively assessed for competency at the end of each placement. Interview data from the focus group revealed that hands on application to skills in SCE was not equitable and likewise in practicum, there was variable exposure to opportunities to apply those skills. There was no guarantee that I would be able to observe students undertaking skills learned first in the SCE and therefore the content of the observation may not be clearly linked to the focus of the research study.

Consequently, I felt a glimpse of the students in practicum was sufficient to give me a flavour of this issue. The focus of this research study was learning in an SCE and was where I believed my priority should lie. The one – to – one interviews allowed me to follow and map the progress of students' clinical skills development, whilst the mentoring process assessed competency (NMC 2010a).

3.14 One – to – one interviews

In qualitative research, interviews are the most common method used to collect data about the beliefs, perceptions and experiences of populations (Nunkoosing 2005; Parahoo 2006; Holloway and Wheeler 2010; Streubert and Carpenter 2011). Whilst interviews can be conducted in various ways, online or telephone for example, face-to-face interviews were selected for this study. Online and telephone options were not considered due to known difficulties, which included superficial discussion and exploration and less co-operation (Parahoo 2006).

Interview types range from structured with a high degree of control through the use of standardised, predetermined questions, through to semi-structured and unstructured which offer more flexibility (Denzin and Lincoln 2003; Holloway and Wheeler 2010). Structured interviews rarely find their way into qualitative research because their rigidity, which essentially makes them a questionnaire, hinders the flow of rich data (Denzin and Lincoln 2003; Parahoo 2006). Semi and unstructured are preferred, although unstructured whilst generating the richest data, tend to generate the greatest amount of 'dross' (Holloway and Wheeler 2010), particularly when used by an inexperienced researcher.

Semi-structured are the most widely interview used. They offer a balance of flexibility and structure, which help keep the inexperienced interviewer focused and make sure they gather the information needed (Polit and Beck 2008). The semi-structured interview was utilised within this study, mainly because I was conscious of my relative inexperience with regard to interviewing. I was guided by the literature when planning my interviews, which advised that a semi-structured approach should start with an opening question, usually general and unthreatening in nature but within a flexible framework. This approach permitted some divergence and free flow of conversation from the participant.

An additional measure was to compile an interview guide, which had additional questions related to the line of inquiry. The literature advised that this should be referred to in order to keep the interview focused on the topic under study. This approach also saved time and reduced the 'dross' (Holloway and Wheeler 2010) whilst maintaining a degree of flexibility (Parahoo 2006).

One – to – one interview was the main data collection method utilised within this study. Each student was interviewed four times from the end of their first clinical placement in Year two until course completion two years later. Interviews occurred in the students' clinical placement area (Practicum) (refer to Table 3.3 for an outline of the interview schedule).

Arrangements for each interview were as previously discussed, and related to accessing students and clinical areas and checking technical equipment. The success of any study can be dependant on how the researchers present themselves and the literature considered the issue of the relationship between researcher and participants (Ribbens 1989; Denzin and Lincoln 2003; Dearnley 2005; Nunkoosing 2005; Parahoo 2006). Ritchie and Lewis (2003) pointed out that as interviewees can come from all walks of life, one of the most crucial skills the interviewer can possess is the ability to put people at ease and create a trusting relationship. Denzin and Lincoln (2003) reiterated this and advised a friendly, civil, non-judgemental demeanour in order to build rapport and trust.

The researcher should be mindful of the interviewer effect, as participants may, unwittingly or otherwise, change their responses to either show themselves in a better light or give a response that they think will please the researcher (Parahoo 2006). Taking time to develop a trusting relationship with the participants may minimise this (Holloway and Wheeler 2010). This process can be initiated by the use of non-threatening 'chit chat' and general questions designed to relax the participants and put them at ease (Casey 2006). I was able to foster and develop a trusting relationship with my study participants over the course of the study.

I was conscious of the fact that my participants were also students within my HEI and Ribbens (1989) and Nunkoosing (2005) both discussed how researchers must be watchful about abusing the power they have as a researcher. McCann and Clarke (2003) discussed this specifically with regards to academic staff using their own undergraduate students as research participants. Although I was a lecturer within the same HEI as the students in my study, the inclusion criterion stipulated that they must not be from my campus, or known to me academically or personally. I was therefore unknown to the students as a lecturer and known only as a researcher.

Eleven students participated in the one – to –one interviews up to the point just prior to the fourth one, when two students dropped out. Nine participated in the final interview. Interviews were all prepared for in the manner described and on average each interview lasted 44 minutes, although times across all the interviews ranged from 22 minutes to 75 minutes. During the course of the interviews I employed my interview schedule as I explored the students' experiences of simulation and the impact it had on their development.

This was a longitudinal study and one of the unique features was that it afforded the opportunity to look at the progressive nature of the student experience from entry into the branch to registration – a period of two years. To facilitate this I had questions, which although often reworded from one interview to another, were repeated throughout the interview process. Van Manen (1990) stated that in phenomenological research the researcher should not expect a definitive answer to each question from one interview, rather the same question should be asked repeatedly in order to probe the consciousness of the participant. This approach was adopted because it was believed that asking the students the same questions over the period of data collection would help to show if there was a progressive development of clinical skill proficiency in the three domains outlined in the research questions.

One of the main influences in qualitative research is the researcher; their lack of expertise can affect data collection (Polit and Beck 2008; Gerrish and Lacey 2010). After listening to recordings of the first interviews conducted in order to transcribe them, I noted that my voice had too much of a presence than I believe it should have. I spent time reflecting on this and reviewed my interview technique. Advice is available within the literature regarding this and on review, whilst I was using many of the techniques on offer, such as sensitivity; tone of voice and body language I felt I was perhaps not giving the student's enough time to reply and speaking too soon, which is a common feature of novice researchers (Ritchie and Lewis 2003; Polit and Beck 2008). Being aware of this helped and I worked to ensure that I tempered my comments.

Whilst researching this aspect I also recalled that I had undertaken training in counselling techniques years before and in subsequent interviews was able to use the techniques learned. The end of the interviews generally occurred quite naturally when all topics on the interview guide had been addressed. The end of the interview was also occasionally signposted by phrases such as *"Finally…."* or *"Do you have anything more you would like to add?"*

3.15 Reflexivity

Jootun *et al.,* (2009) advise that it is unrealistic to expect the qualitative researcher to hold all presuppositions, attitudes, knowledge and experience in abeyance for the duration of the study. Qualitative research is susceptible to influence by the researcher because researchers are an integral part of the process and bring their experiences of the phenomenon and personal values and beliefs to the research process (Holloway and Wheeler 2010). Self-reflection is an everyday human practice, however it is crucial in phenomenological research that the researcher acknowledges their preconceptions and how they may impact on the study. This can be achieved through reflexivity, the practice of critical reflection, where the researcher acknowledges their actions, feelings and conflicts (Holloway and Wheeler 2010).

Dowling (2006) categorised the distinct types of reflexivity, which included reflexivity in the sense of 'bracketing', whereby the researcher suspends personally held beliefs, as in the transcendental phenomenology of Husserl; critical reflection in relation to issues of validity and identification of limitations; and epistemological reflexivity undertaken by researchers in order to make sense of assumptions that arise during the research process, and common in the Hermeneutics of Heidegger. In the words of Gadamer (1976:38) reflecting on our assumptions "*brings before me something that otherwise happens behind my back*" and leads to greater understanding.

Epistemological reflexivity was adopted for the duration of this study. The usual strategy adopted by researchers to manage this is the reflexive diary, which facilitates the cataloguing of personal reflections, trains of thought or experiences of the research process (Clark 2009; Jootun *et al.,* 2009). Other ways include internal and external dialogue and these practices are acknowledged as being useful for preventing the researcher's attitude or emotions, for example, affecting the outcome - a concept known as the Rosenthal phenomenon (Casey 2006).

Over the course of this study I kept a reflexive diary to record informal 'rambling', thoughts, frustrations, which helped me develop my understanding of the *life world (Lebenswelt)* of my participants. This practice was particularly useful in helping me work through nurse-researcher discord. During interviews students disclosed information, or criticisms of lecturing and clinical staff. My dilemma was that I was a lecturer and I knew the lecturing staff they referred to. Although I did not know the clinical staff, I had been a practicing clinician for over twenty years before entering nurse education. My instinct was to defend them because I knew, from first hand experience, the probable rationale behind the actions (and/or omissions) the students commented on. By a process of internal reflection (usually in the car on the journey home); and external reflection through writing it up in my journal or in discussion within my supervisory team I was able to develop some meaning. Subsequently, I advanced my understanding of how students viewed simulation and also of the role of the lecturer/ facilitator (including myself as a lecturer) in that process.

See the following extract from my reflective diary as an illustration.

> **Reflexive Diary Extract from September 6th 2009**
>
> *Jen's comment - lecturer making her feel stupid!?*
> *Her perception so it's valid – she named the lecturer and whilst I don't think X*
> *intended to make her feel stupid it is likely that in frustration X spoke in a manner,*
> *which could be construed by a learner as derogatory.*
> *From personal experience I know that at times it's difficult to 'hold one's tongue'*
> *with students in simulation. If Jen was, as she told me she did, actively not*
> *engaging I can see how this would happen!! – do I do this? must watch!*
> - *need to find a way to get the Jen's of this world to engage - earlier??*
> - *Why doesn't she do some self-directed learning before hand – this seems*
>   *to happen a lot with Jen!?*
> - *Leaning style?? - Visual*

The above extract helped me to start to reflect on the impact that learning style had on student engagement with simulation and how engagement for students like Jen could be fostered earlier and also how important the role of the lecturer was in terms of compassionate support. It brought home to me that although nurse lecturers are not working with patients, 'we' still have a duty of care to our students. Simulation was supposed to be a safe, unthreatening place where students were free to make mistakes (Ker and Bradley 2007), and yet Jen (and others) suggested that at time this was threatened. This was very much influential in the formulation of the engagement framework. Reflexivity was therefore very much an integral part of the research process (Dowling 2006; Holloway and Wheeler 2010).

3.16 Ensuring Robustness in Qualitative Research

Reflexivity is one of the strategies used within qualitative research to establish and demonstrate rigour. Various guidelines available within the literature point the researcher to other strategies, which if followed will help to legitimise qualitative research (Elliot *et al.,* 1999; Yardley 2000; Meyrick 2006). Although non-prescriptive, central to all the guidelines is the importance of transparency at each stage of the research process. First of all, it must be clear why the research is being undertaken. Aims and objectives must be explicit, with all methodological decisions aimed at addressing these. The conduct of the researcher is crucial; existing knowledge or experience of the topic must be declared at the outset and sensitivity to a range of issues evident throughout. There should be clear evidence of engagement with each stage of the process.

Completeness of the data collection and immersion in the data is vital, leading to presentation of a coherent account of the nature of the phenomenon, which highlights the theoretical importance of the findings. The measures set out within these guidelines (Elliot *et al.,* 1999; Yardley 2000; Meyrick 2006) have been utilised throughout the course of this longitudinal study, in order to help ensure the robustness and trustworthiness of the research process and the findings (see Table 3.5 below). Further to this, the following section will discuss how an audit trail was implemented as a means of enhancing the rigour of this study.

Characteristics of good Qualitative research	Application to this study
Sensitivity to context	Literature relevant to the topic of simulation in nursing was reviewed Literature pertaining to the methodology (phenomenology/ hermeneutics) was reviewed Researcher had existing knowledge of the socio-cultural setting and of the sample Researcher had shared understanding of the topic Inclusion/exclusion criterion to minimise potential bias/ power differential were applied
Commitment and Rigour	Researcher had prolonged engagement with the topic (simulation) as both a learner and provider Researcher had previous experience of interview process, but developed competence in data collection methods used. Reflexivity used to aid identification and discussion of any potential bias Researcher experienced immersion in the data – longitudinal study Completeness of data collection/ analysis – no new findings emerged
Transparency and coherence	Findings were presented logically and coherently with extracts from interview transcripts Audit Trail Reflexivity Member checking
Impact and importance	Presented the nature of the student experience – told their story Addressed the research questions Outlined theoretical importance Researcher developed and presented educational framework

Table 3.5 Characteristics of good Qualitative Research applied to this study
Source: Yardley (2000)

3.17 Audit Trail

An audit trail is a process, which makes visible the decision-making of the researcher and is recognised as an essential component of any rigorous research study (Streubert and Carpenter 2011). Like reflexivity, audit trails are particularly adept at ensuring dependability (reliability) and confirmability (accuracy) of data and subsequent findings (Rolfe 2006; Houghton *et al.,* 2013) and allow the researcher to demonstrate that all stages of the research process have been correctly undertaken (Becker and Bryman 2004).

Polit and Beck (2008) highlighted six classifications of the audit trail; the first being raw data in the form of interview transcripts. Other stages involved notes or working drafts of data reduction and analysis in the form of clusters and themes; methodological notes; reflexive journal notes; draft and final reports.

Rolfe (2006) asserted that the quality of a research study is revealed in how it is written and presented and that in order to avoid ambiguity and potential for misinterpretation by the reader, the researcher must provide an audit trail, which provides an accurate and justifiable account of any decisions made during the entire research process.

With this in mind, for the duration of this research study, I endeavoured to show transparency in relation to methodological and analytic choices by explicitly documenting key decisions made in relation to, for example: formulation of the research questions; sampling techniques; informed consent, ethical choices; the analytic process. In line with advice from the research literature, for the duration of this study I kept copies of the full interview transcripts; drafts of the clusters and themes, which emerged; reflexive notes. In addition, due to the longitudinal nature of the data collection process, I had an ongoing record of the developmental process of moving up from the raw data to thematic presentation of the findings. It is believed that these steps, in conjunction with the final stage of member checking helped to maintain the trustworthiness of the research findings.

3.18 Testing of Data Collection Tools

Prior to the commencement of the study proper it was necessary to have a 'dry run' and test the structures and processes of the study to ensure they were operational (Parahoo 2006). A common method of testing this is the pilot study. However, pilot studies are not readily utilised within qualitative research. Instead, interview questions or techniques and recording equipment are tested informally on family and colleagues (Holloway and Wheeler 2010).

Consequently, I 'interviewed' a family member to test effectiveness of the recording equipment and coherency of the questions. I also recruited an academic colleague, with first hand experience of phenomenological research to critique my research questions and review my topic guide questions. In light of this, some minor refinements were undertaken (Holloway and Wheeler 2010).

3.19 Data Protection

In line with the Data Protection Act (1998) all data collected were stored securely and accessed solely by the researcher. Recordings and hard copies of data were stored in a locked filing cabinet, whilst processed data were stored on a password protected computer in the researcher's home and used solely for the purposes of the research study. At the end of the research all data were destroyed. In addition, all participant names were replaced with pseudonyms to maintain anonymity (Cohen *et al.,* 2000).

3.20 Data Analysis

"Data don't speak for themselves. We have to goad them into saying things"

*(*Turner in: Richards 2005:67)

A crucial stage in any research is data analysis (Gerrish and Lacey 2010). In qualitative research this involves the researcher immersing themselves in the data in order to make sense of it. The narrative and observational data produced in my study had to be painstakingly ploughed through in order to extrapolate meaning (Grbich 2007; Polit and Beck 2008). A review of the literature revealed no standard way to accomplish this, as it is dependant on the goal of the research.

The non-participant observations provided a snapshot view of the students' in practicum and as such did not yield a large amount of data – derived from field notes. However, large amounts of data were produced from the focus groups and interviews. Each interview was transcribed verbatim as soon after the interview as possible and field notes compiled while events were fresh in my mind. Verbatim transcription is believed to give the best opportunity for rich data to be unearthed (Holloway and Wheeler 2010).

Transcription was a time consuming and onerous task, mainly because I found the student's regional accents and dialect difficult to decipher at times, especially in the focus group discussions. However, this became marginally easier with each round of interview data as I 'tuned in' to the accents. Secondly, my skills of transcription hindered the process. Dearnley (2005) highlighted that a one-hour interview took five hours to type verbatim, while other sources advised four to six hours for those familiar with audio-typing (Richards 2005; Holloway and Wheeler 20010). However, in reality I found that a 45-minute interview took around eight to 10 hours to transcribe. Consequently, the time implications for this study were considerable due to the number of times the participants were interviewed and the longitudinal nature of the study. This resulted in a delay in transcribing interviews and was a cause of some anxiety.

Coupled with work demands I took the decision to out source the remaining transcriptions to a team of professionals. Although the literature advised that personally undertaking the transcription helps the researcher immerse themselves in the data (Jootun *et al.,* 2009: Gerrish and Lacey 2010; Holloway and Wheeler 2010), I found my lack of transcribing prowess to be a major hurdle.

On completion, I checked each transcription for accuracy by listening to the taped interviews whilst reading the scripts (Holloway and Wheeler 2010), with amendments made at this stage. This process was particularly helpful (and important) with the outsourced transcriptions as owing to the transcribers' lack of familiarity with healthcare dialogue some errors were made with interpretation of some words.

My knowledge and experience within healthcare and simulation allowed me to pick up anomalies and correct them. It also helped me to re-immerse myself in the data.

Once transcribed, the scripts, with pseudonyms were stored on a password-protected computer and two hard copies were made (Data Protection Act 1998). One was used for reference, whilst another was used in the analytical process. Initially I used Nvivo™ software to help manage the data, but after several technological hitches, which limited or denied access and use of the software, the decision to undertake manual thematic analysis was made. This was a laborious task, however it helped me to connect more effectively with the data.

The physical aspects of highlighting key words and phrases from the protocols and arranging them into clusters suited my style of working. I felt physically connected – immersed - and was able to reflect back to the actual interviews and recall some of the additional elements of the interviews. This was also the experience of Clark (2009) who reflected on how connected she felt with her data when forced to undertake manual analysis.

Qualitative data analysis can be a major cause for concern for researchers (Corben 1999; Smith *et al.,* 2009) being recognised as the most challenging aspect of a research project (Cohen *et al.*, 2000; Whiting 2001; Miller 2002; Gerrish and Lacey 2010). Polit and Beck (2008) asserted that the challenges inherent within qualitative data analysis were due to a lack of analytical benchmark procedures. Certainly, Richards (2005) described the process as 'messy', which may be due to the fact that whilst there are common features across qualitative data analysis there are also distinct differences relating to the particular approach used (Holloway and Wheeler 2010). It is a complex and convoluted process, which at the same time is, or should be, methodical, orderly and structured (Holloway and Wheeler 2010) and aligned to the chosen research method.

Holloway and Wheeler (2010: 282) outlined the common features of qualitative analysis:

- o Transcribing interviews and sorting field notes;
- o Organising, ordering and storing the data;
- o Repeatedly listening to and reading/viewing the material collected.

All this means immersion in and engagement with the data. Other stages depend on the process taken by the qualitative researcher:

- o Coding and categorising (particularly in interpretive methods);
- o Building themes;
- o Describing a cultural group (in ethnography);
- o Describing a phenomenon (in phenomenology).

Numerous approaches to the analysis of qualitative data exist along with several frameworks, which offer structured guidance to qualitative analysts. During the process of researching and evaluating the topic, approaches advocated by Giorgi (1975: in Whiting 2001); Colaizzi (1978: in Valle and King 1978); Van Manen (1990) and Interpretive Phenomenological Analysis (Smith *et al.*, 2009) were considered. These approaches, all situated within interpretive research had, as illustrated by Holloway and Wheeler (2010) shared processes. They all aimed to interpret the meaning, or essence of a phenomenon of everyday experience via thematic analysis.

Gomm (2008) described thematic analysis as a version of content analysis (CA). However, unlike CA, which is used to analyse written or broadcast materials, thematic analysis is used to extract meaning from interview data. Van Manen (1990) proffered that humans have an inherent desire for meaning or understanding, which drives the pursuit to unearth something significant. In discussing the meaning of 'theme' in the context of hermeneutic research, Van Manen (1990) acknowledged it as both a skill and a cognitive process.

As stated earlier, the literature produced a number of sources of theoretical and practical guidance regarding thematic analysis (Giorgi 1975: in Whiting 2001; Colaizzi 1978: in Valle and King 1978; Van Manen 1990; Richards 2005; Smith *et al.*, 2009). I wanted one, which offered clear, systematic guidance.

Each was reviewed. Generally they all involved the researcher repeatedly reading transcripts in order to find themes, identified through the use of common language.

I opted to be guided by Colaizzi (1978), but took note of Van Manen (1990) who asserted that the process of thematic analysis should not be viewed as prescriptive - it was a more open and intuitive way of seeking meaning and understanding.

3.21 The Analytical Process

Colaizzi was identified as the most appropriate approach to adopt, mainly because of the detailed step-by-step process (see Table 3.6 below), which I believed would help to guide me through the analytic process (Colaizzi 1978). Thematic analysis in general has been widely used in phenomenological research and Colaizzi specifically has been utilised within a number of qualitative research studies (Cote-Arsenault and Morrison-Beedy 2001; Papp *et al.,* 2003; Chesser-Smyth 2005; Waite 2006).

Colaizzi's seven-stage process of thematic analysis

1. Read all the participant's descriptions [protocols] to acquire a feeling, a making sense out of them.
2. Return to each protocol and extract phrases or sentences that directly pertain to the investigated phenomenon – known as extracting significant statements.
3. Spell out the meaning of each significant statement, known as formulating meanings.
4. Repeat step 3 for each protocol and organise the aggregate formulated meanings into clusters or themes.
5. Results of everything so far are integrated into an exhaustive description of the phenomenon under study.
6. Formulate the exhaustive description of the investigated phenomenon in as unequivocal a statement of identification as possible.
7. A final validating step can be achieved by returning to each participant and asking about the findings so far.

Source Colaizzi (in Valle and King 1978)

Table 3.6 Colaizzi's seven-stage process of thematic analysis

Colaizzi's (1978) seven-stage approach was applied to the data from the focus groups; field notes and the one to one interviews. The steps taken were:

1. *Read all the participant's descriptions [protocols] to acquire a feeling, a making sense out of them.*

   The definitive transcripts [known as protocols] were read in order to get a feel for them. Richards (2005) offered guidance with this step and I found this helpful as a way of adding to the steps outlined in Colaizzi (1978). I read the transcripts through once to get a general feel for them, recording any thoughts I had. Richards (2005) called this stage 'Taking up the data' – it involved skim reading the transcript before reading it again. I also listened to the recordings to pick up on other nuances I may have missed.

2. *Return to each protocol and extract phrases or sentences that directly pertain to the investigated phenomenon – known as extracting significant statements.*

   This time transcripts were read with the purpose of looking for significant statements or words, which were highlighted. These statements were selected because of their alignment to the study research questions. Notes relating to significant words and statements were made in the margin. The significant statements were then removed from the protocol, with a note of the author, page number and interview.

   For example, the following significant statement was extracted from Kate's third one to one interview:

   > *"Completing a task [in SCE] and getting good feedback helps your confidence".*

   Related to one of the research questions '*How does simulation support the development of the skill proficiency in the psychomotor, cognitive and affective domains?*' it highlighted the role that feedback played in helping the students to gain proficiency and subsequent confidence in their abilities.

3. *Spell out the meaning of each significant statement, known as formulating meanings.*

This stage concerned looking at what the statement was telling me and involved reading the statement line by line to extract the underlying meaning. This was a challenging stage, as care must be taken not to disconnect the phrase from the context of the transcript. Constantly referring back to the transcript was integral to this phase in order to minimise misinterpretation (Polit and Beck 2008).

For example, with reference to the previous quote from Kate (highlighted in step two) initially I isolated the first sentence, but on reflection I felt it was a standalone statement, which said little about how feedback was perceived by the student. It helped their confidence, but the statement as it stood did not tell me 'how' it helped with confidence. Placing the phrase within the context of the whole narrative was I believe, more illuminating. It gave a sense of the importance students placed on feedback and their understanding of it, which I felt the isolated sentence failed to convey. The original significant statement is highlighted in yellow, but is now contextualised within the entire sentence from which it was extracted:

> "Completing a task [in SCE] and getting good feedback helps your confidence. I understand feedback will not always be positive but as long as it's portrayed in a positive way - I found if it's not then it seriously puts you off…you think 'well nothing positive has been said about that' and you go home and think 'I'm not doing that again' I've felt like that once and it wasn't a good experience. I think the communication you're getting at the end with the strengths and weaknesses is important. I know a lot of people are like 'I'm not doing that again.'"

This process was carried out for each interview (see Appendix IX for examples of two themes). I also found that during the writing up process, new meaning would emerge from the existing data (Cohen *et al.,* 2000), which acted to enhance the underlying meaning of the significant statements.

This was in line with Van Manen (1990) who saw writing and rewriting as part of the analytical process. In addition, as a result of a period of reflection and return to the literature, I revisited the audio recording of the interviews (Silverman 2005). Hearing how the student's spoke about a particular topic and listening for any inflections or additional sounds such as a sigh or a laugh, that I may have missed, helped to contextualise it. I was also listening to the metaphorical language they used as this helped to formulate hidden meaning (Hycner 1985). This was particularly helpful with regards to how the students viewed the simulation mannequin. Students referred to him as 'dummy'; 'doll'; 'the patient' and about 'getting to know him' and this helped me explore the underlying meanings.

4. *Repeat step 3 for each protocol and organise the aggregate formulated meanings into clusters or themes.*

Having repeatedly examined the significant statements from all the interviews, the formulated meanings from each were organised into clusters. These clusters of common formulated meaning were then examined for commonalities and organised into themes. This was by far the most challenging stage. The statement from Kate was used within the theme of 'Development of clinical skills proficiency', under the cluster of 'Feedback'.

Initially I used participant's own words as headings for clusters, but found this to be too inconsistent. Following discussion with my supervisors and further reflection it was decided that whilst I could understand what the heading meanings were, others less familiar with the participants dialogue could not.

Colaizzi (1978) noted that clusters are often at odds with each other and there was evidence of differences within this study's findings. Researchers are advised to resist the temptation of ignoring data or themes that do not fit. During the course of the data analysis process, findings from the majority of the participants positively supported many aspects of simulation.

However, one participant had opposing opinions. At no point during the process did I consider ignoring her views, which were in the minority, as this would have undermined the rigour and trustworthiness of my study. Such an action would also have breached the philosophy underpinning qualitative research, which values the subjective experience of the individual (Moran 2000). I believed there was immense value in the 'lone voice'. Disconfirming evidence such as that provided by Jen are the antithesis of the general findings and are incredibly important as they help provide a more complete understanding of a phenomenon (Polit and Beck 2008). They helped to show the multiple realties, which existed within the sample and which are aligned to the philosophical underpinnings of Hermeneutics (Moran 2000; Morrow 2005).

5. *Results of everything so far are integrated into an exhaustive description of the phenomenon under study.*

Each set of interviews from this longitudinal study was analysed, and the findings presented and described thematically. From these sets of interviews further analysis was undertaken which looked at the findings in relation to the progressive nature of the students' journey through the two-year period of the branch programme. This involved cross-referencing of the findings from all the interviews undertaken during the two-year period.

6. *Formulate the exhaustive description of the investigated phenomenon in as unequivocal a statement of identification as possible*

During this stage I synthesised the findings from all the interview data. Findings were repeatedly reviewed and scrutinised, before a definitive statement was produced which provided a fundamental description about the topic. This proved to be extremely challenging as I wanted to provide an illustration of the progressive nature of the phenomenon and was constantly flitting between interview data in order to show this progress.

7. *A final validating step can be achieved by returning to each participant and asking about the findings so far.*

Colaizzi (1978: in Valle and King 1978) recommends that findings be returned to participants for validation of accuracy. This was a longitudinal study using two cohorts of students. Although each student participated in two years of data collection the data collection period for me, spanned two and a half years (November 2007 – January 2010). On completion of the study, a descriptive account of the findings was returned to a proportion of the students involved in the study (Colaizzi 1978). I contacted the participants to ask permission to send the findings to them for verification of accuracy. Findings were sent to those who gave consent with a total of six (across both cohorts) confirming accuracy and trustworthiness (Denscombe 2002). Copies if their responses can be viewed in Appendix X.

Colaizzi's (1978) process, whilst being depicted as linear was far from it (Cohen *et al.,* 2000; Polit and Beck 2008). Many of the steps were undertaken almost simultaneously and frequently revisited with analysis adapted as a result of the constant cycle of writing, reading, analysis, rewriting, rereading and so on. Hycner (1985) gave assurances that the more one revisited the transcripts, the more meaning one would derive. My personal experiences would support this.

On numerous occasions steps one and two were revisited and changes made as a result. Cohen *et al.,* (2000) stipulated that writing about the data was one of the steps towards making sense of it and this was undoubtedly the case with the data from this longitudinal study. Constant rewriting was very much part of the analytical phase (Van Manen 1990). Those feelings continued right up to the end point when I felt I could derive more meaning from the data.

3.22 Summary
The aim of this research study was to explore the progressive nature of the student nurses' experiences of learning within a simulated clinical environment and the impact this has on the transfer of skills to practice and to address the following research questions:

1. How does learning through simulation facilitate individual student learning and influence preparation for practice?

2. How does simulation support the development of the student's clinical skills proficiency in the psychomotor, cognitive and affective domains?

3. In what manner are students' able to transfer skills gained in the simulated setting to practicum?

4. What factors facilitate or inhibit student engagement with the simulated clinical experience?

With reference to supporting literature, this chapter provided an account of the methodological choices made in order to address the research aim and research questions. A purposive sample of 12 nursing students was recruited for this phenomenological study conducted over a two - year period. Data collection involved focus group, non-participant observation and one – to – one interviews.

My experiences of conducting thematic analysis echoed the literature. Analysis of data from qualitative research was a lengthy and iterative process (Holloway and Wheeler (2010). It involved engaging with the data in order to make sense of and extrapolate meaning from the vast amount of information gathered during the data collection process (Richards 2005; Smith *et al.,* 2009).

Data were thematically analysed in accordance with Colaizzi's (1978) framework in order to identify and give meaning to significant words and statements, before being arranged into themes. The findings from the focus group and one – to – one interviews are presented in the following chapters, starting with the initial focus groups, which were undertaken at the end of the students first experiences of learning within a simulated clinical environment (SCE) and prior to their first Adult branch experience in practicum. It is believed that providing the findings in this manner will facilitate the reader a sense of the students' journey through the final two-years of their programme.

Chapter 4 Findings from Focus Groups

4.0 Introduction

Following the process of thematic analysis (Colaizzi 1978) described in Chapter 4, data from the focus groups and interviews undertaken over the course of this two-year study were transcribed and analysed. Noteworthy statements and phrases relating to the research questions were extracted and organised into themes. In addition, disconfirming data in direct opposition to the majority view was revealed. This was crucial to the analysis process because it provided information, which challenged the interpretive process, but allowed a more complete picture of the experience of learning in a simulated clinical environment from the unique perspective of the individual to emerge (Polit and Beck 2008). Extrapolating opposing viewpoints helps to authenticate the trustworthiness of the data (Streubert and Carpenter 2011). This chapter presents the findings from the focus groups. Findings from the one-to-one interviews will be presented in subsequent chapters. In order to show the longitudinal nature of the student journey findings from each of the interviews will be examined for similarities, differences and patterns of progression.

4.1 Population Sample

The characteristics of the population sample collectively demonstrated the characteristics of the cultural population being investigated, with regards to age range, gender and education (Burns and Grove 2005; Longley *et al.*, 2007; RCN 2008). In line with principles of confidentiality and anonymity all participants were assigned a pseudonym (Silverman 2005; RCN 2009). All 12 participants contributed to the focus groups. One later withdrew prior to the first one-to-one interview on personal grounds and a further two withdrew prior to the final interview (see Table 4.1 below for an outline of nominal characteristics of the sample, including learning style).

Cohort	Participant	Age	Learning Style [1]	Notes
1 - FG1	Allan	21-30	Visual/Kinaesthetic	
1 – FG1	Bob	>41	Auditory/ Visual	
1 – FG1	Kate	21-30	Visual/Auditory	
1 - FG1	Mary	31-40	Visual	
2 – FG2	Anna	21-30	Kinaesthetic/Auditory/ Visual	Balanced LS - 1 point between each
2 – FG2	Beth	31-40	Visual	Withdrew prior to final interview
2 – FG2	Jack	21-30	Visual/Kinaesthetic	
2 – FG2	Jane	21-30	Visual/ Kinaesthetic	
2 – FG2	Jen	21-30	Kinaesthetic	Withdrew prior to final interview
2 – FG2	Jill	31-40	Not known	Withdrew after focus group
2 – FG2	Meg	31-40	Visual/ Kinaesthetic	
2 – FG2	Sue	31-40	Visual	

Table 4.1: Nominal characteristics of the participants

During the course of the focus groups the issue of learning style (LS) emerged from the dialogues. On reflection, I decided to review the learning style of the students in my study to establish if there was a link between LS and learning in the SCE.

Large volumes of papers have been written about the range of learning styles (LS) (Barbe and Milone 1981; Felder and Silverman 1988; Felder and Soloman no date; Fleming 1995; Coffield *et al.,* 2004; Tanner and Allen 2004; Kolb and Kolb 2005; Myers and Briggs 2009). Following consideration of the different types of LS inventories, I selected the VAK (Visual, Auditory, Kinaesthetic) LS inventory in order to identify the preferred learning styles of the students (Chislett and Chapman 2005). I opted for this particular one because as people receive knowledge through three basic modalites - visually, auditory and kinaesthetically – I believed it to be a suitable tool (Barbe and Milone 1981; Fleming 1995; Chislett and Chapman 2005).

---

[1] Two or Three Learning Styles denote the fact that there was only 1 or 2 points between dominant and second or third preferred LS

I could also have used the VARK tool, which had the addition of Read/write but Fleming and Baume (2006:4) stated that it mattered little what learning style inventory was used because "it is not a set of scores…it is a description of preferences" believing that it's use in is the fact that it gets learners thinking about how they learn. There is some non-research based criticism of modality based learning style inventories such as VAK and VARK, but they have been used quite extensively within the research based nursing and literature (Wehrwein et al., 2007; Alkhasawneh *et al.,* 2008; Meehan-Andrews 2009; Koch et al., 2011). Other modality types have been used to test LS in relation to technology (Effken and Doyle 2001; Graf *et al.,* 2011) and high-fidelity simulation (Fountain and Alfred 2009).

The VAK LS inventory, as introduced in Chapter 1 consisted of 30 standardised predetermined multiple-choice (3 stem) questions. It was user friendly, not lengthy and therefore not too time consuming to complete. I did not want the students to feel that it was too onerous a task and therefore not complete it. Response rate was 91% (n=11). However, as one student had dropped out by this time so did not complete the LSI, this was totally representative of the remaining 11 students. Questions in the LS inventory were framed to represent everyday tasks, such as '*When I am choosing a holiday I usually…" "If I need directions for travel I usually…" "I remember things best by…"* Also, the categories within the inventory (visual, auditory, kinaesthetic) were specific enough to allow mapping to the context of learning within a SCE.

The literature revealed the most prevalent learning styles (LS) amongst student nurses' were ones that favoured concrete experiences; active participation or similarly Kinaesthetic or Visual learning, depending on LS inventory used (Cavanagh *et al.,* 1995; Suliman 2006; Rassool and Rawaf 2007; Alkhasawneh *et al.*, 2008; Meehan-Andrews 2009). The majority of students in my study had a preference for Visual (n=10) either as a single dominant preference (n=3) or in combination with Auditory (n=2) or Kinaesthetic (n=4); whilst one student had a combination of all three styles of learning and one student had a sole preference for Kinaesthetic (as illustrated in Table 4.1 above).

Scores within 1 – 2 points of each other were classed as combination, whilst those with a dominant sole LS had no other LS within 4 points (Fleming 2005). This supports the assertion that most adults of college age and above are Visual learners (Barbe and Milone 1981; Felder and Silverman 1988). More recent studies also support this (Effken and Doyle 2001; Fleming *et al.,* 2011). Visual learners prefer reading and writing and observing things such as pictures, diagrams, film clips and demonstrations, whilst kinaesthetic learners prefer hands on learning, experiments and concrete experiences. Mary (FG1) and Bob (FG1) for example felt they were able to fully engage with the simulation experience. Mary's dominant LS was Visual, whilst Bob's was Aural, suggesting that simulation as a teaching and learning approach could accommodate a variety of learning styles. The longitudinal nature of this study allowed this assumption to be reviewed throughout the students' two-year journey and is discussed in Chapter 9.

4.2. Focus Group

An initial focus group was undertaken with each cohort (cohort 1 n=4; cohort 2 n=8), following the students' first exposure to learning within the simulated clinical environment (SCE). All were in Semester three, in year two of the Adult Branch programme.

Within semester three, students were taught theory and skills relating to the care of patients in a surgical environment, before going into acute surgical clinical placements. During the five-week module students were taught clinical skills within the simulated clinical environment (SCE) for the equivalent of one day per week.

The intention of the focus group was to address the first research question: '*How does simulation facilitate individual student learning and influence preparation for practice?*'

Focus groups were opened with introductions and the offer of refreshments. An initial general question was used to generate discussion and in line with the ethos of semi-structured interviews additional questions were prepared in a topic guide (see Table 4.2 below). These related specifically to the research question and acted to keep the discussions focused on the research topic (Polit and Beck 2008).

Focus Group Topic Guide

"*Having used simulation for five weeks I would like you to tell me about your experiences in that time – what are your thoughts on simulation?*"

"*How do you feel that simulation has helped you prepare for going into the wards?*"

Table 4.2. Focus Group Topic Guide

Although the premise of preparation for practice was evident in the discussion prior to asking this second question, it acted to facilitate focused reflection on that specific theme. Question framing was broad enough to elicit a wide range of experiential data, but explicit enough to address the specific focus of the study questions (Ritchie and Lewis 2003).

From the data analysis process (Colaizzi 1978) significant statements emerged from the findings. These were arranged into 15 clusters of themes. The clusters of themes were subsequently organised into three main themes: Preparation for Practice, Engagement (with the SCE) and Safety (see Diagram 4.1 on the following page for Themes and associated clusters). It is important to note that there is no hierarchy attached to the themes.

Thematic Analysis of Focus Group Interviews

Theme 1 Preparation for Practicum
- Going out into the real world
- Hands on skill development
- Cognitive development
- Professional role of nurse
- Feeling under pressure
- Development of confidence and competence in skills

Theme 2 Engagement
- Self-conscious under observation
- Realism
- Learning Styles

Theme 3 Safety
- 'Guilt free nursing' Freedom to make mistakes
- Space and Time
- Fear of looking stupid
- Patient Safety
- More hands on practice
- Did I do that right?

Clusters of Themes

Diagram 4.1 Thematic Analysis of Focus Group Interviews

4.2.1 Overview of emerging themes

Diagram 4.1 represents the clusters of themes, with the first theme depicting a range of clusters relating to preparation for practice. None of the students in my study had previous experience of working in clinical areas and the simulated clinical environment (SCE) allowed them to become familiar with clinical tasks, equipment and environments and the profession they were entering. They all reported feeling prepared for practice.

Theme two (engagement) related to how well students were able to actively participate with simulation in the SCE. Some students found this easier than others and this appeared to be linked to the authenticity of the SCE and to the students individual learning styles (LS).

The final theme of safety was applicable to both students and 'real' patients. Students' appreciated having the time to practice clinical skills and felt safe to make mistakes without the fear of 'looking stupid' in front of qualified staff in practicum. They appreciated how the simulation opportunities impacted on patient safety by allowing them to practice skills without having to worry about the patient. They coined the phrase "guilt free nursing" to illustrate this aspect.

The following discussion, with illustrative quotes is presented by way of corroboration. Each quote is identified by a pseudonym and an additional code identifying which focus group the respondent was in: FG1 = focus group one; FG2 = focus group two.

4.3 Theme 1. Preparation for Practicum

This was the students' first experience of learning skills in a simulated clinical environment (SCE) using simulation mannequins. First and foremost, all the students were nervous about going out into practicum. See diagram 4.2 below for a visual representation of Theme 1 and associated clusters.
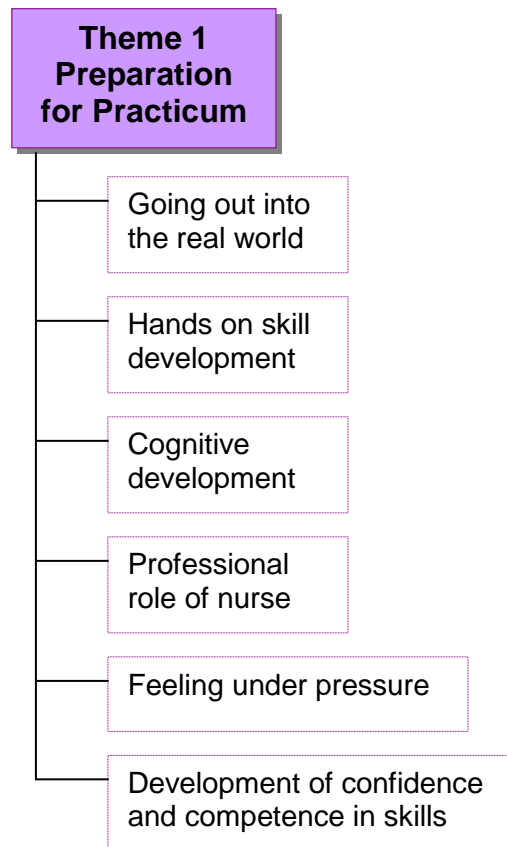
Diagram 4.2 Theme 1 and associated clusters.

4.3.1 Going out into the real world

When asked to recall their experiences of simulation both cohorts emphasised that because none of them had previous experience of being on a ward they felt that working in a realistic clinical environment would help them when they went out into placement:

> Jane FG2 - *"I think even the layout of the sim room – it's like a ward – 'cause I don't know what to expect in the hospital"*

> Mary FG1 - *"A lot of people haven't been in a ward setting, they've maybe visited people, but they've not been in a ward setting where they would go and use the equipment – so I thought it was very beneficial to get that feel before you even step into a ward situation".*

Gray and Smith (1999) described this as 'anticipatory anxiety' - fear of the unknown. The students in my study wanted to fit in and believed being able to handle real equipment and being familiar with using it gave them a 'head start'. Students in a number of other studies also reported feeling less anxious and better prepared for going into practicum as a result of having access to clinical environments, skills and equipment beforehand (Freeth and Fry 2005; Morgan 2006; Baillie and Curzio 2009).

4.3.2 Hands on Skills Development

Students learning in a SCE are socially active participants in their learning experience (Dieckmann 2009). The majority of the participants' responses were fairly positive with regards to ways in which simulation facilitated preparation for practice and this was linked to the process of actually 'doing' the clinical skills within the SCE.

Tangible experiences encountered within the SCE helped students to take the skills from the realms of their imagination and gave them authenticity because of the realistic environment. As the following quotes from Jill and Beth suggested, learning in this active way facilitated a more meaningful learning experience:

> Jill FG2- *"...you know you can read all you want in a book, but actually practically doing it makes it so much easier"*

> Beth FG2 - *"The practice of putting on a hand is much better than the theory, because the theory you still keep in the world of imagination, but when you see them done it just goes into the head – cause you see it you can remember it and you can say it"*

Physically practicing a skill or procedure within the context of the SCE seemed to provide students with a visual mental model by letting them rehearse skills and activities similar to those they would be exposed to in practicum. Mental models are internally constructed from knowledge based on previous experience (Davidson *et al.,* 1999). By referring to a mental model previously constructed within the context of a SCE, the student could, as described by Greenwood (1998) reflect–before–action.

Reflection–before–action involves thinking through what needs to be done and how it will be done prior to undertaking the intended action or task. Participants revealed how if something similar happened in practicum, they would think back to what they had done in simulation.

The students worried about failing to carry out tasks competently and simulation provided the opportunity to 'test run' and hone skills before going into practicum. Some students valued the chance to learn how a skill should be executed before going into practicum and facing exposure to 'variations':

> Allan FG1 - *"I mean you get told "this is how you do it" and you get talked through it and given a handout and you go out into placement and you see somebody doing it that's different – but now that's us physically doing the procedure – I'm quite happy to go out into placement and keep doing it that way."*

4.3.3 Cognitive development

Some participants discussed how the SCE helped them in the acquisition of knowledge. It acted as a motivator by encouraging them to review theory and expand knowledge through reading or writing about something they had done/were going to do in simulation:

> Mary FG1 - *"It would give you the responsibility to go and read up more on things and say – I'm going to do this today, this is what you need to learn"*

> Sue FG2 - *…thing is, to get shown it and do it hands on you could probably go back then and write about it 'cause it's in your head. You've seen it rather than get a piece of paper – you know."*

Sue and Mary's comments linked to the active participation of learning in the SCE and also to their preferred LS. Mary wanted to be prepared prior to the event so she could play an active role, whereas Sue's comment suggested that she used the concrete experience as a base for further learning. Both Sue and Mary had a preference for visual learning, which favours reading and writing and well as observing things such as pictures, diagrams, film clips and demonstrations (Fleming 1995; Chislett and Chapman 2005).

Students were encouraged to assimilate knowledge and test this by applying it in the simulated setting. The following comment from Jane suggested that simulation helped her test her knowledge and clinical decision-making skills:

> Jane FG2 - *"I think because you don't have a lecturer in with you and you're making your own decisions, I think that's better for your own thinking and making your own mistakes and doing what's right as well, and after it being told – as opposed to being totally guided through it."*

Jane's phrasing "…*better for your own thinking…*" suggested that she was beginning to develop autonomy by being encouraged to make her own decisions regarding patient care. Jane went on to relay how her experiences in the skills lab helped her knowledge recall in a recent exam:

> Jane FG2 – *"I just thought back to clinical skills and what we physically did. I never thought of my lecture notes, I thought 'what did I do' – at the time it was the practical bits that were a lot more valuable than lecture notes. I think you learn a lot better."*

This extract suggested that Jane used a reflective process to recall a concrete experience carried out in the skills lab, thus enabling her to transfer that knowledge, albeit into a written format. Jane's comments also added to the debate regarding learning style (LS). Jane's LS was a balance between visual and kinaesthetic (watching and doing). She stated *"…it was the practical bits that were a lot more valuable than lecture notes."* It would appear at this stage that the SCE allowed Jane and the other students to actively experiment and test their skills and knowledge. Active experimentation is part of Kolb's (1984) learning cycle, based on his experiential learning theory. People who have a preference for 'doing' and 'thinking' favour active experimentation.

4.3.4 Professional role of nurse

During the second focus group, Sue expressed concern that they were expected to diagnose what was wrong with the simulated patient:

> Sue FG2 – *"They were asking us to diagnose what's wrong with the patient, which is something we'll not do – so why give us that information?"*

Whilst Sue did not see the relevance of being taught this, a number of other students' did and responded quite assertively:

> Jill FG2 - *"The doctor's not there all the time – you're the person that's with them. You need to be able to say 'he's going into shock or whatever' - otherwise you'll be standing around waiting for someone to diagnose – that person could be literally dying."*

Jill's comment was illustrative of comments from other students and shows an underlying awareness of the role the nurse plays in the identification of the unwell patient.

4.3.5 Feeling under pressure

Despite feeling some pressure when in the simulated skills environment some participants felt that the realism of the skills ward and the patient scenarios replicated some of the stress and pressure they would experience in the wards:

> Jane FG2 - *"I felt under pressure and that – but I thought that was good because it told me how I might feel my first time this kind of happens when I am myself, with others in the ward – it prepares you that way as well – I think you have more of an idea of what to expect when you are out."*

4.3.6 Development of confidence and competence in skills

For the majority of students, working in the SCE had a positive impact on levels of confidence in relation to the development of their skills and knowledge base:

> Beth FG2 - *"It's built my confidence because I just worried all the time – what I'm going to do on the ward – but just working in the lab here I know that when I get something wrong, I have my lecturer – so I just feel I have somebody to fall back on, who is teaching me, assessing me and can see where I am going wrong and can help me there and then before going into the public – so somehow I feel shaped and ready to go out."*

Confidence is a concept that is difficult to measure as it relies on individual self-perception of capabilities, known as self – efficacy (Bandura 1995). A major influence on perceptions of self-efficacy is the individual's ability to master, or develop competence in a skill or task. Whilst confidence is more of an internal process, within the context of nurse education competence is a more tangible concept, which can be measured against competency-based outcome criteria (Cowan *et al.*, 2007; NMC 2010b).

Despite widespread use within nurse education, the concept of competence was poorly defined (Watson 2002; McMullan *et al.*, 2003). Skills competence should encompass psychomotor, cognitive and affective elements of a skill. In the UK competency is usually associated with task 'performance'. The associated assumption being that successfully carrying out the task supported the existence of underlying knowledge. However, completing a task may not mean there is associated underpinning knowledge (McMullan *et al.*, 2003).

Student dialogue in my study suggested at this early juncture, that the more a skill was practiced, the more likely students were to develop confidence in their abilities. Stewart *et al.,* (2000) proffered that confidence was the factor that would determine whether or not the learner would carry out a learned task, whilst competence was linked directly to repeated practice of the task. This supports the development of competence through repeated practice in simulation, before then going out into practicum and having confidence in one's ability to carry out the task on a real patient.

A number of studies highlighted the increased confidence of the student as a result of learning in the SCE (Bremner *et al.,* 2006; Schoening *et al.,* 2006; Pike and O'Donnell 2009). However it is important that students do not go into practicum with unrealistic levels of confidence in their abilities and be tempted to take risks as a result of being unaware of their own limitations (Ker and Bradley 2007). Pike and O'Donnell (2009) pointed out that as a result of the sometimes predictability of scenarios in the SCE, students felt confident to transfer skills to practicum, but found they did not have the level of competence they had in SCE.

4.4 Theme 2. Engagement

Engagement in relation to simulation referred to how well the student was able to participate fully in the simulated activity. One of the aims of simulation education is that the learner is able to experience *suspension of disbelief,* that is, the learner is able to forget that the simulation event is artificial (Dieckmann 2009). As discussed in Chapter 1, suspension of disbelief can be achieved by producing a simulated environment and event with a high level of authenticity.

This is achieved through the use of authentic equipment, realistic surroundings and appropriate personnel (Byers 2003; Seropian *et al.,* 2004; Ker and Bradley 2007) and can help to create the illusion in the mind of the learner that the situation they are in is real. Rettedal (2009: cited in Dieckmann 2009) referred to this illusionary process as 'Internal simulation' because it existed within the mind of the participant. He likened this to the world of the magician where the goal is to 'trick' the audience into believing what they see.

Authenticity is important because if participants can immerse themselves in an event they are more likely to have a meaningful concrete experience from which to base future learning. The development of new learning is influenced by factors such as learning style or personality (Coffield *et al.,* 2004). Even at this early stage in the study several factors emerged that influenced student engagement with simulation. Diagram 4.3 below provides a visual representation of Theme 2 the associated clusters.
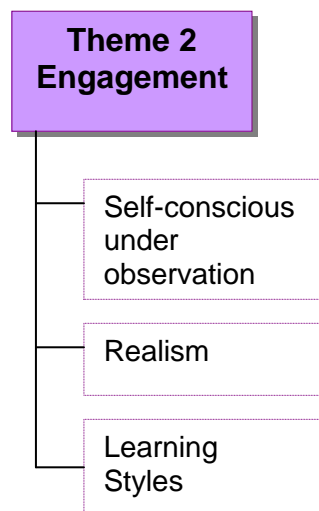
Diagram 4.3 Theme 2 and associated clusters

4.4.1 Self-conscious under observation

This was the students' first experience of simulation as well as being filmed during the simulation event and having this played back to the class to facilitate review and feedback. There was some awkwardness and embarrassment associated with learning in the SCE, especially under audiovisual as well as lecturer and peer observation and this issue was highlighted previously within the literature (McCallum 2006; Lasater 2007). Like Anna, all the students admitted feeling nervous the first time they experienced the SCE:

> Anna FG2 – *"It's still terrifying - that first time."*

However most found they were able to settle into and engage in the scenarios over the five-week period:

> Bob FG1 - *"The first time I think you're quite conscious, after that you're just 'whatever!" – 'cause we're focusing on what's going on in the scenario – you're "right what's happening with the patient here? What are we going to do?" – you don't really bother as much."*

Bob's comments suggested an underlying concept of progressive engagement and also that he was experiencing *suspension of disbelief.* He was becoming immersed in the illusion that the scenario was real and experiencing 'internal simulation' as described by Rettedal (2009) (cited in Dieckmann 2009). With repeated participation and perhaps a willingness to enter into the spirit of the simulation experience, Bob started to relax and engagement followed; and other group members also reported similarly. However, while some students appeared to be more comfortable participating in simulation exercises within the SCE, there were mixed feelings expressed by other students.

Factors that proved to be contentious for a few students related to being observed, group dynamics and communication and for some this could be inhibiting:

> Beth FG2 - *"It's all so panicking when you are sent in because you know that you are being recorded so you get those nerves that you can hardly think – you just get so worked up and "Oh my, they are watching me" so you keep fearing and you start fumbling instead of focusing and you end up getting lost somehow."*

> Jen FG2 – *"I like it but I struggle with it – I just find it hard when I'm in with other people and certain people take charge and you are suddenly in the corner on a back seat – so you don't learn."*

Feelings like these were expressed throughout much of the group at this stage. Kate (FG1) talked about feeling *'shell-shocked'* when in the SCE and while she and others within the cohort were able to make light of this with the lapse of time, it had been a genuine emotion at that time.

These three students had a range of LS. Jen had a sole Kinaesthetic LS; Kate a combination of Visual and Auditory, whilst Beth had a sole Visual LS. This suggested that at this stage of the study and their education, these feelings were perhaps natural and more related to the new experience of simulation and being observed than influenced by LS.

Beth spoke of '*fumbling*'. This term was previously used to describe the perceptions of newly qualified nurses (n=10) to the transition from student to qualified nurse (Gerrish 1990 and 2000). Gerrish (2000) described "fumbling along' as the 'haphazard manner' in which the newly qualified nurses learned their role due to lack of educational preparation and clinical support. The original 1990 study was later replicated with another similar sample of newly qualified nurses (n=25) using the original grounded theory design (Gerrish 2000). This was in order to determine if changes in nurse education had impacted on the transition of the newly qualified nurse.

The data from both Gerrish's study cohorts (1990 & 2000) were coded, or in the case of the data from the earlier study, re-coded in order to ensure rigour (Gerrish and Lacey 2010) and subject to constant comparative analysis (Charmaz 2006). Whilst the second cohort reported similar stress it was less so than the previous cohort, which Gerrish (2000) attributed to changes in nurse education. This may have been the case but whilst the sample in the original study all graduated from one school of nursing and worked in local hospitals, the sample from the replication study came from a number of educational institutes. In addition, the site used for the second study was in a different part of England. Differences therefore may have been influenced by those factors. Gerrish (2000) stated that although students in both groups reported feeling ill prepared for their new role and accompanying responsibilities, they also reported 'finding their feet' within six months.

Comparisons can be made to the 'fumbling' described by Beth in my study. Like the newly qualified nurses, Beth was anxious, not only about being observed, but also about being expected to carry out tasks she was relatively unfamiliar with in similarly unfamiliar environments (SCE). She described being unable to focus and "*getting lost*".

Gerrish (2000) asserted that transition to qualified status is often tough. However, Beth's narrative indicated that the notion of 'fumbling along' also applied to any new and unfamiliar situation where individuals could experience anxiety. The longitudinal nature of my study was conducive to mapping this concept in terms of ease of student engagement with the SCE and whether or not this lessened with time, as it did for the newly qualified nurses in Gerrish (1990 and 2000).

In my study, some students highlighted group size as an issue. Too large a group size could negate equitable opportunity for all the students to get hands on experience. It was reported that confident people would dominate and '*take over*', as Jen highlighted. Students, like Jen, Kate and Beth with less self-confidence could miss valuable opportunities to gain experience and this could adversely affect their learning experience.

Jen had a kinaesthetic LS preference (a predilection for physical hands on practice as a way of learning) and if she was not able to take an active role in the SCE, she may have found it more difficult to process information. Similarly so for Beth, who had a visual LS preference. It seemed the active 'hands on' approach of simulation may have been more difficult for her initially. The influence of learning styles on the individual student experience of simulation was followed throughout the course of this two-year study and will be discussed more in Chapter 9.

4.4.2 Realism

Realism related to both the authenticity of the environment and the situation, as discussed at the start of this section and is crucial in helping to achieve 'suspension of disbelief' (Seropian *et al.*, 2004; Ker and Bradley 2007).

Most of the students found the degree of realism within the SCE to be genuinely representative of their idea of a real clinical area and this seemed to help with engagement:

> Mary FG1 - *"I felt as if I was in the ward and that a patient was really there."*

> Bob FG1 - *"I'm actually holding the patient's hand and going "you're all right, we're going to get this sorted out" you know, talking as if a real person was there."*

Mary, who had a visual LS preference and Bob who had an auditory LS preference, seemed genuinely able to interact with the mannequin with ease. However for some students, communication was a real issue. They reported finding communication with the simulation mannequins challenging because of the lack of spontaneous conversation.

> Sue FG2 -*"I find that [communication] strange because in your head you know it's not human."*

However, as the following quote illustrated, some students appreciated the usefulness of having challenges such as a non-communicative patient and saw how this could prepare them for practice by replicating situations similar to those encountered in practicum:

> Allan FG1 - *"Walking into a mannequin you feel self-conscious and silly about what you're doing, but it's just the same as going into somebody new you've never given nursing care to before. You don't know what they expect, what they can do for themselves and at the end of the day you've got to ask them – sometimes patients can't tell you."*

There was also the belief expressed by some students that how you behaved in the SCE is not always an indicator of how you will behave in practice, particularly in terms of communication:

> Jack FG2 - *"The communication thing is difficult isn't it, but just because you don't talk to [Simman] doesn't mean you're not going to talk to your patient – you're aware it's a real person sitting in front of you."*

Many students, like Kate (FG1) and Sue (FG2) commented similarly, stating that whilst they found communication in the SCE difficult, they postulated that would not be the case when working with real patients.

4.4.3 Learning Style

At this early stage of the study it became evident that some students found participation with simulation and the SCE easier than others. Across both groups, a number of students referred to the fact that simulation suited their learning style (LS) with comments such as "*I'm visual"* by way of illustration. Following a period of reflection and further review of the transcripts, the theme of learning style was emerging from the data. Most of the students showed a preference for visual LS and at this early stage students with that LS appeared to be the ones who had the greatest connection and seemed more in tune with the SCE (see Table 4.1 earlier in this chapter)

Whilst examining significant statements during the process of investigating the underpinning meaning, it was noted that a number of students used the term 'see' as in "*see where you are making mistakes*" *(*in relation to viewing audiovisual footage); "*look to see what is going on*" (in the SCE*); "cause you can see it, you can remember it*" and "*I thought 'What did I do?'*" These quotations suggested an association with how they might take in and assimilate new information (Race 2005). Visual learners, as described previously prefer reading, writing and observing things such as pictures, diagrams, film clips and demonstrations (Chislett and Chapman 2005). The authenticity of the SCE in terms of equipment, furnishings, sounds would at this stage tentatively appear to have helped those students with dominant visual LS to engage with the SCE.

Mary (FG1) reported being able to engage easily and her narrative "*I felt as if I was in the ward*" suggested that she had entered into the illusion. Mary had a sole visual LS, so this implied that she was able 'believe' what her eyes were telling her she was seeing. Likewise, Bob's (FG1) narratives "*I was holding simman's hand talking as if a real person was there*" and "*focusing on what's going on*" also hint at his ability to enter into the illusion: to be in the moment. Bob had an Auditory LS preference, which favoured listening: to spoken words (self or others) and sounds and noises (Chislett and Chapman 2005), but his second LS preference (by a difference of two points) was visual. Not only did it seem that Bob was influenced by what he saw, but also by what he heard. It may be that the sounds in the SCE (monitors or the mannequins physiological sounds) also helped him to enter into the illusion.

This potential influence of LS was strengthened by Sue's contribution. Sue (FG2) had a strong visual LS preference and this would seem to have been influential in her inability to engage. Sue's hurdle was communication and interaction with the mannequin. She could 'see' that simman™ (the mannequin) was not real "*in your head you know it's not human*" and she was thus able to see through the illusion. At this point in time this affected her ability to engage fully in the SCE. She appeared unable at this point to be able to 'suspend disbelief'.

Two students (Jen and Anna) had a kinaesthetic LS preference, which is a predilection for hands on learning, experiments and concrete experiences. Learning in a simulated clinical environment (SCE) would seem to be the perfect medium for the kinaesthetic learner, as it would facilitate access to concrete hands on experiences. However, Jen's (FG2) contribution indicated that although she liked simulation, she struggled with it. She believed her opportunities to gain hands on experience were marred because "*certain people take charge and you are suddenly in the corner…*"

Anna (FG2) on the other hand did get hands on practice in the SCE and had no such difficulty. It seemed that in order for kinaesthetic learners to gain knowledge of a skill they needed a tangible opportunity to practice. However, unlike Jen who had a sole LS (Kinaesthetic), Anna had a balance of all three LS (Kinaesthetic/Auditory/Visual). There was only one point between each.

Jen, unlike Anna seemed to lack confidence and this may have been a key factor. Had Jen been able to gain some meaningful practical experiences her perceptions may have been different. At this juncture it cannot be assumed that this was due to LS as other factors can influence learning opportunities (Coffield *et al.,* 2004, Race 2005).

At this inaugural stage of the data collection process the issue of LS appeared germane in relation to how well students were able to engage meaningfully with the SCE. Over the course of this two-year longitudinal study I was able to follow this thread to discern any relevance.

4.5 Theme 3 Safety

Learning within the SCE allowed the students to practice and test a variety of clinical skills away from 'real' patients and the focus group discussions pointed towards the concept of 'Safety', not only for the patients but also for the students. Diagram 4.4 below provides a visual representation of Theme 3.

```
┌─────────────────┐
│   Theme  3      │
│    Safety       │
└─────────────────┘
         │
         ├──┌─────────────────────┐
         │  │ 'Guilt free nursing'│
         │  │ Freedom to make     │
         │  │ mistakes            │
         │  └─────────────────────┘
         │
         ├──┌─────────────────────┐
         │  │ Space and Time      │
         │  └─────────────────────┘
         │
         ├──┌─────────────────────┐
         │  │ Fear of looking     │
         │  │ stupid              │
         │  └─────────────────────┘
         │
         ├──┌─────────────────────┐
         │  │ Patient Safety      │
         │  └─────────────────────┘
         │
         ├──┌─────────────────────┐
         │  │ More hands on       │
         │  │ practice            │
         │  └─────────────────────┘
         │
         └──┌─────────────────────┐
            │ Did I do that right?│
            └─────────────────────┘
```
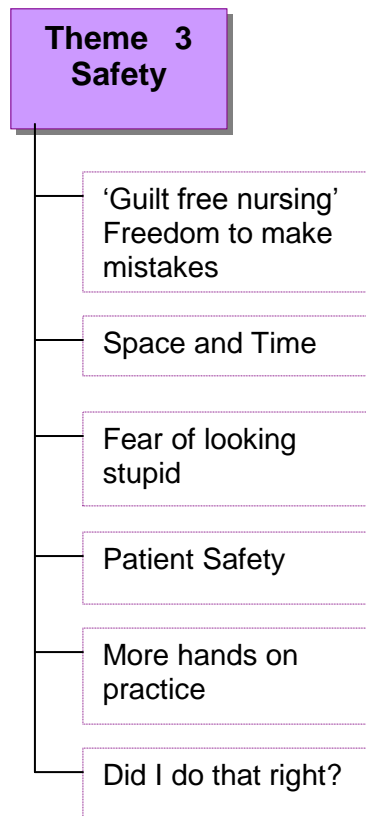
Diagram 4.4 Theme 3 and associated clusters

4.5.1 Guilt free nursing - freedom to make mistakes

The SCE helped the majority of students develop and hone clinical skills before going into practicum. Comments from students' indicated that they felt safe to make mistakes:

> Meg FG2 – *"If you make mistakes nobody's going to get hurt."*

During discussion on this topic Allan (FG1) highlighted the fact that "*you can do it wrong and you get a second chance"* - at the same time coining the phrase "*guilt free nursing"* to illustrate the benefit he saw to simulation. Bob and others in focus group one subsequently adopted the phrase and referred to it on numerous occasions (see Bob's comment below).

Megs comment was in a similar vein to Allan's and in line with other similar comments from both focus groups. Discussions pointed to the fact that students were aware that this was a learning opportunity not available in practicum:

> Bob FG1 - *"You can make a mistake on the mannequin and realise "I've done that wrong – wouldn't get away with that on the ward – it's guilt free nursing."*

Improving and maintaining patient safety and clinical excellence are at the heart of the Healthcare Quality Strategy for NHS Scotland (Scottish Government 2010) and the Scottish Patient Safety Programme (2008). The HEI in my study has over 4,000 pre and post-registration healthcare students who contribute to clinical care in healthcare settings across five health boards. It was anticipated that providing them with the opportunity to practice skills before going into practicum would contribute to the maintenance of patient safety (UWS 2011).

4.5.2 Space and Time

The students had not yet been to their acute clinical placements. However, they understood from their first year experiences that there were distractions and competing demands in practicum that could make it difficult for them to focus on specific tasks. The SCE provided the opportunity to focus on isolated tasks and it also gave them time to do it at a much slower pace:

> Allan FG1 – *"In placement you tend to learn to chat away and you need communication as part of your basic skills, but in the labs you can focus solely on what you're trying to read, checking their obs and what you're taking from that - it helps you concentrate on all the signs and symptoms without having the added ongoing conversation [with the patient] and you think "what am I doing again" and you misread things or you just don't read things properly – I liked it for that."*

Allan was aware that trying to do too many tasks at once distracted him in the early stages. He appreciated being able to focus on isolated skills. As Decker *et al.*, (2008) stated, in clinical areas the needs of patients' must always take precedence over the learning needs of students. Simulated environments address the issue of the needs of the patient being uppermost by giving primacy to the learners needs, thus giving students the opportunity to focus on learning a skill without distraction (Ker and Bradley 2007).

4.5.3 Fear of looking stupid

There was evidence of some anxiety among the participants who feared looking stupid or incompetent in front of qualified nurses. Simulation allowed them to make silly mistakes in a safe environment, rather than in front of clinical staff and patients in practicum. This pointed to the aspect of student, rather than patient safety.

One participant in my study, Kate, vividly recalled an incident in the skills ward, which was very meaningful to her and one that could have caused some embarrassment had it occurred in placement:

> Kate FG1 - *"And I know this sounds stupid but when I was priming [an intravenous infusion] – remember that day when we were doing it and I had to run it straight through, but I'd only ever done it through the machine and I was like "Oh I'm not sure" and then I was like "it's not coming out!" and somebody said "I know it sounds stupid but have you taken the top off?" I mean that is just a stupid thing but if you were in hospital with other nurses you'd just look an idiot and I mean it was something simple."*

However, it was not just fear of looking silly in front of ward staff that worried participants; it included looking less than competent in front of peers. The following quote also suggested a degree of competitiveness:

> Allan FG1 - *"It could be more tribal – you don't want to look silly in front of your peers [group agreement] - you want to get it right and people say "oh that was good" [group agreement].*

Allan's use of the word *'tribal'* suggested an element of competitiveness or vying for position. Whilst tribal can be defined as 'kinship' or 'clan' it can also have derogatory connotations (ODE 2005). It appeared that being accepted by the group was important – appearing *'silly'* could affect how one was viewed by peers. It seemed at this stage that being respected by peers was important. The longitudinal nature of this study allowed this aspect to be followed over the two-year duration.

4.5.4 Patient Safety

Numerous comments and points of discussion indicated that students saw the impact that learning in a simulated environment with simulation mannequins could have on patient safety. Students were aware that the mannequin "…*could be a real person. What if that was a real person in a real setting…*"

> As Mary (FG1) reflected – *"…you think to yourself "what if we didn't do anything like this" and we're being put out to these wards and I'm going "Phwoar!"*

Ker and Bradley (2007) highlighted the aspect of patient safety as being one of the key benefits of simulation and it is also one that participants in similar studies have appreciated (Reilly and Spratt 2007; Baillie and Curzio 2009).

4.5.5 More hands on practice

Whilst both groups felt there were undoubtedly benefits to making mistakes they also acknowledged they would have liked more opportunity for repeated practice in the skills lab in order to rectify errors:

> Jack FG2 - *"...you don't have much time at each bed either – you only have 20 minutes so if one of your colleagues was doing a BP or something and you want to hear it on the manikin as well, you don't have time to do it after them."*

Learning from mistakes was valued and while students were keen to hone skills prior to practicum there was not always the opportunity within the SCE to facilitate this. The simulation literature puts emphasis on the importance of repeated practice at a skill in order to develop competence (Bradley 2006, Ker and Bradley 2007). Focus group discussions from both cohorts suggested that this did not happen because there was insufficient time in the SCE.

4.5.6 Feedback - Did I do that right?

Throughout the focus group discussions the students made it clear that they valued being guided by the lecturers and having any mistakes pointed out to them. Students' wanted to know how well they had performed in the skills ward and how to improve on their practice:

> Beth FG2 - *"I know that when I get something wrong I have my lecturer and I can ask her, so I just feel that I have someone to fall back to, who is teaching me, who is assessing me and can see where I am going wrong and help me there and then."*

Theoretically, this process is known as debrief /feedback and is viewed as the most important aspect of the simulation event (Ker and Bradley 2007). However, some students indicated that feedback on performance was inconsistently provided:

> Jane FG2 - *"There's not much discussion after it, like there is if you're in that room [resuscitation lab] and other people are watching for peer review, but that other room, you're not getting a lot of feedback all the time, which is sometimes what you need, to say that you've done - maybe didn't do – that wrong. It seems as if sometimes it's quite rushed – sometimes you still think "did I do that right?" because there's nobody saying "that was the way" or "maybe you should change that". That's the only thing I think is a bit negative, sometimes you're still a bit unsure and that again is time – you didn't get a second chance to try it again."*

It seemed that feedback was provided some of the time, but not all of the time. Feedback can facilitate critical reflection on the part of the student, which in turn can result in deeper learning (Gordon 2003; Race 2005). Students value feedback, particularly if based on observation of their practice (Bowden *et al.,* 2012). In a small UK based pilot study undertaken by Bowden et al., (2012) and aimed at assessing the value of online video records and feedback, 19 medical students and 11 nurses participated in CPR simulation scenarios. Participants' evaluations were gathered via questionnaire and focus group and one to one interview. Only three nursing students (27%) and ten medical students (52%) participated in the evaluations. Nine (31% response rate) questionnaires were returned; five medical students participated in the one to one interviews; one focus group consisted of two nursing and one medical student and the other had four medical and one nursing student. Despite the limitations relating to response rate; the poor representation of nursing students and the small numbers of participants in the focus groups (Polit and Beck 2008) the findings supported the fact that students valued feedback. The video records allowed students to pause and rewind and view repeatedly. They reported seeing things they had not appreciated had occurred and some wanted a copy to help them measure their future progress and they appreciated the feedback from someone more qualified than themselves.

Not receiving feedback can ultimately lead to false assumptions on the part of the student, who may believe unwittingly that their practice is satisfactory when it may have been otherwise (McKimm 2009). Gordon (2003) asserted that feedback needed to be "practical, timely and concrete".

4.6 Summary

Two focus groups were undertaken by both cohorts of students at the end of their first five-week experience of learning within a SCE, at the start of year 2 of the programme. This was done in order to elicit the perceptions of the students to learning in a SCE and to determine if they felt it had prepared them for practice. The main themes related to preparation for practice; engagement; and safety. See Diagram 4.1 below for an overview of themes and associated clusters.

Theme 1 Preparation for Practicum	Theme 2 Engagement	Theme 3 Safety
Going out into the real world	Self-conscious under observation	'Guilt free nursing' Freedom to make mistakes
Hands on skill development	Realism	Space and Time
Cognitive development	Learning Styles	Fear of looking stupid
Professional role of nurse		Patient Safety
Feeling under pressure		More hands on practice
Development of confidence and competence in skills		Did I do that right?

Clusters of Themes

Diagram 4.1 – Thematic Analysis of Focus Group Interviews

Exposure to the SCE prior to going out into practicum was generally a positive experience for the students. On the whole it helped to allay fears by facilitating their transition into a clinical environment and familiarisation with equipment and procedures.

Students valued the risk-free aspect and appreciated and benefited from the learning opportunities that came with being able to make mistakes safe in the knowledge that no harm was caused to patients. However, students needed and wanted to be supported within this environment to minimise anxiety. Findings highlighted the fact that not all participants had equitable and repeated opportunity to develop the key skills required to transfer to practicum.

At this point in the time-line, feedback was an essential component of simulation, which most of the students' appreciated and saw as a valuable learning tool. However, whilst there was evidence of its inclusion it needed to be more structured and consistently provided.

Learning in the SCE primarily helped most of the students to gain psychomotor skills and also facilitated some of the group to start to develop cognitive and affective skills. However, this was not the case universally as some students struggled to take responsibility for their own knowledge deficits and undertake self-directed learning in preparation for the SCE sessions. The consequence was that they often struggled to participate effectively in the SCE.

The issue of learning styles (LS) emerged from the student comments and consequently hinted at the possible influence this could exert on learning within the SCE. Student's individual learning style preferences were identified, using the VAK Learning Style Inventory (LSI). Six students had bi-modal preference; one had a multimodal preference and four has a single LS preference. Of all the students, a Visual LS was present in ten of them. One student had a sole Kinaesthetic LS. At this juncture it was unclear if simulation was better suited to one particular learning style but as the study progressed over the two-year period the on-going relationship between these two factors was followed.

The next stage of data collection involved one to one interviews with students at the end of their first clinical placement. This occurred five to six weeks after the focus group discussions, still within Year 2 of their programme. The focus of that interview was to explore whether or not learning in the SCE had, as anticipated by the students, prepared them for practicum. See Diagram 4.5 below for an illustration of the course structure in Year 2.

Year 2 comprised two semesters, each 20 weeks in duration (excluding holidays). In each semester there were two theory modules and two practice learning experiences (PLE) in practicum, each five weeks in duration. Please note that it was only the acute modules (surgical in semester 3; medical in semester 4) that incorporated skills taught in the SCE and therefore it was only in relation to those corresponding clinical areas that I interviewed students.

It should also be noted, while viewing the course structure that in each semester students were split into two groups and while, for example one group undertook the surgical module (and corresponding PLE), the other group undertook the older adult (and corresponding PLE) and then swapped. This format was repeated in Semester 4.

| Semester 3 Year 2 5 week Theory Surgical | → | Semester 3 Year 2 5 week PLE Surgical | → | Semester 3 Year 2 5 week Theory Older Adult | → | Semester 3 Year 2 5 week PLE Older Adult | → |

| Semester 4 Year 2 5 week Theory Medical | → | Semester 4 Year 2 5 week PLE Medical | → | Semester 4 Year 2 5 week Theory Community | → | Semester 4 Year 2 5 week PLE Community |
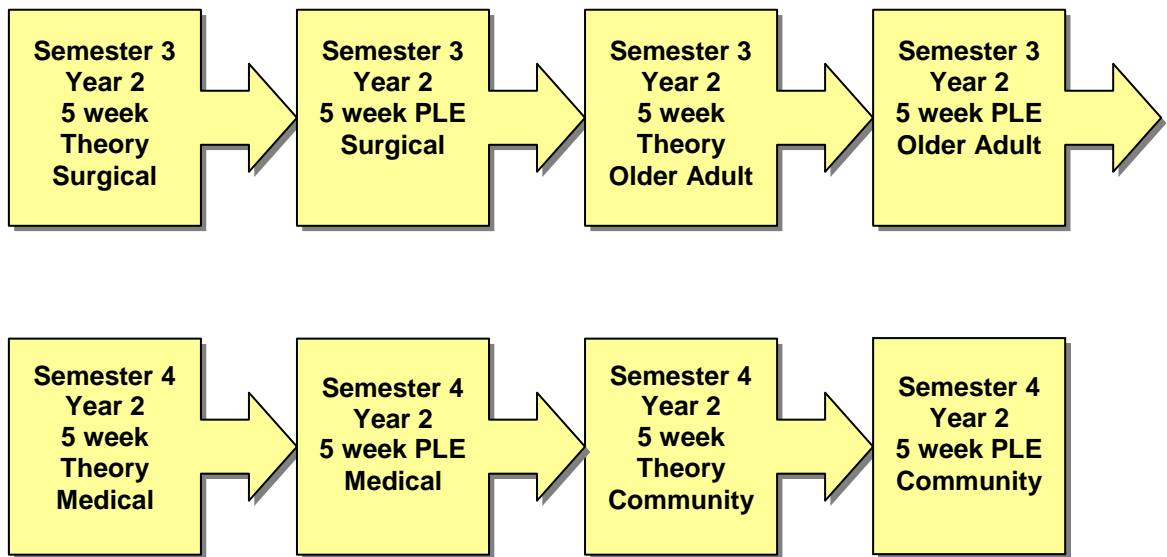
Diagram 4.5 Course structure of Year 2 of the Adult nursing programme.

Chapter 5 Findings from Interview 1

5.0 Introduction

This chapter contains the findings from the first set of one to one interviews. Findings from subsequent interviews will be presented in the proceeding chapters, before findings from each round of interviews are examined for similarities, differences and patterns of progression. Finally they will be related to each of the research questions. The unique longitudinal nature of this study served to showcase the students' journey and this is mirrored in the method of presentation of the findings.

One to one interviews were carried out with the remaining participants (n=11). One student had voluntarily withdrawn from the study in accordance with participants' right to withdraw (RCN 2009). Although difficult to predict with certainty, it was not anticipated that this withdrawal would greatly affect the representativeness of the sample to the wider population. Purposive sampling ensured that only participants with experience of the phenomenon were selected, ensuring data that was rich in information (Streubert and Carpenter 2011).

Each student agreed to undertake four one to one interviews over a two-year period at roughly six-month intervals. The first three interviews occurred at the end of a clinical placement, preceded by the related theory module. The clinical skills taught within the modules related to the clinical placement areas (practicum) students were allocated to during that semester (See Table 5.1 – area highlighted in blue relates to interview 1, the focus of this chapter). The final interview occurred at the end of the final practice placement.

Interview	Year /Semester	Specialty (in practicum)
1	Yr 2 - Semester 3	Surgical
2	Yr 2 – Semester 4	Medical
3	Yr 3 – Trimester 1 & 2	Acute and Community
4	Yr 3 – Trimester 3	Management

Table 5.1 Relationship between interview 1, stage of training and simulation focus

5.1 Interview 1

Eleven students were interviewed at the end of their first clinical placement. The main emphasis of the focus group interviews concerned eliciting student's perceptions of simulation and exploring whether or not they felt it had prepared them for practicum. The initial one-to-one interviews were concerned with, amongst other things revisiting this concept and reviewing if on reflection this had been the case, and related to research question 1. Findings also helped to inform in relation to the other research questions.

Research Questions

1. How does learning through simulation facilitate individual student learning and influence preparation for practice?

2. How does simulation support the development of clinical skill proficiency in the psychomotor, cognitive and affective domains?

3. What factors facilitate or inhibit student engagement with the simulated clinical experience?

4. In what manner are students' able to transfer skill gained in the simulated setting to practicum?

Interviews lasted an average of 45 minutes, (range: 22 to 60 minutes). A general opening question was asked and an interview guide prepared to maintain the focus of the interview (see Table 5.2).

Interview 1 Topic Guide

"In the focus group you talked about how useful everyone found simulation and how you felt it had helped prepare you for coming into clinical practice – do you still agree with that and has simulation played a part in that?"

"Would you like to tell me about the skills you have been using whilst in placement?"

"Does anything else help you to develop your clinical skill in placement?"

"Do you feel confident in what you are doing?"

Table 5.2. Interview 1 Topic Guide

Using Colaizzi's (1978) mode of data analysis, significant statements emerged from the finding. These were arranged into 13 clusters of themes. Clusters of themes were subsequently organised into three main themes: 'Preparation for Practice', 'Transfer of Skills' and 'Other Influential Factors'. See Diagram 5.1 for a visual representation of the themes and associated clusters. There is no hierarchy attached to the themes.

```
                    ┌─────────────────────────────┐
                    │ Thematic Analysis of Interview 1 │
                    └─────────────────────────────┘

   ┌───────────────┐      ┌───────────────┐      ┌─────────────────────┐
   │   Theme 1     │      │   Theme 2     │      │     Theme 3         │
   │ Preparation   │      │ Transfer of   │      │     Other           │
   │ for Practicum │      │   Skills      │      │ Influential Factors │
   └───────────────┘      └───────────────┘      └─────────────────────┘
```

	A head start	Visual Mental Model	Role model/ mentor
Clusters of Themes	Fitting in	Authenticity of SCE	Student attitude/ behaviour
	Lack of opportunity	Self - efficacy	The value of service users
		Menu of experience	Peer support
			Feedback – did I do that right?
			Learning Style
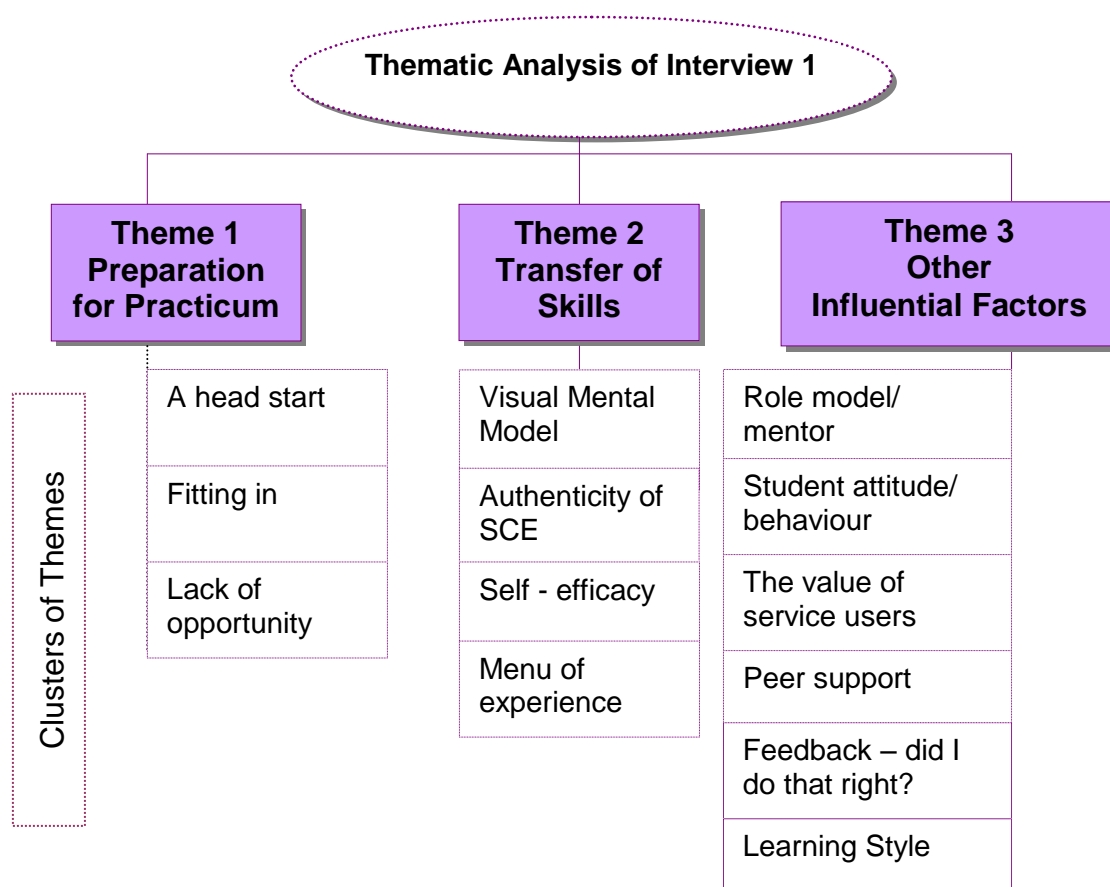
Diagram 5.1 Thematic Analysis of Interview 1.

5.1.1 Overview of emerging Themes

Diagram 5.1 represents the clusters of themes that emerged. Theme 1 depicted how students felt simulation prepared them for practicum. Learning clinical skills and duties in the SCE gave them a head start, helping them adjust to the ward environment. However, some students felt ill prepared, reporting that their placement offered little opportunity to practice the skills learned.

Theme 2 identified factors influential in helping students transfer skills learned in the SCE to their clinical areas. Concrete experiences of practicing skills helped them recall the procedures through a reflective process. Realism of the simulation events, students' self-belief in their own capabilities and available opportunity to apply the skills once in practicum were also instrumental.

Theme 3 concerned factors out with simulation that helped students develop their clinical skills. Staff, fellow students and patients were a good source. Students' valued feedback on their performance although this was not consistently received. The impact of individual learning style started to emerge.

5.2 Theme 1. Preparation for Practicum

Students' perceptions regarding whether or not simulation had made a contribution to preparedness for practicum were, although predominantly positive, also peppered with some mixed reactions. For example, they had an idea of what to expect and were able to participate in clinical duties more readily. However, opportunities to practice skills were dependant on the menu of experience available in placement. A visual representation of Theme 1 and its clusters is presented in Diagram 5.2 below for a visual representation of Theme 1 and its clusters.
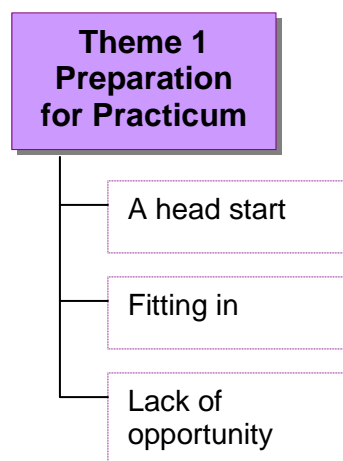
Diagram 5.2 Theme 1 and associated clusters

5.2.1 A head start

There was some synergy between the findings from these initial one-to-one interviews and the focus group. The majority of students (n=9) believed that learning in the SCE had, as they had anticipated, prepared them in some way for practicum. Students' confirmed that having the opportunity to practice a range of clinical skills in the SCE, such as aseptic technique and recording systemic observations, as well as the opportunity to become familiar with equipment encountered in practicum was very helpful. It provided a head start, in terms of how quickly they could actively participate in clinical care. Anna's comment is illustrative of similar comments from other participants:

> Anna – *"I had done suture removals [in SCE] and knew what to expect, fluid pumps, general observations, aseptic technique. At the [focus group] meeting I said I was totally clueless to it all, so it prepared me and I knew what I was expecting…I still got shown what to do, but it [the skill] was very similar…having the practice [in SCE] meant that I could then go on and do it instead of having to be shown it two or three times – it was only once. It did help."*

From the interviews it was evident that students wanted to be useful to the ward staff and simulated practice helped most of them achieve that because they rehearsed skills relevant to clinical areas. Subsequently the majority of students felt they were able to contribute to the work of the ward much more quickly than they perhaps would have had they not had simulation.

5.2.2 Fitting in

Feeling accepted by the ward team in terms of fitting in is important to students (Gray and Smith 1999). Within the literature the term used to describe this process is 'socialisation', which is defined as 'make newcomers behave in a way that is acceptable to their society' [in this case nursing] (Gray and Smith 1999; ODE 2005).

Beth discussed how simulation helped with aspects of clinical socialisation:

> Beth - *"I know what is being done and how it is being done, so I just feel I have fitted in so well – but it was the simulation, because I saw how to work in an environment - like entering a treatment room [in simulation] and you don't know where things are and how you move and I was confused, so that experience was really great. When I worked in the treatment room here [practicum] I thought 'Oh great' and it was fine, I knew where things were so that was a really good experience"*

A purposive sample of Year one student nurses (n=10) in Gray and Smith's (1999) 3-year longitudinal Grounded Theory (GT) UK based study were anxious about going into their first clinical environment due to fear of the unknown – they did not know what to expect. Once there, they reported that the reality of clinical practice did not match their expectations. Similarly, a sample of first year students (n=5) in Higginson's (2006) UK based GT study reported fears and worries of a similar nature. Apart from concerns about dealing with bodily fluids, providing personal care and death, they worried about socialisation issues such as how to act and what their role would entail.

At the time of Gray and Smith's (1999) study, SCE's such as those which are the focus of this study, had not been formally introduced into undergraduate nurse education and were not commonplace (McCallum 2007). The turn of the 21st century saw a concentrated emergence of SCE as the result of a number of drivers, such as changing healthcare policy and reduced placement availability discussed in Chapter 2 (Scholes *et al.,* 2004; Bradley 2006). Like Gray and Smith (1999) learning in a SCE was not the focus of Higginson (2006) either. The focus was on identifying students' worries about their first year of training. For both groups of students, learning in a SCE may have eased some of the anticipatory anxiety. However, whilst one cannot make assumptions regarding this, preliminary findings at this point in my study suggested that learning in an authentic SCE helped prepare several of the students by de-mystifying some of the routine practice they would encounter. They reported that this subsequently helped them to fit in with ward practices.

It's worth noting that whilst learning in a SCE helped most of the students in my study when they went into practicum, they did not appreciate this until they got there. Only then did they seem to recognise the 'head start' it gave them. In all likelihood, learning in the SCE may not have alleviated initial anxieties prior to a first placement, as some apprehension is commonplace when going into any unknown situation.

5.2.3 Lack of opportunity

However, not all students believed that learning skills in the SCE had helped them in placement. Sue and Jen both felt that the skills taught in simulation had done little to prepare them for their first five-week ward experience. Both reported having had little opportunity to practice the skills learned in simulation in their current placement:

> Sue - *"No, because it's not that kind of ward really…I honestly think though, what you learn is college is what you learn in theory, but it does not really prepare you for the real thing."*

Clinical skills development in practicum is dependant on a number of factors. One important factor is the menu of experience available within the placement (Gray and Smith 1999). Sue in this study had been on a ward with a specialism that did not provide her with opportunity to practice such skills as naso-gastric tube insertion, suture removal, and wound dressing.

In addition, Jen believed that skills taught within simulation should focus more on basic care needs of patients. She recounted a number of small instances from this first year two Adult branch placement whereby she did not know how to carry out a seemingly simple task and was left feeling silly and ill prepared:

> Jen – *It was so silly, someone said 'go and make that bed and put hospital corners'. I was in a BUPA care home [in Year 1] and it was fitted sheets – I felt so silly because I genuinely did not know how to put hospital corners on a bed"*

Evidently, Jen's placement experience did not meet her needs at that time. In order to gain proficiency, opportunities to apply skills need to be available (Meyers *et al.,* 2007). Placements for students in this study varied, but what Jen's view illustrated was that it was often the seemingly simple things that students missed out on, which could have a detrimental effect on their self - confidence. Self-confidence is a belief in one's abilities, often referred to in the literature as 'self – efficacy (Bandura 1993). Negative remarks or lack of support from placement staff can have a pronounced degenerative effect on the self–efficacy of students (Levett-Jones and Lathlean 2008), which in turn can affect their willingness to participate or seize future opportunities.

Levett-Jones and Lathlean's (2008) mixed methods cross sectional study explored student nurse's experiences of belonging when on clinical placement. Participants were third year nursing students recruited from two universities in Australia and one in the UK. Data collection involved survey (n=362) and semi-structured interviews (n=18), but only the findings from the interviews were discussed and they focused on factors that influence students' experiences of belongingness. In their thematic analysis of the interview data Levett-Jones and Lathlean revealed that the need to belong was a strong motivator for learning. If students felt welcomed into the ward, they found it easier to learn. This was more important to them than the nature of the work. Students increased confidence as a result of feeling they belonged gave them confidence to ask questions and empowered them into taking more responsibility for their learning experiences. Students who did not have a sense of belongingness experienced increased anxiety and worried about getting into trouble; making mistakes; saying something foolish.

Despite the small sample size and the fact that it was not clear how many students from each country took part in the interviews, these findings show, from the student perspective, the importance of providing students with supportive and compassionate learning environments (Holloway and Wheeler 2010). They also show how incivility, intended or otherwise, can have detrimental affects on self- esteem and learning.

In addition to Jen's lack of opportunity to practice skills was the issue of Jen's preferred learning style, which was Kinaesthetic (a preference for active participation). During her interview she described how she was unable to gain much opportunity for hands on practice in the SCE. This issue is expanded in subsection 2.3 of theme two later in this chapter. The fact she was not able to actively 'do' a skill may have been detrimental to her learning (Chislett and Chapman 2005). The development of skills competence is dependant on experience of practicing the skill (Benner 1984). The impact of Jen's LS on her clinical experience will be followed over the course of this longitudinal study.

5.3 Theme 2. Transfer of Skills

This theme had very close links to the previous theme of preparation for practice, but related specifically to the ease at which students felt they were able to transfer the skills learned in simulation to practicum and to real patients. Skills included aseptic technique, suture/staple removal, intravenous infusions, and systemic observations; and non-technical such as communication, numeracy and decision-making. See Diagram 5.3 below for a visual representation of Theme 2 and its clusters.

```
┌──────────────────────┐
│       Theme 2        │
│  Transfer of Skills  │
└──────────────────────┘
     │
     ├──── Visual Mental Model
     │
     ├──── Authenticity of SCE
     │
     ├──── Self - efficacy
     │
     └──── Menu of experience
```
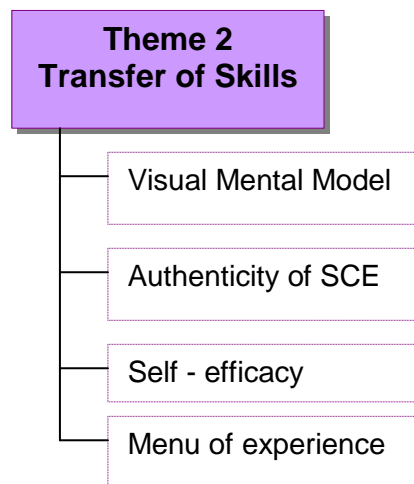
Diagram 5.3 Theme 2 and associated clusters

Although an estimated 10-13% of new learning is actually transferred over to the workplace (Meyer *et al.,* 2007), being able to transfer ('*carry over')* learning from theory to practice is a major indicator of successful learning (Alliger and Janak 1989; Miller 1990; Haskell 2001). Findings identified a number of intrinsic and extrinsic factors, which seemed to contribute to this such as visual mental model, authenticity of the simulation event and student confidence.

5.3.1 Visual Mental Model

Acting out clinical scenarios in the SCE provided many students with concrete experiences they could use as a frame of reference when in practicum:

> Jack – *"… if it had not been for simulation then I would have assumed the way I was being taught in here [practicum] was the right way, whereas I am able to recognise that it's not – I was doing one [dressing] a couple of weeks ago and asked 'why are we not using an aseptic technique?' and she said it was not invasive, but I would have thought an open wound was invasive. I didn't argue but asked if I could do the aseptic technique so that I could practice - she didn't like the fact I knew more than her or whatever - anyway that worked out fine"*

> Jane *- I go over it [in my mind] and I think this is what happens… you make hundred of mistakes but I think back to when we done it [in the SCE] like aseptic technique hands and removing staples and things like that, so for me I think it made a big difference."*

Learning a skill in a SCE provided students with a visual mental model to refer back to when replicating that skill in practicum and this was generally viewed as helpful. Mental models are internally constructed from knowledge based on previous experience (Davidson *et al.*, 1999). A mental model derived from a concrete experience in the SCE has the added dimension of providing the students with a visual memory of the action/task undertaken. By referring to a 'visual' mental model previously constructed within the context of a SCE, the student could, as described by Boud (2001: in English and Gillan 2001) as anticipatory reflection or Greenwood (1998) as reflect–before–action.

Jack and Jane who appeared to refer back to what they had done in the SCE, both have a Visual learning style (LS) preference. Visual learners prefer to observe things like pictures and demonstrations and to read instructions before carrying out a task. However Jack and Jane also had Kinaesthetic LS preference within 2 points of their dominant LS. This suggested that they might also benefit from the hands on practice favoured by Kinaesthetic learners (Fleming 1995; Chislett and Chapman 2005).

Reflection–before–action involves thinking through what needs to be done and how it will be done prior to undertaking the intended action/ task. Mary based her reflection-before-action on experiences from the SCE, of both technical and non-technical skills:

> Mary – *"So it is just thinking before you do anything – what do I need to ask – I'm involving the patient - not just going ahead without asking them – I'm not just putting an obs machine on and expecting them to lift their arm – it's remembering to say everything – that's what we learned in college."*

Mary had a preferred Visual LS and seemed aware of the more complex needs of a real patient in comparison to those of a mannequin. Consequently, she was able to incorporate these non-technical skills with the more technical ones.

5.3.2 Authenticity of Simulation

It was recognised by many of the students that transferring a skill to practicum could be more challenging and this was due to the fact that real patients or real human tissue responded differently than a simulation mannequin to an intervention/ interaction:

> Beth – *"A response is lacking in those models* [simman] *we got in classes so it is not really challenging – but there is a direct response from the patient [in placement]."*

> Meg – *"If I had not done it in simulation it would have been worse.*
> *In simulation it was easier because there is no actual wound and*
> *there is no crusting or anything like that, but there was a wee bit*
> *crusting and so I just wiggled the sutures a wee bit gently and*
> *they came out – so it was really quite good doing that because I*
> *don't think I would have wanted to do it if I had not practiced [in*
> *simulation] first."*

Sue also indicated that suture removal using flesh coloured sponge pads, was not an authentic representation. Despite this disparity in terms of authenticity, students seemed aware of the need to adapt practice in order to transfer it to practicum.

For Allan, applying a skill in practicum was no different to applying one in the SCE. He too recognised the need to modify the skill to meet the needs of a real patient:

> Allan – *"Basically it's the exact same, just a different setting,*
> *different circumstances – you've just got to adjust to the patients'*
> *– doing a procedure like taking out sutures on the false skin it is*
> *the exact same. I did mine on [a patient] who had an RTA - he*
> *had pins in and 25 staples and 14 sutures. The charge nurse let*
> *me do it - the exact same basically to what we learned in college"*

Lack of authenticity in some aspects of the SCE may potentially impede transfer of learning (Park and Wentling 2007). Transfer of knowledge/skills is increased if the learning experience has a high degree of authenticity (Lauder *et al.,* 2004). Lauder *et al.,* (2004) described how transfer of learning was also helped by the use of a 'community of practice'. Communities of practice are based on the 'Situated Learning Theory' of Lave and Wenger (1991), which was discussed in Chapter two. They purported that learning did not occur in isolation but within a context specific community that included experienced practitioners as teachers and role models (lecturers and clinicians). The impact of lecturers and clinicians will be returned to in later chapters, where it had more focus from the perspective of the students in my study.

5.3.3 Self Efficacy

Self-efficacy as highlighted earlier is an aspect of confidence. More specifically, it concerns self-belief in one's abilities (Bandura 1993). The majority of the students reported feeling confident in their ability to undertake skills and as Jane's comment illustrated, were helped by being able to relate it to previous exposure and practice within the simulated environment [SCE].

> Jane – *"Because I had done it in simulation I knew I could do it – I think it helped me quite a lot - you are not shocked at things. When you are asked to go and do something you have more confidence – I feel I have more confidence with a lot of things and just able to go and do them when they say 'go and do an aseptic technique' and things like that. I will go and do it just because I had the practice in simulation."*

> Bob – "*Everything I have learned in there [SCE] I have taken forward to here [practicum], with confidence, and applied it and so far it seems to have worked out quite well for me."*

Previous experience in the SCE gave Jane and others confidence in their abilities to replicate skills in practicum. At this juncture, it appeared that having confidence or self-belief in one's abilities [self-efficacy] meant the students were more likely to participate in transfer of skills to other settings (Bandura 1993).

The literature highlighted the positive effect that simulation had on learners' confidence with regard to both skills acquisition and preparation for practice (Bremner *et al.*, 2006; Morgan 2006; Schoening *et al.,* 2006; Reilly and Spratt 2007). Further to this, Jack described how he transferred the basic skill of aseptic dressing, which he had learned in the SCE and at the same time added to his skills repertoire:

Jack – "That was a totally new skill for me - you could take the aseptic technique and transfer those skills, but the actual packing itself I learned that here. It was scary at first – but I just did that one there and I was not even thinking about it I was just doing it and the patient assured me it was not painful"

Simulation seemed to facilitate Jack and others to develop competence in a technical skill that could be transferred to practice and which could act as a springboard to the acquisition of other associated skills. Implicit within Jack's comment was his awareness that this was a real patient. He sought reassurance that the patient was not experiencing pain from the procedure and this may be viewed as evidence of understanding of the sentient complexities of nursing procedures and practices.

For one student however, it seemed that her lack of self-efficacy sometimes impacted negatively on her clinical experience in. Jen stated that when other students were present in in practicum she shied away from participating.

Jen – " people say I have a great manner and I do find I am confident talking to [patients] but I find I tend to squirm away when there are other students – I go really quiet and will not answer, I will leave them to do all the talking…cause I feel they are better than me".

Most of the students interviewed, actively participated in simulation despite being nervous. Jen however, did not. She disliked it intensely and her narrative revealed that she actively tried to avoid participation:

Jen – "When you are in the simulation room you have no chance! You are pushed aside, you are told what is wrong with the patient; what has to be done to the patient; and you just stand in the corner – and that's from another student! – so that kind of makes you feel and think – Oh my God! you just don't want to do it again. I do not like simulation at all – I hate it – always finding ways to get out of it"

Jen's preferred LS was kinaesthetic. Kinaesthetic learners have a preference for trying things out practically. They like to actively experiment, to touch or hold things (Fleming 1995; Chislett and Chapman 2005). Theoretically speaking, Jen should have been well suited to the hands on approach of the simulated environment. It would seem that other factors might have affected Jen's ability to engage with simulation and the SCE.

Lauder *et al.*, (2008) discussed how lack of self-efficacy, identified first by Bandura (1986) could cause heightened stress and anxiety in learners, subsequently hindering the appropriate use of cognitive strategies. Bremner *et al.*, (2006) and Lasater (2007) both reported that one novice student nurse in each of their respective studies found the anxiety involved with participating in the simulation exercise to be inhibitory initially. It is important that the needs of all students are catered for and if a minority of students find engagement with simulation difficult, strategies must be put in place to provide support to them. Jen recounted carrying out skills *"at a snail's pace…because I am not 100% sure of what I'm doing"* when on her own. Her reported avoidance of active engagement in the SCE might be linked to her lack of self-efficacy in relation to skills. The longitudinal nature of this study allowed the issue of Jen's lack of self-efficacy and her learning style [Kinaesthetic] to be revisited during the two-year duration and is explored more fully in the discussion in Chapter 9.

5.3.4 Menu of experience

Development of skills can be influenced by the placement itself with regards to the menu of experience available clinically to support the transfer of skills learned within the SCE (Meyer *et al.,* 2007; NES 2007). Mary, in common with a number of students cited the fact that she had repeated opportunity to practice a particular skill [injections and removal of staples/sutures] and saw this as being instrumental in the development of competence and confidence.

> Mary – *"My mentor said I have loads for you to do [injections] – you are going to stick with me and do them – see by the end of the night I just picked it up. It was great, it has taken all that [nervousness] away from me"*

On the other hand, some students recounted how lack of opportunity in practicum adversely affected their prospects of practicing skills learned in simulation. Kate in particular felt she always lagged behind:

> Kate –*"I always seem to be a wee bit behind…it will probably not be until the next placement that I get to see sutures… I've not had a chance to do a naso-gastric* [2] *tube either – there were loads at my last [Year 1] placement too!"*

It would appear that elements within clinical practice affected the opportunity for students to transfer skills undertaken in simulation and to develop competency. For some students there was missed or lack of opportunity due to factors out with their control. One of the drivers for the integration of simulation into healthcare education was the recognised lack of availability to practice key clinical skills in practicum (NMC 2007).

Having practiced skills in the SCE, opportunity is then required in real clinical settings to facilitate the development of competency (Ker and Bradley 2007; Meyer *et al.,* 2007). Clarke and Holmes' (2007) UK based qualitative study involving newly qualified nurses (n=34), experienced nurses (n=66) and ward managers (n=5) revealed that newly qualified nurses lacked competence in many skills required to be able to work independently. This supported the belief that students were not being exposed to a wide menu of skills experience during their education (NMC 2007).

5.4   Theme 3. Factors out with simulation, influential in the development of skills competency

Towards the end of each interview each student was asked *"Has anything else, apart from simulation helped you in the process of developing your skills?"* Among the themes that emerged from this question was the impact of the mentor, the patients, and peers. Diagram 5.4 provides a visual representation of Theme 3 and its clusters.

---

[2] Theory and practice regarding this skill was first delivered in Year 2. Year 1 students were not permitted to undertake it in practicum.

```
┌─────────────────────┐
│      Theme 3        │
│      Other          │
│ Influential Factors │
└─────────────────────┘
         │
         ├──── Role model/ mentor
         │
         ├──── Student attitude/
         │     behaviour
         │
         ├──── The value of
         │     service users
         │
         ├──── Peer support
         │
         ├──── Feedback – did I
         │     do that right?
         │
         └──── Learning Style
```
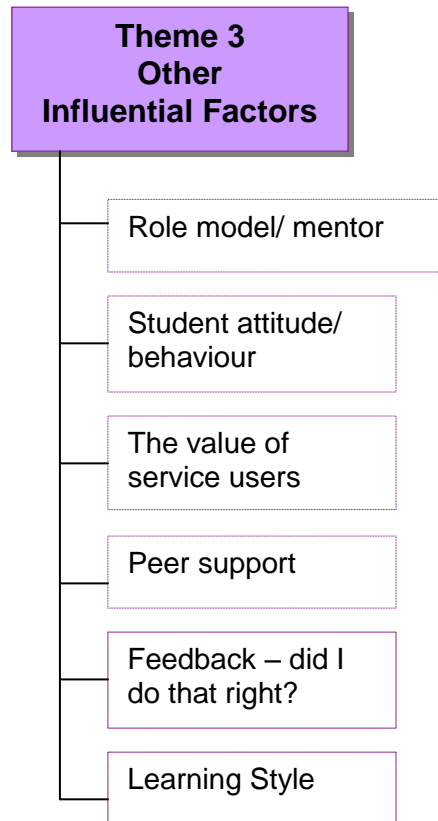
Diagram 5.4 Theme 3 and associated clusters

5.4.1 Role Model/Mentor

The most prevalent factor identified as being influential in helping students develop their clinical skill proficiency was that of 'role model or mentor'. This ranged from simply observing how registered staff conducted themselves professionally on a daily basis; to how instructive, supportive and facilitatory they were to the student.

Sue had indicated earlier that she did not feel simulation had prepared her for her particular placement [Ear, Nose and Throat (ENT) ward]. However she did believe that her placement mentor had helped her skill development.

> Sue – *"My mentor has let me take out [nasal] packs and has had the confidence in me to let me do it – she basically said I had watched it twice and I could do the next patient. I have learned a lot – she is very approachable and I can ask questions if I don't understand. I've been lucky, there have only been about two shifts I've not worked with her"*

Conversely, having a poor relationship with a mentor can have a detrimental effect on acquisition of skills. Jen believed her opportunities were curtailed because she had a *'quiet'* mentor. She perceived that another student had more opportunities because she had an *'authoritative'* mentor. The value of a good mentor/role model has been highlighted in the literature (Gray and Smith 2000; Henderson 2002; Meyer *et al.*, 2007).

A number of the students highlighted ways in which they had learned from all the nurses, not just their mentors. Bob's dialogue is representative of those:

> Bob - *"I watch other people - how they conduct themselves, how they do things, carry out tasks and I think how did you do that? I go and ask them, you know and they take time to tell you."*

Fifty percent of student learning (2300 hours) is practice based (NMC 2010) so the role of the mentor is crucial to the professional development of the student nurse (Gray and Smith 2000; Henderson 2002; Meyer *et al.,* 2007; Levett-Jones and Lathlean 2008). Although students are assigned a formal clinical placement mentor all registered nurses have responsibility to support students' in placement and act as professional role models (NMC 2010a).

5.4.2 Students' professional attitude and behaviour

Students themselves were influential in ensuring they got the most out of each clinical placement. At the end of her first five-week placement Anna's self-efficacy had improved. She felt confident in her abilities and was developing awareness of the professional role she had to play within the team.

> *Anna - "…you get into a role of what people expect of you. Stick in, do your job and work on initiative – on my first week I was kind of standing around the nurses' station when they were busy and thinking, what do I do next? – as it gets to week 5 you just go into rooms and see what needs to be done and go in and speak to the patients, make sure they are alright and just make yourself busy".*

Students' perception of their role in placement can influence their learning experience. Anna appeared to have 'found her feet' in terms of knowing what was expected of her and was developing a professional attitude towards her practice experience. This concept was highlighted previously, as 'learning the rules' (Melia 1982) and 'mucking in' (Gray 1997). Gray's three–year longitudinal qualitative investigation into the effects of supernumerary status and mentorship on a group of ten Project 2000 nursing students reported that doing "the simplest of tasks made the students feel more like a nurse" (Gray 1997:151). Being useful was referred to previously in Theme 1 of this chapter in clusters 'A head start' and 'Fitting in'. It seemed however that not all students in my study were able to report similarly at this initial stage.

In comparison, Allan perceived that because he had not initially displayed a professional attitude his practice learning experience had suffered.

> Allan – *"The staff did not kind of take me that seriously as a student. I was not given many clinical duties to do. One staff member asked me if I wanted to be a nurse…and that is when I sat down and thought maybe I am going about this all wrong…I changed my tactics and it worked"*

Most of the students were enthusiastic when describing their experiences and seemed pro-active in terms of seeking opportunities. Allan was enthusiastic despite the experience he described and seems to learn quickly that he could influence his learning experience in practicum.

5.4.3 The value of service users

For some students, seeing the patient's journey first hand helped enhance their knowledge and understanding. They accompanied patients' to theatre and observed procedures, before returning to the ward with them to continue post-operative care, which involved applying key skills learned in the SCE.

> *Jane – "You understand – seeing theatre - you can have a lot more empathy for your patient. I saw what they've been through and can understand the amount of pain they are in and things like that. You understand a lot more about how to care for them because you saw what happened – it was beneficial to me".*

Meanwhile, others revealed increased knowledge and understanding as a consequence of talking to patients themselves about their illness:

> *Sue – "I think we have got to know how the patient feels, how they cope with it and how it [PEG tube] feels going in. They're the only ones that can tell us what it's like – you don't know what it's like – have not got a clue, you are only reading or being told about it…theory is fine to just sort of know what it does, but you need to have an understanding of how the patient who has got it feels."*

Development of understanding sits within the cognitive domain and this theme suggested that students were actively seeking to enhance their levels of understanding. Following the patient's journey and talking to patients about their illness seemed to act to increase the students' awareness of the holistic perspective of the patient. The narratives also suggested that students were developing within the affective domain as well. They were gaining insight into the patient perspective and seemed to be developing empathy.

Access to patients can be a valuable learning opportunity. Some patients, as described by Collins and Harden (1998), play a formal role in teaching (and assessment) as professional or simulated patients. However, they have also long been involved informally on a day to day basis in teaching medical, nursing and other allied health professionals whilst accessing healthcare (Lowe *et al.,* 2008).

Jane and Sue, like other students in my study appeared to be proactive in seeking to improve their knowledge and understanding by accessing the patients they provided care to. Jane and Sue were both visual learners. Perhaps seeing things from the patient perspective, including the interventions helped them develop understanding and empathy. The impact of LS on student development will be followed for the duration of this two - year study.

5.4.4 Peer support

Patients aside, another source identified by two students was that of more senior students within the same placement. They were viewed as being approachable, more accessible and knowledgeable:

> Jack – *"We have a semester 6 student here, so if there is something I don't want to ask the nurses' or they are too busy and harassed I go and speak to her and usually she can explain – and I think I can rely on getting a more up to date answer from her anyways cause she has been recently covering this stuff and some of the nurses' have been qualified a long time and they may not give you as good an answer"*

Aston and Molassiotis (2003) reported on a peer support supervision programme whereby final year students (n=31) provided supervision and support to junior students (n=27). They helped them develop fundamental skills; understand the rationale for basic interventions and to reflect on their experiences. Mentors in turn supervised the senior students throughout this process. This UK based evaluation study utilized a questionnaire comprised of a mix of fixed response questions and free text comments.

Findings demonstrated generally that both groups of students benefited from this approach. Senior students developed skills in teaching and mentoring, whilst junior students felt supported and less anxious about placement. Limitations included the use of a questionnaire to elicit opinions. Questionnaires, even with free text capabilities tend to elicit quite superficial data (Burns & Grove 2010). A focus group may have allowed students to discuss shared experiences and have produced richer data (Kitzinger 1995).

In quantitative terms this was a relatively small study (n=58), particularly as the sample comprised two separate cohorts, so the experiences of and benefits to each were different. Results, though informing of the benefits of peer supervision are context specific (Gerrish and Lacey 2010).

5.4.5 Feedback on performance

Students in my study valued feedback on their performance within the SCE and this was similarly so when they were in clinical placement:

> Jack – "You really struggle to get time alone. I have not even had my midway report and that's me finishing – it's all getting done today – so nobody has actually told me how I am doing. You hope you are doing alright. When I was doing the packing [the wound] I said did I do that alright and she said, "Yes that was fine"

Anna reported similarly with regards to being proactive in seeking feedback:

> Anna – "I am quite forward in asking questions so I always get feedback on what I do. If I am going to do a wound dressing I check that I have got everything in place first and then once I have done it I get someone to check it, to ensure everything is done right – so I get feedback on what I have done".

Jack's comment suggested that mentors' workload may have prevented feedback from happening and linked to his previous comment about seeking advice from students because staff were too busy. A recognised strength of learning using simulation and the SCE is that the learning needs of the student can be given primacy (Ker and Bradley 2007).

5.4.6 Learning Style

Only one student in this round of first interviews overtly mentioned the issue of learning style (LS). However other students did obliquely refer to this phenomenon through their descriptions of how and if learning in the SCE was transferred to practicum. Preferred learning style was an aspect that the literature highlighted in relation to nursing and simulation. Jane believed that simulation suited her preferred learning style.

Jane – *"I am one of those people that visualises a lot and thinking I need to do this and see it as opposed to reading about it – I think it really benefits me"*

Each of the participants in this study undertook a VAK learning style inventory (LSI) to determine their preferred learning style (Chislett and Chapman 2005). As discussed within the literature review in Chapter 1 nursing attracts people who learn through active participation, such as looking at images, videos or practical application (Sewchuk 2005). The literature informs that no one learning style is superior and individuals have a mix of styles that they use, with some more prevalent in individuals than others (Kolb and Kolb 2005; Myers and Briggs 2009). Individuals tend to learn more effectively if teaching and learning strategies are aligned with their preferred LS (Myers and Briggs 2009).

The dominant style within this study was Visual and Kinaesthetic (observers and doers) as first documented in Chapter 4 (see Table 5.3 below for the learning styles of each study participant) and this is in line with findings from other studies involving nursing students (Effken and Doyle 2001; Meehan-Andrews 2009). As described in the above quote, Jane uses visualization to help her learn something. Her LS inventory revealed that she had a Visual/Kinaesthetic mix of LS, meaning that primarily she finds it helpful to observe a skill being done or to read instructions, before going on to the application stage. She also has a Kinaesthetic LS preference, two points behind, which signifies that she also has a predilection for hands on experience (Fleming 1995; Chislett and Chapman 2005). Due to the longitudinal nature of this study and the homogenous sample of students, I was able to revisit the relationship between learning style and simulation as the study progressed.

Cohort	Participant	Learning Style [3]	Engagement with SCE	Notes
1 - FG1	Allan Age: 21-30	Visual/Kinaesthetic	√	
1 – FG1	Bob Age: >41	Auditory/ Visual	√	
1 – FG1	Kate Age: 21-30	Visual/Auditory	√ over time	
1 - FG1	Mary Age: 31-40	Visual	√	
2 – FG2	Anna Age: 21-30	Kinaesthetic/Auditory/ Visual	√ over time	Balanced LS - 1 point between each
2 – FG2	Beth Age: 31-40	Visual	√	Withdrew prior to final interview
2 – FG2	Jack Age: 21-30	Visual/Kinaesthetic	√	
2 – FG2	Jane Age: 21-30	Visual/ Kinaesthetic	√ over time	
2 – FG2	Jen Age: 21-30	Kinaesthetic	X Intense dislike: actively avoided	Withdrew prior to final interview
2 – FG2	Jill Age: 31-40	Not known		Withdrew after focus group
2 – FG2	Meg Age: 31-40	Visual/ Kinaesthetic	√	
2 – FG2	Sue Age: 31-40	Visual	√ over time	

Table 5.3: Characteristics of participants in relation to Learning Style and Engagement.

5.5 Summary

Eleven students participated in the first one to one interviews, which took place at the end of their first, five-week clinical placement in Year 2. The immediate focus of this interview was to elicit if simulation had, as intended helped the students prepare for practice and in so doing answer the first research question. It was also anticipated that the student's narrative would start to address research questions two and three. Diagram 5.1 below provides a visual summary of the Themes and associated clusters, which emerged from these second interviews.

---

[3] Two or Three Learning Styles denote the fact that there was only 1 or 2 points between dominant and second or third preferred LS

Theme 1 Preparation for Practicum	Theme 2 Transfer of Skills	Theme 3 Other Influential Factors
A head start	Visual Mental Model	Role model/ mentor
Fitting in	Authenticity of SCE	Student attitude/ behaviour
Lack of opportunity	Self - efficacy	The value of service users
	Menu of experience	Peer support
		Feedback – did I do that right?
		Learning Style

Clusters of Themes
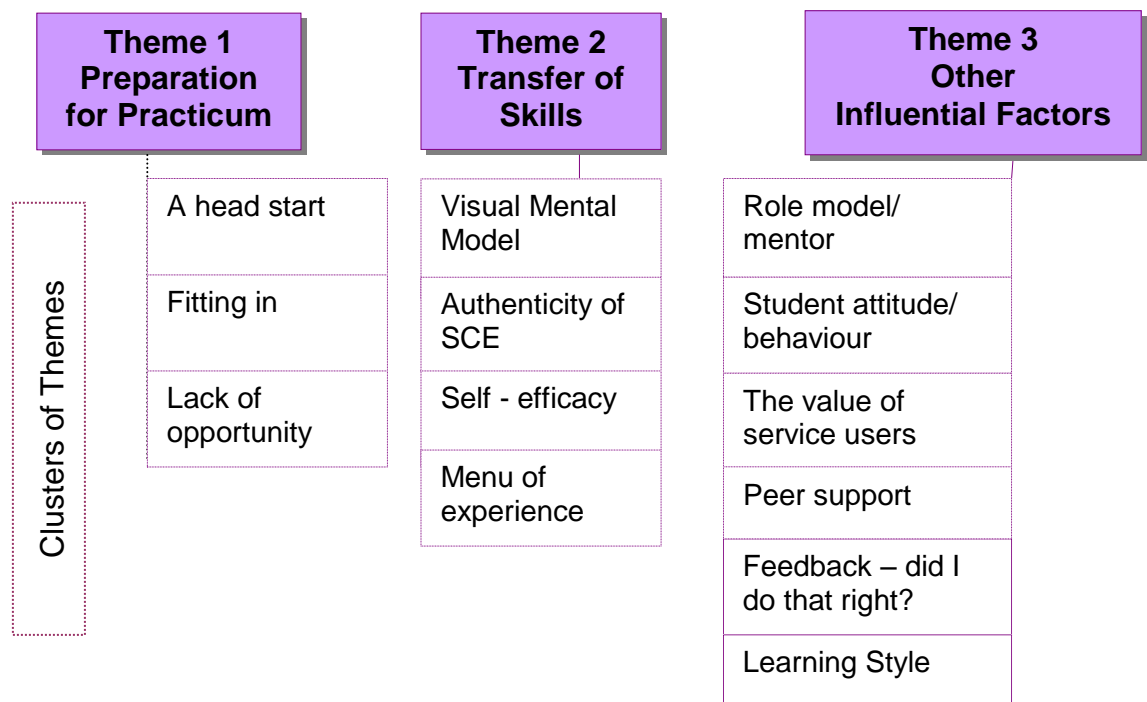
Diagram 5.1 Thematic Analysis of Interview 1.

The majority of student narratives indicated that they had felt better prepared for practicum as a consequence of learning within the SCE. They believed they had a head start by being familiar with equipment, ward layout and having had opportunity to practice some key fundamental skills. However, two students reported that learning in the SCE had not prepared them in relation to skills. Due to limited menu of experience available in their clinical placement areas they experienced little opportunity to apply the skills learned in the SCE. Although able to apply some skills they felt this impacted negatively on their clinical experience.

Practice of the skill in the SCE allowed the students to learn and rehearse the correct procedural sequence via concrete experiences. Subsequent transfer of skills from the SCE to practicum was facilitated for many of the students through a reflection-before-action process, whereby a visual mental model, based on the concrete experience encountered within the SCE, was used to help them recall the procedural steps they needed to apply.

Whilst the authenticity of the SCE had helped many of the students to transfer skills from the SCE to practicum, others had been more skeptical. The majority however seemed to recognise the need to adapt the skills when applying them to a real patient. Most of the students reported increased self-efficacy with regards to their perceived ability to transfer the skills from the SCE to practicum. However, one student expressed self-doubt in her abilities and this may be linked to her dislike of simulation and her active avoidance of participation in it.

Other factors that assisted in the development of skills, knowledge and attitude were access to good role models in practicum; patient's who would willingly share their personal journey; and the student's own attitude towards their professional development. Feedback remained as important to the students in practicum as it did in the SCE. They wanted to know about their clinical performance.

Finally, although only overtly discussed by one student, the issue of Learning Style (LS) was implicit within a number of narratives. For example, Jen's sole preferred LS was Kinaesthetic, which should be compatible with the active hands on element of simulation (Fleming 1995; Chislett and Chapman 2005) and yet she disliked it. It would seem that other factors might also be influential. The relationship between LS and engagement with simulation was followed during the course of this study.

This first round of one-to-one interviews started the process of addressing the first three research questions. The next stage of interviews progressed this process further and saw the re-emergence of the concept of engagement with the SCE. The second one-to-one interview, presented in the next chapter took place at the end of the students' final clinical placement in Year 2. Prior to the clinical placement they were again exposed to a further five-week module incorporating skills learned within the SCE.

Chapter 6 Findings from Interview 2

6.0 Introduction

Findings from the second round of one-to-one interviews are presented in this chapter. The interviews occurred roughly six months after the first interviews, by which time all the students had progressed to Semester four in Year two. Simulation within this semester was scenario-based and focused on a range of systemic medical conditions, in preparation for the students' going to an array of medical placements (see Table 6.1 - area highlighted in blue relates to interview 2, the focus of this chapter).

The simulation scenarios linked to weekly topics and were accessible to the students via a web-based resource (WebCT™). Students were encouraged and expected to undertake self-directed study in preparation for forthcoming simulations. During the five-week theory block students were exposed specifically to simulation within the simulated clinical environment (SCE) for approximately one hour per week, before transferring to a clinical area with a medical focus for a five-week practice block.

Interview	Year /Semester	Specialty (in practicum)
1	Yr 2 – Semester 3	Surgical
2	Yr 2 – Semester 4	Medical
3	Yr 3 – Trimester 1 & 2	Acute and Community
4	Yr 3 – Trimester 3	Management

Table 6.1 Relationship between Interview 2, stage of training and simulation focus.

6.1 Interview 2

The same 11 students were interviewed at the end of their clinical placement. Interviews averaged 55 minutes (range: 38 to 75 minutes). Students were asked to comment on their second simulated experience within semester 4. Interviews commenced with a general opening question used to start discussion. See Table 6.2 below for guide to additional questions.

Table 6.2. Interview 2 Topic Guide

Following analysis of the interview transcripts (Collaizzi 1978) significant statements emerged from the finding. These were arranged into 14 clusters of themes. The clusters of themes were subsequently organised into four main themes: 'complexity of the simulated events'; 'engagement with the SCE'; 'from simulation to real life' and 'factors out with simulation' (see Diagram 6.1). There is no hierarchy attached to the themes.

Diagram 6.1 Thematic Analysis of Interview 2.

225
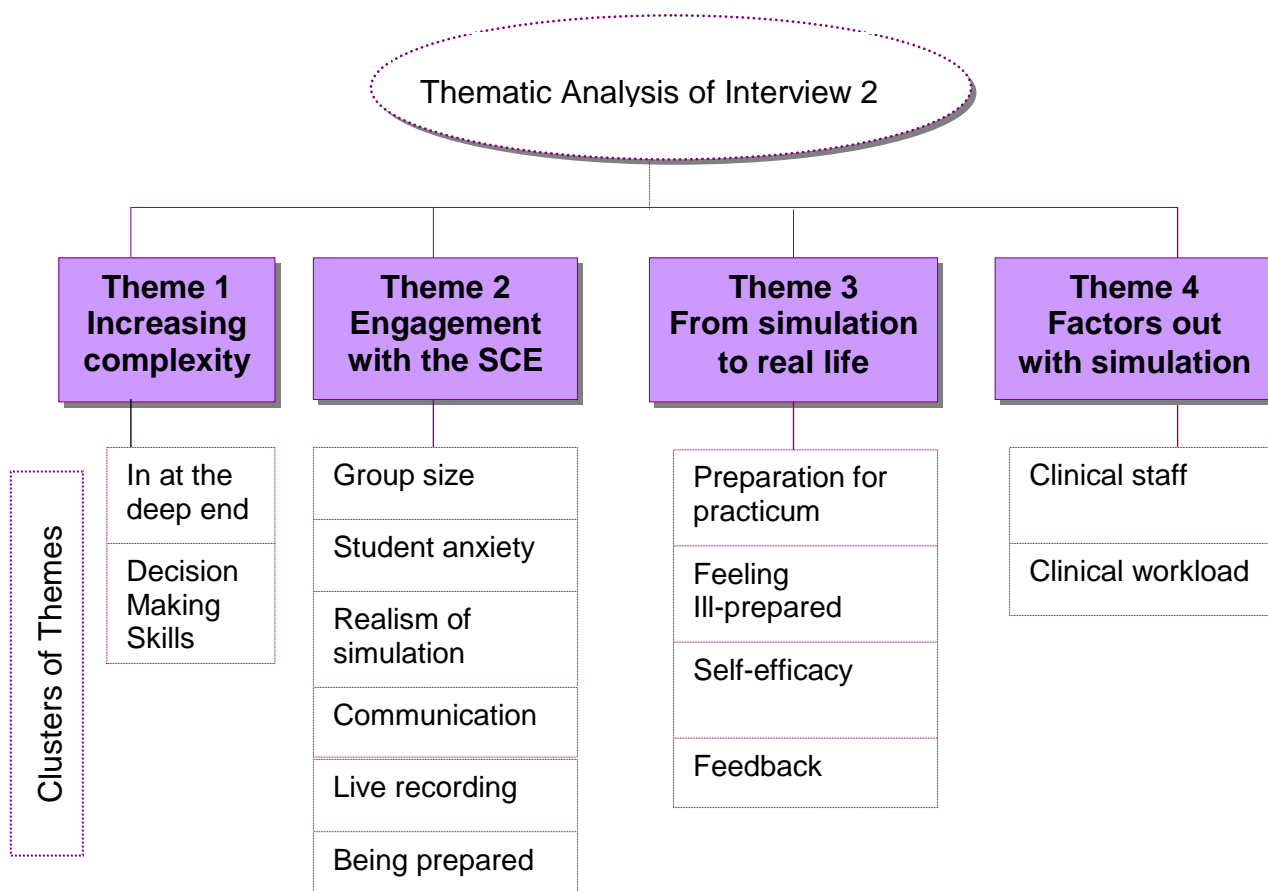
6.1.1 Overview of Emerging Themes

Diagram 6.1 represents the clusters and themes that emerged. Theme 1 depicted how students felt the increased complexity of the simulation scenario's had been challenging, but had helped prepare them for going into practicum. Theme 2 focused on factors, which influenced how well students were able to engage with events in the SCE. Most were nervous and found communication challenging initially but adapted. Smaller groups and undertaking self-directed learning in preparation for the SCE helped.

Theme 3 presented how events in the SCE helped the students prepare for practicum. Although some still felt ill - prepared in relation to underpinning knowledge, most reported improved self-efficacy, which in turn made them more self-assured about transferring skills. Feedback continued to be viewed as important. Finally, Theme 4 was concerned with the impact clinical staff and the ward workload could have on their clinical skills development.

6.2 Theme 1. Increasing complexity of the simulated events

This theme arose as a consequence of asking the students to tell me about their experiences of simulation and how it differed from previous experiences in semester three. Diagram 6.2 below is provided as a focus for this part of the chapter.
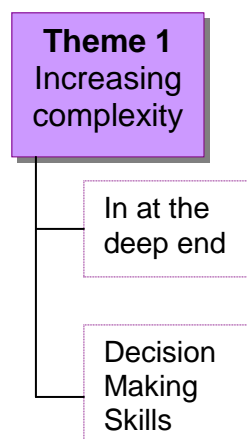
Diagram 6.2 Theme 1 and associated clusters

6.2.1 In at the deep end

All eleven students shared the view that simulation had changed since the previous semester. In particular, the complexity of the simulation events they undertook within the simulated clinical environment (SCE) had increased:

> Allan – *"I half expected it to be the same [as simulation in Semester 3] but you were dropped right in at the deep end – all of a sudden you're put in with another two colleagues and you're in a ward situation. You get a quick handover as if you've just come on duty and left to it"*

> Jane (Cohort 2) – *"The scenarios are more in-depth…you read the scenario and then you're making all the decisions as to what's to be done for this patient and in what order they should be done. I felt we were babied before because we were led a lot more, where as in this one you were left to your own devices a lot more"*

This teaching approach was in line with the spiral curriculum design of the pre-registration programme, whereby the breadth and depth of the student's knowledge and skill proficiency was incrementally increased year on year (Harden and Stamper 1999). Students were expected to consolidate and enhance their existing knowledge with new knowledge as they moved through the nursing programme (UWS 2011). For most of the students this seemed to be acceptable and manageable. This approach challenged them, but comments suggested that they accepted it and rose to the challenge. Their dialogue and accompanying demeanor suggested that they rather enjoyed being tested.

One student however remained skeptical about the increased complexity. In her previous one – to – one interview Jen reported her dislike for simulation and commented on her lack of confidence with fundamental skills. This time she felt that simulation should still have been more focused towards tasks:

> Jen - *"This time it was a lot more in-depth, to the point where it shouldn't have been...I think more simulation should be done with learning your skills rather than giving you a full blown scenario and you're standing there panicking because you can't diagnose the patient and then he takes a cardiac arrest on you and dies…Putting up IV's, observations, ECG's and things – I think more experience should be done with that in simulation."*

As highlighted previously, there was evidence within the literature that student nurses and newly qualified nurses lacked competency in some fundamental skills, such as systemic observations and that the menu of experience available to students in practicum was often less than ideal (Clark and Holmes 2007; NES 2007; Bradshaw and Merriman 2008; Lomas and West 2009; Cooper *et al.,* 2010). Simulation has been supported by the NMC (2007) as a way to redress this issue. Jen's comments indicated that the SCE did not provide the opportunity for all the students to gain practical experience in some of the fundamental skills relevant to their stage of nurse education. Whilst it is in line with the spiral curriculum to increase the complexity of the learning experience it is crucial that students have a basic competence in the fundamental skills before moving on to more complex ones.

Jen's comments suggested she did not and that she felt out of her depth and this may have influenced her lack of willingness to participate. It could be argued that giving students a scenario where their decision-making processes decide the clinical outcome may be detrimental to their learning, especially at this relatively junior stage of their training (Semester 4, Year 2). Up until this point, they had only experienced one acute surgical and one older adult practicum experience. In interview one Kate, Sue and Jen highlighted that they had difficulty gaining access to the skills they had learned in the SCE due to the menu of experience available.

6.2.2 Decision making skills

In addition to the sense of being 'in at the deep end', students felt more cognitively challenged. They conveyed having to think on their feet and make decisions based on information provided by the lecturer/facilitator or acquired by them through direct interaction with the patient. Making decisions based on information gathered during participation with the scenario allowed students to test their knowledge base. Most of the students referred to this aspect and to the reflective discussion it generated post simulation:

> Sue – *"It gave you the opportunity to see if you knew what to do and if you didn't, where you went wrong"*

Jane reported feeling more confident as a consequence of the scenario-based approach stating:

> "*It made me more confident in making my decisions and you know - usually they were right"*

As a nurse, being able to make timely and accurate decisions is vital. Clinical decision-making (CDM) is a complex phenomenon with multi-factorial influences (Thomson et al., 2004; Banning 2008). Nurses in clinical areas often have less opportunity to actively source evidence based information to inform CDM than they would in areas out with those contexts, such as formal education and training situations (Thomson *et al.,* 2004). Students in my study had opportunity to test their CDM skills during the simulation scenarios set within a context specific SCE, before going into practicum.

Nursing students (n=8) in the first term of an acute care course in Lasater's (2007) qualitative Focus Group study, aimed at exploring the effects of hi-fidelity simulation on clinical judgment, reported that learning within a SCE helped students to develop their clinical decision-making skills. The students, purposively selected because they had experience of the phenomenon under study (Holloway and Wheeler 2010) actively participated in an unfolding event within the SCE and had the opportunity to 'try out' interventions and see the consequences.

This was a small study of the views of eight students and whilst in keeping with qualitative philosophy the findings were contextually constrained to that sample (Holloway and Wheeler 2010). In addition, this was a short one-off study and as such the students had no opportunity to establish the accuracy of their perceptions that the simulated experience had helped them develop their clinical decision making skills to the extent that they were applicable in practicum. A follow up post-practicum interview may have facilitated evaluation of this issue. The nature and design of my longitudinal study allowed me to follow up any such assumptions made by my student sample.

On a similar vein, student nurses (n=17) in their final year three semester in Parr and Sweeney's (2006) questionnaire survey about student's evaluations of using simulation to develop CDM skills reported that scenario-based simulation in a SCE challenged them and helped them develop CDM skills. However, as with Lasater (2007), this was also a one-off study, which provided only a snapshot.

The questionnaire response rate was reported to be 81%, but as this only constituted 17 students, the findings were generalisable only to that specific sample (Parahoo 2006). The questionnaire comprised six Likert Scale items and one open-ended question. As a result responses were likely to be superficial (Polit and Back 2008). Students expressed uncertainty regarding whether or not they would be able to transfer the skills to practicum. Gathering more data from the same cohort of students after their practice placement could have followed up the students' uncertainty regarding the issue of transfer.

The longitudinal nature of my study was able to get feedback from students at regular intervals over a two-year period, regarding how the more complex skills such as CDM developed. This helped map if and how effectively these CDM skills were applied in practicum, thus adding to the body of knowledge.

6.3 Theme 2. Engagement with the SCE

A further theme that emerged from analysis was that of engagement. Engagement in relation to simulation referred to how well the student was able to participate fully in the simulated activity. To reiterate, one of the aims of simulation education is that the learner will be able to experience *suspension of disbelief,* that is, the learner is able to forget that the simulation event is artificial. This is achieved by producing a simulated environment/event with a high level of authenticity, through the use of authentic equipment, surroundings and personnel (Ker and Bradley 2007). See Diagram 6.3 for a visual overview of theme 2 and associated clusters.

```
┌─────────────────┐
│    Theme 2      │
│  Engagement     │
│  with the SCE   │
└─────────────────┘
    │
    ├──── Group size
    │
    ├──── Student anxiety
    │
    ├──── Realism of
    │     simulation
    │
    ├──── Communication
    │
    ├──── Live recording
    │
    └──── Being prepared
```
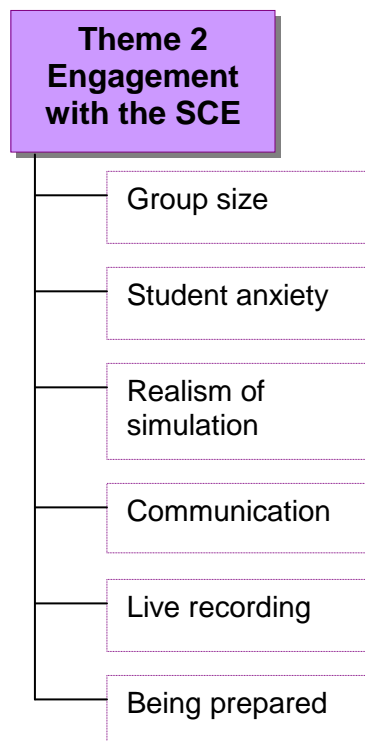
Diagram 6.3 Theme 2 and associated clusters

6.3.1 Group size

Students participated in the simulated clinical environment (SCE) in groups and when asked *"What was different about simulation this time?"* most commented on the fact that this time group size was smaller. Previously, students had reported that larger groups within the SCE prevented all members participating in 'hands on' practice. This time, groups of three were the norm and there was scope for all team members to participate more fully:

> Anna – *"Smaller groups, so you got more hands on experience as opposed to there being so many [students] fighting to do the one thing."*

6.3.2 Student anxiety

Whilst most of the students were nervous to some extent about simulation, some used terms such as 'anxiety', 'fear' or 'panic' to describe how they felt when participating in simulations. Jane's quote is illustrative of this:

> Jane – *"I actually felt I started to panic a wee bit. As the weeks went on I really started to get into it, but I was so nervous I didn't really enjoy the first two weeks."*

For the majority, however these feelings of anxiety were transitory, lasting only two or three weeks, and diminished as they became more familiar with the simulations and the SCE. Whilst participating in simulation can be stressful, findings from the literature argued that allowing students to come across clinically challenging experiences appropriate to their level ultimately serves to reduce anxiety when faced with similar situations in practicum (Bremner *et al.*, 2006; Overstreet 2008; Gore *et al.*, 2010).

However, in order that students get as much benefit from simulation as possible they must achieve a high level of engagement. The data revealed a number of factors that could positively or negatively influence this process, such as the realism of the SCE and the mannequin and the students themselves, which will now be presented.

6.3.3 Realism of Simulation

One of the main factors, which influenced engagement, concerned the realism of the scenario – how authentic a representation it was of a real clinical area and event. The general assumption amongst the students was that the scenarios were realistic, in that the environment and equipment authentically mirrored the clinical areas in the hospitals accessed by the students.

> Allan – *"once you get everything there, the mannequin does turn into a real patient…you do actually go into nurse mode if you're on the ward"*

> Jack – *"They make it as real as possible, like having the sophisticated mannequin – it can present with different symptoms – you've got the monitors in there as well, you know that are backing up the patients symptoms, so you can look at the monitors and see that the blood pressure's this so – say it's dropped suddenly then you're looking for different reasons so that's really good"*

Allan and Jack both had dominant Visual/ Kinesthetic learning styles (Kinesthetic was 2 points behind their more dominant Visual). It would seem that because visually they saw the SCE as realistic and kinesthetically were able to tangibly participate and employ the equipment, engagement was easier. Rettedal (2009: in Dieckmann 2009) discussed how the principles of magic and illusion could be applied to simulation and how the eye cannot be fooled. It will believe what it sees if it is authentic enough. However, whilst the simulated environment and the equipment had a high level of authenticity, one aspect that caused confusion for some students and subsequently affected the realism of the event, was the role they were expected to play within the scenario.

They reported being expected to carry out tasks and actions that they perceived to be out with their role as a student nurse. For example, in the scenarios they would be expected to be able to interpret the systemic observations or clinical features before diagnosing what was wrong with the patient; calling the doctor and requesting tests; or acting out the role of a qualified nurse.

> Sue – *"…I know a nurse will be able to tell when a patient has a tachycardia or bradycardia or whatever, but I feel that they were getting us to do a lot that we wouldn't even do and I think it's distracting you from thinking about the things that you have to do"*

Kate – *"…sometimes they wanted us to do doctor things. I understand it's to teach us about the drugs but sometimes it was a wee bit much - we'll not have to do that, we wouldn't go 'oh he needs such and such [a drug]' and get it. Some times it got a bit confusing"*

Kate and Sue had dominant Visual learning styles and Kate also had an Auditory preference two points behind. While, from a Visual perspective the SCE itself seemed authentic, it was their role within the SCE that they struggled with. It appeared that whilst their eyes believed what they saw was authentic in terms of the environment; their minds did not get a similar sense of the reality (Rettedal 2009: in Dieckmann 2009). They saw that aspect as unrealistic.

The students at this stage had all been in an acute care placement and knew from experience that they would not be diagnosing or requesting tests. They seemed aware of the boundaries of their role. However, whilst the majority of the students in my study understood the rationale behind being asked to take on these responsibilities in the SCE, they were also aware that they would not in all likelihood replicate this in practice. In effect it could be argued that it provided them with a non-authentic mental model. Within the simulation literature it is advised that simulations should be as close an approximation to the reality it is a replica of, in order that learners may successfully transfer the skills learned (Ker and Bradley 2007; Rettedal 2009: in Dieckmann 2009).

6.3.4 Communication

Another factor affecting engagement for some students was communication with the simulation mannequin. Whilst the high fidelity features of the mannequin allowed mimicry of some key physiological parameters, facilitating a range of interventions, there were limitations. In common with findings from other research (Bremner *et al.,* 2006; Lasater 2007; Pike and O'Donnell 2009; Gore *et al.,* 2010) some students found the mannequin's lack of communication capabilities to be prohibitive. Mannequins were also unable to produce visual signs and symptoms, such as pale clammy skin or realistic spontaneous two-way conversation, which in practice help nurses' in their clinical assessment or in the development of a rapport with patients.

> Jane – *"I struggle with communication [with the mannequin] – I constantly talk to my patient, reassure them, explain what I'm doing but in sim, I don't do that as much. I don't think about the cameras – that goes away as I'm getting more involved - but it never goes away from me that it's a dummy – I never see it as a real patient and I think that's why I find it hard to communicate"*

In effect, it seemed that the inauthentic communication capabilities of the simulation mannequin inhibited Jane's ability to *suspend disbelief.* Subsequently, this seemed to hamper her immersion in the simulation event. Jane stated *"I never see it as a real patient"* – her use of language was supportive of her LS, which was predominantly Visual with Kinesthetic within 2 points of that. It seemed that the lack of true authenticity of the mannequin prevented her from suspending disbelief – at least with respect to communicating with the mannequin comfortably and realistically.

Nursing students (n=9) in Pike and O'Donnell's (2009) qualitative study also viewed the mannequins, referred to as 'dummies', as less than ideal. The study aimed to investigate the impact of simulation on nursing students' self-efficacy beliefs. Focus group findings revealed that the students had low levels of self-efficacy in relation to communication skills in clinical situations.

In particular, a number of the students expressed difficulty communicating with a simulation mannequin, which they did not see as authentically representative of the real-life patient. They felt that it undermined the worth of the simulation events in terms of realism and communication. This was a small study, so findings are context specific. However, they are based on personal experiences of individuals to a specific phenomenon (Cohen *et al.,* 2000).

6.3.5 Live recording

Four of the students mentioned the effects that being filmed had on their performance:

> Meg – *"at the start of the 5 weeks it was the thought of the camera's and people sitting at the other side of the glass watching you, but towards the end of your 5 weeks you forgot all about them – well I did"*

Three of the four found this to be an aspect of learning in the SCE they quickly adjusted to as Meg's comment illustrated. It would seem that they got used to the cameras and actually forgot they were there. For one student however, this was not the case.

Jen did not enjoy any aspect of the simulation experience and found it extremely anxiety inducing, to the point where she felt it deterred her engagement. She reported feeling inhibited by the cameras; other team members; her perceived lack of knowledge; and ultimately did not take it seriously. She also saw attempts by lecturers to test students' knowledge by setting challenges within the simulation scenario as a form of public humiliation:

> Jen – *"I just think it's horrendous…if you're quite shy you've no chance. You stand at the back and watch and to make you even more nervous they point the camera at you because you're standing doing nothing…they [lecturers] love phoning you up [taking the role of a relative or doctor in the skills ward] and making you feel stupid and watching your face go red – [lecturers] love it but we don't enjoy it. I could cry going in"*

Clearly for some students taking part in clinical simulations was and is extremely stressful and for them the lack of full participation could ultimately result in a poor learning experience (Ganley and Linnard-Palmer 2012).

6.3.6 Being prepared – self directed learning

A few of the students commented on how they prepared for the simulation events. All students had access to the scheduled simulation scenario in advance and some reported how they assessed what they needed to know in order to be prepared for the simulation event.

> Bob – *"I looked up stuff that would be relevant to what was coming up the following week – when I go in here [simulation] this patient will have this so I'll need to work out what they need done"*

These comments suggested that some students saw the need to be pro-active in preparation for the simulation events in order to help them incorporate cognitive as well as psychomotor skills into a simulated scenario. Twenty – one second year nursing students' in Reilly and Spratt's (2007) brief qualitative study set in Australia, also reported that learning in simulation motivated them to undertake further self-directed study to increase their knowledge. The longitudinal nature of my study will allow this practice to be followed to establish if there is a relationship between self-directed learning in preparation for simulation and engagement in simulation events in the SCE.

6.4 Theme 3. From simulation to real life

In this theme, students discussed skills they had learned through engaging with simulation and how these impacted on their clinical experience in practicum. See Diagram 6.4 for a visual overview of theme 3 and associated clusters.
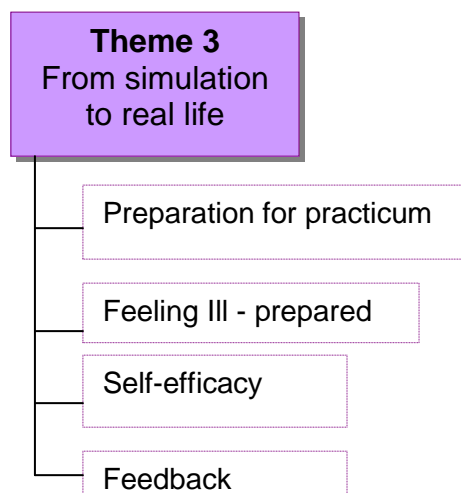
Diagram 6.4 Theme 3 and associated clusters

6.4.1. Preparation for practicum

For the majority of the students the increased complexity of the simulations had, like the task specific simulations in semester three, helped prepare them for their clinical practice experiences. This range of preparedness included awareness of nursing priorities for specific disease processes, appropriate interventions and professional communication.

Bob reported feeling tested in simulation and showed awareness that he could be faced with similar scenarios in practicum:

> Bob – *"It gets you thinking…you could be hit with this dilemma anytime and if you've got that wee bit of practice in how to deal with it, it stands you in good stead for any situation that may arise"*

Sue reported how her communication and information giving skills were appraised during the course of the simulation scenario:

> Sue – *"You're phoning the Doctor [a lecturer]…if you don't get the information right they say 'I don't know what you're talking about, get me the right information' – they're making it as real as possible"*

Sue's comments suggested that she appreciated the value of such a learning experience. Being able to communicate effectively is a skill vital within healthcare (Dougherty and Lister 2011) and one of the competency standards required by pre-registered nurses (NMC 2010b). It is also a skill that worries some students (Pike and O'Donnell 2009). Simulation seemed to provide some students with a platform on which to practice and hone these skills.

For a number of students, Anna, Beth, Allan, Bob, Jack and Jane, preparation for practice also encompassed fitting in to existing ward teams. Comments, like Anna's suggested that simulation played a role:

> Anna – *"Being in different teams – in simman you weren't always with the same group of people; you got mixed up, so it gets you used to working with different people. You're coming into a new placement every 5 weeks so you need to learn how to adapt, how to fit in"*

Whilst there was appreciation that they could continue to hone psychomotor skills and add new ones to their repertoire, there was also evidence that the scenario-based simulations had tested the students' knowledge base and for some had facilitated the development of cognitive skills.

> Jack – *"…the ability to think on your feet and if you're questioned on why you did something, to be able to stand your ground and say 'well I did this because…' it's bringing your knowledge out to play isn't it?"*

It is important that students are able to understand the evidence underpinning clinical practice and, in line with SCQF level 8, are able to provide a sound rationale for clinical decisions (UWS 2011). Jack's comment is also reminiscent of the cognitive apprenticeship model whereby the learner is encouraged to make learning visible (Collins *et al.,* 2004; Wooley and Jarvis 2007).

6.4.2 Feeling ill prepared

As recorded earlier, some students prepared for simulation by undertaking self-directed pre-reading to improve their knowledge base and consequently their participation and engagement with the simulation scenarios. This was not the case for them all. Jen found participation in simulation very difficult, stating she was *"not a great studier"* and felt incompetent in simulation.

> Jen - *"If you are really clever, science wise you have no problem, but if you're a nurse who is good hands on you've no chance because you can't diagnose the patient so you don't know what to do for them"*

This impacted on her experience of practicum. Jen reported feeling *"terrified"* by her lack of knowledge and that this prevented her from attempting unfamiliar skills, such as drug administration:

> Jen – *"I mean if someone was to ask me what that [drug] was for I'd be like 'I don't know.'"*

Responses from two other students pointed to comparable knowledge deficits. Interestingly, they all seemed to accept their apparent lack of knowledge, suggesting that they did not see it as their responsibility to be proactive and undertake self directed learning, as Bob, Jane and others had done. The following comment from Kate is illustrative of this acceptance:

> Kate – *"I'm shining a light in people's eyes and I'm not sure what I'm doing it for or what it's for. I wouldn't be able to translate that and go back to the nurse and say such and such is happening, because I don't know".*

Jen and Kate used the phrase "*I don't know*" when talking about their lack of underpinning knowledge in relation to skills they were undertaking. They both seemed to have insight, but lacked appreciation they could be proactive in addressing their apparent lack of knowledge and understanding by undertaking some self-directed learning.

A mixed method study undertaken by Levett-Jones and Lathlean (2008) found a link between students' sense of belongingness in placement and increased confidence and self-directed learning. The qualitative findings were gathered from a small sample (n=18) so not widely transferable (Polit and Beck 2008). However, findings provided subjective insight into the impact belongingness, or feeling valued, could have on student self-efficacy and esteem and ultimately learning. Findings from a more recent study by Bradbury-Jones *et al.,* (2011) also supported this view.

Bradbury-Jones *et al.'s,* UK based qualitative study explored the empowerment of nursing students (n=13) in clinical practice and demonstrated the impact, both positive and negative, that being valued had on students in relation to feeling empowered. If students felt valued they were motivated to be pro-active learners. Conversely, feeling undervalued negatively affected their learning opportunities. Findings, although contextually specific to the study site (Polit and Beck 2008), helped to demonstrate the value of 'belonging' and the subsequent impact on empowering students.

Admittedly Levett-Jones and Lathlean (2008) and Bradbury-Jones *et al.,* (2011) focused on belongingness in relation to students in placement. However, as SCE's are replicas of clinical placement areas the findings were pertinent. Likewise, if students experience a sense of belonging in the SCE, they may be empowered to undertake self-directed learning to address knowledge deficits. Jen and Kate did not seem at this stage of the study, or their nurse education to feel empowered to address the knowledge deficits they both acknowledged they had. Jen disclosed that she was *"terrified"* by her lack of knowledge and felt unable to participate in simulation. She did not see herself as clever enough – effectively she had no sense of belongingness to the SCE, which made her anxious. This may have contributed to her seeming inability to undertake self-directed learning in order to address her lack of knowledge in relation to the SCE and to practicum.

In terms of learning style (LS), Jen was strongly Kinesthetic (a preference for active hands on participation), while Kate was Visual (observing) with Auditory (listening) two points behind. Jen disliked participating in simulation from the start, as did Kate. However, once Kate saw that participating within the SCE would help her develop her skills, she was more prepared to take part. At this point in the study Jen was not able to do this, even though as a Kinesthetic learner she was theoretically suited to this approach to learning. As the study progressed I was able to look at any relationship between LS; engagement; lack of knowledge; and lack self - directed learning.

In relation to having the opportunity to transfer the skills learned in simulation, the majority of the students generally had opportunity to replicate some of those skills with varying degrees of success. However, not all skills learned in simulation in this semester were available in all the placement areas and reasons for this were multiple, but included placement specialty, and workload and staffing issues.

6.4.3 Self – efficacy

For many of the students being able to practice skills in simulation gave them confidence in their abilities prior to starting in practicum:

> Bob – *"The things I learned in the labs helped build my confidence so that when I came to the ward I felt more self assured and I could go and show the staff that what we are learning is helping me to come in here [practicum] and not be frightened to face up to tasks that you're given – I'm not afraid to face anything in here"*

Bob felt safe. He was "*not afraid to face anything"* in practicum. Having the occasion to practice in a safe environment in the SCE provided Bob and other students who reported similarly, with concrete experiences and evidence of their clinical abilities. It seemed this rehearsal gave them the courage to apply skills clinically when in practicum.

6.4.4 Feedback

Feedback continued to be viewed as valuable in terms of highlighting to students what they did well and helping them identify aspects of practice in need of improvement. This quote from Anna represents the majority view:

> Anna – *"I guess they [lecturers] were taking notes as they watched us – just saying what was good, or not so good or what we maybe could have done differently. It was good just to get their view on how we were working."*

Potentially feedback also allowed students to map their progress over time. Feedback on performance is the most influential aspect of both a simulation event and in the real world clinical learning environment (Race 2005).

It is key to successful learning (Clynes and Raftery 2008). Feedback [or debrief] in the first instance came from the simulation facilitator and was something the majority of students in my study commented on. However it also continued to come from placement mentors and patients.

6.5 Theme 4. Factors out with simulation

For the majority of the students within my study learning in an authentic clinical environment had a positive effect on skills development. However, other factors out with the simulated setting also played a part. These were clinical staff, both in general and more specifically and also the ward environment in terms of the workload and the impact this had on staff availability. Diagram 6.5 provides the reader with an overview of theme 4 and its associated clusters.

```
┌─────────────────┐
│    Theme 4      │
│   Factors out   │
│ with simulation │
└────────┬────────┘
         │
         ├──┌─────────────────────┐
         │  │   Clinical staff    │
         │  └─────────────────────┘
         │
         └──┌─────────────────────┐
            │  Clinical workload  │
            └─────────────────────┘
```
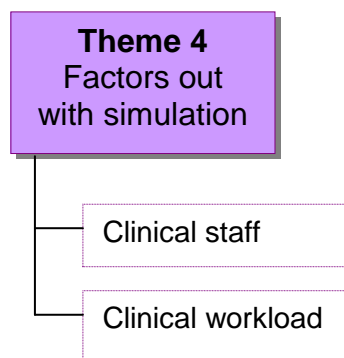
Diagram 6.5 Theme 4 and associated clusters

6.5.1 Clinical Staff

From a positive perspective nursing staff, often in the role of mentor, were cited by most of the students as being influential, either in relation to the support and guidance they provided or by positive role modeling. Students valued the time they spent explaining, coaching, supervising or organizing clinical activities for them:

> Allan – *"…she's really good – she's very pro-active and very interested. If she's going to do anything she's 'Come with me young man' (laughs). I've never done so many drug rounds and dressings and she makes sure we go to lunch together and we'll have a discussion about the protocols, signs and symptoms, what to look for when we're doing the pump checks – things like that"*

Good supervision as highlighted by Heaven *et al.,* (2006) is useful in helping learners transfer a new skill into the clinical area. Conversely a factor detrimental to the learning experience was also highlighted and this is now discussed.

6.5.2 Clinical workload

Some of the students felt that the workload within the ward environment negatively affected their placement experience. They felt staff did not always have time to supervise and support them:

> Jane – *"I just feel that a bad working environment can be detrimental to your learning. Sometimes you'll say to a nurse 'can you show me that?' and they'll say 'No, I've not got time' – that happened a lot in here"*

This was a valid point especially if it had a negative impact on the learning environment and experience for the student nurse. In relation to learning style (LS), Jane had a visual LS preference. Her narrative "*can you show me that?"* suggest that inline with visual learners she wanted to observe skills, in order that she could 'see' how to do it. The fact she was denied this opportunity may have been detrimental to her learning.

The issue of staff not seeming to have time to support students was linked to the issue of belongingness discussed earlier (Levett-Jones and Lathlean 2008). There may be numerous reasons why this situation existed, such as insufficient staffing to facilitate the level of mentorship expected by the NMC (2008); lack of understanding by staff regarding the importance of mentoring students; or unpredictable patient activity (Clynes and Raftery 2008; Lauder *et al.,* 2008).

The NMC (2008) stipulated that mentors had responsibility and accountability for a range of duties in support of student learning. These included: organising and co-coordinating student learning activities in practicum; supervising students and providing them with constructive feedback; setting and monitoring achievement of realistic learning objectives; and assessing performance in the three domains (skills, attitude and behaviour).

Whilst the needs of patients unwaveringly take primacy in practicum, Clynes and Raftery (2008) suggested that students' supernumerary status should facilitate learning through observation and role modeling during periods of complex and urgent activity. However, as Jane's comments above suggested, this was not always the case in practice.

6.6 Summary

The main themes to emerge from the students' dialogue in their second one – to – one interview were: increasing complexity; engagement with the SCE; from simulation to real life; and factors out with simulation (see Diagram 6.1 below).

Theme 1 Increasing complexity	Theme 2 Engagement with the SCE	Theme 3 From simulation to real life	Theme 4 Factors outwith simulation
In at the deep end	Group size	Preparation for practicum	Clinical staff
Decision Making Skills	Student anxiety	Feeling Ill-prepared	Clinical workload
	Realism of simulation	Self-efficacy	
	Communication	Feedback	
	Live recording		
	Being prepared		

Clusters of Themes

Diagram 6.1 Thematic Analysis of Interview 2.

Students' comments indicated that whilst most of them felt prepared for practicum as a consequence of learning within the SCE, this was not universal. The scenario-based simulations were more complex and challenging for the students than previously (UWS 2011). The increasing intricacy of the immersive situations that confronted the students required application of a range of assessment and decision making skills in order to effectively manage unfolding clinical situations. Students were required to draw on their existing knowledge to help with decision-making and were expected to be able to combine technical and non-technical skills simultaneously in order to manage the clinical events.

However, Jen felt that they should have spent more time learning task oriented skills, which she believed would be of more use in practicum: *...I think more simulation should be done with learning your skills rather than giving you a full blown scenario and you're standing there panicking because you can't diagnose the patient…*(Jen: Theme 1). Jen struggled to get hands on practice in simulation in Semester 3 at the start of Year 2 and lacked confidence in her abilities and this seemed to continue into Semester 4 in Year 2. She did not enjoy any aspect of simulation.

Participation in clinical decision-making in the SCE scenarios was easier if self-directed learning was carried out. Those students who prepared by undertaking pre-simulation reading fared better than those who did not. They had a better knowledge base and as a result felt they could actively contribute and apply their knowledge to the situation. For example Jen admitted she was *"not a great studier"* (Jen: Theme 3) and felt incompetent in simulation. Both she and Kate admitted to not always knowing why they were doing something. Jen believed that *"If you are really clever, science wise you have no problem…"* (Jen: Theme 3).

A number of factors influenced student engagement in the simulation scenarios. For a start, group sizes were smaller and most of the students reported more opportunity to gain 'hands on' experience. Participation anxiety was a factor initially with Jane and Meg particularly highlighting this issue. Jane, Sue and Kate found communication with the simulation mannequin difficult due to lack of spontaneous and realistic interaction and this has also been highlighted in the literature (Bremner *et al.,* 2006; Lasater 2007). However almost all the students reported that anxieties diminished over the first few weeks as they became more comfortable with the complex situations they encountered.

A factor, highlighted by Sue, Kate and Jen was that of being asked to carry out tasks they perceived to be 'Doctor-things'. They found this confusing and it negatively affected the authenticity of the simulation event. They were aware that they were beyond the normal boundaries of their clinical role as a student nurse and therefore not ones they would be able to apply in practicum.

There was also some unease about being observed whilst in the SCE. Again, whilst most reported that they very quickly forgot about the camera as they became immersed in the unfolding scenario, this was not the case for Jen. Earlier in this interview, in relation to this she stated: *"…I could cry going in"* (Jen: Theme 2). For the other students immersion in the scenario was helped by the realism of the SCE and the event itself (Ker and Bradley 2007) as clinical scenarios were similar to those students would come across in practicum.

However, most of the students gained confidence in their clinical abilities as a consequence of skills rehearsal in the SCE and were able to transfer the skills in practicum. Influential factors related to transfer of skills within practicum included clinical staff as mentors/role models who were viewed as a valuable asset by many of the students. From a negative perspective clinical workload in the wards was perceived by a few students to prevent staff from having time to support their learning experience.

Whilst the majority of students in this study were beginning to find participation with simulation easier, despite the increasing complexity, Jen continued to experience difficulties. She found simulation a wholly unpleasant experience and did not feel it, or the skills taught were appropriate to her needs. She still lacked confidence in her knowledge and abilities and consequently felt ill prepared for practicum, where she seemed reluctant to attempt unfamiliar skills.

The longitudinal nature of my Hermeneutic study allowed the progressive nature of learning using simulation within a SCE to be described and explored. The following chapter presents the findings from the third one to one interviews, which occurred in year three.

Chapter 7 Findings from Interview 3

7.0 Introduction

In year three, students worked at level 9 of the Scottish Credits Qualification Framework (SCQF 2010). They were expected to develop and consolidate clinical skills, including clinical decision-making, prioritisation and critical analysis of care. During the course of the students' second year the HEI merged with another and this saw the emergence of a newly validated nursing curriculum, which the students transferred onto at the start of year three (see Diagram 7.1 for illustration of new course structure).
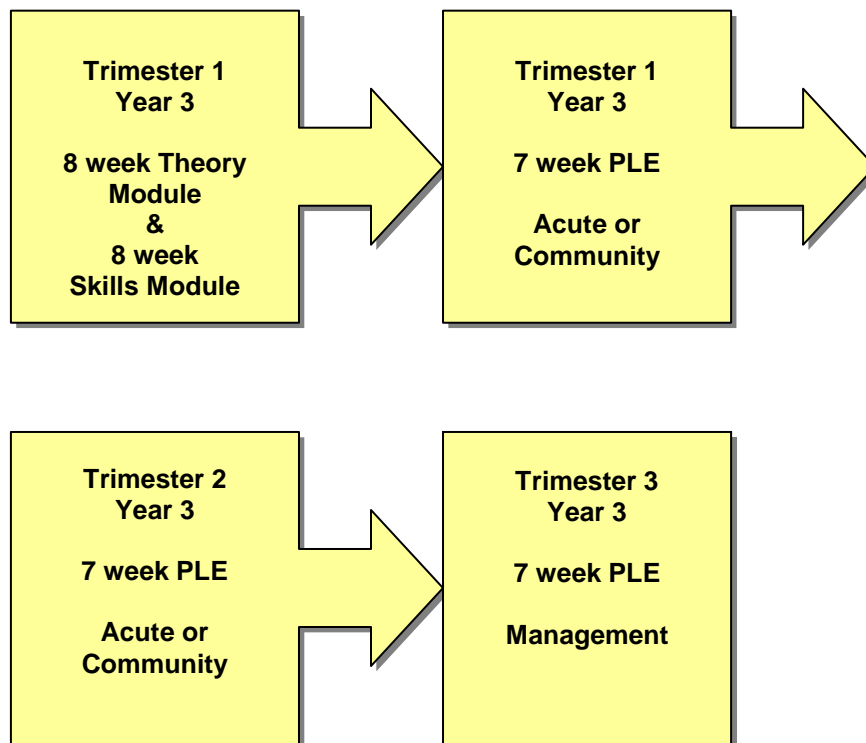
Diagram 7.1 Course structure of Year 3 of the Adult Branch programme.

The main change for the students in terms of simulation was that in the new curriculum simulation was more robustly embedded. Year three moved from two, five-week blocks with approximately one afternoon of simulation per week, to one eight-week block incorporating a theory module and a separate skills module. The skills module ran one day per week and consisted of workshops and clinical scenarios within the simulated clinical environment (SCE).

Content of the skills module was aligned to the focus of the theory module. For example, when the theory component focused on trauma, the skills module focused on relevant skills based scenarios – minor and major trauma assessment and management and similarly so for cardiovascular, respiratory etc. Like Year 2, simulation scenarios were accessible to students via a web-based resource (Blackboard™; which had changed from WebCT™ at the time of the institutional merger), which they were expected to access in preparation for forthcoming simulations. Students then transferred to practicum and undertook three seven-week placements (see Table 7.1 - area highlighted in blue relates to interview 3, the focus of this chapter).

Interview	Year/Semester	Specialty (in practicum)
1	Yr 2 – Semester 3	Surgical
2	Yr 2 – Semester 4	Medical
3	Yr 3 - Trimester 1 & 2	Acute or Community
4	Yr 3 – Trimester 3	Management

Table 7.1. Relationship between interview 3, stage of training and simulation focus

7.1 Interview 3

Interviews with the same eleven students occurred in the final week of their first Year three placement. Each interview took place in the student's clinical placement in a private room with 'do not disturb' notices placed on the door. Despite this two interviews were interrupted, necessitating one being continued at a later date. Length of interviews averaged 39 minutes (range: 25 to 55 minutes).

Students were asked to comment on their perceptions of simulated experiences, which were longer than in Year two. A general opening question was used and as before an interview topic guide was prepared (see Table 7.2 below).

Table 7.2. Interview 3 Topic Guide

One of the strengths of a longitudinal study is the opportunity to map the progressive nature of the perceptions of participants to a phenomenon over an extended period (Polit and Beck 2008). As previously highlighted in Chapter 3, the majority of studies reviewed were carried out over a relatively short timeframe, resulting in findings being specific to a single point in time. Interpretation from a longitudinal perspective allowed me to explore if and/or how perceptions of learning within a simulated clinical environment (SCE) changed over time.

Significant statements emerged from the data analysis process (Collaizi 1978). These were arranged into 14 clusters of themes. The clusters of themes were subsequently categorised into three main themes: 'Engagement with the SCE'; 'Development of clinical skills proficiency' and 'Transfer to practicum' (see Diagram 7.2 below). Each theme will now be presented. There is no hierarchy attached to the themes.

```
                         ┌─────────────────────────┐
                         │  Thematic Analysis of   │
                         │      Interview 3        │
                         └─────────────────────────┘
```

Theme 1 Engagement with the SCE	Theme 2 Development of skills proficiency	Theme 3 Transfer of skills to practicum

Clusters of Themes

Theme 1	Theme 2	Theme 3
Seeing the value	Blended learning approach	Self – efficacy and competence
Facilitator interaction	Learning style	Visual mental model
Group size	Development of skills competence	Role model for good practice
Cognitive preparation for simulation	Feedback	
Authenticity of the simulation event		
'Real' patients		

Diagram 7.2 Thematic Analysis of Interview 3.

7.1.1 Overview of emerging themes

Diagram 7.2 represents the clusters and themes that emerged from the third one to one interviews. Theme 1 was concerned with how well students were able to engage with the simulation events in the SCE at this point in their programme. Factors identified as being influential included the value the students' placed on the simulation events; the preparation undertaken by them in readiness for the simulation session; and how realistic the students perceived those events to be. The number of students in each participating group, their professional role in the simulation event and the interaction of the facilitator, or lecturer were also noted to have some bearing. This time, 'real' patients were used in addition to the simulation mannequins and some students commented on this feature.

Topics that emerged from the second Theme of skills development included the impact of the combined approach to learning afforded by having separate but complementary theory and skills modules. This approach was identified as having an impact on the students' clinical skills competence and the issue of feedback in relation to this was again evident in the narratives. There was a link to the students preferred learning styles.

Finally, Theme 3 focused on transfer of skills to practicum and identified how student's confidence and competency could be affected through the use of simulation events and how this fitted in with skills transfer. Visual mental models that is, the use of mental imagery to facilitate cognitive rehearsal of a skill, were derived from concrete experiences undertaken in the SCE and were viewed positively by the students. Lastly, the value of clinical role models, such as mentors was identified as significantly influential in helping students transfer skills to practicum. These themes will now be presented in greater detail.

7.2 Theme 1. Engagement with the Simulated Clinical Environment

A significant and recurring theme that emerged during this phase of interviews was 'engagement'. To reiterate, within the context of this study, this concerned how well students were able to actively participate in the simulated activity and *suspend disbelief*, whereby they would be able to react to the simulated events authentically, as if they were taking place in the real clinical setting (Ker and Bradley 2007). A visual representation of Theme 1 and its clusters is presented in Diagram 7.3 below.

```
┌─────────────────────┐
│    Theme 1          │
│  Engagement         │
│  with the SCE       │
└─────────────────────┘
        │
        ├──── ┌─────────────────┐
        │     │ Seeing the      │
        │     │ value           │
        │     └─────────────────┘
        │
        ├──── ┌─────────────────┐
        │     │ Facilitator     │
        │     │ interaction     │
        │     └─────────────────┘
        │
        ├──── ┌─────────────────┐
        │     │ Group size      │
        │     └─────────────────┘
        │
        ├──── ┌─────────────────┐
        │     │ Cognitive       │
        │     │ preparation for │
        │     │ simulation      │
        │     └─────────────────┘
        │
        ├──── ┌─────────────────┐
        │     │ Authenticity of │
        │     │ the simulation  │
        │     │ event           │
        │     └─────────────────┘
        │
        └──── ┌─────────────────┐
              │ 'Real' patients │
              └─────────────────┘
```
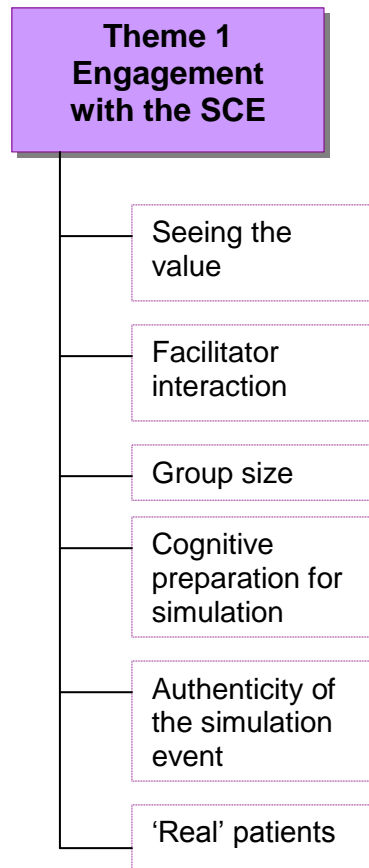
Diagram 7.3 Theme 1 and associated clusters

7.2.1 Seeing the value

Previously, students cited emotions such as 'fear' and 'anxiety' prior to participating in the SCE and this had influenced their initial inability to fully engage. Whilst a few of the students still reportedly felt a little nervous prior to participating, all bar one [Jen] found it less so than previously:

> Anna – *"I'm a bit more relaxed when I go in, more prepared to get involved. I know it's beneficial…I look forward to going into simulation and I'm just not as nervous"*

It would seem that having had previous experience they saw the value of simulation. As a result the students reported a more overall engagement with the simulation events. Allan whilst affirming his appreciation of simulation also acknowledged that he would, if given a choice rather do other exams instead.

> Allan - *"I don't feel comfortable going into it, but once you're in it's fine. I do like it and I see its worth and I think it's good value for me as far as my training's gone, but if someone said they would give me two extra essays instead of simulation I would say "Okay." [laughs]*

One of the pre-requisites for adult learners is the need to see the relevance of what they are being asked to take on board (Knowles 1984; Race 2005). The narratives from Allan and Anna suggested that despite still experiencing a small degree of unease, they participated because overall they could see the benefit. In terms of learning styles (LS), Anna commented that she was *"…prepared to get involved".* Being involved in simulation is a very active, hands-on process and Anna's dominant LS was Kinaesthetic, closely coupled with Auditory. Kinaesthetic learners like to experience things 'in the flesh', whilst Auditory learners like to gain knowledge through listening to instructions. Allan, on the other hand had a Visual LS preference, closely coupled with Kinaesthetic. Visual learners like to observe and learn from others doing something first. Despite the differences in LS preference, the key appeared to be that they both saw how simulation could benefit them and were subsequently prepared to actively participate (Race 2005).

Many of the students shared this generally positive approach to simulation. Some, like Mary and Bob displayed a very positive and enthusiastic attitude to simulation from the start of Year 2 and reported being able to engage with simulation without difficulty, despite feeling a little nervous. Mary's sole preferred LS was Visual whilst Bob's was Auditory.

Kate, who had a Visual LS, closely coupled with Auditory had disliked participating in simulation initially, gradually over time became more proactive:

> Kate - "I thought, you know - we've got these OSCE's and it's only going to help me in the long run so if nobody else is going to do it, I am…because the worst they [lecturers'] can say is 'no, that's not right' and they'll tell me how to do it right…and I thought do you know, I've built up good skills in the last few months and I feel fine about doing the OSCE. I don't feel nervous or anything like that…and I thought 'just go in there and do this and get on with it."

Like others, Kate saw the benefit of simulation. The new programme included a summative objective structured clinical examination (OSCE) and she realised that participation in the SCE scenarios would help her succeed in those. Kate's improved engagement with simulation occurred once she made a conscious decision to engage with simulation, as did Sue, Allan, Beth and the others. They still felt nervous but accepted that it was in their best interests in terms of developing skills proficiency. It would seem at this point that students with a range of differing LS appreciated the learning capabilities of simulation. This issue is explored in greater depth within the discussion in Chapter 9. However, a number of other factors, influential in relation to engagement within the SCE emerged this time. Some, such as group size, self-directed learning and the authenticity of the SCE were similar to those identified in interview two.

7.2.2 Facilitator interaction

An issue raised by a minority of the students was the impact of facilitator interaction. The facilitator's role is 'to guide and direct' (Fanning and Gaba 2007:118) and to provide a safe and supportive atmosphere for the learner. There is an emotional element to learning and a climate that induces negative emotions in the student may be detrimental to their learning experience (Fanning and Gaba 2007; Greenaway 2007: in Silberman 2007). This is similar to the feelings of belongingness reported by Levett-Jones and Lathlean (2008). Students who feel welcome in practicum are more motivated and empowered to take possession of their learning.

In earlier interviews Jen had admitted to a strong dislike for simulation. In this third interview she continued to report difficulty in engaging with simulation in year 3 and actively sought to avoid it. One of the reasons for her reluctance to participate was what she perceived as the attitude of some lecturing staff:

> Jen – *"Some of the lecturer's were great, they were sympathetic towards you because they know how hard it is – but you did get the odd lecturer who really did get a kick out of making you look like an idiot, an absolute idiot and they just loved doing it every time you were in – and you think 'that's it, I give up, I'm not coming in next week."*

Jen's perception was that some of the lecturers derived pleasure from seeing the students struggling. This may or may not have been the case but it was Jen's perception, as well as that of Jane who cited a similar though less vehement view. Students may misconstrue the intended meaning behind actions, particularly if feeling vulnerable and under pressure (Race 2005). The perceived actions of the facilitators seemed to have had little effect on Jane, who was able to move from it. However, this was not the case for Jen. The perceived actions of some lecturers contributed to Jen disengaging from simulation and adopting various avoidance strategies because she did not feel safe and supported or comforted by the opportunity to make mistakes during simulation (Ker and Bradley 2007).

Lasiter *et al.'s,* (2012) survey exploring senior student nurses' (n=153) experiences of faculty incivility in two universities in USA revealed that 88% (n=133) had experienced what they perceived to be unfair and demeaning treatment. Ninety-four (71%) students provided descriptions of the events and reported being 'belittled'; 'made a spectacle of'; or 'made to feel stupid'. Limitations included the relatively small size of this quantitative study and the superficial nature of data collected via questionnaire (Polit and Beck 2008). In addition, findings related to one moment in time and as such represented how the respondents felt that day.

However, despite these limitations the findings cannot be discounted. They are from the perspectives of the individual (Holloway and Wheeler 2010) and suggest a similarity in experiences of some of the students in my study, despite being in different countries.

The strength of my study is that the longitudinal nature allowed students' perceptions and feelings to be followed over a longer time period. This facilitated mapping of the progressive nature of the student experience, allowing a more accurate picture to be drawn.

7.2.3 Group size

Year three students worked in groups of three within the SCE and reported that this facilitated interaction from each member. Interaction in simulation provided the student with a concrete experience and allowed them the opportunity to practice the art and craft of nursing:

> Sue - *"It was a bit better because we were working in three's –* *when we had done it previously there were maybe nine in a* *group…so [this time] you could interact a bit more..."*

Apart from the fact that smaller groups allowed students more opportunity for individual hands on experience, students also reported that during group simulations they could 'think' as a group. They were afforded the opportunity to work through patient assessments and decision making by clarifying knowledge and understanding with other team members. First year student nurses in Rochester *et al.,* (2012) revealed how they valued working in pairs in simulation and were able to discuss ideas and provide mutual support. Data was collected via one focus group (n=12) undertaken to report on the quality of the students' simulation experiences as part of a large cohort (n=375) and was part of a much larger mixed methodology longitudinal study. The focus group participants represented only 3% (n=12) of the entire cohort who participated in the simulation and as such cannot be classed as representative of the collective cohort (Gerrish and Lacey 2010), they are the perceptions of individuals and show that students can benefit from working in smaller groups by working though issues together.

A few students in my study also commented on the fact that they enjoyed the social interaction that working together in simulation gave them. Allan and Beth both felt that they got to know fellow students they would not otherwise mix with. Allan felt it helped to break down barriers and this he felt ultimately helped him when he went into practicum:

> Allan – *"I'm working [in SCE] with lots of other students who I've been studying with for three years – don't even know their name, never actually spoke to them, but they're calling you first name terms to help with a log roll…it breaks down biases – it's changed my opinion of a lot of people at uni because you keep rotating and working with different people"*

Allan felt this also helped prepare him for practicum, where students regularly entered a new placement where they did not know anyone. He believed he was able to build up working relationships more effectively as a consequence.

7.2.4 Cognitive preparation for simulation

Most students continued to prepare for the simulation events. By accessing the synopsis of the simulated event beforehand they were able to undertake self-directed learning in preparation for the event itself. A number of students had experienced first-hand the effect of lack of knowledge around a topic and discussed how this had impacted negatively on their ability to participate fully:

> Jane – *"Because you know what to expect you do the reading up behind it, so you can be more confident and do more. I don't feel I took simulation as seriously in year 2. It was that I didn't enjoy it at the start, I think I didn't see the benefits until later."*

Novice nursing students in Cordeau's (2010) hermeneutic study expressed similarly. The purposive sample (n=19), all of whom participated in the member checking process and agreed that the findings were representative of their experience (Gomm 2008; Saldana 2009), described how adequate preparation for the simulation events helped them know the course of action to take; without it they believed they would have been ill prepared to help the [simulated] patient.

The simulation environment for Cordeau's sample appeared similar to the environment used by the students in my study. The only difference was that students in Cordeau (2010) were undergoing summative assessment and this may have motivated them to undertake preparatory study. Regardless of this, it suggested that those who prepared for simulation, had a better learning experience, which is similar to Jane's account as she reported feeling better prepared and more confident as a consequence of undertaking some preparatory study in readiness for the SCE.

Discussion also revealed that there seemed to be an element of competition with peers – not wanting to appear less competent or less knowledgeable than other classmates as Bob's comment suggested:

> Bob – *"It gives you the motivation to go next time and think 'well I'm going to be sure I'm not standing this time looking a bit stupid. I'm going to get right in there and treat the patient."*

Essentially, not wanting to look ill prepared and feel 'stupid' in front of peers seemed to act as a catalyst; consequently the majority of students' reviewed notes and undertook further self directed learning:

> Sue – *"[simulation] helps with your theory and I also think your theory helps with your simulation because we were to print off the [scenario] so we could look it up before we went in so that we would know what to do – though you still do things wrong, you still make mistakes, but they'll [lecturer's] say 'you should have done this, you should have done that'. So I think it's all a learning process, both in theory and with simulation and I think you can carry each of them to the other, vice versa."*

Undertaking some preparatory research seemed to help the students' self-efficacy as well as their knowledge base. Like students in Cordeau (2010) they believed this helped them respond to problems that arose during the course of the scenarios. It may be that Jen, the only student in my study who reported reluctance to engage with the SCE, would have improved her self-efficacy had she undertaken some self-directed learning in readiness for the SCE.

Additional resources were available to all students through an e-learning site. However, the resources may suited to the learning styles (LS) of some students more than others. With the exception of Jen, all the students in my study had a Visual LS [either as dominant or within two points]. This LS favours learning by observing or reading, both of which were accommodated within e-learning. Jen, had a strong Kinaesthetic LS and appeared not to have undertaken self-directed work in preparation for simulation. Kinaesthetic learners prefer hands on experiences (Fleming 1995; Chislett and Chapman 2005) and the fact this was not largely available within the e-learning and other online resources on offer, may have impacted on her ability or willingness to engage the resources.

7.2.5 Authenticity of the simulated event

Realism within the SCE continued to be an influencing factor in relation to engagement with the simulated events in the SCE. The more authentic the event was, the more the students seemed able to work towards suspension of disbelief and enter into a simulated event as if it was real life.

Strategies to make an event as authentic as possible included the visual realism of both the physical environment and the clinical equipment (Cheng *et al.,* 2007; Ker and Bradley 2007). Psychological authenticity however, refers to the 'internal simulation' taking place in the mind of the learner and relates to how real the learner perceives the simulated event to be (Maran and Glavin 2003; Rettedal 2009: in Dieckmann 2009). Disparity between the physical and psychological authenticity may have prevented learners from suspending disbelief. Whilst the SCE replicated practicum visually, the lack of inter-professional working opportunities seemed to have affected how authentically the environment and the event were viewed by some of the students.

In practicum, nurses do not work in isolation; they are part of a multidisciplinary team of healthcare professionals. Students in my study worked only with peers within the SCE, with no opportunity to work with other professionals, such as Doctors. As a consequence some of the students believed there was less professionalism displayed in the SCE.

> Jack – *"I think the SCE is good practice for your skills and for team working but you're working with your peers so it's unlike the real environment where you've got senior nurses, doctors, OT's and the rest – you learn more about professional attitude in the clinical setting because in simulation you're round your friends', you're having a laugh and it's a bit of fun – it doesn't really matter if the doll dies – but out in the real setting you are on display to the patients at all times so you have to be very professional."*

Jane commented similarly, but also believed that whilst there may be some lack of professionalism within the SCE setting this was not replicated in practicum. Students seemed able to adopt a professional attitude when it was appropriate and this may have been influenced by the fact that there was strict adherence to the local uniform policy when 'working' in the SCE. They seemed aware of the change of focus between the 'informal' and 'formal' clinical environments.

Students' professional roles within simulation varied between being a student and a qualified nurse. Whilst in Year 2 some reported this as being a bit confusing, by Year 3 it was accepted as being helpful in preparing them for their expanded role as a third and final year nursing student, where they acknowledged that more was expected of them. Almost half of the students appreciated the value of this and enjoyed the challenges of the role:

> Beth – *It was useful because we are preparing ourselves to go and take roles as [registered] nurses. I think it's a good strategy, to start preparing you about what you are expected to be doing, so it's now that you learn and if you don't know you can ask for help – because when you are out in the ward people expect you to be able to deliver."*

7.2.6 'Real' Patients

At this time, one factor that significantly impacted on student engagement with simulation was the introduction of 'real' patients, played by lecturers. In previous interviews students commented that communication was difficult due to lack of realistic verbal response and spontaneous interaction from the mannequin. At that time most of them felt uncomfortable talking to and interacting with the mannequin. This time they reported the advantage of having a real person play the role of patient. They communicated more easily, more effectively and more realistically. They liked having a patient who would spontaneously and appropriately respond to questions, and also provide realistic non-verbal cues such as facial expressions and body language. Taking systemic observations such as pulse and blood pressure was easier, realistic and more helpful to them in terms of developing their skills proficiency:

> Jane – *"I thought it was a bit easier actually having the real patients because they can communicate with you –- it's more realistic to be able to take a BP and a pulse on a real person – you can see their colour you can see everything more – whereas with simman you're not getting to see that. I've noticed in this placement that there have been patients admitted who can't communicate and the main thing you're looking at is their colour, if they're sweating, if they're clammy – all that kind of thing – with the mannequin you're not getting that. I would probably prefer the real patient because you're getting the interaction and communication is more realistic…I could relate to it a bit more than I could the dummy."*

However, less beneficial was if they knew the lecturer playing the role of patient, they found it off putting and consequently this made them more nervous:

> Meg - *"Sometimes it was awkward because it was lecturers you knew…it was better if you didn't know them and they didn't know you. Whereas your own lecturers – that's when they tended to dramatise a wee bit because they knew you, just to see how far you would go (laughs) but it was good."*

Collins and Harden (1998) discussed the range of patients available for simulated events. Simulation mannequins aside, they range from the 'real' patient who has received no training but has agreed to take part in a simulated event as a patient with 'their' complaint, through to the 'simulated' patient [a lay person] who plays a scripted character. The type of patient used will depend on both the context and the level of authenticity required.

The authenticity of the simulation may have been reduced due to the awkwardness the students felt by the use of a member of the lecturing staff. It may have prevented them acting 'naturally' and hindered their ability to fully engage, thus not affording the student a wholly effective learning opportunity (Wooley and Jarvis 2007).

Despite seeing the benefit of 'real' patients Jack and Meg both appreciated that due to the technological sophistication of the simulation mannequin, physiological parameters could be altered to simulate specific illnesses and relevant interventions could be applied. This was something that 'real' patients could not facilitate. The students felt that the 'real' patients were generally too healthy:

> Jack – *"Well, I don't know if it was better than using the simulated dolls, because they are quite sophisticated and you can set them to have a high pulse or low blood pressure, whereas you can't get a real person to do that. And because you knew the lecturer as well it made you laugh – it was less serious I would say than having the actual doll."*

Jack referred to the mannequin as a 'doll' and others have made similar references (Jane used the term 'dummy'). To refer to the mannequin as a 'doll', a term generally associated with a childhood plaything suggested that this might be an issue that could influence their engagement and ability to suspend disbelief.

Within the literature, only one student (from a sample of 56) in Bremner *et al.,* (2006) reportedly felt uneasy communicating with a 'dummy'. In Pike and O'Donnell's (2009) study, nine pre-registration nursing students participated in a focus group aimed at investigating the impact of clinical simulation on self-efficacy beliefs. Some of the participants reported difficulty in communicating with the mannequins because they did not see them as realistic representations, referring to them as 'dummies'. This issue will be discussed in greater detail in the discussion in Chapter 9.

7.3 Theme 2. Development of clinical skills proficiency

This theme related to factors that impacted on the students' ability to develop adeptness at undertaking key clinical skills. Intrinsic and extrinsic factors were highlighted. A visual representation of Theme 2 and its clusters is presented in Diagram 7.4 below.

```
┌─────────────────────┐
│     Theme 2         │
│  Development of     │
│ skills proficiency  │
└─────────────────────┘
        │
        ├──── Blended learning
        │     approach
        │
        ├──── Learning style
        │
        ├──── Development of
        │     skills competence
        │
        └──── Feedback
```
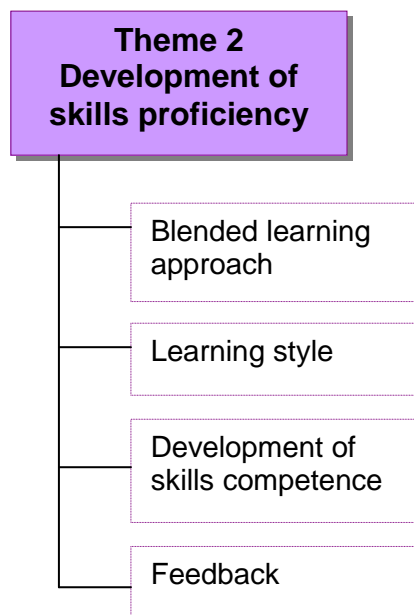
Diagram 7.4 Theme 2 and associated clusters

7.3.1 Blended learning approach

As stated earlier, the curriculum changed as students entered Year three. Weekly theory module content focused on a specific body system with associated disease processes. The allied clinical skills module would in turn focus on facilitating associated skills development pertinent to each disease process, in a range of scenario-based simulations in the SCE. For example, if the topic taught in the theory module was trauma/emergency care, the skills module would focus on teaching skills associated with that topic. Likewise skills scenarios would have a trauma/emergency care focus. The skills module carried level 9 academic weighting (SCQF 2010) and an Objective Structured Clinical Examination (OSCE) summative assessment.

The majority of the students made reference to this integrated feature and commented positively about the subsequent impact. In particular, they appreciated the opportunity to put the newly acquired theory into practice, whilst still fresh in their minds, and prior to going out into practice. The following quote from Allan exemplified the comments from most of the sample:

> Allan – *"I'm more a hands on, practical person so when you can actually put the theory into practice while you are still learning the theory – it's okay getting taught theory and then going into practice but a lot of it's forgotten – but while you're getting your theory, you're getting your practice at the same time, which then when you come out into practice – it's priceless really, for myself personally. So everyday it [simulation] is either talked about, prepared for, even going onto Blackboard to download your notes for the next day simulations – there's always something. It's very much a foremost part of your theory module I thought. It worked well."*

The closely aligned nature of the two modules seemed to help students reinforce and make sense of the newly acquired knowledge. Allan also alluded to his preferred learning style – *"I'm more a hands on, practical person…"* and there was reference to this from a number of other students.

7.3.2 Learning Style

Allan referred to his LS *"I'm more a hands on, practical person"* (see full quote above), which was Visual/Kinaesthetic. The issue of learning style (LS) was referred to by a number of other students, including Anna, who had a Kinaesthetic/Auditory LS:

> Anna - *"I knew it [simulation] was beneficial. I enjoy the classes and I enjoy the interaction. I enjoy classes where you are active, as opposed to sitting taking notes – I learn more that way."*

Most students who made reference to LS felt that their own preferred LS responded to the participatory approach utilised within simulation. Only one student felt that simulation was not suited to her preferred mode of learning:

> Jen – *"I would have chosen to watch a video. I watch the telly constantly. I can take anything in through watching the telly. Simulation? No chance – can't remember it."*

The literature revealed that people who choose nursing as a career predominantly have LS preferences for learning through observation; active participation; experimentation; and reflection (Rakoczy and Money 1995; Alkhasawneh *et al.,* 2008; Fountain and Alfred 2009; Meehan-Andrews 2009; Fleming *et al.,* 2011; James *et al.,* 2011; Koch *et al.,* 2011). Although this observation was highlighted over 20 years ago it appears from contemporary literature to have remained largely unchanged. Certainly, the vast majority of students in my study had a prominent Visual LS, (preference for observation); a slight majority also had a prominent Kinaesthetic LS (active participation).

It is over 20 years since Rakoczy and Money (1995) reported that the most common LS among nursing students in their three-year study was Assimilator (RO: observation and AC: thinking) (Kolb 1984). At that time they proffered that future nurses would need to develop convergent (doing and thinking) and divergent (feeling and watching) skills as nursing became more complex. It would seem this was a wise prediction as contemporary nursing education involves participative learning with simulation and a requirement to participate in reflective practice (UWS 2008; NMC 2010b).

More recently, Fleming *et al.,* (2011) undertook a similar longitudinal non-experimental study to map changes in LS over a three year nursing programme. A sample of 202 Irish nursing students recruited in Year one undertook a Honey and Mumford LS Inventory. This was repeated in Year three with 166 students (83% of the original sample) and 58 matched pairs (42%) were analysed. Reflector (a preference for observation and evaluation before taking action) was the preferred LS in both Year one and Year three. However, the second most dominant LS were Activist (Year one students) and Pragmatist (Year three students) both of which, in keeping with Kinaesthetic like hands-on learning (Activist) or active experimentation (Pragmatist).

Findings were similar to those from Rakoczy and Money (1995) on two counts. First, the dominant LS largely did not change over the course of the three years and secondly the characteristics of the Reflector LS bore a similarity to the characteristics of the Assimilator LS (Kolb 1984). However, findings also showed that there were students who also had LS more suited to hands-on ways of learning – similar to the need for convergent LS asserted by Rakoczy and Money in 1995.

This was an isolated sample from one site, with data representing only 42% of the original sample and so not wholly generalisable (Polit and Beck 2008). Despite this and the 25-year gap, findings from both these studies showed that nursing students' preference for observation, participation, and reflection has remained static for a considerable period of time. Further to this the characteristics of the prominent LS (Kolb's Assimilator and Honey and Mumfords Reflector) shared similar characteristics to the Visual LS of VAK, as utilized in my study.

The learning styles of the students in my study appeared to be suited to learning in the SCE. Fountain and Alfred (2009) suggested that high-fidelity simulation, such as that utilised within my study, accommodated students with various LS. Whilst this was largely true, one student Jen, the only student with a sole Kinaesthetic LS did not enjoy the experience of learning in the SCE.

In theory Jen should have found learning in this hands-on way suited to her way of learning, but she did not. Numerous factors' can influence how a learner engages with any learning approach (Coffield *et al.,* 2004; Race 2005), for example, childhood development, formal and social education, personality and previous experience. Jen had alluded to a negative experience in secondary education.

Fountain and Alfred (2009) sought to establish if there was a specific correlation between LS and high-fidelity simulation. Students were in year three and had been using simulation since first year, so were familiar with it. A sample of 104 nursing students from three campus sites was recruited. Prior to participating in a simulation scenario they attended a lecture on the same topic and then completed similar case studies. Following the simulation scenario students were asked to complete a 13 – item Likert scale satisfaction survey. Response rate was 75% (n-78), so could be judged as representative of the population (Polit and Beck 2008). Fountain and Alfred (2009) matched the satisfaction scores to the students LS, which they had on record. All students, as part of the enrolment process undertook a LS Inventory which categorised them as: Auditory; Visual; Social; Solitary; Orally dependant; or Writing dependant Learners.

Results revealed that the commonest LS was Social (n= 60:77%) with two LS, Social and Solitary, showing significant correlation to satisfaction with simulation. Social learners like comparing, listening, networking and interacting; whilst Solitary learners prefer to work independently, to observe others, use reflection and complete projects or tasks at their own pace.

Both Solitary and Social LS have characteristics common to VAK LS Inventory and relevant to the students in my study. For example: Visual learners like to observe and reflect before acting; Auditory learners like to listen, network and interact before acting and Kinaesthetic learners like to complete projects or tasks.

It would have been interesting to know if students in Fountain and Alfred's study still had the same LS they had at the start of first year at the end of year three. It may be that like students in Rakoczy and Money (1995) and Fleming *et al.,* (2011) their LS would have remained unchanged, but there may also have been significant changes. James *et al.,* (2011) reported that 80% of a sample of 334 student nurses and midwives in Australia had a multimodal VARK LS. The response rate of 78% rendered these results noteworthy (Gerrish and Lacey 2010). A Kinaesthetic LS was consistently present and dominant.

Likewise, 62% (n=38) of the sample (n=61) in Koch *et al.'s,* (2011) study had a multimodal VARK LS. Although Read/write and Aural were predominant generally, 95% (n=58) of the sample of graduate entry nursing students spoke English as a second language. Those who spoke only English had a Kinaesthetic and Visual LS preference. This may account for James *et al.'s,* (2011) preference for Kinaesthetic dominance as 81% spoke English as a first language. The sample in Koch *et al.'s,* study was small and the findings therefore constrained by this (Gerrish and Lacey 2010), however, like James *et al.,* (2011) they demonstrated that multimodal LS are most common. Most of the students in my study had multimodal preferences. Koch *et al.'s,* findings also demonstrated the significance of language. Those who did not speak English as a first language tended to favour LS which were perhaps less reliant on interaction. One of the students in my study spoke English as a second language. Her English was impeccable and her preferred LS was visual.

Returning to Jen, who reported being unable to remember things she did in simulation. This may be stress related as she acknowledged her dislike of that teaching approach on numerous occasions. When individuals feel under stress, the body releases a stress hormone (Cortisol), which when excreted in higher levels can cause the individual to experience symptoms such as anxiety, nausea and cognitive impairment in terms of 'mind goes blank' (Mind 2011). In addition, Catecholamines (released by adrenal glands) initiate an emotional response, which can suppress activity in the regions of the brain concerned with short-term memory, concentration, inhibition, and rational thought.

This sequence of mental events allows a person to react quickly - the fight or flight response. However, it also interferes with the ability to handle difficult social or intellectual tasks and behaviours during that time. This may have been the case for Jen.

Students have reported participation in simulation to be stressful (Lasater 2007; Baxter *et al.,* 2009). Conversely however, some students actually liked the adrenaline charged atmosphere that sometimes occurred in simulations:

> Jack – *'…and there's a buzz involved in it as well, because you don't have a lot of time to complete a task."*

7.3.3 Development of skills competence

The aspect of simulation most favoured by the majority of the students was the opportunity it afforded them to develop and hone key clinical skills; some technical but also some softer skills such as communication and clinical decision-making (CDM). Many skills were revisited each week, such as recording and documenting systemic observations, communication and CDM in order that students could develop competence through application in increasingly complex scenarios. This in turn was designed to help them develop confidence through repeated practice in a range of scenarios (Ker and Bradley 2007).

Other skills were visited less often (aseptic technique, catheterization, drug administration) while others were dependent on the clinical decisions made by the students, for example airway management and basic and immediate life support (BLS/ILS). As a consequence of poor clinical choices resuscitation skills (BLS/ILS) were practiced quite frequently as students tested their knowledge and decision making skills. The following quotes from students were reflective of these issues:

> Anna - *"A lot of people found it really simple – putting the fluids and connecting it all through the Baxter pump – but that took me a wee while to grasp, so I made sure that after that I was involved in doing that…you just have to make sure that you get the opportunity the next time you go in."*

Anna seemed to benefit from repeated practice of a skill that required the combined skills of dexterity and numeracy. Allan, on the other hand relayed how his communication skills were tested in challenging scenario's involving patients with variations in culture, age, lifestyles or backgrounds:

> Allan – *"One form of communication might work with one person – some people like to be talked to in medical terms and others in lay terms. It kept you on your toes – this isn't working, what else can I try? It got everybody thinking – myself especially, when I was trying to communicate with the person I thought 'I'm really not handling this…I'll try a different approach."*

For Allan and others that type of meaningful scenario was possible because of the use of a 'real' patient. As highlighted earlier, most students found communication with real patients easier than with the mannequin. From students' narratives it appeared that communication [with real patients] was more complex and spontaneous and felt more authentic [unless the individual was known to the student]. As reported previously, this was not the case with the mannequin, which the majority generally found difficult to interact with.

Nonetheless, not all students found the simulation scenarios meaningful. For Jen, the repetitiveness of the scenarios was one influencing factor in her dislike of simulation. Jen felt that rather than repeatedly revisit skills like assessment and resuscitation, scenarios should have more of a focus on day-to-day skills. Whilst acknowledging the importance of resuscitation skills, Jen believed that fundamental skills were of more importance because students were less likely to see a cardiac arrest than need to carry out aseptic technique. She reported being unclear sometimes about the order in which to carry out a procedure, particularly when individual nurses had their own way of applying a skill:

Jen – *"I would have maybe done simulation if it had been varied, but it wasn't. You were doing the A-E assessment every week, which is fair enough but what about the normal day-to-day skills you need - dressings, injections, catheterisation – they just bypassed it…you start to panic – 'Do I do the dressing pack first and then put on my gloves or…?' – you start to get all muddled because people do things different. So I think revisiting [aseptic technique] on a regular basis would have been a better idea…obviously revisiting a cardiac arrest, fair enough, cardiac arrest is a major problem but it's something that you don't generally see every week, whereas you go in on a daily basis and somebody needs their dressing done…by the time you get to the patient you're thinking 'what do I start with' and you start to panic. I think basic things should be done regularly in simman.'*

Jack also highlighted this point. However in contrast to Jen, he felt practice in simulation had helped him to learn the correct procedural steps of a skill.

Jen was unique within the sample. The majority of students seemed to value simulation. They gained practical experience in a range of skills, which their discussion implied they were then able to practice and further develop in practicum. Jen's discussions on the other hand suggested she struggled with this aspect and was unsure how to carry out some procedures. This suggested a link between engagement within simulation and transfer of skills to practicum. In this third interview, but also in previous interviews, Jen repeatedly indicated that she found engagement in the SCE difficult. She discussed how, because of her dislike for learning in this manner she avoided taking part, thus not allowing herself to build a visual mental model of a skill, based on practical application.

Others who had successfully engaged went on to apply these acquired skills in practicum and made reference to the fact that they *'just thought back to what they did in simulation'*. It seemed that Jen did not have this same experience. This important issue is looked at in depth in the discussion chapter.

7.3.4 Feedback

The simulation activities within the SCE were recorded, which facilitated a number of review capabilities. Students participated in peer and self-review as well as receiving feedback from academic staff:

> Kate – *"Completing a task [in SCE] and getting good feedback helps your confidence. I understand feedback will not always be positive but as long as it's portrayed in a positive way - I found if it's not then it seriously puts you off…you think 'well nothing positive has been said about that' and you go home and think 'I'm not doing that again' I've felt like that once and it wasn't a good experience. I think the communication you're getting at the end with the strengths and weaknesses is important. I know a lot of people are like 'I'm not doing that again."*

Other students also commented on the impact of poorly given feedback. It negatively affected Jen's willingness to engage with simulation. Feedback is the most important aspect of any teaching and learning event (Eraut 2006). In addition to constructive feedback from the lecturer, students should be facilitated to critically review their own performance. The wisdom comes from learners' reflections during feedback. They identify learning that occurred and formulate a learning plan that identifies future learning needs and goals (Brown and Knight 1994; Glover, 2000; Clynes and Raftery 2008).

Glover's (2000) case study explored third year nursing students' (n=5) perceptions and uses of feedback. Findings from students' log book entries and interviews revealed the most significant feedback related to clinical skills. RN's and clinical teachers gave the most significant feedback, which acted to reinforce existing knowledge, provide encouragement and help confidence.

Glover's study was small (n=5) and based on the students' experiences of feedback in practicum, rather than in simulation and is therefore specific to that context (Polit and Beck 2008). However, the findings showed the impact feedback can have on student learning and the important focus clinical skills have in practicum. Feedback following participation in the SCE is important for students in order that they may reflect on their learning needs in preparation for going into practicum and applying those skills.

Regardless of whether feedback occurs in the academic or the clinical setting it needs to be timely, constructive and focused on behaviour rather than person; because although positive feedback engenders confidence and motivates further learning, negative feedback insensitively given can produce opposing results; inhibit future learning and damage self esteem (Eraut 2006; Clynes and Raftery 2008; Koh 2008). Further to this, Dohrenwend (2002) advised that negative feedback be sandwiched between positive feedback for greater impact and beneficence.

7.4 Theme 3. Transfer of skills to practicum

Simulation aimed to facilitate clinical skills competence in students to the extent that they could safely and effectively transfer those skills to practicum. The students highlighted a number of influential issues, which had a bearing on this. A visual representation of Theme 3 and its clusters is presented in Diagram 7.5.
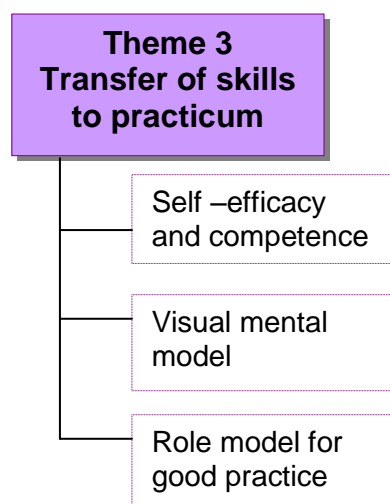
Diagram 7.5 Theme 3 and associated clusters

7.4.1 Self-efficacy and competence

Most of the students discussed this issue and most asserted that having the opportunity to practice the skill before going to practicum gave them the self confidence to carry out the skill in practicum:

> Beth – *"It reduces the fear, you develop a kind of confidence – when you are practicing it out in the field you are less stressed and you feel even proud of yourself because you know how it's being done…I feel in control of my situation – if they want a BM I know what to do."*

Beth reported feeling more relaxed "*it reduces the fear"* about having to perform skills in practicum, as did Anna. Beth also felt *"in control"* – an empowering emotion. Like Jack, Bob and Allan, Beth and Anna had confidence in their abilities having practiced in the SCE and Jane, whilst a little nervous, acknowledged that simulation helped in the first instance. Bob, Allan and Jack believed there was pressure to give a good impression to the staff and felt confident that simulation helped them achieve that.

On further exploration from a longitudinal perspective, other factors had helped. For a start, working in the clinical environment on a day-to-day basis, practicing and developing skills whilst delivering care was a big factor, which consequently had a positive impact on their level of confidence. Other students, like Sue, Anna and Beth cited their increasing knowledge base as helping their confidence levels. They acknowledged having undertaken further reading around topics relevant to their clinical experiences or to help them prepare for upcoming exams.

In terms of competence the majority of the students' who commented on this aspect felt that simulation had given them the initial confidence to perform a task. However, equally important was the repeated exposure and opportunity to perform the task whilst in practicum that led to the development of competence.

This unfortunately, was in direct opposition to the situation that Jen found herself in when discussing her fear of simulation and of being observed via live video while in the SCE and how this influenced her abilities to transfer skills:

> Jen – *" I feel very, very incompetent when I'm out here [practicum] because I feel that when someone says 'can you go and do…[any skill] and a say 'I would but I don't really know how it's done – can somebody guide me' - and because you've said 'can someone show me' they just go 'Och…"*

This apparent lack of support from staff had a negative effect of Jen's learning experiences (Levett-Jones and Lathlean 2008) and Jen acknowledged that she was "*piecing it together slowly*" and that "*with plenty of experience*" she felt things would become clearer. She conceded she was able to practice some knowledge transfer concerning carrying out an assessment, so *"to some extent it [simulation] had helped – not much but…"*

With reference to Jen's LS, which was strongly Kinaesthetic, she said she felt things would become clearer "with *plenty of experience*". Kinaesthetic learners prefer active hands-on participation - a 'learning by doing' approach. Jen's account indicated that she was able to do that in practicum and it may be that she was able to use her LS preference to her advantage. It seems unfortunate that she felt unable to do similarly in the SCE.

Perhaps Jen's perceptions of learning though simulated practice were influenced by her seemingly crippling lack of self-confidence, in terms of her knowledge base and abilities; and her intense discomfort at being observed whilst participating in the SCE. These significant issues appear to have prevented her from engaging with simulation. Consequently, she seemed unable to formulate any visual mental model because she had very limited concrete experiences or, experiences that were marred by her anxiety (MIND 2011). Despite this, Jen passed her clinical competencies in practicum. I had observed Jen briefly during her first placement experience in Year 2 and she carried out the tasks confidently and competently (for that stage of training).

7.4.2 Visual mental model

A visual mental model in the context of this study is a physical memory of a previous experience, which can be recollected in order to mentally rehearse an action prior to recreating it (Marks 1999). Most of the students made reference to the concept of a visual mental model and the positive effect it had on transfer of skills to practicum. 'Doing' a skill [in SCE] gave them a concrete experience and subsequent memorable image to recall as needed (a visual mental model).

All students thought back to what they had done in simulation, using phrases such as *"think back"*; *"remembered how I did it"*; *"practiced in my head"*; *"thinking through the process"*; *"remember doing that".* This concept, discussed previously is 'reflection before action' or 'anticipatory reflection'. The learner prepares for the intended action by 'thinking through what one wants to do and how one intends to do it before one actually does it' (Greenwood 1998:1049).

In relation to learning styles (LS), the language used by the students: "*think back"; "remember"; "practice in my head"* and *'think through"* suggested they drew on memories. These memories might have arisen from a range of sources significant to individual LS. Visual learners may recall activities or images they have observed or read; Kinaesthetic learners might draw on actual physical experiences and Auditory learners may recall what they have heard (Fleming 1995; Chislett and Chapman 2005). As illustrated in Table 8.2 earlier (see page XX), 10 of the 11 remaining students in my study had prominent Visual LS preferences (Visual was either dominant or within 2 points of the more dominant Auditory or Kinaesthetic LS) with many able to recall previous experiences from simulation.

The following quotes from Bob, Beth and Mary suggested that this was what they did and also embody similar comments from other students':

> Bob – *"I reflect back – if I do something on the ward that's similar, I'll say 'how did I do that [in simulation]…and I go through it in my mind [step by step] - it helps because it triggers off in your mind if you've done something similar in simulation and you can reflect back on that – it also shows the staff that you're quite confident."*

> Beth – *"When I went and practiced [in simulation] the knowledge of the skill lives with me. I don't forget it because I remember in simulation how I did it…and then when I go out [to practicum] I just keep remembering how it was practiced – then when I go to practice it, it becomes easy."*

> Mary – *"It was in my mind yeah. I could picture it because, I'm going 'I need to do this right' – so I did the tourniquet and I'd remembered to take it off before I took the needle out."*

Having a visual mental model as a consequence of a concrete experience [of same or similar skill] helped students transfer skills by providing a template for how the skill should be carried out. Learning 'how to' carry out a skill in preparation for practicum has been shown to help students in practicum (Freeth and Fry 2005; Bremner *et al.,* 2006; Morgan 2006; Reilly and Spratt 2007).

Perhaps not being in possession of a visual mental model they could refer to meant the student had to rely on staff. Variations in application of procedures seemed to lead to confusion for students and the potential for poor practice:

> Jen – *"…then you're like 'oh, I'll just do what they [clinical staff] do' because they work on the ward so obviously it'll be alright – so you're just following on from their techniques and nobody actually knows what's right."*

Possibly if Jen had possessed a visual mental model of that particular skill from the SCE, she may have had knowledge of the correct procedure. Previously, in relation to another skill she had reported *"going through in [my] head".*

With reference to Jen's quote *"I'll just do what they [clinical staff] do because they work on the ward so obviously it'll be alright"* Greenwood (1998) put forward the case of 'double loop' reflection. She asserted that whilst students may 'reflect before action' and set desired goals based on 'espoused' theory [learned from lectures and literature] they learn that these are often less than appropriate in practicum and they adopt a 'theory in use' approach.

278

Adopting a 'theory in use' approach means they utilise a different approach to meet the same end goal (Greenwood 1993). Double loop reflection permits the learner to examine the suitability of unscheduled actions by reflection on 'espoused' norms and values, rather than adopt an alternative action which deviates from their taught 'norm'. It's not clear however that this was the approach taken by Jen, because she did not seem to have 'espoused' theory [or visual mental model of a skill] from which to draw. The students in my study were, by this stage of their higher education, on Level 9 of the Scottish Credit and Qualification Framework (SCQF). This level expects that the student will develop the ability to critically appraise issues such as these mentioned (SCQF 2010). A dichotomy existed because whilst Jen's discussion suggested a lack of awareness of the right way to undertake a task/skill, she was progressing well in practicum and achieving all competencies.

7.4.3 Role model for good practice

As reported earlier, learning skills in the SCE seemed to give students the initial confidence to apply skills once in practicum. Repeated application on a day-to-day basis afforded students the opportunity to hone competency levels, which in turn improved their confidence in their abilities. A continuing and important factor was clinical staff, in particular the clinical mentor:

> Jack – *"It's definitely good to have a good mentor. If you show willing they will help you – I had to prove to her very quickly that I was able to do things and once she saw that I was keen she did spend a lot of time with me…she made sure I was taking part first thing in the morning, during the busiest times and she was sending me off to speak to doctors about different symptoms and things and [I was] taking handovers from theatre patients – that was quite daunting."*

Jack's comment above suggested that he had to prove his competence to his mentor. He also acknowledged that he benefited from a mentor who responded to his willingness to learn.

The role of the mentor and clinical staff seemed significant. A number of students including Bob, Beth and Jane felt that working with good mentors and other role models from the multidisciplinary team helped them develop professionally - *"seeing how they practice"* was invaluable.

7.5 Summary

In summing up, the sample of 11 students remained unchanged for the third one to one interviews, which occurred at the end of the seven-week acute clinical placement in Year 3. This placement followed on from an eight-week skills module aligned to a corresponding theory module in Year 3. The aim of this third interview was to further explore the students' ongoing perceptions of continued exposure to simulation within the SCE and address the research questions (see page 163). See Diagram 7.1 below for a summary of the key themes and associated clusters.

Theme 1 Engagement with the SCE	Theme 2 Development of skills proficiency	Theme 3 Transfer of skills to practicum
Seeing the value	Blended learning approach	Self –efficacy and competence
Facilitator interaction	Learning style	Visual mental model
Group size	Development of skills competence	Role model for good practice
Cognitive preparation for simulation	Feedback	
Authenticity of the simulation event		
'Real' patients		

Clusters of Themes

Diagram 7.1 – Thematic Analysis of Interview 3.

The theme related to student engagement seemed to take centre stage during these third one-to-one interviews. Most of the students saw the value of learning in the SCE and whilst it continued to be a little nerve wracking they made a conscious decision, based on the benefits they derived, to actively participate. It was not something that came effortlessly to them, but some students, such as Jack and Meg found it easier then others.

A number of factors were instrumental in facilitating engagement and included utilising real people as patients, which made communication easier. Whilst lecturing staff usually played this role and students found it more realistic, they also felt it would have been better had it been individuals unknown to them. In addition, lecturers who provided benevolent support were highly valued. Those students who prepared for simulation by self directed pre-reading of relevant information appeared to have fared better. This pro-activity seemed partly driven by fear of looking 'stupid'.

In terms of skills development, students highlighted various influential aspects. The majority favoured the closely aligned theory and skills modules because it allowed practical application of theory before venturing into practicum. Many skills were revisited weekly and students gained confidence from being able to test and hone their skills competence. Students welcomed feedback, as long as it was constructive and sensitively delivered (Eraut 2006). Overall, this approach to skills development seemed to especially suit the preferred LS of most of the students, which was Visual and/ or Kinaesthetic.

When it came to transfer of skills to practicum, gaining confidence in their abilities in the SCE seemed to make students more willing to apply those skills when in practicum. This, coupled with repeated application helped them develop clinical competence. Simulation appeared to help most students construct a visual mental model that facilitated 'reflection-before-action' (Greenwood 1998).

For the majority of students in this study, learning in the SCE was a positive experience. One student however was unique within the sample. Jen's narrative consistently highlighted that she did not like learning in the SCE, despite having a preferred LS (Kinaesthetic) suited to a hands-on approach to learning. However, other factors could have influenced this (MIND 2011). Because of her dislike, Jen seemed to actively seek to avoid engaging with scenarios in the SCE, thus depriving herself of concrete experiences. Consequently, she lacked confidence in her clinical abilities. Perhaps owing to the lack of concrete experiences she had little opportunity to develop visual mental models, which may otherwise have helped her to transfer skills once in practicum.

The strength of the longitudinal nature of this study was in allowing a number of key issues, such as engagement and learning style to be followed over an extended period of time. The findings from the fourth and final interview of this study revisited the key themes and will now follow.

Chapter 8 Findings from Interview 4

8.0 Introduction

The final interviews occurred at the end of the student's last clinical placement in trimester three of Year three (see Table 8.1 below - area highlighted in blue relates to interview 4, the focus of this chapter). The final interview was different from previous interviews because, as a consequence of transferring to a new curriculum for Year 3, the students had not had any additional experience within the SCE since I last spoke with them approximately six months earlier. They had continued to work in community and /or hospital placements.

By way of reminder, scenarios within the SCE became incrementally more complex as students progressed from Year 2 (SCQF level 8) to Year 3 (SCQF level 9), in accordance with the spiral curriculum approach used within the HEI (UWS 2011). Whilst early simulations were focused towards technical psychomotor skills, later scenarios gave students an opportunity to manage challenging situations requiring utilisation of effective and sometimes complex communication skills: for example teaching/advising patients, with 'doctors' via telephone and communication with peers when working in teams.

Interview	Year/Semester	Specialty (in practicum)
1	Yr 2 – Semester 3	Surgical
2	Yr 2 – Semester 4	Medical
3	Yr 3 - Trimester 1	Acute or Community
4	Yr 3 – Trimester 3	Management: Acute/Community

Table 8.1. Relationship between interview 4, stage of training and simulation focus

8.1 Interview 4

Nine students from the previous 11 participated in the final interview of this longitudinal study. Two students, Jen and Beth, opted out of the study giving no reason for the decision (Polit and Beck 2008). This will be discussed in the discussion of limitations in Chapter 10.

Interviews were carried out in the university setting, lasting an average of 39 minutes (range: 22 to 61 minutes). This time, students were asked to reflect on their experiences of simulation over the course of the two years of the branch programme. A topic guide was again utilized and helped focus the questions in order to address the outcomes of the study (see Table 8.2 below).

Interview 4 Topic Guide

'*Did learning in a simulated clinical environment help prepare you for clinical practice - if so, in what ways?" Can you give me some examples?"*

"In terms of both confidence and competence, what factors have influenced that – either positively or negatively?"

"What would you say are the skills you've really learned in the SCE?"

"How easy/ difficult was it to transfer those skills to the clinical areas?"

"How has simulation helped you to acquire knowledge and develop a professional attitude?"

"How did you get the most out of simulation?"

[this final question was included because as each of the remaining students had in the end evaluated simulation quite positively I wanted them to think about why that was]

Table 8.2. Interview 4 Topic Guide

Following analysis of the interview transcripts (Collaizzi 1978) significant statements emerged from the finding. These were arranged into 12 clusters of themes. The clusters of themes were organised into four main themes: 'skills development in SCE'; 'preparation for transfer'; 'engagement with the SCE'; and 'self-efficacy and competence'; with the theme of 'learning style' co-existing with each. Themes were similar to previous ones and this I believe emphasised the issues that had the greatest impact on the students and their learning experiences. These themes will now be presented and discussed. Diagram 8.1 below provides a visual representation of Theme 4 and its associated clusters. There is no hierarchy attached to the themes.

```
Thematic Analysis of Interview 4

┌──────────────┬──────────────┬──────────────┬──────────────┐
```

| Theme 1. Skills development in the SCE | Theme 2. Preparation for transfer of skills to practicum | Theme 3. Engagement in SCE | Theme 4. Self-efficacy and competence |

Clusters of Themes

Communicating and listening	An initial head start	Mannequin's lack of realism	Initial confidence to apply skills in practicum
Technical skills and knowledge base	Skills of assessment	From practicum back to SCE	Feedback constructively given
Professionalism	Visual mental model	A leap of faith – seeing the benefit	Developing and maintaining competence

Coexisting Theme
Evident in Themes 1 - 4
Individual student's Preferred Learning Style

Diagram 8.1 – Thematic Analysis of Interview 4.

8.1.1 Overview of Emerging Themes

Diagram 8.1 represents the clusters of themes that emerged from the interview data. The first theme concerned the student's clinical skills development the psychomotor, cognitive and affective domains as a consequence of the SCE. Technical skills were easier to gain through simulation, although when 'real' patients were used instead of mannequins, students found communication easier. Affective skills such as professionalism were influenced by the authenticity of the SCE.

Preparation for, and transfer of skills learned in the SCE to practicum was the second theme. Students felt that as a result of exposure to the SCE they went into practicum with a 'head start'. Having concrete experiences of clinical situations provided the students with a visual memory – a mental model, which they could 'replay' in their mind when undertaking the skill in practicum.

The third theme of engagement relates to how effectively or easily the students felt able to actively participate in the clinical scenarios when in the SCE. This seemed to be progressive and influenced by such things as the realism of the mannequin. However, essentially what seemed evident from narratives was that students could see that simulation would benefit them in their quest to reach registration through the development of competence. As a result they made a conscious effort to engage with the process.

Theme four highlighted that whilst learning in simulation did not result in complete skills competency, it did give then the initial confidence to apply skills once in practice. It was the subsequent opportunity for repeated practice in practicum that helped the development of competency. Feedback on performance, if constructively given, was highly valued both in the SCE and practicum and helped in the development of competence. Continued competency was very much dependant on the opportunity for application and was often context specific.

One final theme woven through the four already identified themes was that of learning styles (LS). The impact of LS seemed to be evident in the narratives of the students. All of the students in this final interview had common LS preferences.

8.2 Theme 1. Skills development in the SCE

Students were asked to consider their learning experiences in relation to skills acquisition in the SCE over the course of the two-year branch programme. The narratives revealed a number of issues related to the psychomotor, cognitive and affective domains. Diagram 8.2 is a visual representation of Theme 1 and its clusters.
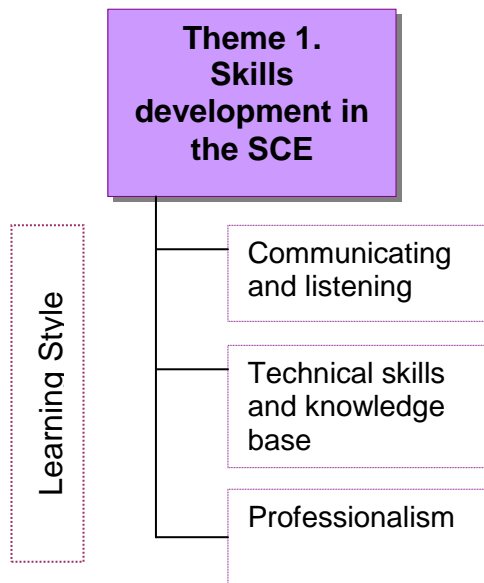
Diagram 8.2 Theme 1 an associated clusters

8.2.1 Communicating and listening

Softer skills, such as communication and decision-making were believed by most of the students to have been aided by participation in the SCE. Meg found using real people as patients made communication easier, particularly when dealing with more complex issues, and facilitated further development of this skill. Meanwhile, Mary recognized that communication skills also incorporated listening skills and was appreciative of the potential impact on patient safety:

> Meg – *"They [real simulated patients] helped develop communication skills and dealing with difficult patients…and going into practice knowing you should explain things to your patient, address your patient more. It's not just about taking a blood pressure and walking back out without saying anything. Whereas with [simman] you find you do that a lot – it's hard to speak to a dummy"*

> Mary – *"Communicating and listening – I could give the wrong IV fluids if I haven't picked up a past history, or the patient might not know what they're allergic to or anything like that – it's listening and asking questions – that's the main thing."*

The NMC (2010b) emphasised the need for nursing students to be consistent, safe, effective and sensitive communicators by point of registration. This included that the student "uses the skills of active listening, questioning, paraphrasing and reflection to support a therapeutic intervention" (NMC 2010b: 110). Accounts from students indicated that they grasped the importance of this skill and that the SCE had helped them work towards achievement.

It would seem that the use of real people as patients resulted in a more authentic experience for some of the students. Meg in particular pointed out that it was easier to communicate realistically with real people than with the mannequin. As she puts it *"…it's hard to speak to a dummy".* Meg's learning style, which was Visual, may have been influential, as visual learners prefer seen or observed things (Chislett and Chapman 2005). Seeing a '*dummy*' seemed to affect her interaction and communication.

8.2.2 Technical skills and knowledge base

Whilst the SCE helped foster communication skills, some students felt it was especially effective for technical skills. Students learned approved procedures in a systematic way and had opportunity to participate in skills they perhaps would not readily see or participate in whilst in practicum:

> Kate – *"It's things like CPR – I've not had to do that in placement, but I feel if I was in that situation I would be able to use those skills. Obviously you don't get confident until you've done it a few times but I think I would be able to go in and do it."*

> Jane – *Simulation gives you the knowledge of how to do things practically and in what order to do them as opposed to why you're doing them."*

Kate's statement was illustrative of similar comments from other students who appraised the scenario-based simulation exercises as helpful for development of their non-technical and also cognitive skills. In addition, Jane highlighted an important issue. Her comment suggested that whilst practical skills can be 'rote' learned, the underlying knowledge may not be present, an issue highlighted by Watson (2002). For a few students it seemed that scenarios in the SCE served mainly to allow them to practice technical skills. This is in opposition to the cognitive apprenticeship ideology adopted within the host HEI (Wooley and Jarvis 2007; UWS 2011).

The cognitive apprenticeship model underpinning simulation encourages and expects learners to 'make visible' the thinking behind actions (Collins *et al.,* 2004; Wooley and Jarvis 2007) and some students appeared to take a pro-active approach in seeking to further their knowledge base. Students were given feedback following simulation in the SCE. This practice should facilitate identification of areas in need of improvement in relation to skills development and underpinning theory. It would seem however, that not all students were proactive in addressing deficits in underpinning knowledge or understanding, focussing more on the technicality of a skill. This may also have been due in part to lecturing staff not making this aspect explicitly clear to students.

An Australian quasi-experimental study (Levett-Jones *et al.,* 2011) involving 84 third year nursing students, using a pre-test, post-test 21 item MCQ found no statistically significant improvement in knowledge as a result of learning with medium and high-fidelity simulation. The sample represented only 41% of the population (n=203) so not wholly representative (Gerrish and Lacey 2010) and unlike mine this was a one off study, which did not follow the progression of the students over a period of time and repeated exposure to simulation. It does however support the notion that simulation may not always provide students with associated underpinning theory, which is the precursor to understanding (Race 2005).

8.2.3 Professionalism

There was some evidence that the SCE was influential in helping students develop within the affective domain, in relation to attitude and professionalism. The SCE was similar to practicum, in terms of structure and setting and students adhered to the uniform policy whilst working within it. These authenticating factors may subconsciously have made it easier for students to adopt a professional attitude:

> Anna – *"I mean when we were in [SCE] we had to act professional at all times, it was just the way you would be on placement, you wouldn't act any differently – but it wasn't really something I thought about when I was in there. I just thought of it like placement…it's how you would act in here."*

Anna "just thought of it like placement" suggesting that on some level she had been able to suspend disbelief. Jack felt similarly, adding that a number of factors facilitated this - adhering to NMC regulations, being encouraged by the lecturing staff and being caught up in the complexity of the unfolding scenario. However, he also acknowledged it was sometimes difficult to sustain:

> Jack – *"…you're certainly taught it [professionalism] - it's maybe hard to sustain when you're with your friends…you're kind of encouraged to enjoy simulation as well and to have fun and to use it as a tool to correct mistakes…but it's certainly a good starting point."*

As previously discussed, the authenticity of the SCE is crucial in helping students to enter into the spirit of the simulation event, suspend disbelief and act as much as possible as they would in practicum (Ker and Bradley 2007; Rettadal 2009: in Dieckmann 2009). Certainly Anna's narrative suggested that she was able to see the SCE as being contextually representative of practicum and thus an effective learning environment and this was supported by a concept analysis undertaken by Bland *et al.,* (2011). These are crucial contributory factors for successful transfer of skills [psychomotor, cognitive, affective] to practicum (Lauder *et al.,* 2004; Park and Wentling 2007).

Anna had an almost equal preference for all three learning styles – Kinaesthetic, Auditory (one point behind Kinaesthetic) and Visual (one point behind Auditory and two points behind Visual). Kinaesthetic learners have a liking for a physical connection with the skill – touching, holding, and doing. Auditory learners prefer listening to information/instructions – either from self or others and Visual learners like to observe before doing (Fleming 1995; Chislett and Chapman 2005). Anna talked of *"acting professional"* in her narrative. Acting or 'role-play' is a mental as well as physical activity (Diekmann 2009) so seemingly the activity within the SCE suited various aspects of Anna's learning style (LS). Jack on the other hand had an almost equal balance of Visual and Kinaesthetic. Again, the authentic setting and realistic activities would help, but his narrative suggested that working solely with peers in the SCE challenged the authenticity of the event in relation to professional behavior.

8.3 Theme 2. Preparation for transfer to practicum

Transfer of skills to practicum emerged as a consistent theme during the course of my study. When asked to reflect on experiences of simulation over the two – year period, almost half of the students felt that learning in the SCE had a bigger impact at the beginning of the adult branch (year two), in terms of preparing them for going out into practicum, than later on in year two and also in year three. Diagram 8.3 provides a visual overview of Theme 2 and its clusters.
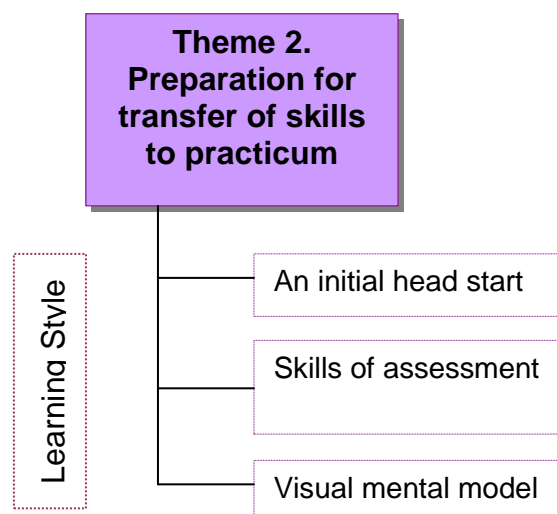
Diagram 8.3 Theme 2 and associated clusters

8.3.1 An initial head start

At the start of Year two none of the students had any experience of what to expect in a hospital environment so it provided a frame of reference:

> Anna – *"It did prepare us for clinical practice, more at the start because we didn't have much experience and didn't know what to expect…it was more, just being set in a [clinical] environment and the things you would be doing on a daily basis…more the hands on practical skills that I felt benefited me. Nearer the end we had more clinical experience and knew what to expect…then it just kept your practice up to date."*

Exposure to the SCE introduced them to the clinical environment and clinical equipment. Anna, like many of the other students felt the *"hands on"* practice facilitated within the SCE helped her when she went out into practicum. Although Anna had a slightly dominant Kinaestheic LS, most of the others had a visual LS preference. This would suggest that at the early task driven psychomotor stage of training, and with regard to the nine remaining students in my study, learning within the SCE could accommodate all learning styles. This was a few held by Fountain and Alfred (2009). Students in my study reported that going into their first clinical placement was less unfamiliar to them. This point was highlighted by many of the students in the first interview (Chapter 5).

8.3.2 Skills of assessment: putting them to use

Students appreciated the fact they were introduced to a number of key clinical skills prior to going into practicum and not practicing them for the first time on patients. A number of students recounted how the more complex simulation scenarios in year three, proved similar to actual situations they had encountered in their acute care placements:

> Bob – *"I had a patient who's blood pressure was down in their boots (74/49) – I did his observations and immediately thought 'this man needs fluids" and I went and told the doctor. She said she would cannulate and I said I would go and get fluids, which I did and I got the pump which we had used in the SCE…so I was quite confident setting the pump and the fluids up and I connected the line up."*

Bob was able to use both technical and non-technical skills first encountered in simulation to manage the situation. Bob's pride in the positive contribution he made to this potentially life-threatening situation was evident in his conversation, as was his confidence, which he directly attributed to learning the initial skill in the SCE.

Allan too, had a comparable experience and felt similarly grateful to the learning opportunities of the SCE:

> Allan – *"It's really helped me with the identification of a really unwell patient…and I'm grateful, because if it wasn't for that experience in simulation – could I have possibly misjudged the situation?"*

To a qualified and experienced nurse, these two incidents could seem quite commonplace. As a nurse myself I am aware that it is easy to lose sight of how challenging nursing practice can be for the novice and for these students on the threshold of their nursing careers these were significant events. They had identified a deteriorating patient, sought assistance and played an active role in stemming further deterioration, thus facilitating recovery.

Buckley and Gordon (2011) undertook a survey design study to evaluate RN's (n=50) ability to respond to deteriorating patients in clinical practice after undertaking training using immersive hi-fidelity simulation. Training consisted of lectures and skills simulations during which all participants played the role of first responder – ensuring each had opportunity for physical hands on application.

Three months after the skills sessions the participants completed a questionnaire designed to measure their ability to respond to actual clinical emergencies in their work environments. The response rate was 76% (n-38), so representative of the sample (Burns and Grove 2010). During the interim most participants (76%: n=30) had responded to between one and five clinical emergencies. Overall participants reported an improvement in their assessment skills; 64% (n=25) felt they could recognize an unstable patient while 77% (n=31) felt they could clinically manage the situation.

Buckley and Gordon's (2011) study support the assertion from Allan and Bob, in my study, that skills learned in simulation helped them identify a deteriorating patient and take the right course of action. Allan's event was very meaningful to him. Although he had acted promptly and the outcome was good he was conscious he could have overlooked this patient, especially if he had been trying to cope with competing demands. He felt vulnerable and reflected on the fact that this was real life, not simulation:

> Allan – *"If this man died…there was no coming back from that. It's not "oh next week I'll try a bit better" or I'll reflect on it. It's not as simple as that. I still feel vulnerable about it."*

During his last interview Alan also disclosed how simulation had helped to highlight other areas of weakness, such as communication skills. Subsequent sessions in simulation in year 3 helped him to improve his time management and his decision - making skills, with the result that he was able to identify the deteriorating patient and act appropriately.

8.3.3 Visual mental model

In addition to the introduction of new skills in the SCE, some skills such as psychomotor, assessment and communication were revisited every week within a variety of clinical contexts. This was designed to facilitate the student's ability to transfer and adapt skills from one clinical context to another. Over the course of the two years, students were grateful for the opportunity to practice the correct procedure within the SCE as some reported that on occasions there were variations in practice across the placements:

> Jack – *" I remembered the important things like taking out alternate ones [sutures] because I was seeing the other nurses not doing it that way…obviously you've got the risk of the wound opening again. That's something I definitely learned here [SCE], I remember the class."*

Jack's account implied he was applying double-loop reflection. He 'reflected before action' and planned what he was going to do, based on evidence-based 'espoused theory' learned in the SCE - he "*remembered the class*". Consequently, when faced with an alternative unplanned action to meet the desired end goal he was able to consider the options before following his original preconceived plan (Greenwood 1993 and1998).

This was in contrast to Jen previously, who when faced with a similar situation [as recounted in her account from Interview three in Chapter 7] opted to adopt the 'theory in use' approach *"I'll just do what they do because they work on the ward…"*

In relation to LS preference, Jack was Visual. He reported '*seeing…"* and he "*remembered the class*", which are in line with strategies used by visual learners who take in information through observation of demonstrations, diagrams, film clips or reading instructions (Fleming 1995; Chislett and Chapman 2005; Fleming *et al.,* 2011).

A few other students also mentioned the issue of seeing variations in procedures and reported how simulation experiences provided a valuable visual mental model. Bob was also acutely aware of the importance of following the correct procedure as he, as a senior year three student was a role model for more junior students. A role he took earnestly.

> Bob – *"Everything's been done to the letter because you also must remember that you've got other students on the ward who are not so far on as you and they are watching you."*

Bob was conscious of how important his role as an informal role model was and was aware he was being 'watched' by junior students. He seemed confident about his ability to be a positive role model because he knew the correct way to undertake procedures. The visual mental models he had formulated from his experiences in the SCE seemed to aid this.

In comparison to Jack and despite the fact they both seemed able to engage with simulation, Bob's dominant LS was Auditory (listening). However, his second preferred LS (2 points behind) was Visual, which was Jack's dominant LS (with Kinaesthetic 1 point behind). As suggested earlier, it appeared that the SCE suited the various LS of most of the students. Only Jen, who was the only student with a sole dominant Kinaesthetic LS preference, had problems engaging with the SCE. She actively avoided it.

However, Anna, also Kinaesthetic reported that whilst she found it awkward at first, she was able to participate over time. Anna's second and third LS preferences were Auditory (1 point behind) and Visual (2 points behind the dominant Kinaesthetic LS), giving her an almost balanced LS preference. Race (2005) proffered that no one LS was superior to another and that ideally individuals should try to develop an equitable balance of LS. Learning style seemed consistently to be an influencing factor and is discussed in greater detail within the discussion in Chapter 9.

What became apparent was that the students in my study seemed more effective in transferring technical and non - technical skills to practicum if they were able to fully participate [engage] in the learning experiences within the SCE. As highlighted previously, some students were able to do this more easily than others and this leads on to the next theme of engagement.

8.4 Theme 3. Engagement in the SCE

Engagement with the simulation events within the SCE was a major factor for these students. As highlighted in earlier interview findings, it could influence the development of confidence and competence and subsequent transfer of skills to practicum.

Students in this final round of interviews revealed that engagement with the SCE had been gradual. For a few students this came after the initial exposure at the beginning of year two. For most however, this took a little longer. Most reported feeling uneasy with it initially, particularly because peers and lecturers were observing them. However, by Year three all the remaining nine students saw the advantage and were ready and able to participate more fully with the experience. Diagram 8.4 below provides a visual representation of Theme 3 and its associated clusters.
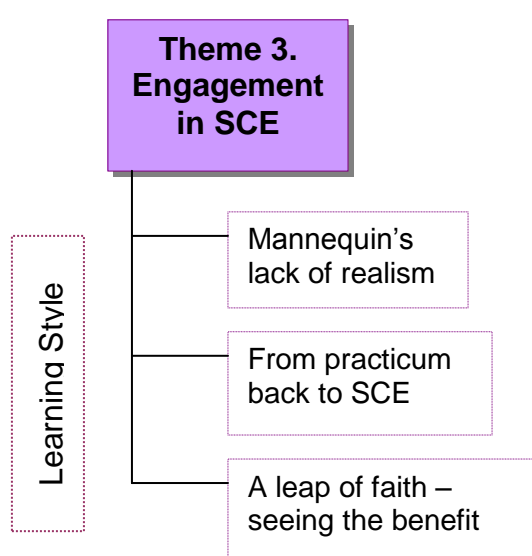
Diagram 8.4 Theme 3 and associated clusters

8.4.1 Mannequin's lack of realism

Simulation mannequins are physical representations of the human body. However, it seemed that for some aspects of care, the mannequins were somewhat less sophisticated. For Sue, the biggest barrier to engagement had been the mannequin's lack of communication capabilities and the absence of some physiological markers such as change of skin colour to represent cyanosis or pallor. She also felt that the lack of time spent in simulation prevented her from engaging more fully with Simman.

> Sue – " I do certainly think that if we had more time with Sim man you probably could get to know him better and look at him as a patient."

Students in other studies highlighted the mannequins lack of realism (Bremner *et al.,* 2006; Lasater 2007; Pike and O'Donnell 2009). Sue's use of language was interesting. Despite stating earlier, *"…it wasn't human"* this last quote where she referred to the mannequin is *'him'* suggested there was potential for 'suspension of disbelief' with regards to the mannequin. She felt she *"could get to know him better"* if more time had been spent working with him. All students at some point mooted the issue of limited time spent in the SCE.

8.4.2 From practicum back to SCE

For a number of students, experiences in practicum helped them to participate in the SCE. They facilitated authenticity within the simulation scenarios:

> Anna – *"You can imagine a person, as opposed to just the mannequin once you've actually practiced it in placement…it makes it a bit easier."*

Having experience of nursing real patients helped them see the relevance of the SCE and helped future participation. Anna's comments suggested she was able to transfer skills and knowledge back to the SCE from practicum.

Anna's comment "*you can imagine a person…"* also suggested that she made a conscious decision to enter into the illusion of the SCE. Rettedal (2009: in Dieckmann 2009: 202) acknowledged that medical simulators (mannequins) were 'not true to nature' and that 'the simulation process takes place in the head, or the mind, of the user'. It may be that Anna, with her more 'balanced' LS preferences was able to use the strengths from each LS (seeing, doing, listening) to enter into the illusion.

Having confidence, either in one's self or in one's ability to perform clinical skills was also an influencing factor. Positive feedback on performance [from lecturing or clinical staff] helped to affirm to the students that they had a level of competency and this seemed to make participation easier and motivate further learning. Five third year nursing students in Glover's (2000) mixed method study aimed at identifying how they viewed feedback reported similarly.

Positive feedback increased their confidence. It improved their self-esteem improved and was the impetus for further learning.

8.4.3 A leap of faith – seeing the benefit

When the students were asked what made engaging with the SCE easier, many responded that they *'just got it"*. However, all the students in this final interview (n=9) revealed that there was a required willingness to participate with simulation in the SCE. They saw, either in semester three at the start of Year two, like Bob, Mary, Anna and Jack or like Jane, Allan, Meg and Kate after their second exposure in semester four of Year two, that simulation was going to benefit them. By their final exposure at the start of Year three, all except Jen (who dropped out of the study just prior to this final interview) reported seeing the benefits of learning within the SCE and to varying degrees were able to engage more fully, despite barriers highlighted earlier.

The deciding factor however, appeared to be their attitude, and their eagerness to learn the skills needed to be a successful nursing student. They took a leap of faith and like Mary *'just got on with it'*:

> Mary – *"Maybe it's my personality but I can't be bothered with all this faffing about – I mean you come into nursing to learn about it – others were like 'oh this is silly' but you get so much out of it if you see the potential in it. Anything that helps you learn must be a bonus…it must have been a conscious decision just to get on with it. Whatever you hit me with I get on with because it will benefit me."*

A 'leap of faith' is an idiom defined as *'the act or an instance of believing or trusting in something intangible or incapable of being proved'* (The Free Dictionary 2009). In other words, the individual trusts that the action they take will have a positive outcome, even though they have no concrete evidence.

A few, like Mary had this attitude right from the start of their first foray into learning in the SCE. Others, like Jane took a little longer, either to see the benefit or to be more comfortable in the SCE.

> Jane –*"At the start I didn't like it at all…it was nerve wracking and knocked your confidence a wee bit…I think it's getting yourself into the right frame of mind…it's about pretending you know - role play – pretending you're actually in practice, this is a real patient, this is life and death you're playing with. Sometimes you do want to show off a wee bit that you know this and that, you know – I want to shine like that you know…"*

It is clear from Jane's quote that she became more relaxed over time. Her desire to show she knew what to do was linked to a meaningful episode she recounted whereby as a result of being ill - prepared for an earlier simulation she felt she did not know what she was doing and was unable to participate. This was the catalyst for her decision to *"just get on with it"*:

> Jane – *"I thought, that's not the kind of nurse I want to be…it made me think 'right! Simulation – you may not love it but just get on with it, go in, put yourself in the position, pretend' and after I did that I thought 'oh you know, this isn't so bad."*

These last quotes from Mary and Jane (who both had a Visual LS preference) were representative of the attitude of the majority of the students. Jane's excerpt "…*it's getting yourself into the right frame of mind…it's about pretending - you know…"* showed that she made a conscious decision to enter into the illusion, as did Mary. To paraphrase Rettedal (2009: in Dieckmann 2009), the simulation took place in her head – she willingly accepted the illusion and took a leap of faith. Similarly, Roberts and Greene (2011) used the analogy of simulation being like the stage, with the students in the role of actors and peer reviewers as the audience. Students follow a loose script and are required to improvise as the scene unfolds before them, using previous knowledge to guide their actions. They suggested that this process would lead to self-actualisation on the part of the learner as they 'learn to act and think like a nurse' (Roberts and Greene 2011:697).

Of the final sample of nine students in my study, Sue appeared to have the biggest barrier and this was related more to the mannequin in particular and to the lack of realistic and spontaneous responses. Sue found engagement easier if a real person played the patient. However, the following quote suggested that despite her personal barrier she saw the benefit of simulation:

> Sue – " I don't think doing a presentation in a group is going to help you treat a patient, whereas spending that time with Sim man probably could."

Sue had a visual learning style preference (observing things, watching a demonstration or reading instructions before performing a task) and it would seem that because she could see that sim man was not an authentic representation of a real patient her ability to 'suspend disbelief' was hampered. However, she acknowledged that "*spending time with sim man*" was perhaps a better learning experience than other more traditional ways of learning.

Students in this study displayed traits highlighted within the literature relating to adult learners. Adult learners are goal orientated and will learn more effectively if they can see the point of what they are being taught or expected to do. Important motivating factors for adult learning include the need to know the reason why they need to know something and how relevant it is to them in terms of achieving their goals (Knowles 1984; Boud and Walker 1990; Jarvis *et al.,* 2003; Race 2005) and student discussions supported this assertion. The students' recognised that engagement with simulation would ultimately help them develop the skills they needed to become proficient nurses and achieve registration, and chose to *"just get on with it".*

8.5 Theme 4. Self-efficacy and competence

Most of the student narratives pointed to a close relationship between the concepts of confidence and competence. See Diagram 8.5 for a visual representation of Theme 4 and its clusters.

```
┌─────────────────┐
│   Theme 4.      │
│  Self-efficacy  │
│      and        │
│   competence    │
└─────────────────┘
```
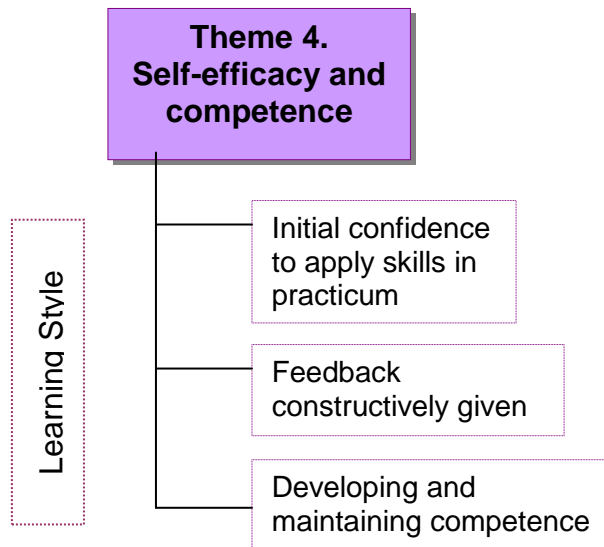
Diagram 8.5 Theme 4 and associated clusters

The diagram shows "Theme 4. Self-efficacy and competence" connected to a "Learning Style" box and three clusters: "Initial confidence to apply skills in practicum", "Feedback constructively given", and "Developing and maintaining competence".

8.5.1 Initial confidence to apply skills in practicum

Simulation, whilst not thought by the students to have resulted in complete competence, afforded them opportunity to practice skills. This in turn gave them the initial confidence to transfer and practice that skill when in practicum:

> Jane – *"As much as simulation gives you a head start, it probably helps more with your confidence than your actual competence…in simulation you only get to do something once or twice - in practice you're doing them a lot more. Out in practice is where you'll find out if you can do it or not – it's not a controlled environment."*

Students in Pike and O'Donnell (2009) experienced similar. Whilst they reported increased self-efficacy in relation to psychomotor skills after learning in the safety of a controlled skills environment, transfer to practicum was not always as easy. Pike and O'Donnell (2009) proffered that this might be due to lack of realism in the controlled SCE. Students usually know what is going to happen and when they are met with unexpected variations in practicum it can interfere with transfer of skills.

Previous comments from students in my study had highlighted the lack of time spent in the SCE and Jane's comment would support the idea that the students had insufficient time to repeatedly revisit a skill in order to develop a significant degree of competence. This may also be true in relation to Pike and O'Donnell's (2009) study findings. Jane's comment also suggested that she appreciated the 'safe' environment provided by the SCE (Ker and Bradley 2007). Regardless of the complexity of the scenarios it seemed she realised there was a degree of control within the SCE and that learners were protected.

On the other hand, Anna relayed how her confidence was helped, not so much by her experiences in the SCE but by working with real patients in practicum:

> Anna – *"I think when you're dealing with people in clinical areas, I think that's where I gained most of my confidence, just working with different people daily, getting to know different people, speaking to families…I would say when you're on placement, that's when your confidence builds as opposed to the [SCE]."*

This may also be due to insufficient time available in the SCE for repeated practice. Anna's statement that 'most of her confidence' came from practicum suggested that some initial confidence might have been gleaned from simulation.

8.5.2 Feedback constructively given

Feedback and constructive criticism were crucial to the development of confidence and also competence. In the SCE this came primarily from lecturing staff:

> Jack – *"It was beneficial to have constructive criticism so you could improve and often it becomes clear right away and you think 'why didn't I do it that way to start with?...feedback's important for confidence because it's nerve wracking going into a room with another 10 or so people watching you. It's different when you're in placement because it's just you and the patient and the patient doesn't always know what's right and wrong."*

Jack's narrative highlighted the importance of practicing skills/procedures prior to going into placement and the value of constructive feedback. Jack also showed awareness of the vulnerability of the patient and the importance of knowing the correct way to carry out procedures in order to protect the patient. As he highlighted, patients will often be unaware that something has not been carried out correctly or competently.

Similarly, in placement feedback received from mentors was influential in engendering confidence in most of the students. Positive comments informed students that clinical staff had confidence in them, which in turn improved their self-efficacy. The knock on effect was that students were less anxious and more inclined to continue to practice and hone their skills expertise. Glover (2000) also highlighted this positive consequence of constructive feedback.

Mary described an event whereby she had accompanied her mentor on a community visit to a patient who required catheterisation. Although nervous, Mary's self-assurance was bolstered by the confidence of the mentor towards her competence:

> Mary – *"…the patient turns round and says 'Have you done this before?' and before I could say anything the nurse replied 'Yes, she's very skilled at this – I've watched her'. I know she's seen me do it but it was the way she put it and I'm thinking 'Is she talking about the right person?' But inside you're thinking 'That's nice, that's feedback right away."*

In support of this, third year students in Glover (2000) identified that the most significant person to receive feedback from was the Registered Nurse, but also the patient, and that most episodes of feedback (22 out of 60) occurred at the patients bedside with the most important being related to skills.

8.5.3 Developing and maintaining competence

The previous comments suggested that for the majority of the students in my study, practising a skill in simulation gave them the confidence to practice it when the opportunity arose in practicum. In terms of competence; that is the ability to carry out a skill to the required standard, almost all of the students believed that development of competence was progressive and dependant on the opportunity for repeated practice, either in the SCE or more likely from opportunities in practicum. The following quotes from Jack and Mary are illustrative of this belief:

> Jack – *"Becoming competent is what the last three years have been about. If I was in a ward now I would happily go and do a drug round on my own, because although I've [previously] had someone standing beside me all the other times they haven't always given me input…it's about practice – the more you do something the more competent you become."*

> Mary – *"Just because you've done something over and over again you feel confident in it doesn't mean you're going to get it right every time. You can walk into a situation and think 'I'm dead confident about this' but then you don't do it right. I think you're always learning and practice always helps…in certain clinical areas some staff nurses are very reluctant to let you do things still."*

Mary's quote highlighted that competency could be context specific and dynamic. Another factor with relevance to contemporary nursing in relation to confidence and competence is the impact of reduced job opportunities for newly qualified registrants. Sue, like all the sample, had at the time of this fourth interview completed her final placement approximately eight weeks earlier and was awaiting registration, which was still a few weeks away.

> Sue – *" I think the longer you're away from it – I mean at this precise moment in time I wouldn't say I'm competent because you're not actually actively carrying out any duties – I think the fact that you don't have a job now."*

The assessment strategy within the students' HEI (in partnership with the clinical trusts) summatively measured the student's competence in all domains. However, as already highlighted during the course of this study, maintaining competence is difficult if there is little or no opportunity for continuous application. There is continued debate within the literature regarding the skills competency of newly qualified nurses (Clark and Holmes 2007; Bradshaw and Merriman 2008; Holland *et al.,* 2010). For some students in my study, this gap in their clinical skills practice was causing them concern. They felt it might impact on their transition from student to registrant.

A qualitative study exploring the lived experiences of a purposive sample of 10 newly qualified nurses in their first post, found that they lacked experience in a number of clinical skills (O'Shea and Kelly 2007). In particular, organisational and managerial skills but also in skills they had little or no exposure to during their education, such as naso-gastric tube insertion, suctioning and death.

Kelly and Ahern (2008) found similarly in a comparable qualitative study involving 13 newly qualified nurses who also reported feeling ill-prepared and 'thrown in at the deep end'. Both these studies were small and context specific (Polit and Beck 2008) with no focus on simulation. However, they both supported the fact that students found the transition to qualified status stressful and did not always have competence in all the skills needed to fulfil the role of the registered nurse.

8.6 Summary

Nine of the original 12 students took part in this final interview, which occurred at the end of their final placement and just prior to completion and registration. Diagram 8.1 below, visually depicts the Themes and associated clusters from the fourth and final one-to-one interview.

Theme 1. **Skills development in the SCE**	Theme 2. **Preparation for transfer of skills to practicum**	Theme 3. **Engagement in SCE**	Theme 4. **Self-efficacy & competence**
Communicating and listening	An initial head start	Mannequin's lack of realism	Initial confidence to apply skills in practicum
Technical skills and knowledge base	Skills of assessment	From practicum back to SCE	Feedback constructively given
Professionalism	Visual mental model	A leap of faith – seeing the benefit	Developing and maintaining competence

Clusters of Themes

Coexisting Theme
Evident in Themes 1 - 4
Individual student's Preferred Learning Style

Diagram 8.1 Thematic Analysis of Interview 4.

In summing up the findings from this final interview, what was evident was that learning in the SCE was most useful at the start of Year two, when students had no real knowledge of clinical environments or what to expect. The SCE gave them an opportunity to review and practice a range of key fundamental skills and this, whilst not particularly fostering competence, seemed to give them the confidence to transfer these skills to practicum. Most felt that it was the repeated practice in practicum, in conjunction with feedback from mentors that facilitated the development of competence.

In terms of engagement with the SCE, all nine students felt this was progressive. Although a few were able to engage relatively easily from the outset, all admitted initial nervousness, with two or three expressing actual dislike, mainly due to anxiety. For most, engagement became easier when they saw the benefit simulation could have on their skills acquisition.

Others made a conscious effort to engage, because they too saw the benefit and decided to *'just go for it'*. Factors such as preparation for simulation, compassionate support and feedback were found to be influential in helping students engage with the concept.

An important theme embedded within the conversations was that of Learning Style. The students had undertaken a VAK Learning Style Inventory (LSI) in the first year of the study (See Table 8.3 below). Of the 11 students who undertook the LSI, the only one not able to engage was Jen. On further review of the LS scores, Jen was the only student not to have another LS preference in close second: she was clearly Kinaesthetic. The other 10 students had a Visual LS preference as their dominant LS or within 2 points of their dominant LS, regardless of whether the dominant LS was Auditory or Kinaesthetic.

Cohort	Participant	Learning Style [4]	Engagement in SCE	Notes
1	Allan Age: 21-30	Visual/Kinaesthetic	√	
1	Bob Age: >41	Auditory/ Visual	√	
1	Kate Age: 21-30	Visual/Auditory	√ over time	
1	Mary Age: 31-40	Visual	√	
2	Anna Age: 21-30	Kinaesthetic/Auditory/ Visual	√ over time	
2	Beth Age: 31-40	Visual	√	Withdrew prior to final interview
2	Jack Age: 21-30	Visual/Kinaesthetic	√	
2	Jane Age: 21-30	Visual/ Kinaesthetic	√ over time	
2	Jen Age: 21-30	Kinaesthetic	X Intense dislike - actively avoided	Withdrew prior to final interview
2	Jill Age: 31-40	Not known		Withdrew after focus group
2	Meg Age: 31-40	Visual/ Kinaesthetic	√	
2	Sue Age: 31-40	Visual	√ over time	

Table 8.3: Characteristics of participants in relation to LS and engagement

---

[4] Two or Three Learning Styles denote the fact there was only 1 or 2 points between dominant and second or third preferred LS.

One would presume that learners with a preferred Kinaesthetic LS would be suited to learning within the SCE. There is opportunity for 'hands on practice' and Kinaesthetic learners favour practical experiences, which facilitate doing, holding and touching (Fleming 1995; Chislett and Chapman 2005). However, the findings from my study suggested that it is those students with an evident Visual LS who appear to be able to engage more effectively with the SCE. The longitudinal nature of my study unearthed an important link between Learning Style preference and engagement with simulation, which will be further discussed in Chapter 9.

This concludes the presentation of the findings from the focus groups and one-to-one interviews. Collectively they represented the iterative and longitudinal nature of the experience of learning in a simulated clinical environment for a small group of nursing students. In so doing they have provided a visible and chronological account of the audit trail associated with progressive nature of this study. The following chapter offers a more refined and focussed discussion, where the essence of the phenomenon under study will be presented in relation to the research questions.

Chapter 9   Synthesis and Discussion of Findings

9.0 Introduction

This study sought to explore the nature of student nurses' experiences of learning within a simulated clinical environment, and the development of clinical skills within the psychomotor, cognitive and affective domains over a two-year period in order to address the following research questions:

1   How does learning through simulation facilitate individual student learning and influence preparation for practice?

2   How does simulation support the development of the student's clinical skills proficiency in the psychomotor, cognitive and affective domains?

3   What factors facilitate or inhibit student engagement with the simulated clinical experience?

4   In what manner are students' able to transfer skills gained in the simulated setting to practicum?

The literature revealed that simulation was well established in non-healthcare environments as well as nursing, where simulation in its simplest form had been used since the beginning of the 20th century (Issenberg *et al.,* 2005; Bradley 2006; Langran and Carlin 2006; Albores and Shaw 2008). In contemporary nurse education this had been further developed utilising a range of low and high fidelity simulation, with varying degrees of complexity (Seropian *et al.,* 2004).

The introduction of simulation into healthcare education was due to changes in both healthcare provision and nurse education, resulting in less opportunity for nursing students to develop competence in key clinical skills (Scholes *et al.,* 2004; Bradley 2006; Clark and Holmes 2007; Haigh 2007; Murray *et al.,* 2008; NMC 2007; Bradshaw and Merriman 2008). A wealth of research exists relating to simulation in nurse education and informed that learning with simulation was effective in facilitating both the acquisition and further development of skills competency (Cioffi *et al.,* 2005; Issenberg *et al.,* 2005; Alinier *et al.,* 2006; Haigh 2007; Lasater 2007; Lathrop *et al.,* 2007) and to test competency (Landry *et al.,* 2006).

Pre and post registration students generally valued the benefits, finding that it helped improve their confidence before going into practicum (Bremner *et al.,* 2006; Morgan 2006; NMC 2007; Reilly and Spratt 2007). Simulation helped students test knowledge and hone technical and non-technical skills in a safe environment (Rystedt and Lindstrom 2001; Mole and McLafferty 2004; Hogg *et al.;* 2006; Morgan 2006; Schoening *et al.,* 2006; Haigh 2007; NES 2007; Reilly and Spratt 2007). However, a few students expressed negative perceptions, such as anxiety, associated with participation in the simulation scenarios and authenticity of the events (Mole and McLafferty 2004; Bremner *et al.,* 2006; Lasater 2007; Pike and O'Donnell 2009).

The literature provided evidence from one-off studies conducted over brief timeframes, or short-term studies of a few months, and as such provided standalone results with no indication that results were sustainable over a longer period. Issues identified, such as personal perceptions, confidence, anxiety, skills development and transfer were ones that could change over time and be influenced by a number of factors. Owing to the paucity of longitudinal studies mapping the progressive nature of simulation, it was evident that research was needed to explore the long-term nature of the phenomenon and the development, retention and transfer of skills learned using simulation (Alinier *et al.,* 2006; Parr and Sweeney 2006; Lathrop *et al.,* 2007).

The previous five chapters presented findings from the initial focus group, and subsequent one-to-one interviews carried out over the course of the two-year branch programme (see Table 9.1 below for the interview schedule).

Interview	Year /Semester	In the context of the student's practice placement experience
Focus Group	Yr 2 - Semester 3	After initial 5 week exposure to simulation and prior to fist clinical placement
1	Yr 2 - Semester 3	At end of first 5 week clinical placement following initial exposure to simulation
2	Yr 2 – Semester 4	At end of 5 week clinical placement following second 5 week exposure to simulation
3	Yr 3 – Trimester 1 & 2	At end of first 7 week placement following 8 weeks exposure to simulation [5]
4	Yr 3 – Trimester 3	At end of final placement but prior to registration with no further exposure to simulation since last interview

Table 9.1. Interview Schedule

During the data analysis process a number of key issues were revealed, which illuminated the nature of the student nurses' experiences of learning within a simulated clinical environment (SCE) and the development of clinical skills over the two-year period. These were in relation to: Learning within the SCE; Authenticity of the SCE; Concrete experiences in the SCE; Visual mental model; Practicum experiences (see Diagram 9.1 below). Each will now be discussed and in so doing evidence will be provided to demonstrate that the research questions have been addressed.
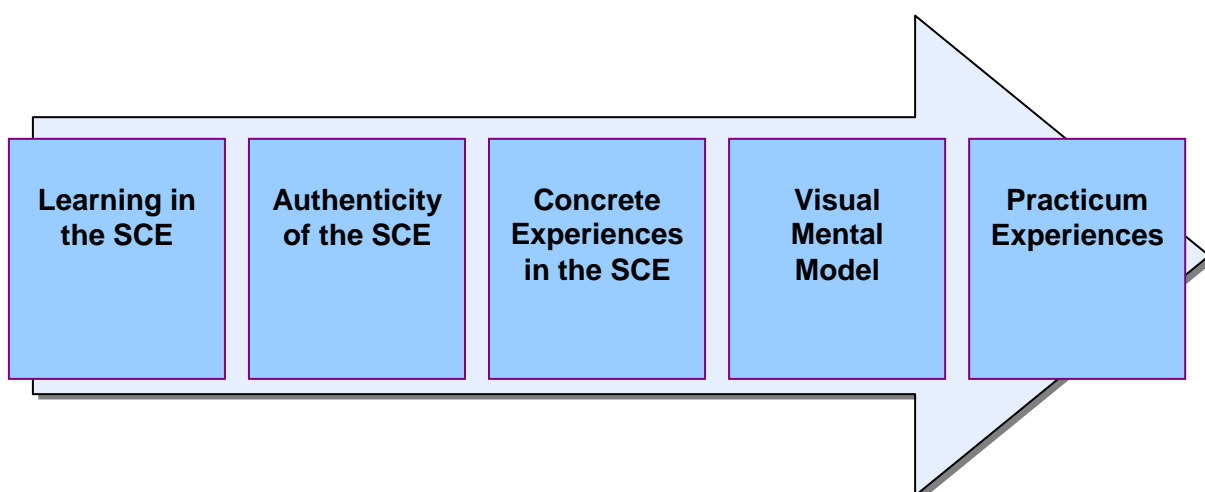
Diagram 9.1 Key issues in relation to students' experiences of learning in SCE

---

[5] The curriculum format changed for the students in Year 3 as a result of institutional merger. Students went from a semester based academic year, with two 5-week theory blocks and simulation per semester, to trimesters with one 8-week theory block, incorporating a separate skills module, and used simulation extensively in Trimester 1 of their final academic year.

9.1 Learning within the Simulated Clinical Environment (SCE)

The focus of this section is on the first part of Diagram 9.2 highlighted in blue.
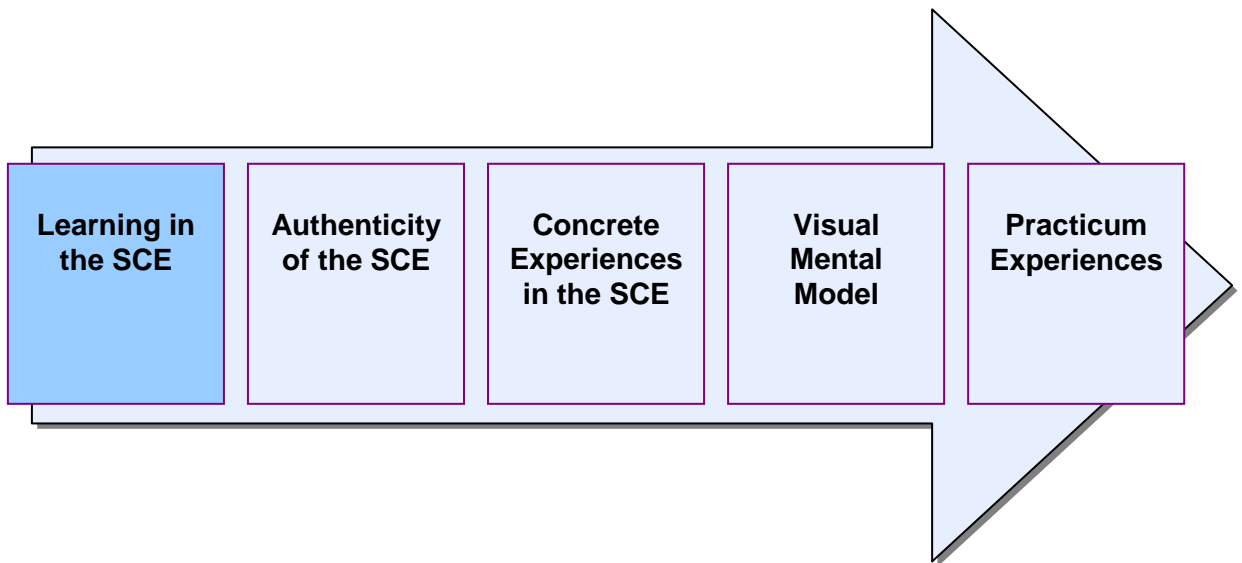
Diagram 9.2 Learning in the SCE as one of the key issues in relation to students' experiences of learning in SCE

At the beginning of my study, learning in the SCE was new to all the students and influenced by three factors: the opportunity to participate; willingness to engage with the SCE; and facilitation, supervision and feedback.

9.1.1 Opportunity to participate

The overall aim of the clinical skills component of the programme, and associated learning outcomes, expected students to apply a range of clinical skills in a variety of clinical scenarios set within the SCE. Student numbers were large (120 in August 2007 Cohort; 91 in February 2008 cohort) and this impacted on the time available to the students to spend in the SCE. In the SCE students worked in teams, initially with a ratio of around six to nine students to one patient bed space, although this dropped to a three to one ratio later in the programme. Group size ultimately led to mixed levels of opportunity for students to actively apply the skills learned, due mainly to students competing for hands on practice. Lack of opportunity to practice skills goes against the ethos of learning using simulation, which was introduced to counter the lack of availability students faced in relation to skills acquisition (Bradley 2006; NES 2007; NMC 2007).

Jen and Kate both highlighted that during group simulations there was a tendency for the more confident students to dominate. Jen (Interview 1) felt "*you are pushed aside…and you just stand in the corner*". Even those with more confidence, such as Jack and Anna found group size and general lack of time due to the large numbers, prevented them from rehearsing all the skills they felt they needed and wanted to practice. Consequently, not all students had equitable opportunity to apply the skills. Race (2007) acknowledged that in groups of six or more, equity is challenging to maintain and group supervision is required. Large groups also make it easier for non-participant behaviour to emerge and go unnoticed and may be why Jen was able to avoid participation on several occasions. Although groups became smaller as students moved through the programme, Jen was able to 'hide' when all the groups were together at the start of class.

Most of the students in my study who had opportunity for hands on participation, felt this helped them develop confidence in their abilities (self-efficacy). The same was true of students in a number of studies within the literature, who also reported feeling more confident in their abilities as a result of having opportunity to participate in hands on practice using simulation (Freeth and Fry 2005; Bremner *et al.,* 2006; Reilly and Spratt 2007; Pike and O'Donnell 2009; DeBourgh and Prion 2010). However, students in Bremner *et al.,* (2006) and Haigh (2007) also identified lack of time for more practice as a factor that impacted on student experience. In my study, Jen's confidence was curtailed as a consequence of her lack of opportunity for active participation at the start of the programme and contributed to her unwillingness to engage with the SCE.

Time is an important commodity when learning skills. Novice learners require time to learn new skills, due to the need for repetitive rehearsal and closer support and guidance (Freeth and Fry 2005; Race 2005; Haigh 2007). Literature on skills acquisition consistently asserted the need for deliberate and focused practice and drill in order for competence (technical or cognitive) to be developed and refined (Haskell 2001; Issenberg *et al., 2005*; Ericsson 2008), with Haskell (2001) suggesting that 100 hours of practice was required for a reasonable degree of proficiency to be developed.

Benner (1984) described the first stage of the novice to expert continuum as a deliberate step-by-step approach to learning a new skill. With increasing practice (experience) of the skill expertise and mastery would develop until the learner was able to reproduce the skill automatically. While Miller's (1990) competency framework (Knows/ Knows how/ Shows how/ Does) has the learner moving from knowing how to do a skill (through deliberate practice) to having the ability to 'Do' the skill competently and automatically.

Repetitive practice provides learners with the opportunity to iron out bad practice and to hone their ability to perform the skill automatically (Ericsson 2008). Issenberg *et al.,* (2005) stipulate the requirements of deliberate practice as: repetitive practice of the intended cognitive or psychomotor skill in a focused domain, which in conjunction with rigorous skills assessment and specific feedback of performance leads to increasingly better skills performance in a controlled setting. Oermann *et al.,* (2011) found positive performance improvements and skill retention for up to 12 months following deliberate practice in a large intervention study (n=606), confirming the importance of repeated practice in skills acquisition, particularly when coupled with feedback.

Clearly, the common denominator for learners is sufficient time for deliberate practice of skills and to reflect on the process of learning; the length of time needed is dependant on the complexity of the skill or individual learner needs (Ericsson 2008). Another important factor however, is the willingness of the student to engage with the SCE.

9.1.2 Willingness to engage with the SCE

Willingness to engage with the SCE was related to feeling safe, seeing the benefit and individual learning style. Firstly, this was the students' first experience of learning within the SCE, so there was naturally some anticipatory anxiety at this stage (Gray and Smith 1999). However, in line with the students in Lasater's (2007) study this anxiety, or 'stage fright' as referred to by Hope *et al.,* (2011), diminished over a few weeks as their skills developed and they became familiar and more at ease with the SCE.

A universally acknowledged strength of learning using simulation is that the SCE is a safe environment for the student. They have the freedom to make mistakes in a controlled setting; learning outcomes can be tailored to their specific learning needs; feedback on performance is facilitated and there is opportunity for repetitive practice (Issenberg *et al.,* 2005; Ker and Bradley 2007). In line with findings from other studies (Freeth and Fry 2005; Alinier *et al.,* 2006; Parr and Sweeney 2006; Schoening *et al.,* 2006; Lasater 2007; Haigh 2007; Hope *et al.,* 2011; Oermann *et al.,* 2011) the majority of students in my study generally identified these as aspects of the SCE they valued.

As highlighted previously, the students in my study worked in groups in the SCE. Within the literature, whilst a minority of students in Bremner *et al.,* (2006) admitted being wary of team working, most studies highlighted that students largely enjoyed working in teams with their peers (Schoening *et al.,* 2006; Haigh 2007; Lasater 2007; Elfrink *et al.,* 2009; Sinclair and Ferguson 2009; Rochester *et al.,* 2012). They learned by working alongside and being able to share knowledge, and from watching the performances of their peers. Although there were one or two initial comments from students in my study about the impact of large group numbers on opportunities to participate, generally this was addressed over time as the groups became smaller.

However, for Jen, early experiences of being *"pushed to the side"* (Interview 1) during her first exposure to the SCE left her reluctant to participate and subsequently adopting avoidance strategies. Her lack of self-efficacy was also a factor in her unwillingness to participate: *"I am confident talking to [patients] but I squirm away when there are other students –I leave them to do all the talking…cause I feel they are better than me"* (Interview 1). As stated earlier, students want the chance to practice and large numbers in the initial groups (between six and nine to one bed space/mannequin) resulted in more confident or over zealous students seizing opportunities both physically and vocally. Strict group management and rigorous planning may have averted this (Race 2007; Rochester *et al.,* 2012).

Rochester *et al.,* (2012) reported on a very structured approach taken to provide simulation to a large cohort of first year nursing students (n=375). They enlisted additional lecturing staff to provide support and supervision and ensured that students worked in pairs when in simulation and had designated roles to play. Students reported that this move made them feel less vulnerable and they felt more comfortable actively participating because they knew what was expected of them. This approach, which showed that with support and careful planning large groups of students can be accommodated in the SCE and in a way that seemed to meet the needs of the learners, may have benefited Jen who felt pushed aside by more dominant individuals.

In contrast to Jen's consistent intolerance to simulation, initial wariness diminished gradually for most of the students. They revealed how engagement with simulation was actually a conscious decision. By the second interview, near the end of year two, most of the students stated that while still nervous they saw the benefits of simulation. They were prepared to put aside their reservations and take a 'leap of faith'. Most of the students were in their mid-twenties to mid-thirties and having chosen to pursue a career in nursing, wanted to succeed. Andragogically they saw the benefit learning in the SCE offered so were willing to engage in order to achieve their goals (Knowles 1984). Adult learners are motivated if they can see the point of what they are being taught or expected to do (Knowles 1984; Boud and Walker 1990; Jarvis *et al.,* 2003; Race 2005). The following extracts from Mary (able to engage with SCE with ease from the start of year two) and Jane (initially nervous but able to engage by the end of year two) typify the attitudes of all the students, except Jen.

> Mary (Interview 4) – *"Maybe it's my personality but I can't be bothered with all this faffing about – I mean you come into nursing to learn about it – others were like 'oh this is silly' but you get so much out of it if you see the potential in it.*

> Jane (Interview 4) - *"I thought that's not the kind of nurse I want to be…it made me think 'right! Simulation – you may not love it but just get on with it, go in, put yourself in the position, pretend' and after I did that I thought 'oh you know, this isn't so bad."*

In line with the cognitive apprenticeship model, simulation scenarios became increasingly complex as the programme progressed (Collins *et al.,* 2004). Whilst most students admitted feeling 'in at the deep end' and challenged, they also felt their self-efficacy improved due to their willingness to take responsibility for their own learning. A number of students found that being ill prepared left them feeling out of their depth and most quickly realised that learning experiences in the SCE were more meaningful if self-directed learning was undertaken in preparation. Rochester *et al.,* (2012) highlighted the value of undertaking preparatory work prior to participation. It helped learners know what they were expected to do and they were subsequently able to participate more readily.

Most of the students in my study had Visual and/or Auditory learning preferences (including those with additional Kinaesthetic) and additional material available on the web-based resources (WebCT™; Blackboard™) were perhaps more suited to those learners (Weblinks; articles; video's and animations). For Jen however, as a sole Kinaesthetic learner the web-based materials did not facilitate physical hands on application (Fleming 1995; Chislett and Chapman 2005), so participation with these may have been limited.

In year two a few students identified they had some knowledge deficit but failed initially to appreciate that they could take ownership of that. For example, one student knew 'how' to check pupilary response but not 'why' she was doing it. In particular, Jen revealed this on numerous occasions in relation to skills and knowledge. In the following extract from Jen's second interview at the end of year two she relays how she felt ill-prepared for simulation - 'Jen found participation in simulation very difficult, stating she was *"not a great studier"* and felt incompetent in simulation.

> Jen (Interview 2) - *"If you are really clever, science wise you have no problem, but if you're a nurse who is good hands on you've no chance because you can't diagnose the patient so you don't know what to do for them"*

Again, Jen seemed to be constrained by her lack of self-efficacy. She displayed little confidence in her academic ability, but more importantly no motivation to act to address it. Unlike other students in my study or those in Bremner *et al.,* (2006) and Reilly and Spratt (2007) who were motivated to undertake further study to address knowledge deficits highlighted in simulation, Jen was very accepting of her limited knowledge. Consequently she was unwilling to engage in the SCE.

My reflective diary contained numerous entries related to Jen's inability or unwillingness to engage – she was in stark contrast to the other students. However, I found her views immensely valuable as they highlighted issues I had not given cognisance to in my role as a lecturer who taught using simulation.

Extract from Reflective Diary

September 4th 2009
J is very negative – vehemently so in fact. Hates simulation. Hates simman. Hates scenarios; perceives that lecturers do things to make students look stupid. Denies knowledge of basic skills, says she never got chance to do them in college. Admits not paying attention in class – doesn't seem to see that by not paying attention she may have missed information. Says she has never been taught how to look after a patient with cancer – doesn't see how she can transfer the skills she already has. I'm not sure if it's just that she is so negative she cannot see anything positive or that she has poor understanding. Doesn't recognise she should undertake some further reading.

September 6th 2009
Still thinking about J's interview. What's coming over is that she doesn't seem to see she can take control of her learning. Only focuses on what 'college' didn't tell her… This is frustrating!

February 22nd 2010
Does J feel threatened by her lack of knowledge?

April 4th 2010
By interview 3 the majority of the students can engage with simulation on some level…J simply continues to hate it. I see from the data that she has factors from her past that may be inhibiting her. She probably isn't alone in this - more and more I feel she is important.

Jen reported not focusing well when in class and apparently did not use the self-directed web-based materials to further her knowledge deficit. Jen's LS was suited to a hands-on approach. Sitting listening in class or having to read resources online are quite solitary and non-physical and unlike the other students in the study, she did not have a combined LS which included either Visual or Auditory. Kinaesthetic learners prefer social and physical interaction (Fleming 1995) and the additional learning resources and strategies appear not to have been compatible with Jen's LS. Subsequently, if she felt she lacked knowledge, my reflective observation that she may feel threatened by her lack of knowledge seemed valid.

I spent considerable time reflecting on Jen's situation with regards to why she could not make the conscious effort that others stated they had done when they saw it would help them achieve their goals. Essentially she seemed to believe she was not as 'clever' as the other students and she did not try to integrate with her peers in the SCE. A number of researchers have highlighted the issues of 'fitting in' and 'socialisation' (Melia 1982; Gray and Smith 1999; Gerrish 2000; Higginson 2006; Levett-Jones and Lathlean 2008; Bradbury-Jones *et al.,* 2010) mainly with regards to students, but also newly qualified nurses in practicum. However, these issues can also be attributed to the SCE, which were designed as authentic replicas of real clinical areas. More recent literature advanced the notion of 'fitting in', highlighting the importance of 'belongingness' and 'being valued' and the impact this could have on student self-efficacy (Levett-Jones and Lathlean 2008; Bradbury-Jones *et al.,* 2010).

Just as Gray and Smith (1999) and Higginson (2006) found that students wanted to fit in and not look silly in the eyes of the ward team, the same applied to students engaging with the SCE. Students wanted to be accepted by their peers and not to appear silly. Allan highlighted this issue in the focus group after his first experience of the SCE "*…you don't want to look silly in front of your peers [group agreement] - you want to get it right and people say "oh that was good" [group agreement]* (Focus Group). It seemed that students wanted to be accepted by peers. Other terms used within the literature related to this included 'being valued' and 'belongingness'.

Belongingness relates to interpersonal relationships and the theory that human beings need to form social attachments with others who share common interests, experiences or traits (Baumeister and Leary 1995). A lack of belongingness can lead to anxiety and can affect self-esteem and motivation (Baumeister and Leary 1995). More recently in the area of nurse education Levett-Jones and Lathlean (2008) established a link between students' sense of belongingness in placement and self-efficacy and motivation to undertake self-directed learning. They identified that students who felt accepted and valued by staff were more self-confident and more likely to seek out learning opportunities.

More recently, Bradbury-Jones *et al.,* (2010) reported how being valued in practicum, empowered students to self-direct their learning. These two studies referred to practicum, but findings can be applicable to the SCE. Lack of belongingness can lead to negative emotions (Baumeister and Leary 1995) and Ganley and Linnard-Palmer (2012) identified that negative emotions negatively impacted on student learning in the SCE. One of the causes of negative emotions in the SCE identified by Ganley and Linnard-Palmer (2012) was that of feedback from facilitators. A factor with a detrimental influence of Jen's willingness to engage was that of her perception of the facilitator.

9.1.3 Facilitation, supervision and feedback

In the final interview at the end of the students' final placement, almost all stated that learning in the SCE had been most useful at the start of the branch programme in Year 2, when they did not know what to expect in terms of equipment, skills technique and going into practicum. A number of learning theories stressed the importance of the novice learning from the expert, by observing and modelling; by working along side them and by being supervised and coached by the expert (Benner 1984; Bandura 1986; Collins *et al.,* 2004; Lave and Wenger 1991). Students in Freeth and Fry's study (2005) valued supervision from lecturing staff while learning new skills. They liked the opportunity to observe the lecturers demonstrating a skill, before having the opportunity themselves to practice under supervision.

Feedback from lecturing staff allowed them to start to develop competence and confidence as a consequence, especially if there was the opportunity for repeated practice. More recently, Rochester *et al.,* (2012) reported similar findings. In theory, this should have happened for Jen. However, it seemed that as a consequence of the aforementioned time constraints and cohort numbers, this did not always happen for the students in my study. If closer supervision had occurred earlier, students like Jen could have been identified and steps taken to help provide additional focussed support, which may have helped participation and engagement.

The cognitive apprenticeship model (Collins *et al.,* 2004) upon which the skills teaching and learning approach of the HEI the students in my study attended was based, offered a set of steps to facilitate the development of competence (see Table 9.2 below) and central to that was coaching and scaffolding. Coaching and scaffolding involve supervision of and feedback to the student on their performance as they learn the skill, and are similar to the approach positively referred to in Freeth and Fry (2005).

Components of Cognitive Apprenticeship Model

Modelling: expert performs skill while the learner observes & builds conceptual model.

Coaching: expert observes learner performing skill, offers prompts, feedback & further modelling.

Scaffolding: learning is supported according to skill level; activities designed to assist progression to next level. Support is gradually removed until fully independent.

Articulation: learner articulates their knowledge, reasoning and problem solving processes.

Reflection: learner critically analyses their performance and compares with expert practice.

Exploration: learner engages in autonomous practice.

(Source: Collins *et al.,* 2004:8)

Table 9.2 Components of Cognitive Apprenticeship Model

The NMC (2007) simulation and practice-learning project stipulated that the SCE should be fit for purpose. SCE's were intended to replicate real clinical areas, so it would seem reasonable that they also provide a level of clinical supervision commensurate with the students' stage of training and the level of support they would receive in practicum, to ensure equitable opportunity to practice the skill correctly. It could also be argued that a group of novice students would not be permitted to care for a patient if they had not first been judged to be proficient in the skills required to deliver care.

In my study, the students identified that supportive and benevolent facilitators were most helpful to them in the SCE. Students needed to feel safe in the knowledge they could make mistakes and would be guided to improve (Collins *et al.,* 2004; Ker and Bradley 2007; Ganley and Linnard-Palmer 2012) and for the majority of the students this was so. However, Jen reported feeling stupid as a consequence of perceived lecturer incivility whilst learning in the SCE. This acted to exacerbate Jen's existing dislike for participating in simulation.

> Jen (Interview 3) – *"Some of the lecturer's were great, they were sympathetic…but you did get the odd lecturer who really did get a kick out of making you look like an idiot, an absolute idiot and they just loved doing it every time you were in – and you think 'that's it, I give up, I'm not coming in next week."*

Although acknowledging that some lecturers were supportive it was the 'odd lecturer's poorly communicated comment that compounded Jen's already low levels of self-efficacy. The harmful impact of negative feedback, or feedback negatively given, on self-esteem and future learning has been highlighted in the literature (Eraut 2006, Fanning and Gaba 2007; Greenaway 2007 in: Silberman 2007; Ganley and Linnard-Palmer 2012; Lasiter *et al.,* 2012). Jen disclosed how as a consequence she actively sought to avoid participating in the SCE. This subsequently limited her access to hands on concrete experiences, which in turn appeared to further jeopardise her self-efficacy in relation to clinical skills. This struck me as unfortunate because Jen had a Kinaesthetic LS – well suited to hands on learning (Fleming 1995; Chislett and Chapman 2005) yet she actively disengaged from learning opportunities that may have helped her.

It is likely that if Jen had received closer support at the start of year two, she would have developed some confidence in her abilities. Subsequently, she may have found it easier to engage with the SCE.

The facilitator's role is to guide and direct students and to provide a safe atmosphere conducive to learning (Fanning and Gaba 2007; INACSL 2011). There is an emotional aspect to learning and a climate that causes heightened anxiety and negative emotions in the student can be detrimental to their learning experience (Fanning and Gaba 2007; Greenaway 2007 in: Silberman 2007). This is similar to the feelings of belongingness reported by Levett-Jones and Lathlean (2008). Students who felt welcomed and supported were more motivated and empowered to take possession of their learning.

Ganley and Linnard-Palmer (2012) revealed how students were more inclined to learn if they felt safe. They reported that students actually felt less safe than faculty realised with some students reporting negative emotions, which may have impacted on their learning. Essentially, the students wanted support and constructive feedback. They did not want to be ridiculed or embarrassed for making mistakes. Ganley and Linnard-Palmer's findings also revealed faculty were sometimes unsure about how to provide a safe environment for students.

It is possible that, as Ganley and Linnard-Palmer (2012) highlighted, the lecturing staff facilitating the simulation scenarios in the SCE, in which Jen was participating were unaware of the negative impact their comments had on students like Jen. Another student, Jane also commented on negative remarks made by lecturers, but she was unaffected by it and this may have been due to her increased self-efficacy.

Blazeck (2011) highlighted that it is not only students who suffer simulation anxiety. Many lecturing staff, charged with facilitating simulation events also experience uncertainty about this relatively new technology. Blazeck reported how lecturers in her HEI feared looking foolish in front of students and how this was helped by the introduction of an orientation course for lecturers new to simulation. It may be that the lecturing staff facilitating the simulation events for the students in my study had varying degrees of familiarity with running simulation events and were experiencing similar emotions related to anxiety as the students had experienced.

Lasiter *et al.,* (2012) surveyed senior student nurses' (n=153) experiences of faculty incivility in two universities in the USA and found that 88% (n=133) experienced what they perceived to be unfair and demeaning treatment. Of those students, 94 (61%) provided descriptions of the events, reporting 'being belittled'; 'made a spectacle of'; or 'made to feel stupid'. This was a relatively small quantitative study carried out at one moment in time and the use of questionnaires rendered data that were quite superficial in nature (Polit and Beck 2008). In addition responses related to how the respondents felt that day. Regardless of these limitations, the findings whilst context bound cannot be discounted because they were the perceptions of individuals (Holloway and Wheeler 2010) highlighting a very important issue. Again, this may have been due to poor understanding on the part of the lecturing staff concerning how to fully support students in the SCE as previously highlighted (Ganley and Linnard-Palmer 2012; Blazeck 2011).

Feedback is the most important aspect of learning (Eraut 2006), especially with regards to simulation where it helps close the learning loop (Ker and Bradley 2007; Waxman 2010). Good feedback reinforces existing knowledge, offers encouragement and builds confidence (Glover 2000; Freeth and Fry 2005; Buckley and Gordon 2011; INACSL 2011; Kable *et al.,* 2012; Rochester *et al.,* 2012), whilst negative feedback can inhibit future learning and damage self-esteem (Eraut 2006; Clynes and Raftery 2008; Koh 2008). Ker and Bradley (2007) admit that feedback often falls short of the effectiveness mark.

Although feedback was not a major issue highlighted by the students in my study, there was a general feeling that there was not enough time dedicated to it at the end of the simulation events. The students valued and wanted feedback because it helped them gauge how they were progressing, but they felt it was generally rushed, at times leaving them unsure of how they had performed and wondering *"did I do that right?"*. McKimm (2009) proffered that not giving feedback was a form of non-verbal communication, which could result in the learner making false assumptions about their abilities.

The literature on feedback is consistent in the assertion that feedback must be an integral part of the simulation (or any learning) event and be carefully planned in order to be effective, and a number of sources offered advice regarding how to plan and deliver effective feedback (Gordon 2003; Eraut 2006; Hill 2007; Ker and Bradley 2007; Dreifuerst 2009; McKimm 2009; INACSL 2011). The general consensus is that feedback should be well structured in order to enhance learning. Dreifuerst (2009) advised that feedback, which lacked structure, was directionless with the facilitator open to adopting a passive role or giving feedback unconnected to the outcomes of the event. Feedback should be timely and undertaken as soon after the event as possible in an appropriate environment. It should be non-judgemental and constructive and given in a way that will not belittle or demean the learner. The overall focus should be positive (McKimm 2009). Knowing how to give feedback to students about their performance is as important as knowing how to plan and implement a simulation event (Jeffries 2005). Feedback should be specific, based on observation and focussed on actions. There should be sufficient time allowed to facilitate reflection on students' experiences and also to allow emotions regarding the simulation to be released (Stafford 2005; Dreifuerst 2009). Table 9.3 below offers a summary of the general pre-requisites of effective feedback.

Pre-requisites of Effective Feedback
• Given privately where possible
• Be facilitated by an individual competent in the process of feedback
• Be provided by an individual who witnessed the observation
• Structured approach
• Based on the outcomes of the event
• Timely
• Non-judgemental
• Constructive
• Specific
• Based on observation
• Focussed on actions
• Adequate time to facilitate reflection / emotional release
• Overall focus should be positive
Adapted from: Gordon (2003); Eraut (2006); Hill (2007); Ker and Bradley (2007); Dreifuerst (2009); McKimm (2009); The INACSL (2011).

Table 9.3 Pre-requisites of Effective Feedback

Hill (2007) asserted that effective feedback helped students apply and develop critical self-reflection and recognise their own strengths and weaknesses, which in turn would help them plan future learning. The feedback process should be interactive, starting with the student's own assessment of their performance in the event. First and second year nursing students in Kable *et al.,* (2012) supported this assertion when asked to evaluate various aspects of simulation events they participated in. Ninety-six percent (n=82) believed that the de-brief process allowed them to self-evaluate their clinical learning needs.

The International Nursing Association for Clinical Simulation and Learning (INACSL) (2011) produced *Standards for Best Practice: Simulation,* and Standard VI offers guidance on the debrief process. Reflection is viewed as central to effective learning, with the skills of the facilitator crucial to this practice. Criteria for debrief/feedback stipulate that the individual undertaking debrief should be competent in the process of debrief and use evidence-based debrief methodologies.

McKimm (2009) described a number of feedback models, the simplest being the chronological model, in which the facilitator highlights events as they happened sequentially. Pendleton's Rules model (1984: in McKimm 2009) aims to provide balanced feedback and opens by asking the student what went well/ less well, encouraging them to self-evaluate their practice while the facilitator offers objective observations. Similarly, McKimm described the Feedback Sandwich model, which starts and finishes with a positive observation, sandwiching any negative comments between them.

Effective feedback is important, but it seemed from comments offered by students in my study that the facilitation process, which encompassed feedback, was inconsistently provided. In addition, it may not have fully adhered to the criteria for effective feedback outlined within the literature and summarised in Table 9.3 above.

Students in my study believed learning in the SCE was most beneficial at the start of Year 2. It is appropriate therefore that effective facilitation; supervision and feedback are provided from the start of the programme to ensure all students' equitable exposure and opportunity to observe and apply the skills needed and to receive constructive feedback in line with the recommendations in the literature (see Table 9.3 above).

9.2 Authenticity of the simulated clinical environment

The focus of this section is on the second part of Diagram 9.3 highlighted in blue.

Learning in the SCE	Authenticity of the SCE	Concrete Experiences in the SCE	Visual Mental Model	Practicum Experiences
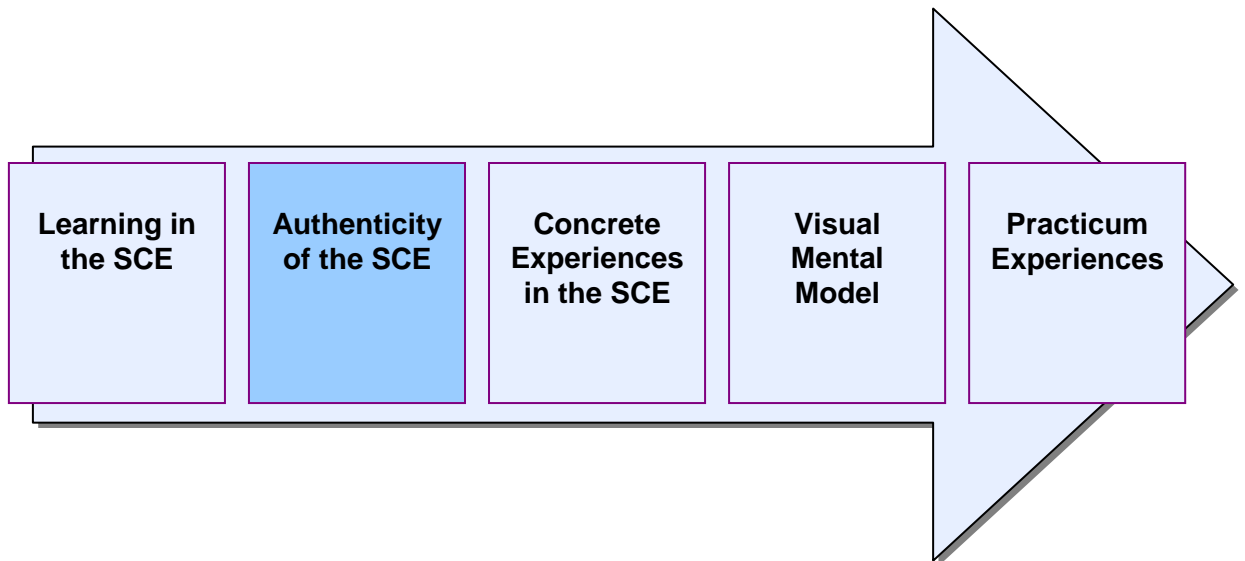
Diagram 9.3 Authenticity of the SCE as one of the key issue in relation to students' experiences of learning in SCE

Authenticity of the SCE relates to how accurate a representation of a clinical area it is. The greater the authenticity of the SCE the greater likelihood of successful transfer of skills to practicum (Lauder *et al.,* 2004; Ker and Bradley 2007; Park and Wentling 2007). There are two aspects to authenticity relating to the simulation process: external and internal. The external aspect concerns the aesthetic qualities of the environment and the equipment, whilst the internal aspect relates to the internal simulation process that takes place in the mind of the user (Rettedal 2009: in Dieckmann 2009).

Externally, in relation to the SCE authenticity can be achieved by the interior design of an environment as close to the real thing as possible by replicating the layout and equipment (including documentation) that are relevant to the role of those who will be using it (Bradley and Postlethwaite 2003). Students' adherence to local uniform policy and the use of clinical soundtracks (background noises) can also further enhance this.

Internal simulation occurs when the learner experiences *suspension of disbelief* – that is they are able to accept that the simulation is an actual event and can think and act accordingly (Cheng *et al.,* 2007). Realism is crucial in helping learners achieve this state (Seropian *et al.,* 2004; Ker and Bradley 2007). Rettedal (2009: in Dieckmann 2009) proffered that simulation was reliant on the art of illusion to make the user believe that what they see is real. In so doing, they enter into that illusion.

In relation to external authenticity, the students in my study judged the SCE to be authentic in terms of layout and equipment. When they went into practicum they encountered similar environments and equipment, which as the literature suggested made the transition easier by preparing them for practicum (Bremner *et al.,* 2006; Hogg *et al.,* 2006; Morgan 2006;) and for transfer of skills (Lauder *et al.,* 2004; Ker and Bradley 2007; Park and Wentling 2007; Reilly and Spratt 2007). The simulation literature generally, revealed a significant number of studies in which the realism of the simulated environment and event was positively evaluated by the users, who believed the realism helped with technical and non-technical skills development (Freeth and Fry 2005; Alinier *et al.,* 2006; Schoening *et al.,* 2006; McCaughey and Traynor 2010; Kable *et al.,* 2012; Rochester *et al.,* 2012). Students in DeBourgh and Prion (2010) became upset if the simulated patient fell (as part of a scenario designed to teach nursing students to minimise patient risk and harm) suggesting that the students had also experienced internal simulation.

There were, however some aspects of the simulation events judged by some students in my study to be lacking authenticity and caused them concern. These were the realism of the simulation mannequin and the roles and tasks they were sometimes expected to undertake whilst in the SCE. Mary and Bob were able to 'see' the mannequin as a real patient from their first encounters at the start of Year 2. Bob's (Focus Group) comment *"I'm actually holding the patient's hand and going "you're all right, we're going to get this sorted out"* suggested he was able to suspend disbelief when working with the mannequin.

Allan's comment from his second one – to - one interview suggested that by the middle of year 2 he too was able, and prepared, to suspend disbelief "…*you do actually go into nurse mode if you're on the ward"*.

For others however, the mannequin was a barrier, mainly in relation to communication, which was one of the skills students were expected to develop in the simulation events. Around half the students consistently reported how difficult this was for them when working with the mannequin. As Sue put it "*in your head you know it's not human"*. Interpersonal interaction was more realistic and spontaneous when humans played the role of patient, although when played by a lecturer this negatively affected the authenticity of the event and inhibited the students. There was also the fact that, although some of the mannequin's physiological parameters (heart rate, respirations, blood pressure) could be manipulated to mimic real clinical events, others, which in real life situations would be present and act as triggers to deterioration were missing. For example: cyanosis; diaphoresis; skin turgour, temperature and colour; and spontaneous verbal dialogue.

Although the majority of the literature was supportive of the realism of immersive simulation events there were others, which identified that authenticity was challenged. These related mainly to the communication capabilities of the mannequin, which students, like those in my study, found challenged and limited their simulation experience (Lasater 2007; Pike and O'Donnell 2009; Gore *et al.,* 2010; Kable *et al.,* 2012). Low levels of authenticity are linked to poor transfer of skills to practicum (Lauder *et al.,* 2004; Park and Wentling 2007; Rettedall 2009: in Dieckmann 2009). However, in terms of communication, students in my study countered that low authenticity of the mannequin did not stop them from communicating with patients in real life or, to a lesser extent applying the fundamental skills learned in the SCE.

The issue of the realism of some tasks and roles was more significant to the students. In year two students reported being asked to do tasks, which they saw as being the remit of the medical profession, such as diagnosis or identifying a course of action, such as a drug and being expected to phone the doctor to request it. The students were aware of the boundaries of their role as a student nurse, so knew this was unrealistic and not a task/role they would be expected or permitted to undertake in practicum.

Certainly there is value in knowing what a course of action may be, but it could be argued that asking students to carry out something they would not do in reality is providing an inauthentic experience. Ker and Bradley (2007), in discussing the limitations of simulation warned that there was a danger that some students would fail to recognise their limitations when in the workplace. Simulation is experiential learning, which is powerful because the student is actively involved in the process (Kolb 1984). Therefore if nursing students undertake tasks or roles out with their normal remit there is opportunity for mis-education (Dewey 1938). For Kate (Interview 2), *"it was confusing – doing Doctor things"*, whilst for Sue (Interview 2) *"it's distracting you from thinking about things you have to do".* Students in Rochester *et al.,* (2012) also identified this issue. They did not see the relevance of having to undertake a practice they would not be expected or allowed to do when in practicum. Cheng *et al.,* (2007) advised that realism is more likely to occur if learners assume their normal roles.

On the subject of appropriate skills one student, Jen believed the repetitive revisiting of assessment and resuscitation skills was not what was needed for a student nurse at her level. Whilst acknowledging the importance of practising these skills she felt that this was to the detriment of skills that were more commonly needed on a regular basis by students. As she put it "*what about the normal day-to-day skills you need - dressings, injections, catheterisation – they just bypassed it…"* (Interview 3).

On reflection of this comment I came to the conclusion that Jen, who was not alone in voicing this opinion, had a point. The lack of opportunity for students to gain repeated exposure to the range of clinical skills they need to be proficient in is well documented within the literature (McCallum 2006; Haigh 2007; NES 2007; Borneuf and Haigh 2009) and one of the drivers for simulation. Students throughout the study commented on having difficulty gaining access to skills they needed, so it would seem prudent that in the SCE students were able to focus on skills relevant to their professional and academic needs when they are in practicum. Skills must be aligned to the curricular needs of the student (Bradley and Postlethwaite 2003).

An additional missing factor was supervision. In practicum, students worked closely with clinical mentors in the initial stages of the branch programme (NMC 2010a). This aspect was missing from the SCE. A number of theories, all relevant to nurse education stipulate the importance of supervision or guidance in the professional development of the learner. Legitimate peripheral participation (Lave and Wenger 1991) has the learner situated within a community of practice (the SCE), which facilitates the student learning at the side of the master. Benner's (1984) novice to expert model of skill acquisition requires the neophyte to be supervised by the more experienced practitioner as they develop their skills. The cognitive apprenticeship model emphasises the roles of modelling, coaching and scaffolding as central to the development of the knowledgeable doer (Collins *et al.,* 2004). The expert observes, guides and supervises the learner according to their skill level.

In order for an experience to be as representative of practicum as possible, as many realistic factors as possible need to be present (Bradley and Postlethwaite 2003). On reflection, it seems anathema that supervision was not more robustly embedded in the simulation events in a way that mirrored that which students get in practicum. The NMC (2008) stipulate that students' should be supervised (directly or indirectly) by a mentor for 40% of the time when in practicum. Student need would possibly be variable but supervision should be available for those who require extra guidance. Supervision in the early stages may have bolstered the authenticity of the events and helped less confident students like Jen develop skills competence and confidence through engagement with the SCE.

Most of the students had a visual component to their learning styles and of those, all were able to accept the authenticity of the environment. As Rettedal (2009: in Dieckmann 2009) put it, the simulation has to also take place in the head. The students were all aware that the events in the SCE were not real, but because the surroundings and equipment and noises were realistic the brain accepted that what it saw was real – especially when immersed in an unfolding scenario (Rettedal 2009: in Dieckmann 2009).

There is an element of performance when participating in simulation. To paraphrase Shakespeare (1599), simulation is a stage and participating students all had a part to play. However, students, like actors required a willingness to engage, to enter into the illusion presented to them (Rettedal 2009: in Dieckmann 2009; Roberts and Greene 2011). Jane saw that really "*…it's about pretending - you know…*" (Interview 4*)* as did most of the others. Jane, along with others made a conscious decision to suspend disbelief.

Jen was the only student with a sole LS (Kinaesthetic) and the only one not able or willing (as was the case in the later stages) to enter into the illusion, and this might have been linked to her low self-efficacy. Had she been supervised in the SCE, as is customary in practicum (NMC 2008) she may have had opportunity to gain physical concrete experiences, which would have helped her develop confidence in her abilities.

Students in Freeth and Fry (2005) liked the supervision aspect of simulation. Had this been available, it may have impacted positively on Jens ability to engage with the SCE and gain hands on experiences.

9.3 Concrete experiences in the SCE

The focus of this section is on the third part of Diagram 9.4 highlighted in blue.

| Learning in the SCE | Authenticity of the SCE | Concrete Experiences in the SCE | Visual Mental Model | Practicum Experiences |
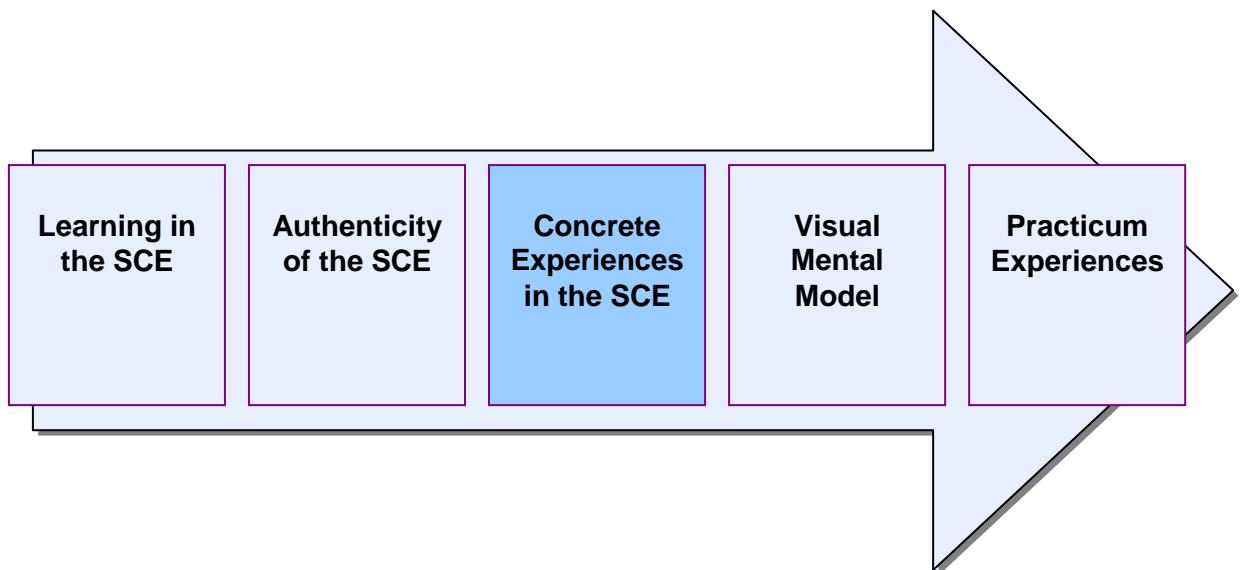
Diagram 9.4 Concrete experiences in the SCE as one of the key issues in relation to students' experiences of learning in SCE

Nursing students' require proficiency in a range of clinical skills (NMC 2010b) and a major factor in successful learning is 'doing' (Race 2005). In order to gain a level of skill proficiency the students had to 'do' the skill – they had to have an actual concrete experience. A 'concrete experience', which is the physical act of undertaking a skill or task or action first hand, is central to the acquisition of skills and the first stage of Kolb's (1984) experiential learning cycle. Concrete experiences are crucial to the process of experiential learning as is the opportunity for reflection, analysis and repeated practice, in order to facilitate deeper understanding (Dewey 1938; Moon 2004; Kolb and Kolb 2005; Silberman 2007).

Although most of the students in my study were able to access concrete experiences in the SCE, they did not always have opportunity to re-visit the skill in order to develop procedural competency (Ker and Bradley 2007). Over the two-year period of my study, students consistently voiced that they would have valued more time in simulation to rehearse skills repeatedly. Opportunity to repeat concrete experiences is important for the development of competency and, in line with Miller's (1990) competency framework, to facilitate the learner moving from having knowledge of a skill, to knowing how to apply it and demonstrating how to apply it in practicum. Thus achieving the 'does' stage of Miller's framework (see Diagram 2.1 in Chapter 2 for Miller's competency framework).

Those students in my study able to access concrete experiences reported increased confidence [self-efficacy] in their ability to perform the skill and this fuelled their desire to actively participate in future SCE scenarios. One or two students reported that they sought additional practice time in the SCE after hours. Having access to concrete experiences also helped the students feel prepared for going into practicum. Generally, within the literature similar benefits to concrete experiences were highlighted.

Confidence in abilities was a well-reported consequence of concrete experiences (Morgan 2006; Schoening *et al.,* 2006; Meyer *et al.,* 2007; Baillie and Curzio 2009). In addition, Lasater (2007) reported that concrete experiences in the SCE allowed students to see the outcome of actions, while students in McCaughey and Traynor (2010) believed it helping them develop a range of skills including clinical judgement. Students in other studies (Reilly and Spratt 2007; DeBourgh and Prion 2010) appreciated the learning the correct way to carry out skills before going into practicum.

Danbjorg and Birkelund (2011) highlighted how a small group of newly qualified registered nurses (NQRN) felt ill-prepared for their clinical roles and how observation revealed that they lacked technical skill competency. The sample of four NQRN felt that having opportunity to practice the skills would have helped, supporting the value of concrete experiences in the acquisition of clinical skills. However, the benefits highlighted by most of the students in my study and within the literature were not reflective of Jen's experience, which seem similar to the NQRN in Danbjorg and Birkelund (2011).

Having been denied access to concrete experiences, initially due to more confident students vying for position and latterly due to her deliberate non-participation, Jen went into practicum with little or no experience of physically undertaking some of the clinical skills. Consequently, she lacked confidence in her abilities, avoided further concrete experiences, which in turn further compounded her levels of confidence. However, this did not seem to affect her ability to pass her clinical competencies in practicum.

Concrete experiences were particularly relevant to Jen, who had a singularly strong Kinaesthetic LS because individuals with this LS have a predilection for learning through practical application (Fleming 1995; Chislett and Chapman 2005). Had Jen been supervised and supported to apply skills initially, she may have developed confidence in her abilities and been motivated to participate in further simulation events. Hands on practice provided students with a concrete experience, the starting point of the learning cycle (Kolb 1984). These concrete experiences in turn helped the students to construct visual mental models, which they could use in practicum.

9.4 Visual mental models

The focus of this section is on the fourth part of Diagram 9.5 highlighted in blue.

Learning in the SCE	Authenticity of the SCE	Concrete Experiences in the SCE	Visual Mental Model	Practicum Experiences
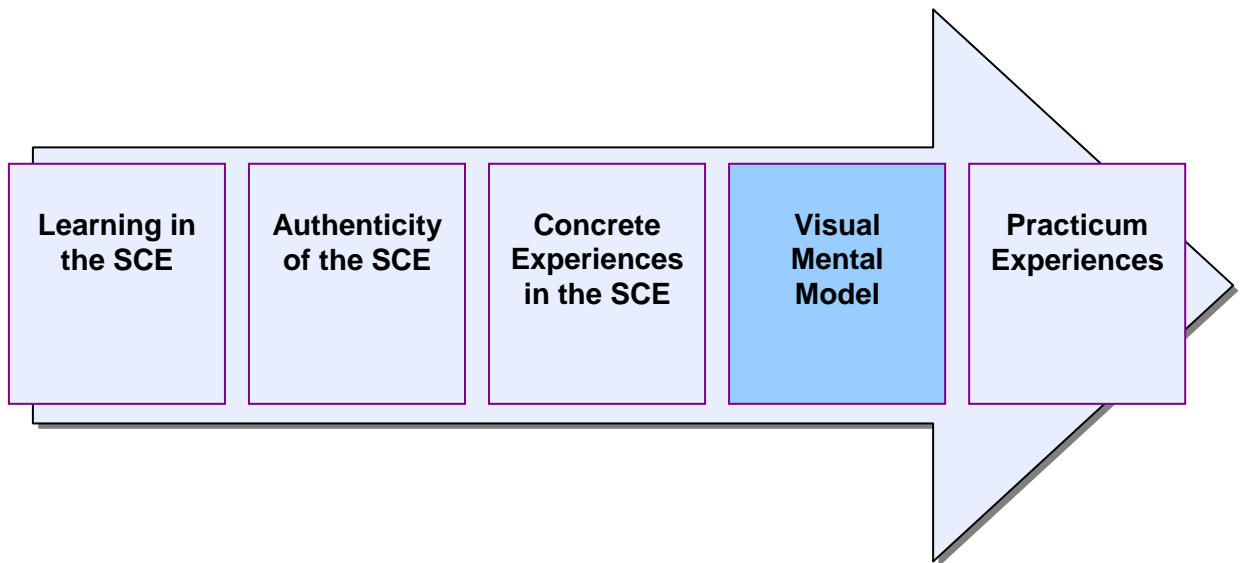
Diagram 9.5 Visual mental model as one of the key issues in relation to students' experiences of learning in SCE

A 'visual mental model' in the context of this study was a visual frame of reference internally constructed from a previous concrete experience - based on a memory of a physical action. The term is adapted 'mental model', which is 'an internal scale model of an external reality' (Davidson *et al.,* 1999). Visual mental models permit mental rehearsal of planned actions, similar to reflection-before-action (Greenwood 1998), before undertaking the intended task.

The practice of mental rehearsal is not new; alternative terms within the literature include 'mental practice'; imagery rehearsal; 'visualisation'; and 'mental imagery'. Mental imagery, the most commonly used term, is the imagined rehearsal of a psychomotor task in the absence of physical movement (Marks 1999; Geoffrion *et al.,* 2012; Muller *et al.,* 2013) and is widely used in the field of sports psychology (Knudstrup *et al.,* 2003; Sanders *et al.,* 2008; Smeeton *et al.,* 2013). Mental imagery has also been reported within teacher training (Fletcher 2000); management training (Knudstrup *et al.,* 2003) and healthcare (Bachman 1990; Sanders *et al.,* 2008; Geoffrion *et al.,* 2012) and human navigation skills (Palermo *et al.,* 2008).

According to Knudstrup *et al.,* (2003) it is akin to daydreaming, but with more direction and intention. It is a cognitive activity activating the same cortical areas of the brain that function when physically undertaking the imagined event (Knudstrup *et al.,* 2003; Geoffrion *et al.,* 2012; Muller *et al.,* 2013). Although it can involve all the senses, it is generally related to the visual modality (Marks 1999). Richardson (1985) and Knudstrup *et al.,* (2003) believed it was more effective if based on concrete, rather than abstract events because tangible events allowed the individual to revisit, replay and explore the sequence of previously experienced events when needed (Marks 1999).

The literature revealed evidence of the positive benefits to the use of imagery. Junior batters (n=34) in Smeeton *et al.,* (2013) demonstrated improved ability to anticipate the direction a bowled ball will take by using mental imagery based on experiences of watching video footage of numerous bowlers in action; and navigation abilities were enhanced with the use of mental imagery exercises in Palermo *et al.,* (2008). In Knudstrup *et al.,* (2003) junior and senior management students (n=99) were exposed to mental imagery techniques to help them prepare for interviews. All students were given a written protocol to read but students in the intervention group were also guided to visualise feeling in control and to envisage a good outcome to the interview. Students who received the visual imagery intervention reported feeling less anxious before the interview and actually performed better when subjected to an interview. Although not based on the recreation of an actual experience of a skill, it does suggest mental imagery could help to reduce anxiety by allowing a future event to be explored virtually.

In relation to psychomotor skills within healthcare, Bachman (1990) reported on a post-test study involving nurses (n= 22) attending for cardiopulmonary resuscitation (CPR) recertification. The intervention group (n=11) was guided into a relaxed state and then visually guided through an imaginary scenario where they were given step-by-step instructions on the assessment of the patient and the performance of CPR. A post-test CPR scenario (n=22) showed that although the intervention group performed better in some aspects there was no statistically significant difference in performance levels between groups.

However, some in the intervention group reported that the relaxation had enhanced their learning (n=2) and others (n=5) felt it would help them respond in real life. Findings were constrained by the small numbers and the different levels of experience of the sample and the lack of pre-test, which would have given a better indication of improved performance (Polit and Beck 2008). A similar, slightly larger study by Sanders *et al.,* (2008) did show an improvement in the performance of those who have been received guided mental imagery.

The sample of second year medical students (n=64) in Sanders *et al.,* (2008) received a lecture and demonstration of a basic surgical skill (suturing). The control group (n= 32) then read a description of the skill, while the intervention group (n= 32) underwent guided imagery to relax and then guided imagery of the procedure. Both groups were then assessed (blindly) as they undertook the procedure in a skills laboratory and following an hour of practice this assessment was repeated. Two weeks later the guided imagery intervention was repeated, while the control group reread the description. A further ten days later both groups were assessed applying the skills to live patients (rabbits). The intervention group performed better, especially with regards to transfer of the skills to live patients, whilst the skills in the control group faded with time, particularly when transferring the skills to live patients.

In contrast, Geoffrion *et al.,* (2012) found no difference in pre-test, post-test performance scores between those who received guided imagery and those who did not. The entire sample of junior gynaecology residents (n=50) across eight centres in North America undertook the usual training and performed a pre-test vaginal hysterectomy (VH). The control group (n=26) read a chapter on VH, whilst the intervention group (n=24) received a mental imagery script, which was more detailed and contained visual, cognitive and kinaesthetic cues. Both groups then performed a post-test VH. Although no difference in performance was noted there was a significant difference in confidence scores between the groups.

The intervention group reported a 19% improvement in levels of confidence post-test, compared to 11% for the control group. With regards to performance, the control group may have used mental imagery of their own volition whilst reading the text as all had observed at least one VH and this may account for the lack of difference in performance (Burns and Grove 2010).

Findings of these studies suggested that although the use of mental imagery may not always have resulted in better performances, it reduced anxiety (Knudstrup *et al.,* 2003; Sanders *et al.,* 2008) and/or increased self-efficacy (Bachman 1990; Geoffrion *et al.,* 2012) for those who received it. Low self-efficacy can cause heightened stress and anxiety in learners whilst increased self-efficacy can positively influence cognitive processes (Lauder *et al.*, 2008).

The literature stated that mental imagery was most effective if based on a previously experienced concrete skill (Richardson 1985; Marks 1999; Knudstrup *et al.,* 2003) because concrete events allowed the individual to revisit and replay the sequence of events when needed. Those students in my study who had concrete experiences of applying skills in the SCE spoke of how they visually recalled that experience when they were in practicum and required to apply it in the real clinical setting. Phrases *included "I go over it in my head'*; *"I practiced in my head"*; *"I reflect back – step by step"*; *"I picture it in my mind"*; *"thinking through the process"; "I remember how I did it".*

Clearly what was important at this stage was that they were able to recall 'accurate' concrete experiences. If students only had one opportunity to practice a skill there was likelihood their competence of that skill would be incomplete, as proffered by Bachman (1990), who also stressed the need for skill reinforcement. In relation to my study this would relate to the need for supervision, feedback and repeated opportunity for the students to re-apply the skill in the SCE, particularly in the early stages when many, if not all of the skills were new to them. The cognitive apprenticeship model outlines steps to accomplish this quite clearly and central to that is modelling, coaching and supervision to facilitate mastery (Collins *et al.,* 2004).

Bachman (1990) asserted that if psychomotor skills were not practiced, or were practiced incorrectly, or went unchecked they threatened patient safety. Bachman was aware of the barriers, such as lack of opportunity or time to practice skills physically and believed that mental rehearsal could help to overcome this.

Visual mental models allow mental rehearsal of a skill but depend on previous concrete experiences of particular skills so they may be recreated in the imagination as and when needed (Richardson 1985; Marks 1999). For most of the students in my study this was possible. However, for Jen, who actively avoided engaging with simulation the consequence of little or no concrete experience was that she seemed to have no notable experiences to draw on.

Every student except Jen had a Visual LS preference and they were able to construct visual mental models from previous concrete experiences. Visual learners seemed to find it easier to recall activities or images they had observed or read and then acted out (Fleming 1995). As highlighted, although the use of mental imagery can be multisensory, it is generally related to the visual modality (Marks 1999) and this may be one of the reasons Jen found difficulty in using mental imagery to construct a visual mental model.

However, the use of visual mental models helped facilitate effective transfer to practicum for many of the students from my study. Students in other studies also highlighted the learning in the SCE provided them with a visual model, which helped them in practicum (Morgan 2006; Reilly and Spratt 2007).

9.5 Practicum experiences.

The focus of this section is on the final part of Diagram 9.6 highlighted in blue.

Learning in the SCE	Authenticity of the SCE	Concrete Experiences in the SCE	Visual Mental Model	Practicum Experiences
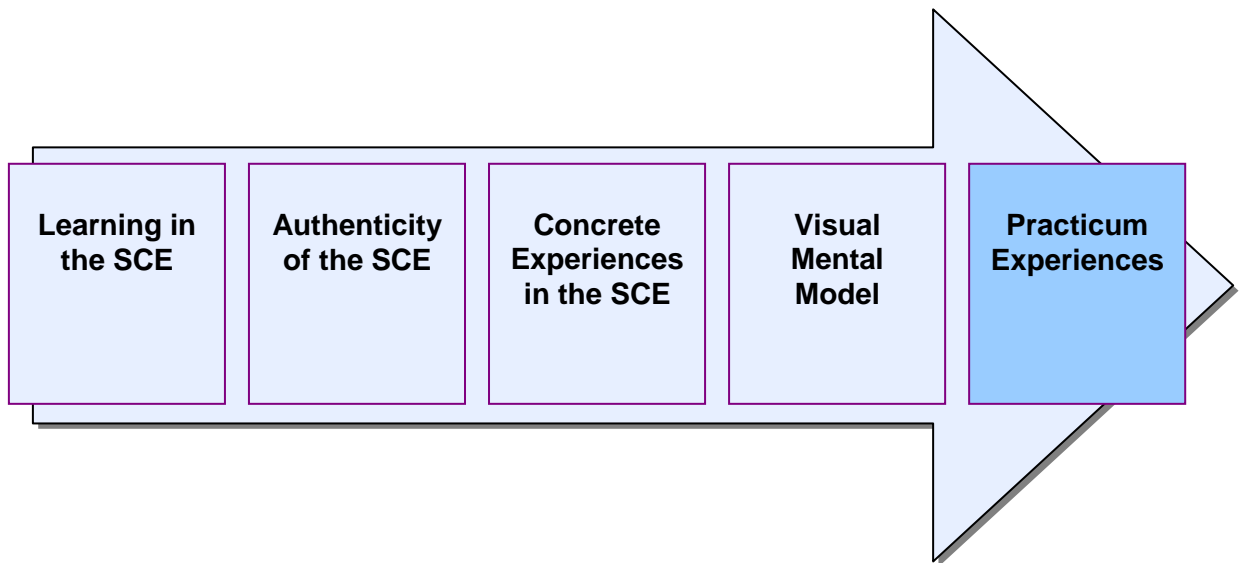
Diagram 9.6 Practicum experiences as one of the key issues in relation to students' experiences of learning in SCE.

Practicum experiences related to the ease at which the students were able to make the transition to practicum and the ease and proficiency at which they were able to apply the skills learned in the SCE. The process of applying the skills in practicum is known within the literature as transfer.

Transfer of learning is 'the process of applying skills, knowledge and attitudes acquired during a training programme, to the workplace' (Leberman *et al.,* 2006:2). Being able to effectively transfer skills and knowledge to the real environment is considered a true measure of effective learning (Miller 1990; Haskell 2001; Leberman *et al.,* 2006). Haskell (2001) believed that the process of transfer was important because it was at the heart of all progress. Transfer facilitates storage, processing, remembering and recall of information and utilises and builds on existing knowledge (Halpern and Hakel 2003; Leberman *et al.,* 2006). This is similar to the spiral curriculum, utilised within the study site, whereby students were facilitated to build on existing knowledge and skills at each incremental level of the programme (UWS 2008).

Haskell (2001) asserted that all learning involved transfer of learning, describing numerous pre-requisites to facilitate successful transfer. First of all, opportunity for practice and drill; an incubation period - as learning does not occur instantly; learner motivation – they must want to transfer new learning; underpinning knowledge, which influenced the ease of transfer. Haskell believed there were no shortcuts to transfer and that it was influenced by previous learning and helped the learner to process information. Six levels of transfer were identified (see Table 9.4 below for a typology of transfer levels).

LEVEL	NAME	TRANSFER DESCRIPTION
1	Non-specific transfer	This refers to all learning – all learning has been connected to past learning.
2	Application transfer	Applying what one has learned a specific situation.
3	Context transfer	Applying what one has learned to a slightly different situation (e.g. recognizing something in one context and then in another).
4	Near transfer	Transferring to new situations that are closely similar (e.g. learning a skill and using part of that learning to develop another skill).
5	Far transfer	Applying learning to situations that are quite dissimilar.
6	Creative transfer	In the interaction between the new and the old situation something new is created.

Table 9.4 Typology of transfer levels (Source: Haskell 2001:29)

In relation to my study, interview discussion suggested that at various times throughout the two-year adult branch programme the students were applying skills up to level four of the typology (Table 9.4). For example, Bob and Allan (Interview 4) described how they transferred skills learned in the SCE to identify and manage deteriorating patients in practicum (level three). Meanwhile, Jack (Interview 1) described how he used skills of basic aseptic technique to develop these further in a more complex (and previously unseen) wound dressing (level four). This was also described as low road transfer; when similarities in contexts facilitate a more automatic transfer (Perkins and Salomon 1992).

Kirwan and Birchall (2006) described a model of learning transfer, which included some of the pre-requisites identified throughout the literature on transfer of learning and listed above. Although not specific to transfer of clinical skills from simulation to practicum, it is transferable to that context. The model, based on a previous model by Holton *et al.,* (2000) placed importance on the need for the learner to be motivated to transfer.

Factors that would influence that (and which are also pertinent to healthcare skills transfer) included learner readiness (training is viewed as an opportunity); perceived content delivery (course content is perceived as relevant); performance self-efficacy (confidence from experience and feedback develops in learner regarding ability to learn/transfer); feedback and coaching (constructive feedback from any source); peer support (amount of help from peers); opportunity to use (organizational factors which enable or inhibit transfer); personal capacity for transfer (personal factors that enable or inhibit transfer); transfer itself (good or bad outcome).

Many of these factors were issues identified by the students in my study when they were describing their clinical experiences in relation to the application of clinical skills. In particular: opportunity; supervision and feedback. Although opportunity to transfer the skills learned in the SCE to practicum had been out of sync for some students in my study, essentially by the end of third year most had been able to apply them to some degree in practicum.

Guaranteeing all students equitable clinical learning experiences, with unilateral exposure to the range of skills taught in university, at the time they are taught them, was and is out with the control of nurse educationalists. Reasons for this have been previously established as changes to healthcare policy and practices (Maran and Glavin 2003; McCallum 2007; NES 2007; Murray *et al.,* 2008).

Not all students in Rochester *et al.,* (2012) had opportunity to transfer the skills learned in the SCE. One student from the sample of 12 who participated in the focus group did not get to practice the skills learned. Although only one student, it is possible that there were others in a similar situation.

Similarly, Jen, Sue and Kate in my study reported having little or no opportunity to transfer some of the skills learned in the SCE to the real setting and real patients. For example, Sue's first placement did not facilitate application of skills such as aseptic technique; intravenous infusion line care; suture or staple removal. However, experiences in practicum were variable. Most of the students in my study were able to transfer some skills but this was very much dependant on the placement and some did struggle to get skills opportunities. The literature highlighted that transfer of new skills was dependant on opportunity for application (Meyer *et al.,* 2007; Widyandana *et al.,* 2010; Houghton *et al.,* 2012). They also highlighted that lack of opportunity led to frustration and deskilling, supporting the beliefs of Holton *et al.,* (2000) and Kirwan and Birchall (2006).

As discussed earlier, initially students were nervous about going into practicum. Like the students highlighted in a number of studies (Gray and Smith 1999; Levett-Jones and Lathlean 2008; Bradbury-Jones *et al., 2011)*, the students in my study wanted to fit in; they wanted to be useful; and they wanted to start providing care to patients. For most of the students, concrete experiences in the SCE gave them the confidence to apply skills in practicum; a factor referred to as 'performance self-efficacy' in Kirwan and Birchall's (2006) learning transfer model. Other factors highlighted by Kirwan and Birchall (2006) and Haskell (2001) were also evident; for example 'learner readiness' – whereby the SCE gave most of them the opportunity to learn a skill and they wanted the opportunity to develop them in practicum; 'motivation to transfer' – the students had the desire to apply what they had learned to practicum. Lack of motivation can be a major barrier to learning (Levett-Jones and Lathlean 2008).

The literature supported that learning in simulated environments helped students transfer learning to practicum (Morgan 2006; Park and Wentling 2007; Reilly and Spratt 2007; McCaughey and Traynor 2010; Buckley and Gordon 2011). However, it was also dependant on the skill, as some were easier requiring little more than mental rehearsal. First year nursing students (n=9) in Maginnis and Croxon's (2010) qualitative study reported being able to apply basic task related fundamental skills learned in the SCE to practicum.

Once in practicum many of the students in my study were able to recall the procedural steps learned through application in the SCE, through the use of mental recall and imagery [as discussed in the previous 'Visual Mental Model' section] and this served them well, especially if they encountered procedural variations. Jack for example was able to note inaccuracies because he had opportunity to practice the correct procedure in SCE. Students in Maginnis and Croxon (2010), Widyandana *et al.,* (2010) and Houghton *et al.,* (2012) also highlighted this issue. In support of the use of visual mental models to help with procedural recall or rehearsal, Jen in my study having reportedly had little or no opportunity to practice skill in practicum, admitted being unsure of procedures and simply emulated what she observed in practicum.

In line with students from other studies (Gray and Smith 2000; Henderson 2002; Papp *et al.,* 2003; Donaldson and Carter 2005; Lofmark *et al.,* 2012), the students in my study were eager for supervision and to demonstrate their capabilities to their mentors; to learn from them; and to improve and be judged competent. However, they also reported that supervision and feedback were inconsistently provided, especially if wards were busy due to workload or staffing issues. Supervision and coaching both help facilitate skills transfer (Heaven *et al.,* 2006; Kirwan and Birchall 2006; Meyer *et al.,* 2007; Clynes and Raftery 2008).

It could be argued that mentors have a duty to support and foster learning opportunities for students in practicum (Lauder *et al.,* 2008; NMC 2008) and that during times of heightened activity students can, as suggested by Clynes and Raftery (2008) learn by observing from the sidelines. This approach is also in keeping with the philosophy of communities of practice and legitimate peripheral participation (Lave and Wenger 1991) whereby the apprentice learns at the side of the master or expert, observing initially before gradually becoming more involved as their knowledge and expertise increases.

The students in my study had a range of experiences with mentors. Some were supportive and nurturing while others largely absent. By way of illustration: on arriving in practicum to undertake an interview the student informed me it was her final week and she had not yet met her mentor. Another student relayed how she had a really quiet mentor and missed out on opportunities, while she perceived another student in the same ward, with an 'authoritative' mentor had been given lots of experiences. Students valued a good mentor who would guide them and provide supportive and appropriate learning opportunities. They were eager for feedback, especially in year two. They were acutely aware they were providing care for real patients and not simulation mannequins and there was potential to cause harm. Without feedback they were unsure of how they had performed or were progressing "*…nobody's actually told me how I am doing - you hope you are doing alright.*" (Jack: Interview 1).

Feedback on clinical skills is important for the development of self-efficacy and proficiency (Glover 2000). Provision should be timely; constructive and focused on behaviour rather than person. As Kate (Interview 3) pointed out *"Getting good feedback helps your confidence. I understand feedback will not always be positive but as long as it's portrayed in a positive way - I found if it's not then it seriously puts you off… I've felt like that once and it wasn't a good experience."* Hence, while positive feedback engenders confidence and motivates further learning, negative feedback insensitively given can have the opposite effect (Eraut 2006; Clynes and Raftery 2008; Koh 2008).

Patient care must always take primacy and student needs will not always realistically be the main focus in practicum (Lauder *et al.,* 2004). A number of the students in my study reported how useful more senior students were to them. For example, Jack (Interview 1) commented*"…so if there is something I don't want to ask the nurses' or they are too busy and harassed I go and speak to her [semester 6 student] and usually she can explain"*. This role was reversed as the students progressed. Bob (Interview 4) was aware that as a final year student he was a role model for the more junior students *"…you also must remember that you've got other students on the ward who are not so far on as you and they are watching you"*.

The students' discussion pointed to the value of learning from peers, senior or otherwise and although not a formal practice within the university where my study took place there is evidence within the literature of this practice occurring elsewhere in the UK. Senior students in Aston and Molassiotis (2003) provided peer supervision and support for junior students. The aim was to allow senior students to increase their professional responsibilities in readiness for graduation, whilst being supported by mentors. The junior students valued the support and felt more able to approach another student, than a registered nurse and this mirrored what Jack had said in his first interview. Unfortunately, almost half the senior students (n=14) in Aston and Molassiotis (2003) had issues with lack of support and supervision from mentors, due to the impact that issues such as staff workload. However, providing support to more junior students helped many of the senior students develop confidence in their knowledge and skills as they helped the juniors develop fundamental skills. It is probable that with more structured support this model would benefit students at all stages of their undergraduate education.

Students' in my study were keen to apply the skills learned in the SCE to practicum, but wanted support and constructive feedback to enable them to develop self-efficacy and competence. Although they received this some of the time it was not consistent and for students like Jen, this affected their confidence and competence in relation to clinical skills development.

9.6 Summary

In summary, a Hermeneutic approach was used to explore the nature of student nurses' experiences of learning within a simulated clinical environment, and the development of clinical skills within the psychomotor, cognitive and affective domains over a two-year period. An important factor identified as crucial to student learning was their ability to participate [engage] when in the SCE. The following key themes were identified as crucial to engagement and subsequent transfer of skills to practicum: Learning within the SCE; Authenticity of the SCE; Concrete experiences within the SCE; Visual mental model; and Practicum experiences. Each was discussed in relation to existing evidence and helped to address the research questions. These will be summarised in turn.

Learning through simulation facilitated student learning by providing the opportunity for direct hands on application of the skills they needed and were expected to use in practicum. The use of a contextually authentic environment and equipment and supplies enhanced student learning. Most of the students were able to practice key skills and familiarise themselves with equipment and clinical procedures in preparation for going into practice.

Learning through simulation was most useful to the students at the start of the branch programme for learning basic psychomotor skills and introducing them to clinical environments and equipment. For students with no previous clinical experience this was important, as they had no existing point of reference. Students' wanted to fit in and were anxious about their first clinical placement, so having the opportunity for skills rehearsal in authentic environments helped prepare them by reducing some of the anxiety and giving them confidence in their ability to apply those skills when in practicum.

Learning in the SCE was most suited to those with multimodal learning styles (LS), which incorporated a Visual LS or those with a sole Visual LS. Visual learners like to learn through observation of demonstrations before then going on to try the skill themselves and it would seem that the design of the skills curriculum which incorporated demonstrations of skills; authentic settings; and peer review through observation suited visual learners specifically and aural learners to a lesser degree. One would presume that learning in a SCE was specifically suited to Kinaesthetic learners, who benefit from a hands on approach to learning. However, for Jen, the one student with a sole Kinaesthetic LS, learning a skill was dependant on having the opportunity to physically perform it.

Factors such as time and group size meant there was often inequitable opportunity amongst the students for hands on practice, or for the opportunity for repetitive practice. This was particularly important at the start of the programme where opportunity for concrete experiences of skills application was the catalyst for self-efficacy regarding skills competence. Consequently, some students went into practice with limited practice of the basic skills needed when in practicum.

Research Question 2: *How does simulation support the development of the student's clinical skills proficiency in the psychomotor, cognitive and affective domains?*

Students felt that the SCE was particularly important at the start of the branch programme as a way of learning practical skills. Skills development was facilitated through the use of a spiral curriculum approach and as such the development of skills within the psychomotor domain was progressive in nature. Initially students learned isolated skills, which allowed them to focus on learning the skill, without the need to worry about the needs of a patient.

As they advanced through the programme, learning within the SCE helped most of the students' cognitive development. In managing the increasingly complex scenarios, students were able to safely test their underpinning knowledge and understanding by a trial and error process. Constructive feedback and a critically reflective process helped the majority of the students make sense of their learning experiences and plan future learning.

The external authenticity of the SCE, coupled with adherence to local uniform policy and the realism of emerging simulated scenarios, helped students to act professionally. However, students' reported that despite these steps affective skills developed from working in practicum with real clinicians and patients. There was no opportunity for multi-professional working, students always worked with academically equivalent peers and staying professional was occasionally challenging due to the light-hearted nature of working with peers.

Findings in relation to this question highlighted the need for adequate time in order to ensure each student had opportunity to carry out repetitive and supervised practice of required skills before going out into practicum (Haskell 2001; Issenberg *et al.,* 2005; Ericsson 2008; Oermann *et al.,* 2011); and to receive constructive feedback on their performance.

Each student therefore needs to physically undertake the skill or activity that is the focus of the learning experience and be facilitated to repeat that skill to ensure that they develop a physical memory (visual mental model) of the procedural steps, which they could recall when in practicum. Learning in the three domains was also influenced by the motivation and commitment of the learners. In line with Rochester *et al.,* (2012) those students who undertook self-directed learning in preparation seemed to perform better in the SCE. Again, in relation to LS, those students with a multimodal LS seemed more able to make use of the e-learning resources, which included video demonstration, web links and further reading. For a sole Kinaesthetic learner, they may have been less suitable.

Research Question 3: *What factors facilitate or inhibit student engagement with the simulated clinical experience?*

Engagement with the SCE related to how well the students were able to participate fully in the simulated event and suspend disbelief. The authenticity of the SCE is crucial in helping students to suspend disbelief and this must extend to the roles enacted within the scenarios. They must be relevant to the student and any activities and actions relevant to the student's stage of training. This facilitated the formulation of accurate visual mental models, which in turn helped students transfer skills to practicum. At the start of the branch students found it confusing if asked to play the role of a Registered Nurse or a Doctor. Likewise if expected to undertake non-nursing tasks, they knew they would not be allowed to do in practice. Essentially it stopped them from doing skills that would be useful to them and they would be permitted to undertake in practicum.

Ongoing engagement was easier if, from the outset, students were afforded equitable opportunity to practice a skill and to develop some initial confidence in their abilities. Those students were more inclined to want to continue to participate in future SCE sessions. This was also aided by the student's willingness to undertake self-directed learning in preparation for the forthcoming scenarios. This facilitated mental rehearse in readiness for practical application, and helped their performance.

The students wanted and appreciated supervision and constructive feedback, sensitively provided. There was evidence of perceived facilitator 'incivility' which, intentional or otherwise acted to inhibit student engagement with the SCE. Students needed to know they were safe to make mistakes and that they would not be 'belittled'. Finally, students had to have a willingness to participate and in line with adult learning theory, students who saw the benefit of learning in the SCE seemed motivated and made a conscious decision to actively participate.

Research Question 4: *In what manner are students' able to transfer skills gained in the simulated setting to practicum?*

At the start of the branch programme [at the start of the study] transfer of skills to practicum was easier for students if the skills learned in simulation were directly related to their needs in relation to their particular stage of nurse education. The students wanted to be useful when they went into practicum and to contribute to care.

Initially, psychomotor skills were of most use to them when they went into the wards and once in practicum a visual mental model [based on a concrete experience] helped students recall the skills and apply them to real situations. The more opportunity students had to apply the skill in the SCE, the more confident they felt and the more willing they were to transfer that skill to the real setting. They were also more able to adhere to the espoused approach learned in simulation and bridge the gap between what was taught in simulation and sometimes practiced in reality.

Having exposure to these skills and opportunity to apply them in practicum was crucial to skills development and for many of the students this was variable. Whilst some students were able to transfer the skills in practicum others students found limited or no opportunity to apply the skills taught in the SCE. This was due to issues such as the clinical specialty of the ward area; the workload on the ward; and/or the availability and/or willingness of the mentor to offer support, supervision and feedback. In addition, lack of self-efficacy influenced by a lack of opportunity to practice the skills in the SCE was found to inhibit some students from applying skills.

What was evident was that in order to transfer skills students first needed to have developed some confidence in their abilities in relation to the skills. This came from having had ample opportunity for practical application [with support and feedback] in the SCE. Secondly, the skills had to be relevant to the students' stage of education and be available in practicum. It was not useful to be taught skills, which in reality the students would not be permitted or likely to undertake in practicum. Students should be taught skills they would be expected and be able to apply. Finally, students needed support and feedback on their performance, appropriate to their individual need.

During the process of addressing the research questions it was clear that a number of important pre-requisites were essential to facilitate student engagement with the SCE. These will be the focus of the following chapter. However, prior to this it is necessary to review the process of closing the hermeneutic circle.

9.6.1 Closing the Hermeneutic Circle

The *Hermeneutic Circle* concerns the interpretive process of understanding the text and is central to the development of understanding within a Hermeneutic approach (Polit and Beck 2008). Heidegger believed the cyclical nature of the hermeneutic circle, likened to a spiral by Mullhall (2005) and Debesay *et al.,* (2008) facilitated ongoing questioning, as one revisited and reviewed the experience (Moran 2000).

In order to fully understand the whole experience, the individual parts of the experience are viewed and in order to understand the parts, the whole is viewed. This ultimately facilitates deeper understanding of the phenomenon. (Mullhall 2005; Smith *et al.,* 2009).

The principles of the hermeneutic circle were applied to this study, with both the whole experience and the parts being viewed on a number of levels (see table 9.5 below) in order to understand the experience of learning within a SCE.

Part	Whole
Word	The sentence
Significant statement	The interview
Interview	The study

Table 9.5 Relationship between the whole and the parts of the experience

The iterative and longitudinal nature of the interpretive process allowed time for understanding of the students' experiences to develop as I constantly revisited data and explored notions and perceptions through the use of the reflexive process. The hermeneutic circle is described as open, to emphasis the ongoing nature of interpretation (Moran 2000), and this was very much the case with the interpretive process of this study.

In order to understand the 'whole' experience of learning in the SCE, I looked at the experience from the perspective of the individual as each individual 'part' was examined over the two-year time frame. Narratives were thematically analysed in chronological order, with constant reference to previous interviews, in order to gain a better understanding of the 'whole' experiences in relation to the passage of time.

Chapter 10 Conclusions, Recommendations and Limitations

10.0 Introduction

The nature of the student nurses' experiences of learning within a simulated clinical environment (SCE) was explored from a longitudinal perspective. The longitudinal design of this study was unique; previous research in relation to student experiences of simulation was undertaken over a short timeframe and not able to describe the progressive nature of that experience (Schoening *et al.,* 2006; Reilly and Spratt 2007; Prescott and Garside 2009; Rochester *et al.,* 2012).

What this study showed was the significance of the concrete experience. An important point was that most of the students stated that simulation was most useful at the start of their nurse programme because it introduced them to clinical environments and equipment, and taught them basic skills they could apply in practicum. Therefore, it is crucial to the process of clinical skills development and transfer that all neophyte nursing students have access to physical concrete experiences.

Generally, those students able to access concrete experiences in the SCE went into practicum with more confidence regarding their abilities, and subsequently were more willing to transfer the newly learned skills to practicum. Competence was linked to having repeated opportunities to apply the skill in practicum. If there were limited or no opportunities to apply the skill in practicum, then advancement of competence was delayed.

Conversely, those students unable to access opportunities for concrete experiences in the SCE generally lacked confidence in relation to applying that skill once in practicum. This resulted in developmental delay in skills competence, which was further compounded if the skills learned in SCE were not available, for a variety of reasons, in practicum. As students progressed through the two-year branch programme some were able to retrieve their skills deficit. However, for others, the lack of skills competence and confidence affected their willingness and ability to engage with the SCE.

This study highlighted a possible link between learning style (LS) and engagement with the SCE. Students undertook a VAK LS Inventory (Chislett and Chapman 2005) and those with a Visual modality, either as sole LS or part of a multimodal LS, seemed more suited to learning within a SCE. This notion was supported by the fact that the only student in this study [Jen] not able to engage with the SCE had a sole Kinaesthetic LS, which in turn was linked to her initial inability to access a concrete experience in the SCE. It is likely, but speculative that if she had opportunity initially to access concrete experiences she may have developed some confidence in her abilities and associated competence.

As a consequence of the long-term nature of this study and in relation to engagement and subsequent skills development, a number of important pre-requisites were highlighted. These pre-requisites are believed to be essential to facilitate all students gaining the most out of learning within a simulated clinical environment and greater likelihood of successful transfer of skills to practicum. Absence of these pre-requisites had the potential to result in some students feeling excluded and unable or unwilling to engage with events in the SCE, subsequently adopting avoidance strategies, which in turn impacted on their ability to transfer skills to practicum. The pre-requisites were:

- o Knowledge of skill;
- o Concrete experience;
- o Repetitive practice and drill;
- o Direct supervision and/ or facilitator support (in line with practicum);
- o Constructive feedback, sensitively given, which identifies future learning need(s);
- o Realistic role within the SCE;
- o Skills commensurate with students role and level of education;
- o Authenticity of environment and related activities;
- o Skills re-assessment at academic point of progression.

Those students unable to secure sufficient concrete experiences – that is, actual experience of physically undertaking the steps of a procedure or skill are potentially at risk of non-engagement. They therefore need to be identified so that they may be supported adequately.

The identified pre-requisites helped to inform the design of the following framework, which was developed to provide guidance and facilitate student engagement in the simulated clinical environment (see Diagram 10.7 Framework of Engagement and Transfer to enhance Professional Development below). An explanation of the components of the Framework for Engagement and Transfer follows the diagram.

Diagram 10.1 Framework for Engagement with Simulation and Transfer to enhance Professional Development

Learning in the SCE
- Preparation by students
- Opportunity to participate
- Small groups
- Designated roles
- Strict group management
- Time for repeated practice
- Willing learner engagement**
- Coaching & supervision
- Supportive facilitation
- Constructive feedback

T R A N S F E R   P R E R E Q U I S I T E

Authenticity of the SCE
Aim: Suspension of disbelief
- Realistic environment & equipment.
- Adherence to uniform policy.
- Roles and tasks aligned to academic level of student.
- Supervision in line with practicum.
- Appropriate use of mannequin/ simulated patient.

Concrete Experiences in the SCE
- Each student must physically practice skill.
- Repeated opportunity to practice skill prior to transfer to practicum.
- Supervision, reflection & feedback on skill competence.

Visual Mental Model
- Must be based on actual concrete experience.
- Facilitates mental rehearsal when in practicum

Practicum Experiences
- Previous [concrete] experience.
- Visual Mental Model
- Underpinning knowledge of skill.
- Opportunity to apply skill first learned in simulation.
- Self-efficacy to apply the skill.
- Supervision – mentor/peer
- Constructive & timely feedback
- Belongingness

Successful Transfer to practicum

Student At Risk – of non-engagement Observable behaviours
- Sole Kinaesthetic LS
- Being ill prepared
- Consistent poor performance
- Anxiety
- Passive engagement/ 'freezing'
- Standing on periphery
- Consistently late for simulation
- Adopting distracting behaviour/ 'fooling around' when in SCE
- Poor/ non-attendance for SCE

The causes of any of the above behaviours should be explored with students to identify possible solutions i.e. additional support.

Y Identification of students preferred Learning Style
E Knowledge of fundamental skill – reading/tutorial/demonstration/video
A Repeated practice and drill of isolated skill in wet lab under direct supervision
R Repeated application of skill in SCE – scenario-based.
Direct supervision from Lecturer/ Year 3 student
Student to stay in own role
Tasks relevant to students stage of training/ role as Year 1 student/learner
1 Feedback using evidence-based framework

Y Reassessment of skills base. consolidate and build on previous year 1 skills
E Knowledge of new skills – reading/tutorial/demonstration/video
A Repeated practice and drill of isolated skills in wet lab under direct supervision
R Repeated application of skill in SCE – immersive scenario
Indirect/Direct supervision from lecturer
Student to stay in own role and undertake skills/tasks relevant to stage of nurse education.
2 Feedback using evidence-based framework

Y Reassessment of skills base/ consolidation of previous year 1 and 2 skills
E Knowledge of higher order skills - CDM/ Human Factors/ Nursing management –reading/ tutorial/ PBL/ SDL
A Extended fully immersive simulation ward exercises
R Tasks must be relevant to students role as Year 3 student/ final stage management student – each student should experience 'taking charge'
Repeated opportunity to apply skills from all domains
Facilitator support available
3 Year 3 student to supervise and coach Year 1 student in fundamental skills acquisition

359

10.1 Framework for Engagement and Transfer to enhance Professional Development

With reference to Diagram 10.1 above there are a number of components parts. The five 'Transfer Pre-requisites' super imposed onto the arrow along the top of the framework, highlight the multifaceted nature of engagement and transfer and relate to the five main themes, which emerged from the study findings. Each box identifies various pre-requisites relating to each theme, which when present facilitate successful transfer of skills to practicum and were discussed in Chapter 9. These pre-requisite needs were revealed either directly by the students over the course of the interviews or extrapolated during the interpretive process of analysis of the interview data and each will now be outlined. The first stage of the process of transferring skills from the SCE to practicum occurs in the SCE.

Learning in the SCE

'Learning in the SCE' outlines the essential requirements for effective learning experiences within the SCE. These include the need for the student to undertake some self-directed preparation in readiness for participation in the SCE and also the responsibilities of the facilitators. These include planning events and managing groups effectively so that all students would have opportunity to participate; and the provision of appropriate support and feedback, which mirrors that provided in practicum.

Authenticity of the SCE

'Authenticity of the SCE' identifies the requirements to facilitate suspension of disbelief and centre on the need for the simulated event to be as close an approximation to real life as possible – it must be a believable illusion. Believability relates to the realism of the environment and includes adherence to professional policies and role-playing appropriate to the student's stage of nurse education.

Concrete experiences in the SCE

'Concrete experiences in the SCE' stipulate the importance of physical and repeated application of skills prior to practicum and also the importance of guided supervision and feedback, in order to facilitate the development of self-efficacy and competence.

Visual mental models

'Visual mental models' require concrete experiences and can assist students in the process of transfer of skills to practicum, by giving the student a physical memory of a skill they can go though in their imagination, in readiness for recreating the skill in practicum.

Practicum experiences

'Practicum experiences' draws attention to aspects identified as influential in helping students apply skills in practicum. In addition to the previous four pre-requisites, students require a number of factors to be present in practicum itself in order to facilitate transfer of skills and these include the opportunity to apply that skills learned; self-efficacy and belongingness; and supervision and constructive feedback.

Successful transfer to practicum

'Successful transfer to practicum' is the desired outcome. If all the factors highlighted in the five pre-requisites sections are achieved the student has more likelihood of experiencing this final stage. For example, an actual concrete experience based on physically 'doing' a skill in the SCE can foster self-efficacy and provide opportunity for future creation of visual mental model, which can be used in practicum.

These transfer pre-requisites may be generic to all learners in relation to engagement with simulation and subsequent transfer of skills. However, there are some aspects relevant to nursing students at specific stages of their nurse education and these are specified in the three boxes labelled years one to three, which lie directly beneath the transfer pre-requisites in the framework. These were derived from findings from the study.

Year one

Year one is the staring point as students begin the process of skill development. It is recommended that students complete a learning style (LS) inventory. Findings from my study pointed to a link between a Visual LS and positive engagement. Being aware of the students LS, may help to identify those students who find engagement more challenging than others and facilitate the provision of additional support.

Before physically undertaking a skill students should have underpinning knowledge from a number of sources (reading/ tutorials/ observation) suited to a range of learning styles (Race 2005). Demonstration of the isolated skill with subsequent repeated opportunity for practice and drill should start in a skills laboratory [often called a wet lab]. This will allow the student to focus entirely on the procedural steps of the skill, without being distracted by other issues (Allan: Focus Group). Application of the skill can then be transferred to the SCE where the contextual authenticity of the SCE will help prepare students for transfer to practicum. Practicing in skills in the SCE gives students the confidence to apply that skill when they go into practicum (Jane: Interview 1; Bob: Interview 2; Beth: Interview 3).

During year one, in line with a number of educational theories (Benner 1984; Collins *et al.,* 2004; Lave and Wenger 1991) all students should be directly supervised whilst practicing skills in order to ensure procedural accuracy. This is in line with the close supervision that takes place in practicum in year one (UWS 2008; NMC 2010a) and therefore helps to maintain authenticity of the SCE as a representation of practicum. Direct supervision will also facilitate timely and constructive feedback. Year three students may be utilised to help lecturing/facilitation staff provide direct supervision. Senior students informally support more junior students in practicum (Jack: Interview 1; Bob Interview 4; Aston and Molassiotis 2003) and involving them in support of junior students will contribute to their professional development in readiness for registration.

In addition, direct supervision will ensure all students have opportunity for hands on practice and ensure that more confident students do not dominate the skills sessions (Jen: Interview 1). Finally, concrete experiences should be specific to the role of a junior student to guarantee that students develop accurate mental models, based on concrete experiences, which in turn will assist in the transfer of skills to practicum (Richardson 1985; Marks 1999, Knudstrup *et al.,* 2003).

Year two

On progression to Year two, there must be re-assessment of the students' skills base. Not all students will have had equitable exposure to all the skills (Sue and Kate: Interview 1) and it is essential to their skills development that skills deficits are identified at the commencement of Year two. This will allow students to re-visit and consolidate skills from Year one and students should be encouraged to identify their own learning needs. New skills and previous skills technique in need of development are again practiced in a wet lab under supervision before transferring to the SCE. However, the scenarios in Year two will become more immersive than in Year one and supervision will gradually move from direct to indirect as judged appropriate by the lecturer/facilitator. As in Year one, the students in Year two should stay within their academic and professional role, undertaking tasks appropriate to their stage of nurse education (Sue and Kate: Interview 1). Feedback should continue to be constructive and based on observed behaviour and actions (Jack: Interview 4). These measures will help to ensure the development of accurate mental models (Bob, Beth and Mary: Interview 3).

Year three

On progression to Year 3, skills will again be re-assessed and steps taken to address any short falls in relation to skills competence as a result of lack of opportunity in practicum (Sue and Mary: Interview 4). New skills introduced relate to human factors, clinical decision-making; prioritisation and other relevant skills required in readiness for Year three and eventual registration. Again, tasks must be relevant to that of a Year three student, but may now involve taking on the role of a registered nurse and supervising Year one students in readiness for registration.

In this final year, skills scenarios within the SCE become more complex, requiring the student to utilise skills in all domains (psychomotor, cognitive, affective). As with previous years, repetitive practice is required. Supervision and support should be based on the need of the student and in line with that of clinical practice and academic level. Some students may require more direct facilitation than others who may require more indirect support.

At risk student

Finally, within the model there is an 'At Risk' checklist for identification of the non-engaging student. In my study, Jen appeared to have had a wholly negative experience of learning within the SCE, due largely it would seem to lack of opportunity early on for practical hands on experience. From Jen's discussions this seemed to have been influenced by more dominant students 'taking over'; lack of time in the SCE; Jen's low self-efficacy in her knowledge and abilities; her perception that lecturers were unsupportive and her subsequent unwillingness to participate. Jen's Kinaesthetic learning style (LS) may also have impacted on her willingness and ability to use supplementary learning resources, which may not have been suited to her LS.

Concrete experiences are key to skills development and those students not engaging with the experiences risk being ill prepared for transfer to practicum. The 'At Risk' checklist highlights observable factors, which may suggest a student is in danger of non-engagement and include:

- Sole Kinaesthetic Learning Style;
- Being Ill prepared;
- Consistent poor performance;
- Passive engagement/ 'freezing';
- Anxiety;
- Standing on periphery;
- Consistently late for simulation;
- Adopting distracting behaviour/ 'fooling around' when in SCE;
- Poor/ non-attendance for SCE;

The presence of any of the above, or similar, behaviours should trigger a discussion with the student to discover the underlying cause in order to identify possible solutions i.e. additional support.

Limitations of the Framework of Engagement and Transfer to enhance Professional Development

This Framework is not without limitations, which need to be taken into account when applying it in the SCE. First of all there are a number of resource implications. Adequate supervision is required for all learners, particularly in Year one, to ensure equitable and repeated access to concrete experiences and feedback. Lack of opportunity for concrete experiences early on may be influential in the non-engagement of students with simulation, which in turn can affect students' ability/ willingness to transfer of skills to practicum. However, the utilisation of senior students as supervisors may help to counter this restriction.

Secondly, it requires re-assessment at each stage of progression as students' develop at differing speeds and their unique experiences in practicum may also impact on skill development. This could result in a necessity for students to catch up with skills not routinely scheduled for that particular academic level.

It is dependant on each student being motivated to undertake self-directed learning in preparation for engagement in the SCE. Learning style can influence this aspect, particularly if resources are designed which are better suited to specific learning modalities. Lack of preparation can lead to negative experiences in the SCE, which in turn may affect future willingness to engage with the SCE and impact of transfer or skills.

Finally, while the transfer pre-requisites within the framework can be utilised in the SCE in order to help students develop skills in readiness for transfer, the pre-requisites needed for successful transfer to practicum may not be so easy to implement. Practicum experiences, as previously discussed are influenced by a number of factors, such as exposure to and opportunity to access skills; workload; mentor availability and commitment.

10.2 Recommendations

The following recommendations are made as a result of this research study and are based on the Framework of Engagement and Transfer to enhance Professional Development (see Diagram 10.1 above).

1. Students' preferred learning styles (LS) should be identified at the start of the programme.
2. Teaching and learning activities should be varied to suit all styles of learning. Those with a Visual component to their LS seemed more able to engage with simulation.
3. Attention must be paid to the external and internal authenticity of the simulated event in order to facilitate suspension of disbelief. Both the simulated environment and the simulation event itself must be a believable representation of a clinical reality.
4. The student should stay in the role of student, adhering to the uniform policy expected in practicum.
5. Tasks and procedures undertaken by the student in the SCE must be tasks and procedures students would realistically undertake in practicum and be commensurate with their stage of training.
6. Emphasis should be placed on ensuring that all first year nursing students have opportunity for repeated 'practice and drill' of fundamental skills, in order to foster improved self-efficacy and contribute to skills competence. Students found simulation most useful at the start of the programme.
7. Groups should be small, to facilitate equitable and repeated opportunity for skills practice.
8. Support and supervision of students within the simulated clinical environments should mirror that of practicum. In particular, students in Year one should have one to one supervision and coaching to facilitate reinforcement of the correct procedural steps of any skill.
9. Consideration should be given to the use of final year students as supervisors of year one student nurses in the SCE. This would help to ease some of the resource issues associated with providing one to one supervision for large numbers of students and also help senior students professional development.

10. Planned simulation events should be structured in such a way that they support student learning. Distracting incidents should be avoided unless linked to the outcomes of the event.

11. Consideration should be given to ensuring that skills taught are appropriate to the students' stage of training and that the skills are ones, which they will have opportunity to apply in practicum.

12. Feedback to students following simulated events should be overt and follow an evidence-based structured approach in order to facilitate a positive learning experience and should allow future learning needs to be identified.

13. Students' skills competence should be reassessed at the start of each progression point (the start of level 8 and level 9) to monitor progress and identify skills deficits, which can be addressed.

14. Greater awareness is needed by clinical staff in practicum of the teaching, role modelling and supervisory responsibilities of their roles.

10.3 Recommendations for further research

- A longitudinal study should be undertaken to test the Framework of Engagement with Simulation and Transfer to enhance Professional Development

- Further study should be conducted to look at the relationship between engagement with simulation events and those with a Visual LS modality.

- A follow up study should be undertaken to explore the impact learning in a SCE had on the participants as they made the transition from students to registered practitioner.

10.4 Limitations of the study

The person best placed to identify imperfections in relation to a research study is the researcher (Polit and Beck 2008). On reflection, a few issues had potential to impact on the research process undertaken in this study; they were: the researcher as an apprentice; participant withdrawal; and member checking.

The researcher

My inexperience of interviewing for research purposes was a limitation in the initial stages of the interview process. During the process of reviewing and transcribing the interview data it was noted that I had a tendency to speak too soon, rather than using the silences to encourage further contribution from the students. The longitudinal nature of this study and the process of reflexivity, inherent in a Hermeneutic approach allowed me to improve my interview skills over time. I developed my skills of active listening, and of using open-ended questions as cues or to clarify or explore issues in more depth (Streubert and Carpenter 2011). These steps helped diminish the detrimental effect my inexperience may have had initially.

Participant withdrawal

Twelve students were recruited initially: one withdrew after the initial focus group and two withdrew after the third interview, so did not undertake the forth and final interview. However, 11 students did participate in the three one-to-one interviews, which followed each exposure to simulation. There was no further simulation before the final interview, during which, students were asked to reflect on their experiences of simulation over the course of the two years of the branch programme. The themes that emerged from these final interviews were repetitious of previous themes and as such provided rigour and supported the trustworthiness of the findings from previous interviews, which had involved all 11 students. As no new information was revealed in the final interview, this suggested saturation had been achieved (Polit and Back 2008; Streubert and Carpenter 2011).

Member checking

Although viewed as incongruous with phenomenology by some researchers (Webb and Kevern 2001; McConnell-Henry *et al.,* 2011) member checking is generally acknowledged as an essential final stage of the analysis process: necessary for the establishment of trustworthiness and credibility of research findings (Polit and Beck 2008; Saldana 2009; Bradbury-Jones *et al.,* 2010; Houghton *et al.,* 2013).

A potential limitation was the fact that despite numerous requests, confirmation was received from only six participants, representing just over half of the sample of 11 who had participated in the majority of the interviews over the two years of their Branch education. Although lack of corroboration from the other participants was a limitation, the feedback received from those who did respond was overwhelmingly supportive. All agreed that the nature of their experiences was truthfully represented in the description (See Appendix X for participants comments of the findings). Jen, who described negative experiences with simulation and who withdraw before the final interview, did not respond to the request for member checking, so could not verify that her views were accurately represented. However, other students, such as Sue, who had also described negative experiences, did verify the accuracy of the findings and this suggested that the interpretation of the event was comprehensive and credible.

10.5 Summary

In conclusion, this study began with the desire to explore the meaning of a sample of student nurses' experiences of learning within a simulated clinical environment (SCE) from a longitudinal perspective. What emerged was the students' story, which was presented chronologically. In so doing the progressive nature of their experiences was revealed, which also helped in the creation of an audit trail and aided reflexivity.

The stories provided valuable insight into the influences that shaped the students' experiences of learning in the SCE and held sway over their abilities to engage with the phenomenon of learning within that environment. It is hoped that the findings, which have been presented, and the resultant recommendations, which led to the formulation of the Framework of Engagement and Transfer to enhance Professional Development will help to shape the planning and delivery of clinical skills across the three domains (psychomotor, cognitive and affective) within simulated clinical environments.

The recent Francis Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry (United Kingdom House of Commons 2013) highlighted issues, which concerned standards of professionalism in nursing and more specifically, in nurse education. Amongst other things, the report recommended (recommendation 185) that nurse education needed to ensure that students possessed 'appropriate values, attitudes and behaviours; while recommendation 186 specifically stipulated that 'a consistent standard is achieved by all trainees' through "Practical hands-on training and experience'.

The guidance set out in my Framework for engagement and transfer to enhance professional development (Figure 10.1) is supportive of these recommendations. Inherent within the framework is the importance of practical hands on experience, in conjunction with appropriate supervision. It is my belief that this, in combination with learning in an authentic simulated environment will help to facilitate the development of clinical skills competence and professionalism.

REFERENCES

Albores P. & Shaw D. (2008) Government preparedness: Using simulation to prepare for a terrorist attack *Computers and Operations Research,* 35: 1924 – 1943.

Alexis O., Vydelingum V. & Robbins I. (2007) Engaging with a new reality: experiences of overseas minority ethnic nurses in the NHS. *Journal of Clinical Nursing,* 16: 2221 - 2228

Alinier G. (2003) Nursing students' and lecturers' perspectives of objective structured clinical examination incorporating simulation *Nurse Education Today*, 23: 419 - 426

Alinier G., Hunt W. & Gordon R. (2004) Determining the value of simulation in nurse education: study design and initial results *Nurse Education in Practice*, 4: 200 - 207

Allinier G., Hunt W., Gordon R. & Harwood C. (2006) Effectiveness of intermediate-fidelity simulation training technology in undergraduate nursing education. *Journal of Advanced Nursing*, 54 (3) 359 - 369

Alkhasawneh I. M., Mrayyan M. T., Docherty C., Alashram S. & Yousef H. Y. (2008) Problem-based learning (PBL): Assessing students' learning preferences using VARK. *Nurse Education Today*, 28: 572 – 579

Alliger G. M. & Janak E. A. (1989) Kirkpatrick's Levels of Training Criteria: Thirty years later. *Personnel Psychology*, 42 (2) 331 – 342.

Andrew N., Tolson D. & Ferguson D. (2008) Building on Wenger: Communities of practice in nursing. *Nurse Education Today*, 28: 246-252.

Annells M. (1999) Evaluating phenomenology: usefulness, quality and philosophical foundations. *Nurse Researcher*, 6 (3) 5 - 19

Aston L. & Molassiotis A. (2003) Supervising and supporting student nurses in clinical placements: the peer support initiative. *Nurse Education Today*, 23: 202 – 210

Atherton J. S. (2005) Situated Learning [on-line] UK, Available: http://www.learningandteaching.info/learning/situated.htm.

Association for Simulated Practice in Healthcare (ASPiH) Available: http://www.aspih.org.uk

Association for the Study of Medical Education (ASME) Available: http://www.asme.org.uk

Bachman K. (1990) Using Mental Imagery to Practice a Specific Psychomotor Skill *The Journal of Continuing Education in Nursing,* 21 (3) 125 - 128

Bahn D. (2001) Social Learning Theory: its application in the context of nurse education. *Nurse Education Today*, 21: 110 - 117

Baillie L. & Curzio J. (2009) Students' and facilitators' perceptions of simulation in practice learning. *Nurse Education in Practice*, 9 (5) 297 - 306

Bandura A. (1986) *Social Foundations of thought and action: A social cognitive theory*, Englewood Cliffs, NJ. Prentice-Hall

Bandura A. (1993) Perceived Self-Efficacy in Cognitive Development and Functioning *Educational Psychologist,* 28 (2) 117 – 148

Bandura A. (Ed.) (1995) *Self-efficacy in Changing Societies*, Cambridge. University Press

Banning M. (2008) A review of clinical decision making: models and current research. *Journal of Clinical Nursing,* 17: 187 – 195

Barbe W. B. & Milone M. N. (1981) What we should know about modality strengths *Educational Leadership*, February 1981: 378 – 380

Bates K. (2004) A critical analysis of evaluation practice: the Kirkpatrick model and the principle of beneficence *Evaluation and Program Planning*, 27: 341 - 347

Baumeister R. F. & Leary M. R. (1995) The need to belong: desire for interpersonal attachments as a fundamental human motivation *Psychology Bulletin,* 117 (3) 497 - 529

Baxter P., Akhtar-Danesh N., Valaitis R., Stanyon W. & Sproul S. (2009) Simulated experiences: Nursing students share their perspectives *Nurse Education Today*, 29 (8) 859 -866

Becker S. & Bryman A. (Eds.) (2004) *Understanding Research for Social Policy and Practice*, Bristol, The Policy Press

Beech I. (1999) Bracketing in phenomenological research *Nurse Researcher,* 6 (3) 35 - 51

Bendall E. (1975) *So You Passed, Nurse*, London. RCN & National Council for Nurses

Benner P. (1984) *From Novice to Expert: Excellence and Power in Clinical Practice*, California. Addison Wesley

Bentley H. (1996) The need for change in nurse education: a literature review *Nurse Education Today*, 16: 131 – 136

Beyea S. C. & Kobokovich L. J. (2004) Human Simulation: a teaching strategy *Association of Operating Room Nurses Journal*, 80 (4) 738 – 742

Bland A. J., Topping A. & Wood B. (2011) A concept analysis of simulation as a learning strategy in the education of undergraduate nursing students *Nurse Education Today,* 31: 664 – 670

Blazeck A. (2011) Simulation Anxiety Syndrome: Presentation and Treatment Clinical *Simulation in Nursing,* 7 (2) e57 – e60

Blutner F. & Hochnadel E. (2010) Two qubits for C.G. Jung's theory of personality. Cognitive Systems Research 11: 243 – 259

Borneuf A-M. & Haigh C. (2009) The who and where of clinical skills teaching: A review from the UK perspective. *Nurse Education Today,* 30 (2) 197 – 201

Boud D., Geogh R. & Walker D. (Eds.) (1985) *Reflection: Turning Experience into Learning*, Routledge Falmer. Abingdon.

Boud D. & Walker D. (1990) Making the most of experience *Studies in Continuing Education*, 12 (2) 61 -80

Bowden T., Rowlands A., Buckwell M. & Abbot S. (2012) Web-based video and feedback in the teaching of cardiopulmonary resuscitation *Nurse Education Today*, 32 (4) 443 - 447

Bradbury-Jones C., Sambrook S. & Irvine F. (2009) The phenomenological focus group: an oxymoron? *Journal of Advanced Nursing*, 65 (3) 663 - 671

Bradbury-Jones C., Irvine F. and Sambrook S. (2010) Phenomenology and participant feedback: convention or contention? *Nurse Researcher*, 17 (2) 25 – 33

Bradbury-Jones C., Sambrook S. & Irvine F. (2011) Empowerment and being valued: A phenomenological study of nursing students' experiences of clinical practice *Nurse Education Today*, 31 (4) 368 – 372

Bradley P. (2003) Simulation in clinical learning (Editorial) *Medical Education*, 37 (Supplement 1): 1-5

Bradley P. (2006) The History of Simulation in medical education and possible future directions *Medical Education,* 40: 254 - 262

Bradley P. & Postlethwaite K. (2003) Setting up a clinical skills learning facility *Medical Education,* 37 (Supplement 1): 6 – 13

Bradshaw A. & Merriman C. (2008) Nursing Competence 10 years on: fit for practice and purpose yet? *Journal of Clinical Nursing,* 17 (10) 1263 - 1269

Bremner M. N., Aduddell K., Bennett D. N. & VanGeest J. B. (2006) The Use of Human Patient Simulators. Best Practices with Novice Nursing Students *Nurse Educator*, 31 (4) 170 - 174

Brosnan M., Evans W., Brosnan E. & Brown G. (2006) Implementing objective structured clinical skills evaluation (OSCE) in nurse registration programmes in a centre in Ireland: A utilisation focused evaluation. Nurse Education Today. 26 (2) 115 – 122

Brown S. & Knight P. (1994) *Assessing learners in Higher Education*, London. Kogan Page

Buckley T. & Gordon C. (2011) The effectiveness of high fidelity simulation on medical-surgical registered nurses' ability to recognise and respond to clinical emergencies *Nurse Education Today*, 31: 716 – 721

Bulman C, Lathlean J. & Gobbi M. (2012) The concept of reflection in nursing: Qualitative findings on student and teacher perspectives *Nurse Education Today*, 32 (5) e8 - 13

Burke L. M. (2003) Integration into higher education: key implementers' views on why nurse education moved into higher education *Journal of Advanced Nursing*, 42 (4) 382 – 389

Burns N. & Grove S. (2010) *Understanding Nursing Research: Building an Evidence-based Practice* (5th Edition) Philadelphia, Saunders.

Burns N. & Grove S. (2005) *The Practice of Nursing Research. Conduct, Critique and Utilization* (5th Edition) St Louis, Elsevier Saunders

Byers G. (2003) Dress rehearsal *Emergency Nurse*, 11 (4) 14 - 17

Caldwell K. & Atwal A. (2005) Non-participant observation: using videotapes to collect data in nursing research *Nurse Researcher,* 13 (2) 42 – 52

Canon R. & Newbie D. (2000) *A Handbook for Teachers in Universities and Colleges* (4th Edition) Glasgow, Kogan Page

Carr S. M. (2004) A framework for understanding clinical reasoning in community nursing *Journal of Clinical Nursing,* 13, 850 - 857

Carr S. M. (2005) Knowing nursing – The challenge of articulating knowing in practice *Nurse Education in Practice,* 5: 333 - 339

Casey D. (2006) Choosing an appropriate method of data collection *Nurse Researcher* ,13 (3) 75 – 92

Cavanagh S. J., Hogan K. & Ramgopal T. (1995) The assessment of student nurse learning styles using the Kolb Learning Style Inventory *Nurse Education Today,* 15: 177 - 183

Charmaz K. (2006) *Constructing Grounded Theory: A Practical Guide Through Qualitative Research*, London, Sage

Cheng A., Duff J., Grant E., Kissoon N. & Grant V. J. (2007) Simulation in paediatrics: An educational revolution *Paediatric Child Health,* 12 (6) 465 – 468

Chesser-Smyth P. (2005) The lived experience of general student nurses on their first clinical placement: A phenomenological study *Nurse Education in Practice*, 5: 320 – 327

Chislett V. & Chapman A. (2005). VAK Learning Style Questionnaire. Available www.businessballs.com (Accessed June 2008)

Cioffi J., Purcal N. & Arunell F. (2005) A Pilot Study to Investigate the Effect of a Simulation Strategy on the Clinical Decision Making of Midwifery Students *Journal of Nursing Education,* 44 (3) 131-134

Clancy K. (2007) Experiences of a novice researcher *Nurse Researcher*, 12 (4) 27 - 38

Clark D., Davies J. & McNee P. (2002) The case of a children's nursing skills laboratory *Paediatric Nursing*, 14 (7) 36-39

Clark E. & McCann T. (2005) Researching students: an ethical dilemma *Nurse Researcher*, 12 (3) 42 – 51

Clark K. A. (2009) Uses of a research diary: learning reflectively, developing understanding and establishing transparency *Nurse Researcher*, 17 (1) 68 – 76

Clarke K. & Iphofen R. (2007) Issues in phenomenological nursing research: the combined use of pain diaries and interviewing *Nurse Researcher*, 13 (3) 62 - 74

Clark T. & Holmes S. (2007) Fit for practice? An exploration of the development of newly qualified nurses using focus groups *International Journal of Nursing Studies,* 44: 1210 - 1220

Clinical Skills Managed Educational Networks (2009) *Pilot of Mobile Clinical Skills Unit*, Available: http://www.csmen.scot.nhs.uk

Clynes M. P. & Raftery S. E. C. (2008) Feedback: An essential element of student learning in clinical practice *Nurse Education in Practice,* 8: 405 – 411

Coffield F., Moseley D., Hall E. & Ecclestone K. (2004) *Learning styles and pedagogy in post-16 learning. A systematic and critical review*, London. Learning & Skills Research Centre

Cohen L., Manion L. & Morrison K. (2000) *Research Methods in Education* (5th Edition) London. Routledge Falmer

Collins A., Brown J.S. & Holum A. (2004) *Cognitive Apprenticeship: Making things visible.* http://www.21learn.org/archive/article/brown_seely.php

Collins J. P. & Harden R. M. (1998) AMEE Medical Education Guide No. 13: real patients, simulated patients and simulators in clinical examinations *Medical Teacher,* 20 (6) 508 – 521

Cooper S., Kinsman L., Buykx P., McConnell-Henry T., Endacott R. & Scholes J. (2010) Managing the deteriorating patient in a simulated environment: nursing students' knowledge, skills and situation awareness *Journal of Clinical Nursing,* 19: 2309 - 2318

Corben V. (1999) Misusing phenomenology in nursing research: identifying the issues *Nurse Researcher,* 6 (3) 52 – 66

Cordeau M. A. (2010) The Lived Experience of Clinical Simulation *International Journal for Human Caring*, 14 (2) 9 – 15

Correll J., Wittenbrink B., Park B., Judd C., Sadler M. & Kessee T. (2007) Across the Thin Blue Line: Police Officers and Racial Bias in the Decision to Shoot *Journal of Personality and Social Psychology,* 92 (6) 1006 - 1023

Coté-Arsenault D. & Morrison-Beedy D. (2001) Women's Voices Reflecting Changed Expectations for Pregnancy after Perinatal Loss *Journal of Nursing Scholarship* 33 (3) 239 – 244

Cowan D. T., Norman I. & Coopamah V. P. (2007) Competence in nursing practice: A controversial concept – A focused review of literature *Accident and Emergency Nursing*, 15: 20 - 26

Coward M. (2011) Does the use of reflective models restrict critical thinking and therefore learning in nurse education *Nurse Education Today,* 31: 883 – 886

Coyle-Rogers P. & Cramer M. (2005) The Phenomenon of Caring: The Perspectives of Nurse Educators *Journal for Nurses in Staff Development*, 21 (4) 160 – 170

Crowley M. (2005) Skills for Life *Nursing Standard,* 19 (38) 69-70

Crowley M. (2008) Practice makes perfect *Nursing Standard,* 22 (37) 62-63

Cudmore H. & Sondermeyer J. (2007) Through the looking glass: being a critical ethnographic researcher in a familiar nursing context *Nurse Researcher* 14 (3) 25 – 35

Curtis E. A. & Redmond R. (2007) Focus groups in nursing research *Nurse Researcher*, 14 (2) 25 - 37

Danbjorg D. B. & Birkelund R. (2011) The practical skills of newly qualified nurses *Nurse Education Today*, 31 (2) 168 - 172

Darbyshire P. (2003) 'Rage against the machine?' nurses' and midwives' experiences of using computerised patient information systems for clinical information *Journal of Clinical Nursing*,13: 17 - 25

Data Protection Act (1998) Available: www.legislation.gov.uk/ukpga/1998/29/data.pdf

Davidson M. J., Dove L. & Weltz J. (1999) Mental Models and Usability. *Cognitive Psychology* 404: Depaul University. November 15: 1999

Davies M. B. (2007) *Doing a Successful Research Project,* Palgrave Macmillan

Davis C. (2005) The perfect patient *Nursing Standard*, 26 (20) 20 - 21

Dearnley C. (2005) A reflection on the use of semi-structured interviews *Nurse Researcher,* 13 (1) 19 - 28

Debesay J., Naden D. & Slettebo A. (2008) How do we close the hermeneutic circle? A Gadamerian approach to justification in interpretation in qualitative studies. Nursing Inquirly 15 (1) 57 – 66

DeBourgh G. A. & Prion S. K. (2010) Using Simulation to teach pre-licensure nursing students to minimise patient risk and harm *Clinical Simulation in Nursing,* 7 (2) e47 – e56

Decker S., Sportsman S., Puetz L. & Billings L. (2008) The Evolution of Simulation and its Contribution to Competency *Journal of Continuing Education in Nursing,* 39 (2) 74 - 80

Denscombe M. (2002) *Ground Rules for Good Research,* Maidenhead, Open University Press

Denzin N. & Lincoln Y. (Eds) (2003) *Collecting and Interpreting Qualitative Materials,* (2nd Edition) Thousand Oaks, Sage

Dewey J. (1910) *How we think*, Boston, Heath & Co.

Dewey J. (1938) *Experience and Education*. New York, Simon and Schuster.

Dieckmann P. (Ed.) (2009) *Using Simulations for Education, Training and Research Vol. 3 Work Research Multidisciplinary*, Lengerich, PABST

Dohrenwend A. (2002) Serving Up the Feedback Sandwich *Family Practice Management*, November/December 2002: 43 – 46. Available: www.aafp.org/fpm.

Donaldson J. & Carter D. (2005) The value of role modelling: Perceptions of undergraduate and diploma nursing (adult) students *Nurse Education in Practice*, 5: 353 - 359

Dougherty L. & Lister S. (Eds) (2011) *The Royal Marsden Hospital Manual of Clinical Nursing Procedures* (8th Edition) London, Blackwell Publishing.

Dowling M. (2004) Hermeneutics – an exploration *Nurse Researcher,* 11 (4) 30 – 39

Dowling M. (2006) Approaches to reflexivity in qualitative research *Nurse Researcher*, 13 (3) 7 – 21.

Dreifuerst K. T. (2009) The Essentials of Debriefing in Simulation Learning: A Concept Analysis *Nursing Education Perspectives,* 30 (2) 109 – 114

Dreyfus H. (1996) A Phenomenology of Skill Acquisition as the basis for a Merleau-Ponty Non–representationalist Cognitive Science [Online] USA Available: http://www.socrates.berkeley.edu/~hdreyfus/pdf/merleauPontySkillCogSci.

Effken J. A. & Doyle M. (2001) Interface Design and Cognitive Style in Learning an Instructional Computer Simulation *Computers in Nursing* 19 (4) 164 – 171

Elfrink V. L., Nininger J., Rohig L. & Lee J. (2009) The Case for Group Planning in Human Patient Simulation *Nursing Education Perspectives*, 30 (2) 83 – 86

Ellington H., Percival F. & Race P. (1995) *Handbook of Educational Technology* (3rd Edition), London, Kogan Page.

Elliot R., Fischer C.T. & Rennie D. L. (1999) Evolving guidelines for publication of qualitative studies in psychology and related fields *British Journal of Clinical Psychology* 38: 215 -229

English L. M. and Gillen M. A. (Eds.) (2001) Promoting Journal Writing in Adult Education *New Directions in Adult and Continuing Education,* No. 90 San Francisco, Jossey-Bass.

Eraut M. (2006) Editorial: Feedback *Learning in Health and Social Care,* 5 (3) 111-118

Ericsson K. (2008) Deliberate Practice and Acquisition of Expert Performance: A General Overview *Academic Emergency Medicine,* 15: 988 – 994

Fanning R. M. & Gaba D. M. (2007) The Role of Debriefing in Simulation-Based Learning *Simulation in Healthcare,* 2 (2) 115 - 125

Farmer E, van Rooij J. & Riemersma J. (1999) *Handbook of Simulator Based Training*, Ashgate. Aldershot

Felder R. M. & Silverman L. K. (1988) Learning and Teaching Styles in Engineering Education *Engineering Education,* 78 (7) 674 – 681

Felder R. & Soloman B. (no date). Accessed from: http://www4.ncsu.edu/unity/lockers/f/felder/public/ILSdir/sty

Field D. E. (2004) Moving from novice to expert – the value of learning in clinical practice: a literature review *Nurse Education Today,* 24: 560 - 565

Finlay L. (2000) Multiple Voices, Multiple Paths: Choosing between Qualitative Traditions. *British Journal of Occupational Therapy* 63 (12) 580 - 2

Fleming N. D. (1995) I'm different; not dumb. Modes of presentation in the tertiary classroom: in Zelmer A. (ed) *Research and Development in Higher Education. Proceedings of the 1995 Annual Conference of the Higher Education and Research Development Society of Australasia* (HERDSA), HERDSA, 18: 308 - 313

Fleming N. & Baume D. (2006) Learning Styles Again: VARKing up the right tree! *Educational Developments*, SEDA Ltd. 7 (4) 4 – 7

Fleming S., Mckee G. & Huntley-Moore S. (2011) Undergraduate nursing students' learning styles: A longitudinal study *Nurse Education Today,* 31: 444 – 449

Fletcher S. (2000) A role for imagery in mentoring *Career Development International* 5: 4: 5: 235 – 243

Fountain R. A. & Alfred D. (2009) Student Satisfaction with High-Fidelity Simulation: Does it Correlate to Learning Style? *Nursing Education Perspectives,* 30 (2) 96 – 98

Freeth D. & Fry H. (2005) Nursing students' and tutors' perceptions of learning and teaching in a clinical skills centre *Nurse Education Today*, 25: 272-282

Gaba D. M. (2004) The future vision of simulation in health care *Quality & Safety in Health Car,*. 13: 2 – 10.

Gadamer H-G. (1976) *Philosophical Hermeneutics*, Berkeley, University of California Press

Ganley B. J. & Linnard - Palmer L. (2012) Academic Safety during Nursing Simulation: Perceptions of Nursing Students and Faculty *Clinical Simulation in Nursing,* 8 (2) e49 – e57. Available: http://www.nursingsimulation.org/

Gaumard (2009) Patient Simulators for Healthcare Education. Available: www.gaumard.com

Geoffrion R., Gebhart., Dooley., Bent A., Dandulo V., Meeks R., Baker K., Tang S., Ross S. & Robert M. (2012) The mind's scalpel in surgical education: a randomised controlled trial of mental imagery. *BJOG International Journal of Obstetrics and Gynaecology* 119: 1040 - 1048.

Gerrish K. (1990) Fumbling along *Nursing Times,* 86, 35 – 37

Gerrish K. (2000) Still fumbling along? A comparative study of the newly qualified nurse's perception of the transition from student to qualified nurse *Journal of Advanced Nursing,* 32 (2) 473 - 480

Gerrish K. & Lacey A. (Eds) (2010) *The Research Process in Nursing* (6th Edition) Oxford. Blackwell Publishing

Gibbs A. (1997) Focus Groups *Social Research Update*, Issue 19

Gibbs G. (1988) *Learning by Doing: A guide to teaching and learning methods*. Oxford: Further Education Unit, Oxford Brookes University.

Glen S. & Parker P. Eds. (2003) *Supporting learning in nursing practice,* Houndsmill, Palgrave Macmillan

Glover P. A. (2000) 'Feedback. I listened, reflected and utilized': Third year nursing students' perceptions and use of feedback in the clinical setting *International Journal of Nursing Practice,* 6: 247 – 252

Gomm F. (2008) *Social Research Methodology: A Critical Introduction* (2nd Edition) Basingstoke, Palgrave Macmillan

Gordon J. (2003) ABC of Learning and Teaching in Medicine: One to one teaching and feedback *BMJ,* 326: 543 - 545

Gore T., Hunt C., Parker F. & Raines K. (2010) The Effects of Simulated Clinical Experiences on Anxiety: Nursing Students' Perspectives *Clinical Simulation in Nursing,* 7 (5) e175 – 180 Available: http://www.nursingsimulation.org

Graf S., Liu T-C., Kinshuk., Chen N-S. & Yang S. J. H. (2011) Learning styles and cognitive traits – Their relationship and its benefits in web-based educational systems *Computers in Human Behavior,* 25: 1280 - 1289

Gray M. (1994) Personal experience of conducting unstructured interviews *Nurse Researcher,* 1 (3) 65-71

Gray M. A. (1997) The Professional Socialisation of Project 2000 Student Nurses: A longitudinal qualitative investigation into the effect(s) of supernumerary status and mentorship on student nurses. *Unpublished Ph.D. Thesis* Department of Nursing & Midwifery, Faculty of Medicine, University of Glasgow.

Gray M. & Smith L. N. (1999) The professional socialisation of diploma of higher education in nursing students (Project 2000): a longitudinal study *Journal of Advanced Nursing*, 29 (3) 637-647

Gray M. A. & Smith L. N. (2000) The qualities of an effective mentor from the student nurse perspective: findings from a longitudinal qualitative study *Journal of Advanced Nursing,* 32 (6) 1542 - 1549

Grbich C. (2007) *Qualitative Data Analysis. An Introduction*, London. Sage

Greenwood J. (1993) Reflective practice: a critique of the work of Argyris and Schön *Journal of Advanced Nursing,* 18: 1183 – 1187

Greenwood J. (1998) The role of reflection in single and double loop learning *Journal of Advanced Nursing*, 27, 1048 – 1053

Gupta P., Dewan P. & Singh T. (2010) Objective Structured Clinical Examination (OSCE) Revisited *Indian Paediatrics,* 47: 911 - 920.

Haigh J. (2007) Expansive learning in the university setting: The case for simulated clinical experience *Nurse Education in Practice,* 7: 95 - 102

Halpern D. F. & Hakel M. D. (2003) Applying the Science of Learning to the University and Beyond: Teaching for long-term retention and transfer *Chang,e* August 2003: 37 - 41

Happel B. (2007) Focus groups in nursing research: an appropriate method or the latest fad *Nurse Researcher,* 14 (2) 19 - 24

Harden R. M. & Stamper N. (1999) What is a spiral curriculum? *Medical Teacher*, 21 (2) 141 - 143

Haskell R. E. (2001) *Transfer of Learning Cognition, Instruction, and Reasoning,* London, Academic Press

Heaven C., Clegg J. & Maguire P. (2006) Transfer of communication skills training from workshop to workplace: The impact of clinical supervision *Patient Education and Counselling*, 60: 313 – 325

Heidegger M. (1962) *Being and Time,* Malden MA, Blackwell

Henderson S. (2002) Factors impacting on nurses' transference of theoretical knowledge of holistic care into clinical practice *Nurse Education in Practice,* 2: 244 – 250

Henneman A. E. & Cunningham H. (2005) Using Clinical Simulation to teach patient safety in an Acute/Critical Care Course *Nurse Educator,* 30 (4) 172 – 177

Higginbottom G. (2005) Sampling issues in qualitative research *Nurse Researcher*, 12 (1) 7 – 19

Higginson R. (2006) Fears, worries and experiences of first year pre-registration nursing students: a qualitative study *Nurse Researcher,* 13 (3) 23 – 49

Hill F. (2007) Feedback to enhance student learning: facilitating interactive feedback on clinical skills *International Journal of Clinical Skills*, 1 (1) 21 - 24

Hogg G., Pirie E. & Ker J. (2006) The use of simulated learning to promote safe blood transfusion practice *Nurse Education in Practice,* 6: 214 - 223

Holland K., Roxburgh M., Johnson M., Topping K., Watson R., Lauder W. & Porter M. (2010) Fitness for practice in nursing and midwifery education in Scotland, United Kingdom *Journal of Clinical Nursing,* 19: 461 – 469

Holloway I. & Wheeler S. (2010) *Qualitative Research in Nursing* (3rd Edition) Oxford. Blackwell Publishing

Holton E. F., Bates R. A. & Ruona W. E. A. (2000) Development of a Generalized Learning Transfer System Inventory *Human Resource Development Quarterly*, 11 (4) 333 – 360

Hope A., Garside J. & Prescott S. (2011) Rethinking theory and practice: Pre-registration student nurses experiences of simulation teaching and learning in the acquisition of clinical skills in preparation for practice *Nurse Education Today,* 31: 711 - 715

Houghton C. E., Casey D., Shaw D. & Murphy K. (2012) Staff and students' perceptions and experiences of teaching and assessment in Clinical Skills laboratories: Interview findings from a multiple case study *Nurse Education Today,* 32 (6) e29 – e34

Houghton C. E., Casey D., Shaw D. & Murphy K. (2013) Rigour in qualitative case-study research *Nurse Researcher,* 20 (4) 12 – 17

Howatson-Jones I. L. (2007) Dilemmas of focus group recruitment and implementation: a pilot perspective *Nurse Researcher*, 14 (2) 7 - 17

Human Patient Simulator Network (HPSN). Available: http://www.hpsn.com

Hycner R. H. (1985) Some guidelines for the phenomenological analysis of interview data *Human Studies,* 8: 279 – 303

INACSL. International Nursing Association for Clinical Simulation and Learning. (2011) Standard VI: The Debriefing Process. *Clinical Simulation in Nursing* 7 (4) s16 – s17 Available: https://inacsl.org/

Information Services Division (ISD) Available: http://www.isdscotland.org/isd/6079.html

Ironside P. M., Jeffries P. R. & Martin A. (2009) Fostering patient safety competencies using multiple-patient simulation experiences *Nursing Outlook*, 57: 332 – 337

Issenberg S. B., McGaghie W. C, Petrusa E. R., Gordon D. L. & Scalese R. J. (2005) Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review *Medical Teacher*, 27 (1) 10 - 28

Issenberg S. B., Pringle S., Harden R. M., Khogah S. & Gordon M. S. (2003) Adoption and integration of simulation-based learning technologies into the curriculum of a UK Undergraduate Education Programme *Medical Education,* 37 (Suppl. 1) 42 - 49

Issenberg S. B. & Scalese R. J. (2008) Simulation in Healthcare Education *Perspectives in Biology and Medicine*, 51 (1) 31 - 46

Jackson C. J. (2009) Using the hybrid model of learning in personality to predict performance iin the workplace. *8th IOP Conference, Conference Proceedings, Manly, Sydney, Australia.* 25 – 28 June, 2009: 75 – 79

James S., D'Amore A. & Thomas T. (2011) Learning preferences of first year nursing and midwifery students: Utilising VARK *Nurse Education Today*, 31: 417 – 423

Jarvis P., Holford J. & Griffin C. (2003) *The Theory and Practice of Learning* (2nd Edition), London. Kogan Page.

Jeffries P. R. (2005) A Framework for Designing, Implementing, and Evaluating Simulations used as Teaching Strategies in Nursing *Nursing Education Perspective,* 26 (2) 96 – 103

Jones A. (2002) A condensed history of the phenomenology *Nurse Researcher,* 8 (4) 65 – 75

Jootun D., McGhee G. & Marland G. (2009) Reflexivity: promoting rigour in qualitative research *Nursing Standard,* 23 (23) 42 – 46

Kable A. K., Arthur C., Levett-Jones T. & Reid-Searl K. (2012) Student evaluation of simulation in undergraduate nursing programs in Australia using quality indicators *Nursing and Health Sciences,* 14th December 2012 doi:10.1111/nhs.12025

Kalra A. D., Fisher R. S. & Axelrod P. (2010) Decreased length of stay and cumulative hospitalized days despite increased patient admissions and readmissions in an area of urban poverty *Journal of General Internal Medicine,* 25 (9) 930 - 5.

Kapp S. & Fergason J. (2002) Contemporary Students: Learning Styles and Teaching Strategies *Journal of Prosthetics and Orthotics*, 14 (2) 71 – 74

Kelly J. & Ahern K. (2008) Preparing nurses for practice: A phenomenological study of the new graduate in Australia *Journal of Clinical Nursing,* 18: 910 – 918

Kember D., Jones A., Loke A. Y., McKay J., Sinclair K., Harrosno T., Webb C., Wong F. K. Y., Wong M. W. L. & Yeung E. (2001) *Reflective Teaching and Learning in the Health Professions*, Oxford, Blackwell.

Ker J. & Bradley P. (2007) *Simulation in Medical Education,* Edinburgh, ASME

Kirwan C. & Birchall D. (2006) Transfer of learning from management development programmes: testing the Holton model *International Journal of Training and Development*, 10 (4) 252 – 268

Kitzinger J. (1995) Qualitative Research: Introducing focus groups *BMJ,* 311: 299 – 302

Kleiman S. (2004) Phenomenology: to wonder and search for meanings *Nurse Researcher,* 11 (4) 7 – 19

Kneebone R. (2003) Simulation in surgical training: educational issues *Medical Education*, 37, 267 – 277

Knowles M. (1984) *The Modern Practice of Adult Education: From Pedagogy to Androgogy*, Illinois, Follett.

Knudstrup M., Segrest S. L. & Hurley A. E. (2003) The use of mental imagery in the simulated employment interview situation *Journal of Managerial Psychology,* 18 (6) 573 – 591

Koch T. (1999) An Interpretive Research Process *Nurse Researcher,* 6 (3) 20-34.

Koch J., Salamonson Y., Rolley J. X. & Davidson P. M. (2011) Learning preference as a predictor of academic performance in first year accelerated graduate entry nursing students: A prospective follow – up study *Nurse Education Today*, 31: 611 – 616

Koh L. C. (2008) Refocusing formative feedback to enhance learning in pre-registration nurse education *Nurse Education in Practice,* 8: 223 – 230.

Kolb A. & Kolb D. A. (2005) Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education *Academy of Management Learning & Education*, 4 (2) 193 – 212

Kolb D. A. (1984) *Experiential Learning: experience as the source of learning and development,* New Jersey, Prentice Hall

Kooken W. C., Haase J. E. & Russell K. M. (2007) "I've Been Through Something" Poetic Explorations of African American Women's Cancer Survivorship *Western Journal of Nursing Research,* 29 (7) 896 – 919.

Kvale S. (2006) Dominance through interview and dialogue *Qualitative Inquiry,* 12: 480 – 500

Laerdel (2010) Available: http://www.laerdal.com/gb/

Landry M., Oberleitner M. G., Landry H. & Borazjani J. G. (2006) Using Simulation and Virtual Reality Technology to Assess Continuing Nurse Competency in Long-Term Acute Care Settings *Journal for Nurses in Staff Development,* 22 (4) 163- 169

Langran M. & Carlin B. (2006) A road traffic accident simulation vehicle for training pre-hospital practitioners *Emergency Medicine Journal*, 23: 318 – 320

Lasater K. (2007) High Fidelity Simulation and the Development of Clinical Judgement: Students' Experiences *Journal of Nursing Education,* 46 (6) 269-276

Lasiter S., Marchiondo L. & Marchiondo K. (2012) Student narratives of faculty incivility *Nursing Outlook*, 60: 121 – 126

Lathrop A., Winningham B. & Vandevusse L. (2007) Simulation-Based Learning for Midwives: Background and Pilot Implementation *Journal of Midwifery and Women's Health*, 52 (5) 492 – 498.

Lauder W., Roxburgh M., Holland K., Johnson M., Watson R., Topping K., Porter M. & Behr A. (2008) *Nursing and Midwifery in Scotland: Being Fit for Practice,* University of Dundee, Scotland

Lauder W., Sharkey S. & Booth S. (2004) A case study of transfer of learning in a family health nursing course for students in remote and rural areas *Nurse Education in Practice*, 4: 39 – 44

Lave J. & Wenger E. (1991) *Situated Learning: legitimate peripheral participation,* Cambridge, Cambridge University Press

Leberman S., McDonald L. & Doyle S. (2006) *The Transfer of Learning: Participants Perspectives of Adult Education and Training*, Padstow, Gower

Leitch R., Moses G. R. & Mcgee H. (2002) Simulation and the future of military medicine *Military Medicine*, 167 (4) 350 - 4

Levett-Jones T. and Lathlean J. (2008) Belongingness: A prerequisite for nursing students' clinical learning *Nurse Education in Practice,* 8: 103 – 111

Levett-Jones T., Lapkin S., Hoffman K., Arthur C. and Roche J. (2011) Examining the impact of high and medium fidelity simulation experiences on nursing students' knowledge acquisition *Nurse Education in Practice*, 11: 380 – 383

Lewis M. & Staehler T. (2010) *Phenomenology: An Introduction*, London, Continuum

Li Y-S., Chen P-S. & Tsai S-J. (2008) a comparison of the learning styles among different nursing programs in Taiwan: Implications for nursing education, *Nurse Education Today*, 28: 70 -76

Lofmark A., Thorkildsen K., Raholm M-B. & Natvig G. K. (2012) Nursing students satisfaction with supervision from preceptors and teachers during clinical practice *Nurse Education in Practice,* 12: 164 169

Lomas C. & West D. (2009) Poor observation skills are risking patient's lives. *Nursing Times*. 13th October. Available: www.nursingtimes.net

Longley M., Shaw C., Dolan G. & Stackhouse R. (2007) *Nursing: Towards 2015. Alternative Scenarios for Healthcare, Nursing and Nurse Education in the UK in 2015*, Welsh Institute for Health and Social Care. NMC

Lowe M., Kerridge I., McPhee J. & Hart C. (2008) Do patients have an obligation to participate in students teaching *Medical Education,* 42: 237 – 241

Maginnis C. & Croxon L. (2010) Transfer of learning to the nursing clinical practice setting *Rural and Remote Health* 10: 1313: 1 - 6

Maran N. J. & Glavin R. J. (2003) Low- to high-fidelity simulation- a continuum of medical education *Medical Education*, 37 (Supplement 1) 22 – 28

Marks D. F. (1999) Consciousness, mental imagery and action *British Journal of Psychology,* 90: 567 - 585

Massias L. & Shimer C. (2007) Clinical Simulations: Let's get real! *Teaching and Learning in Nursing*, 2: 105 – 108

McCallum J. (2006) Implementing simulation into the pre-registration nursing curriculum *Clinical Skills Matters*, 2: 4 – 6

McCallum J. (2007) The debate in favour of using simulation education in pre-registration adult nursing *Nurse Education Today,* 31 (7) 825 - 31

McCann T. & Clark E. (2003) Grounded theory in nursing research: Part 1 – Methodology *Nurse Researcher*, 11 (2) 7 – 18

McCaughey C. S. & Traynor M. K. (2010) The role of simulation in nurse education *Nurse Education Today,* 30 (8) 827 – 32

McConnell-Henry T., Chapman Y. & Francis K. (2011) Member checking and Heidegerrian phenomenology: a redundant component *Nurse Researcher,* 18 (2) 29 – 37

McKimm J. (2009) Giving effective feedback *British Journal of Hospital Medicine*, 70 (3) 158 – 161

McMullan M., Endacott R., Gray M. A., Jasper M., Miller C. M. L., Scholes J. & Webb C. (2003) Portfolios and assessment of competence: a review of the literature *Journal of Advanced Nursing,* 41 (3) 283 – 294

McNamara M. (2005) Knowing and doing phenomenology *International Journal of Nursing Studies,* 42: 695 – 704

Medley C. F. & Horne C. (2005) Using Simulation Technology for Undergraduate Nursing Education *Journal of Nursing Education*, 44 (1) 1 – 34.

Meehan-Andrews T. (2009) Teaching mode efficiency and learning preferences of first year nursing students *Nurse Education Today*, 29: 24 – 32

Medical Education Technologies Inc (2007) Available: www.meti.com

Melia K. M. (1982) 'Tell it as it is' – qualitative methodology and nursing research: understanding the student nurse's world *Journal of Advanced Nursing*, 7: 327 – 335

Mensink C. & Cosemans G. (2008) From traffic flow simulations to pollutant concentrations in street canyons and backyards *Environmental Modelling & Software*, 23: 288 – 295

Meyer E., Lees A., Humphris D. & Connell N. A. D. (2007) Opportunities and barriers to successful learning transfer: impact of critical skills training *Journal Advanced Nursing*, 60 (3) 308 – 316

Meyrick J. (2006) What is Good Qualitative Research? A first step towards a Comprehensive Approach to Judging Rigour/Quality *Journal of Health Psychology* 11 (5) 799 – 808

Miller G. E. (1990) The Assessment of Clinical Skills/ Competence/ Performance *Academic Medicine,* 65 (9) S63 - S67

Miller S. (2002) Analysis of phenomenological data generated with children as research participants *Nurse Researcher,* 10 (4) 68 -82

MIND for Better Mental Health (2011) Mental Health Organisation.

Available: http://www.mind.org.uk/

Mole L. J. & McLafferty I. H. R. (2004) Evaluating a simulated ward exercise for third year student nurses *Nurse Education in Practice*, 4: 91 – 99

Moon J. (2004) *A Handbook of Reflective and Experiential Learning Theory and Practice,* London, Routledge Farmer

Moore L. & Savage J. (2005) Participant observation, informed consent and ethical approval *Nurse Researcher,* 9 (4) 58 – 69

Moran D. (2000) *Introduction to Phenomenology,* London, Routledge

Morgan R. (2006) Using clinical skills laboratories to promote theory-practice integration during first practice placement: an Irish perspective *Journal of Clinical Nursing*, 15: 155-161

Morrow S. L. (2005) Quality and Trustworthiness in Qualitative Research in Counselling Psychology *Journal of Counselling Psychology*, 52 (2) 250 – 260

Mulhall S (2005) Heidegger and Being and Time (2nd Edition) Oxon, Routledge

Muller K., Bacht K., Prochnow D., Schramm S. & Seitz R. J. (2013) Activation of thalamus in motor imagery results from gating by hypnosis. *NeuroImage 66: 361 – 367*

Murray C., Grant M J., Howarth M. L. & Leigh J. (2008) The use of simulation as a teaching and learning approach to support practice learning *Nurse Education in Practice*, 8 (1) 5 - 8

Myers I. & Briggs K. (2009). Available http://www.myersbriggs.org/my-mbti-personality-type/mbti-basics/ Accessed 11/06/2009

Neale J. (Ed.) (2009) *Research Methods for Health and Social Care*, Houndsmill, Palgrave.

NES. National Health Service Education for Scotland (2007) *Partnerships for Care: Taking Forward the Scottish Clinical Skills Strategy,* Dundee. Scottish Funding Council. Available: www.nes.scot.nhs.uk

NES. National Health Service Education for Scotland (2012) *NES Patient Safety Programme: Human Factors Overview Paper,* Edinburgh, NES. Available: www.nes.scot.nhs.uk

NHSS. National Health Service Scotland (2005) *Building a Health Service Fit for the Future.* Edinburgh. Scottish Government. Available: www.scotland.gov.uk

NHSS. National Health Service Scotland (2007) *Better Health, Better Care: Action Plan,* Edinburgh, Scottish Government. Available: www.scotland.gov.uk

Northcott N. (2002) Role Play: proceed with caution! *Nurse Education in Practice*, 2: 87 – 91

Northway R., Davies P., Lado A. & Williams R. (2005) Involving pre-registration students in a research project *Nurse Researcher*, 8 (4) 53 - 64

Nunkoosing K. (2005) The Problems With Interviews *Qualitative Health Research,* 15 (5) 698 – 706

Nursing & Midwifery Council (2007) *Simulation and Practice Learning Project*, *Final Report*, London, NMC

Nursing & Midwifery Council (2008) *The code: Standards of conduct, performance and ethics for nurses and midwives*, London, NMC

Nursing & Midwifery Council (2010a) *Standards to support learning and assessment in practice: NMC standards for mentors, practice teachers and teachers (*2nd Ed.) London. NMC

Nursing & Midwifery Council (2010b) *Standards for pre-registration nursing education,* London, NMC

O'Donovan M. (2007) Implementing reflection: Insights from pre-registration mental health students *Nurse Education Today*, 27: 610 – 616

O'Shea M. & Kelly B. (2007) The lived experiences of newly qualified nurses on clinical placement during the first six months following registration in the Republic of Ireland *Journal of Clinical Nursing,* 16: 1543 – 1542

Oermann M. H., Kardong-Edgren S., Odom-Maryon T., Hallmark B. F., Hurd D., Haus C., Keegan McColgan J., Snelson C., Wilson Dowdy S., Resurreccion L. A., Kuerschner D. R., LaMar J., Nelson-Tennant M & Smart D. (2011) Deliberate Practice of Motor Skills in Nursing Education: CPR as Exemplar *Nursing Education Exemplars,* 32 (5) 311 – 315

Overstreet M. (2008) The Use of Simulation Technology in the Education of Nursing Students *Nursing Clinics North America,* 43: 593 – 603

ODE (2005) *Oxford Dictionary of English* (2nd edition revised), Oxford. Oxford University Press

Palermo L., Iaria G. & Guariglia C. (2008) Mental imagery skills and topographical orientation in humans: A correlation study *Behavioural Brain Research,* 192: 248 – 253

Paley J. (2004) Phenomenology as rhetoric *Nursing Inquiry*, 12: 106 – 116

Papp I., Markkanen M. & von Bonsdorff M. (2003) Clinical environment as a learning environment: student nurses' perceptions concerning clinical learning experiences *Nurse Education Today,* 23: 262 – 268

Parahoo K. (2006) *Nursing Research: Principles, Process and Issues* (2nd Edition), Houndsmill, Palgrave McMillan

Park J-H. & Wentling T. (2007) Factors associated with transfer of training in workplace e-learning *Journal of Workplace Learning*, 19 (5) 311 – 329

Parr M. B. & Sweeney N. (2006) Use of Human Patient Simulation in an Undergraduate Critical Care Course *Critical Care Nurse Quarterly,* 29 (3) 188 – 198

Pellatt G. (2003) Ethnography and reflexivity: emotions and feelings in fieldwork *Nurse Researcher,* 10 (3) 28 – 37

Perkins D. N. & Salomon G. (1992) *International Encyclopaedia of Education* (2nd Edition) Oxford, Pergamon Press

Pike T. & O'Donnell V. (2009) The impact of clinical simulation on learner self-efficacy in pre-registration nursing education *Nurse Education Today*, 30 (5) 405 - 410

Polit D. & Beck C. T. (2008) *Nursing Research: Generating and Assessing Evidence for Nursing Practice* (8th Edition), Philadelphia, Lippincott Williams & Wilkins

Prescott S. & Garside J. (2009) An evaluation of simulated clinical practice for adult branch students *Nursing Standard*, 23 (22) 35-40

Punch K. F. (2006) *Developing Effective Research Proposals* (2nd Edition), London, Sage

Punch K. F. (2009) *Introduction to Research Methods in Education,* London, Sage

Quinn F. & Hughes S. (2007) *Principles and Practice of Nurse Education* (5th Edition), Cheltenham, Nelson Thornes

Race P. (2005) *Making Learning Happen: A Guide to Post-Compulsory Education*, London, Sage

Race P. (2007) *The lecturer's toolkit. A practical Guide to Learning, Teaching and Assessment* (3rd Edition), Oxon, Routledge

Rakoczy M. and Money S. (1995) Learning Styles of Nursing Students: A 3-Year Cohort Longitudinal Study *Journal of Professional Nursing,* 11 (3) 17 - 174

Rassool G. H. & Rawaf S. (2007) Learning style preferences of undergraduate nursing students *Nursing Standard,* 21 (32) 35 – 41

Rees C. (2003) *Introduction to Research for Midwives* (2nd Edition), Edinburgh, Books for Midwives

Reilly A. & Spratt C. (2007) The perceptions of undergraduate student nurses of high fidelity simulation based learning: A case report from the University of Tasmania *Nurse Education Today*, 27: 542 - 550

Ribbens J. (1989) Interviewing – an "unnatural situation" *Women's Studies International Forum,* 12 (6) 579 – 592

Richards L. (2005) *Handling Qualitative Data: A Practical Guide*, London, Sage

Richardson J. T. E. (1985) Converging operations and reported mediators in the investigation of mental imagery *British Journal of Psychology,* 76: 205 – 214

Ritchie J. & Lewis J. (Eds.) (2003) *Qualitative Research Practice: A Guide for Social Science Students and Researchers*, London, Sage

Roberts J. D. (2000) Problem Solving Skills of Senior Student Nurses: An exploratory study using simulation *International Journal of Nursing Studies,* 37: 135 -143

Roberts D. & Greene L (2011) The theatre of high-fidelity simulation *Nurse Education Today*, 31: 694 – 698

Rochester S., Kelly M., Disler R., White H., Forber J. & Matiuk S. (2012) Providing simulation experiences for large cohorts of 1st year nursing students: Evaluating quality and impact *Collegian, 19 (3) 117 - 124*

Rolfe G. (2006) Validity, trustworthiness and rigour: quality and the idea of qualitative research *Journal of Advanced Nursing,* 53 (3) 304-310

Royal College of Nursing (2009) *Research Ethics: RCN guidance for nurses*, London. RCN

Royal College of Nursing (2008) *Nursing our future: An RCN study into the challenges facing today's nursing students in the UK*, London. RCN

Rushforth H. E. (2007) Objective Structured Clinical Examination (OSCE): Review of literature and implications for nursing education. *Nurse Education Today*, 27: 481 - 490

Rystedt H. & Lindström B. (2001) Introducing simulation technologies in nurse education: a nursing practice perspective *Nurse Education in Practice,* 1: 134 – 4

Salas E., Wilson K., Burke C. & Priest H. (2005) Using Simulation-Based Training to Improve Patient Safety *Journal on Quality and Patient Safety*, 31 (7) 363-371

Saldana J. (2009) *The Coding Manual for Qualitative Researchers*, London, Sage

Sanders C. W., Sadoski M., van Walsum K., Bramson R., Wiprud R. & Fossum T. W. (2008) Learning basic surgical skills with mental imagery: using the simulation centre in the mind *Medical Education,* 42: 607 – 612

Schoening A. M., Sittner B. J. & Todd M. J. (2006) Simulated Clinical Experience: Nursing Students Perceptions and the Educator's Role *Nurse Educator,* 31 (6) 253 -258

Scholes J., Freeman M., Gray M., Robinson D., Mathews-Smith G. & Miller C. (2004) *Evaluation of Nursing Education Partnerships*, DoH

Scottish Clinical Skills Network (SCSN). Available: http://scsn.scot.nhs.net

Scottish Credit and Qualifications Framework (2010*) SCQF Level Descriptors*, Glasgow. Available: www.scqf.org.uk

Scottish Executive Health Department (2006) *Research Governance Framework for Health and Community Care* (2nd Edition), Scottish Executive Available: http://www.scotland.gov.uk

Scottish Government (2010) *The Healthcare Quality Strategy for NHS Scotland,* Edinburgh, Scottish Government Available: www.scotland.gov.uk

Scottish Government (2011) *National Statistics-Rural Scotland Key Facts 2011* Available: http://www.scotland.gov.uk/Publications/2011/09/29133747/1

Scottish Patient Safety Programme (2008) Available: http://www.healthcareimprovementscotland.org

Seropian M. A., Brown K., Gavilanes J. S. & Driggers B. (2004) Simulation: Not Just a Manikin *Journal of Nursing Education*, 43 (4) 164 - 169

Sewchuk D. H. (2005) Experiential learning – a theoretical framework for peri-operative education *Association of Operating Room Nurses Journal*, 8 (6) 1311 - 1316

Shakespeare W. (1599) *As you like it,* Available:http://www.shakespeare-online.com

Silberman M. Ed. (2007) *The handbook of Experiential Learning*, San Francisco, Pfeiffer.

Silverman D. (2001) *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction* (2nd Edition), London, Sage

Silverman D. (2005) *Doing Quantitative Research* (2nd Edition) London, Sage

Simones J. (2008) Creating a Care Home Laboratory *Journal of Nurse Education*, 47 (3) 131 – 3

Sinclair B. & Ferguson K. (2009) Integrating Simulated Teaching/Learning Strategies in Undergraduate Nursing Education *International Journal of Nursing Education Scholarship,* 6 (1) Article 7

Smeeton N. J., Hibbert J. R., Stevenson K., Cumming J. & Williams A. M. (2013) Can imagery facilitate improvements in anticipation behaviour? *Psychology of Sport and Exercise*, 14: 200 – 210

Smith M. J. (1998) *Social Science in Question*, London, Sage

Smith K. & Biley F. (1997) Understanding grounded theory principles and evaluation *Nurse Researcher,* 4 (3) 17 – 26

Smith J. A, Flowers P. & Larkin M. (2009) *Interpretative Phenomenological Analysis, Theory, Method & Research*, London, Sage

Society in Europe for Simulation Applied to Medicine (SESAM). Available: http://www.sesam-web.org

Sokolowski R. (2000) *Introduction to Phenomenology*, New York, Cambridge University Press

Stafford F. (2005) The significance of de-roling and de-briefing in training medical students: using simulation to train medical students *Medical Education*, 39: 1083 – 1085

Stanley H. (2003) The journey to becoming a graduate nurse: a study of the lived experience of part-time post-registration students *Nurse Education in Practice, 3: 62 – 71*

Stewart J., O'Halloran C., Barton J. R., Singleton S. J., Harrigan P. & Spencer J. (2000) Clarifying the concepts of confidence and competence to produce appropriate self-evaluation measurement scales *Medical Education,* 34: 903 – 909

Streubert H. J. & Carpenter D. R. (2011) *Qualitative Research in Nursing: Advancing the Humanist Imperative* (5th Edition), Philadelphia, Lippincott, Williams & Wilkins

Suliman W. A. (2006) Critical thinking and learning styles of students in conventional and accelerated programmes *International Nursing Review,* 53: 73 – 79

Tanner K. & Allen D. (2004) Approaches to Biology Teaching and Learning: Learning Styles and the problem of Instructional Selection – Engaging All Students in Science Courses *Cell Biology Education*, 3: 197 – 201

The Free Dictionary (2009) *American Dictionary of the English Language* (Fourth Ed.), Houghton Mifflin Company Available: http://the freedictionary.com

Thomson C., Cullum N., McCaughan D., Sheldon T. & Raynor P. (2004) – Nurse's, information use, and clinical decision making – the real world potential for evidence-based decisions in nursing *Evidence Based Nursing*, 7: 68 – 72

Timmins F. & Dunne P. (2009) An exploration of the current use and benefit of nursing student portfolios *Nurse Education Today,* 29: 330 – 341

Todres L. & Wheeler S. (2001) The complementarity of phenomenology, hermeneutics and existentialism as a philosophical perspective for nursing research *International Journal of Nursing Studies,* 38: 1 – 8

United Kingdom Central Council (UKCC) (1986) *Project 2000,* London, UKCC

United Kingdom (UK) House of Commons (2013) *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry Executive Summary,* London, The Stationary Office

University of the West of Scotland (2008) *School of Health, Nursing and Midwifery Dip HE/BSc Nursing Programmes Handbook*, Paisley, UWS

University of the West of Scotland (2011) *School of Health, Nursing and Midwifery: Clinical Skills Strategy,* Hamilton, UWS

Valle R. S. & King M. (1978) *Existential Phenomenological Alternatives for Psychology,* New York, Oxford University Press

Van Manen M. (1990) *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy*, Albany, State University of New York Press

Waite R. (2006) The psychiatric educational experiences of advance beginner RNs *Nurse Education Today*, 26: 131-138

Wall C., Glenn S., Mitchinson S. & Poole H. (2004) Using a reflective diary to develop bracketing skills during a phenomenological investigation *Nurse Researcher,* 11 (4) 20 – 29

Walters J. & Adams J. (2002) A child health nursing objective structured clinical examination (OSCE) *Nurse Education in Practice,* 2: 224 – 229

Watson R. (2002) Clinical Competence: Starship Enterprise or straitjacket? *Nurse Education Today,* 22: 476 – 480

Watson R., McKenna H., Cowman S. & Keady J. Eds (2008) *Nursing Research Designs and Methods,* Edinburgh, Churchill Livingstone

Waxman K. T. (2010) The development of evidence-based clinical simulation scenarios: guidelines for nurse educators *Journal of Nurse Education*, 49: 29 – 35.

Webb C. & Kevern J. (2001) Focus groups as a research method: a critique of some aspects of their use in nursing research *Journal of Advanced Nursing*, 33 (6) 798 – 805

Wehrwein H., Lujan H. & DiCarlo S. (2007) Gender differences in learning syle preferences among undergraduate physiology students *Advances in Physiology Education*, 31 (2) 153 – 7

Wenger E., McDermott R. & Snyder W. M. (2002) *Cultivating Communities of Practice*, Boston, Harvard Business School Press

Whiting L. (2001) Analysis of phenomenological data *Nurse Researcher,* 9 (2) 60 - 74

Widyandana D, Majoor G, Scherpbier A (2010) Transfer of Medical Students' Clinical Skills Learned in a Clinical Laboratory to the Care of Real Patients in the Clinical Setting: The Challenges and Suggestions of Students in a Developing Country *Education for Health,* 23 (3) 1-6

Wilkin K. & Slevin E. (2004) The meaning of caring to nurses: an investigation into the nature of caring work in an intensive care unit *Journal of Clinical Nursing* 13: 50 -59

Wilson M., Shepherd C., Kelly C. & Pitzner J. (2005) Assessment of a low-fidelity human patient simulator for the acquisition of nursing skills *Nurse Education Today,* 25: 56-67

Wong F. K. Y. & Lee W. M. (2000) A phenomenological study of early nursing experiences in Hong Kong *Journal of Advanced Nursing,* 31 (6) 1509 – 1517

Woods L. & Roberts P. (2005) Requesting access for research purposes: issues and guidelines *Nurse Researcher,* 10 (3) 38 – 47

Wooley N. & Jarvis Y. (2007) Situated cognition and cognitive apprenticeship: A model for teaching and learning clinical skills in a technologically rich and authentic learning environment *Nurse Education Today*, 27: 73 – 79

Yardley L (2000) Dilemmas in qualitative health research *Psychology and Health* 15 (2) 215 – 228

Zhang H. & Lambert V. (2008) Critical thinking dispositions and learning styles of baccalaureate nursing students from China *Nursing and Health Science*, 10: 175 – 181

Appendix I

Learning Style Inventory	Learning Style Categories				Comments
	Hands on	Watching/ Thinking	Reading/Listening	Experimenting	
Kolb	Accommodating (doing & feeling)	Diverging (feeling & watching)	Assimilating (watching & thinking)	Converging (doing & thinking)	Each type based on 2 opposing variables
Honey and Mumford	Activist & Pragmatist	Reflector & Theorist	Theorist & Reflector	Pragmatist & Activist	Can label people. Does not take into account that most have more than one strong learning preference
Felder and Silverman	Active	Reflective or Visual	Verbal	Active/Reflective	A hybrid
VARK	Kinaesthetic	Visual	Auditory & Read/ Write	Kinaesthetic Also visual & Auditory	Thinking based on primary senses
VAK	Kinaesthetic	Visual	Auditory	Kinaesthetic Also visual & Auditory	Thinking based on primary senses
Myers Briggs Type Indicator MBTI	ESTJ (Extraversion/Sensing/ Thinking & Judging) ENFJ	ISTJ (Introversion/Sensing/ Thinking & Judging	INFP (Introversion/Intuition/ Feeling & Perceiving)	INTJ (Introversion/Intuition/ Thinking & Judging	Very complex – based on 16 personality types Not specifically about learning

Whilst some of the LS categories in the table above could be easily linked to similar categories in others LSI's there were others where it was more difficult to match them as they could fit a number of categories. For example, Felder and Silverman was a hybrid and so some categories were interchangeable. Myers-Briggs (MBTI) had so many personality types and due to the complexity it was difficult to align them to others similar types. Those MBTI types represented above are by way of illustration only and not intended to be prescriptive. There are various antecedents influential to how one learns (Coffield *et al.,* 2004).

UWS UNIVERSITY OF THE WEST of SCOTLAND   NAPIER UNIVERSITY

XXXX

Dear Student,

My name is Maureen Crowley and I am currently undertaking a PhD research project looking at the experiences of second and third year student nurses and their use of simulation as a teaching and learning method.

The research will involve the participant (student) being observed and interviewed on four occasions by the researcher whilst working in a variety of clinical placements from semester three to semester six. I may also get views from mentors and patients on your performance.

I am looking for 12 volunteers from Hamilton campus who will be prepared to take part in the two year research project.

If you are interested in being a participant in this study or would like more information please complete the tear off slip at the bottom of this letter and return it in the addressed envelope in the internal mailing system by **XXXXXX.** On receipt of your return slip I will contact you to discuss the research further and arrange a date for our first interview.
Thank you.

Maureen Crowley
Kindar Merrick House,
Dumfries Campus
Tel: 01387 702118/ email: maureen.crowley@uws.ac.uk

Tear off and return in envelope

Name: _____
Address: _____
Contact No: _____ (optional)

Best time to make contact: AM ☐   PM ☐   EVENING ☐

Return to: Maureen Crowley, School of Health, Nursing & Midwifery, Kindar Merrick House, Dumfries Campus

UWS UNIVERSITY OF THE WEST *of* SCOTLAND
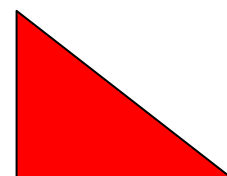
Information Sheet for Potential Participants

My name is Maureen Crowley and I am a postgraduate research student from the School of Acute and Continuing Care at Napier University in Edinburgh. As part of my degree course, I am undertaking a research project for my PhD dissertation.
The title of my project is:

"Student nurses' perceptions of the impact of a simulated environment on their clinical learning experience"

This study will explore the lived experience of the undergraduate (Adult) nurse over the two year adult branch programme, in relation to their development of clinical skills following exposure to simulated teaching and learning methods within a simulated clinical environment and subsequent support from their mentors in clinical practice.

The findings of the study will be valuable because they will evaluate the effectiveness of simulation as a teaching method from the perspective of those who use it and will help to determine how useful it is in preparing student nurses for clinical practice. This will also act to inform nurse educationalists of the value of simulation as a teaching methodology and be useful with future curriculum development.

I am looking for 12 volunteers to participate in the two-year project.
The inclusion criteria are:
1. You must be an Adult nursing student at the Hamilton Campus and be in semester three at the time of the commencement of the study
2. You must have no contact, either academic or personal, with the researcher.
3. You must have no previous experience as a nursing student or a healthcare assistant.

Participants will be selected in order that they are demographically representative of the population of student nurses at the University of the West of Scotland.

If you agree to participate in the study, you will be interviewed as part of a group before you go into your surgical placement. During week five of your placement you will be observed by the researcher. You will also be interviewed on a one to one basis by the researcher. The observations and interviews will be carried out a total of four times over a two-year period. Each, observation and interview should take no longer than two hours, with the interview lasting between 45 minutes to one hour. The researcher is not aware of any risks associated with this proposed schedule.

You will be free to withdraw from the study at any stage, you would not have to give a reason, and it will not in any way affect your progression on the course. This project will also mean that I will have to listen to and transcribe your audio recording.

All data will be anonymised, although you may be identifiable from tape recordings of your voice. Your name will be replaced with a participant number or a pseudonym, and it will not be possible for you to be identified in any reporting of the data gathered. Any data collected will be kept in a secure place to which only the researcher has access. These will be kept until the end of the research study and then destroyed.

The results may be published in a journal or presented at a conference and if you wish, you will be provided with a copy at the end of the study.

If you would like to contact an independent person, who knows about this project but is not involved in it, you are welcome to contact Professor Morag Gray. Her contact details are given below.

If you have read and understood this information sheet, any questions you had have been answered, and you would like to be a participant in the study, please now see the consent form.

Contact details of the researcher:

Name of researcher: Maureen Crowley

Address: University of the West of Scotland
School of Health, Nursing & Midwifery,
Kindar Merrick House,
Dumfries Campus,
Bankend Road, DUMFRIES, DG1 4ZN

Email / Telephone: maureen.crowley@uws.ac.uk/ 01387 702118

Contact details of the independent adviser:

Name of adviser: Professor Morag Gray, Associate Dean Ed. Development

Address: School of Acute and Continuing Care
Napier University
Canaan Lane Campus, EDINBURGH, EH9 2TB

Email / Telephone: m.gray@napier.ac.uk / 0131 455 5687
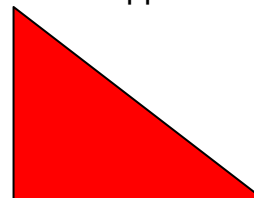
NAPIER UNIVERSITY

Acute and Continuing Care Nursing and Community Health Schools' Research Ethics Committee

Consent Form (Participants)

"Student nurses' perceptions of the impact of a simulated environment on their clinical learning experience"

	YES	NO
I have read and understood the information sheet.		
I have had an opportunity to ask questions about the study before taking part		
I confirm that my contact details can be securely stored by the researcher		
I understand that I am under no obligation to take part in this study and that I have the right to withdraw at any stage without giving any reason.		
I agree to interviews being tape-recorded		
I agree to participate in this study.		

Print Name: _____

Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

Sign both forms: 1 copy for participant and 1 copy for researcher

Lanarkshire Local Research Ethics Committee
Lanarkshire NHS Board
14 Beckford St
Hamilton
ML3 OTA

Telephone: 01698 281313
Facsimile:

30 March 2007

Ms Maureen Crowley
Lecturer (Adult) Nursing Studies
Bell College, School of Health
Dudgeon House, Crichton Campus
Bankend Road
Dumfries
DG1 4ZN

Dear Ms Crowley

Full title of study: **Student nurses' perceptions of the impact of a simulated environment on thir clinical learning experience**

REC reference number: **07/S1001/5**

Thank you for your letter of , responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
Application	5.2	15 January 2007
Investigator CV	1	15 January 2007
Protocol	1	15 January 2007
Covering Letter	1	15 January 2007
Summary/Synopsis	1	01 December 2006

Letter from Sponsor	1	08 January 2007
Interview Schedules/Topic Guides	1	01 December 2006
Letter of invitation to participant	1	01 December 2006
Participant Information Sheet: PIS (patient)	2	01 March 2007
Participant Information Sheet: PIS (mentor)	1	01 December 2006
Participant Information Sheet: PIS	1	01 December 2006
Participant Consent Form		
Participant Consent Form: PCF (patients)	1	01 December 2006
Participant Consent Form: PCF	1	01 December 2006
Response to Request for Further Information		
Honorary Contract Agreement	1	01 March 2004
Superv isors CV	1	01 December 2005

R&D approval

The study should not commence at any NHS site until the local Principal Investigator has obtained final approval from the R&D office for the relevant NHS care organisation.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

| 07/S1001/5 | **Please quote this number on all correspondence** |

With the Committee's best wishes for the success of this project

Yours sincerely

P.P. MRS. P. CONWAY
SECRETARY TO THE COMMITTEE

Enclosures: *Standard approval conditions [SL-AC1 for CTIMPs, SL-AC2 for other studies]*

BELL COLLEGE

Memo
ETHICS COMMITTEE

To: Maureen Crowley, School of Health Studies

From: Elaine Maitland, Secretary to Ethics Committee

CC: K Scott, Chair of Ethics Committee

Date: 2/5/2007

Re: Application from Maureen Crowley: 'Student nurses perceptions of the impact of a simulated environment on their clinical learning experience.' (Ethics071206/Paper5.4)

The Ethics Committee has met and considered your application. Your application was approved, and, below, find an extract from the minutes of 7 December 2006:

12. APPLICATIONS TO ETHICS COMMITTEE

.4 *Application from Maureen Crowley: 'Student nurses perceptions of the impact of a simulated environment on their clinical learning experience.' (Ethics071206/Paper5.4)*

*The Committee expressed concern at the small size of the sample and the effects of attrition. The application was **approved**.*

If you have any questions regarding this please do not hesitate to contact me.

www.napier.ac.uk

School of Nursing, Midwifery
& Social Care
Napier University
Canaan Lane Campus
Edinburgh EH9 2TB
Scotland

t +44 (0)131 455 5689
f +44 (0)131 455 5614
e info@napier.ac.uk
w www.napier.ac.uk/fhls

Ms M Crowley
Fenway
Dalbeattie Road
Dumfries
DG2 7PL

17 January 2008

Dear Maureen

APPLICATION FOR ETHICAL APROVAL FOR A RESEARCH PROJECT

I am writing to confirm that Ethical Approval for your research project has
been granted. I apologise for the delay in getting this to you.

If you have any questions please do not hesitate to contact me, or Dr
Maureen Macmillan (m.Macmillan@napier.ac.uk tel. 0131 455 5663.

Yours sincerely

Lesley Laidlaw
Assistant Faculty Manager
Faculty of Health & Life Sciences
Email: l.Laidlaw@napier.ac.uk
Tel: 0131 455 5622

INVESTOR IN PEOPLE

NAPIER UNIVERSITY
EDINBURGH
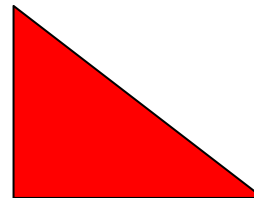
NAPIER UNIVERSITY

Acute and Continuing Care Nursing and Community Health Schools' Research Ethics Committee

Consent Form (Patients)

"Student nurses' perceptions of the impact of a simulated environment on their clinical learning experience"

	YES	NO
I have read and understood the information sheet.		
I have had an opportunity to ask questions about the study before taking part		
I confirm that my contact details can be securely stored by the researcher		
I understand that I am under no obligation to take part in this study and that I have the right to withdraw at any stage without giving any reason.		
I agree to participate in this study.		

Print Name: _____

Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

Sign both forms: 1 copy for participant and 1 copy for researcher

Example of Thematic Analysis (Focus Group)

Preparation for Practicum

Going out into the real world

Jane - *"I think even the layout of the sim room – it's like a ward – 'cause I don't know what to expect in the hospital"*

Hands on skill development

Jill - *"...you know you can read all you want in a book, but actually practically doing it makes it so much easier"*

Cognitive development

Mary - *"It would give you the responsibility to go and read up more on things and say – I'm going to do this today, this is what you need to learn"*

Professional role of nurse

Sue - *"They were asking us to diagnose what's wrong with the patient, which is something we'll not do – so why give us that information?"*

Jill - *"The doctor's not there all the time – you're the person that's with them. You need to be able to say 'he's going into shock or whatever' - otherwise you'll be standing around waiting for someone to diagnose – that person could be literally dying."*

Feeling under pressure

Jane - *"I felt under pressure and that – but I thought that was good because it told me how I might feel my first time this kind of happens when I am myself, with others in the ward – it prepares you that way as well – I think you have more of an idea of what to expect when you are out."*

Development of confidence and competence in skills

Beth - *"It's built my confidence, because I just worried all the time – what I'm going to do on the ward – but just working in the lab here I know that when I get something wrong, I have my lecturer – so I just feel I have somebody to fall back on, who is teaching me, assessing me and can see where I am going wrong and can help me there and then before going into the public – so somehow I feel shaped and ready to go out"*

Example of Thematic Analysis (Interview 3)

```
                        ┌─────────────────┐
                        │  Engagement     │
                        │  with the SCE   │
                        └─────────────────┘
```

Engagement with the SCE

Seeing the value	Facilitator interaction	Group size	Cognitive preparation for simulation	Authenticity of the simulation event	Real patients

Anna - *"I'm a bit more relaxed when I go in, more prepared to get involved. I know it's beneficial…I look forward to going into simulation and I'm just not as nervous"*

Allan - *"I don't feel comfortable going into it, but once you're in it's fine. I like it and I see its worth and I think it's good value for me as far as my training's gone, but if someone said they would give me two extra essays instead of simulation I would say "Okay." [laughs]*

Jen - *"Some of the lecturer's were great, they were sympathetic towards you because they know how hard it is – but you did get the odd lecturer who really did get a kick out of making you look like an idiot, an absolute idiot and they just loved doing it every time you were in – and you think 'that's it, I give up, I'm not coming in next week."*

Sue - *"It was a bit better because we were working in three's – when we had done it previously there were maybe nine in a group…so [this time] you could interact a bit more..."*

Jane - *"Because you know what to expect you do the reading up behind it, so you can be more confident and do more. I don't feel I took simulation as seriously in year 2. It wasn't that I didn't enjoy it at the start, I think I didn't see the benefits until later."*

Bob - *"It gives you the motivation to go next time and think 'well I'm going to be sure I'm not standing this time looking a bit stupid. I'm going to get right in there and treat the patient."*

Jack - *"The SCE is good practice for your skills and for team working but you're working with your peers so it's unlike the real environment where you've got senior nurses, doctors, OT's and the rest – you learn more about professional attitude in the clinical setting because in simulation you're round your friends', you're having a laugh and it's a bit of fun – it doesn't really matter if the doll dies – but out in the real setting you are on display to the patients at all times so you have to be very professional."*

Jane - *"I thought it was a bit easier actually having the real patients because they can communicate with you –- it's more realistic to be able to take a BP and a pulse on a real person – you can see their colour you can see everything more – whereas with simman you're not getting to see that…"*

Jack - *"Well, I don't know if it was better than using the simulated dolls, because they are quite sophisticated and you can set them to have a high pulse or low blood pressure, whereas you can't get a real person to do that. And because you knew the lecturer as well it made you laugh – it was less serious I would say than having the actual doll."*

Member Checking

The students were forwarded a description of the findings with the following request:
"Please read the attachment and judge if it sums up the main points of your experiences of learning skills within a simulated environment. If you want to add anything or tell me if you feel it helped you in the long run when you got your first job as a qualified nurse that would also be fine. It is important that what I have sent you is a true representation of your experience, so if I have missed anything crucial do let me know.

My sincere thanks and good wishes,

Six students read the description of their experiences and responded. The following comments were received:

I have had a read through everything and agree with everything written. At the time I definitely felt those things about simulation.

Since qualifying I must admit I have used all the skills I gained from those SIM labs in practice. I now understand why we done the scenarios we done however still fell at the time it didn't quite match what stage we were at in our learning at times, ie doing cardiac arrest scenarios when our next placement was district nursing, I did feel time would have been better spent on injections/ dressings/ catheterization etc. Overall I enjoyed my time in the lab but I suppose I was probably one of the more confident and eager to learn students. I think more time should be spent on that type of learning and more time should be taken for feedback as ultimately it is the feedback which gives you the confidence in knowing what you are doing is correct and what areas you need to focus on and improve. A lot of the students we get into ECU at Wishaw general lack basic practical skills and lack the confidence to assess patients and I feel I learned a lot of those skills when I was a student from what i done in the SIM labs. I would love to go back and do some of this "guilt free nursing".....haha, life was easier when it was SIM man you were trying to care for. **Jane (Cohort 2)**

I have just read the enclosed paper and yes I do feel it was a true account of the experiences of learning skills within a simulated environment. It is still the same today when you are sent on a course from the ward, although having been qualified 3 years now find it much easier to associate with the manikin. **Sue (Cohort 2)**

I have just read the simulation study that you have written well done this is a fantastic piece of research. It covers all the main points that we addressed within the 2 years of the study, covering all our experiences and learning skills. I can honestly say that this experience in simulation has helped me greatly within my role as a first year nurse and there after. As a newly qualified nurse I worked within surgical wards medical wards stroke ward, care of the elderly and emergency wards so I had a variety of roles and situations that simulation that helped me with. I feel that I appreciated simulation and the benefits of simulation more as a staff nurse than I did as a student nurse and iI would encourage student

nurses to carry this on in the future. **Kate (Cohort 1)**

I have read your findings and it brings it all back to me! It takes me back to the simulation classes and the anxiety's I and the other students had. I can't think of anything that you have missed out and it appears, to me, to sum up our collective thoughts and experiences. Below, just out of interest, I have written my current thoughts on some issues I may have had with the simulation classes at the time. Hope this helps.

Communication with mannequin- I remember commenting that I found this difficult to do, and felt silly doing it; however I was confident that I could communicate well with real patients, and I do, most of the time! However I can understand now that it was a useful skill to learn- if you had never been in contact with a real patient before.

Making diagnosis- I may have commented on this not being relevant to student nurse training but being a nurse now I find it a very valuable skill. Not because it's my job to do so but I find it helps me forward plan the patients care. E.g. I find a post-op patient tachy and hypotensive, I'm pretty certain the patient is very dehydrated perhaps through blood loss, and at risk of hypovolemic shock so I know as soon as I call medical staff it is likely they will ask me to immediately bolus some fluids initially into the patient.

Practicing skills like resus instead of basic skills- I actually had 2 cardiac arrests as a student and I was able to participate due to learning the skills in simulated study.

Mentors not spending time with students because they are too busy- I felt that I missed out on a lot of practical opportunities in placement for this reason and my opinion hasn't changed now that I am qualified. My ward is extremely chaotic and sometimes I feel that I literally don't have time for students, but I always remember my experiences, and how I felt at the time and I ensure that I teach them at least one new skill a day and I include them in all aspects of the running of the ward, and they always tell me they appreciate that I take time with them and that I help them to feel more confident. **Jack (Cohort 2)**

I would say that the majority of points raised would replicate my experience of what was relevant in my simulation experience, especially when dealing with the mannequins, regarding the fact that there is no body language or facial expressions and pallor etc. It is easier to make more accurate clinical decisions on real humans. But what you gain in simulation is the experience of being dumped in the thick of it, so it shows how your basic nursing models actually work as in your ABC's and the like. **Allan (Cohort 1)**

Very happy with what you have written and reported. **Mary (Cohort 1)**