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SIMULATION IN NURSE EDUCATION: THE STUDENTS' EXPERIENCE.

BY

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Declaration of Author's Rights

Declaration

I, Jacqueline McCallum, confirm that I as the named author conducted the research study detailed in this dissertation. No portion of this work has been submitted in support of an application for another degree or qualification of this or any other University or Institute.

Signature Jacqueline McCallum Date 19/6/06

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Abstract

Nurse education has changed significantly in the last 15 years with the move into Higher Education. With it however teaching clinical skills within the HEI was abandoned and left to the clinical areas. It has been identified that this was to the detriment of the clinical skills competence of the newly qualified practitioner. Recently however there has been development in using simulation education as a teaching, learning and assessment strategy within the HEI. In light of this development this research aims to explore what simulation education means to the student nurse.

A mainly qualitative approach was employed through interviews with fourteen students on the Diploma of Higher Education/Bachelor of Science nursing programme (adult) within one HEI using a phenomenological hermeneutic method and Nvivo for data analysis. Methodological triangulation was employed by the student's completion of a semantic differential (SD) questionnaire on their self perception of competence while on clinical placement.

The overall findings revealed valuable insights from the students' perspective on implementing simulated education as a teaching, learning and assessment strategy. The student interviews revealed six themes, concept; attitudes; learning better; mistakes; realism and putting into practice. The students in this study enjoyed simulation education and it encouraged them to practise and become competent in the clinical skills that the newly qualified nurses had been shown to be deficient in previously. This led to an increase in confidence and the student's seeking out further skills to practise. The SD questionnaire found that the students were anxious prior to their clinical placement experience, but felt prepared.

The recommendations of this study are to implement simulation education within the nursing curriculum in order for the student nurse to gain

competence in clinical skills whilst keeping in accordance with the current research literature on this teaching, learning and assessment strategy.

Chapter 1: Simulation in Nurse Education: The students' experience.

1.1 Introduction

I hear and I forget
I see and I remember
I do and I understand
(Chinese Proverb cited by Hertel and Millis 2002)

Since the early days of formal nurse education, learning practice has been viewed as an essential element, however, it has long been recognised that this practice must be related to theory. Indeed, as Florence Nightingale (1859 p.v) wrote "how immense and invaluable would be the produce of her united experience if every woman would think how to nurse". This historical relationship between practice and theory is not limited to nurse education. Mills (1959), an eminent sociologist, highlighted the relationship between using life experiences and intellectual work. Similarly, as recently as 2004 the Nursing & Midwifery Council (NMC) emphasised the link between theory and practice and stated that "to practise competently, the registered nurse must possess the knowledge, skills and abilities for lawful, safe and effective practise without direct supervision" (NMC, 2004a, p9).

The importance of practice and teaching practical skills to ensure safe effective practice by the student nurse has become increasingly apparent. One of the key principles of the NMC Code of Professional Conduct is that registered nurses "have a duty of care to patients and clients, who are entitled to receive safe and competent care" (NMC, 2004a, p4). Historically, in order to learn the skills of nursing, student nurses practised directly on the patients and clients. This was often referred to as the apprenticeship model of learning (du Boulay & Medway, 1999). The student nurse followed "the master" nurse who was seen as a role model and learned by doing what the master did (Elzubeir & Sherman, 1995). Problems however arose from this model as students had limited supervision due to the registered nurse's workload and they often failed to learn the theory underpinning their actions

(Nicol & Glen, 1998). This often resulted in learning by trial and error (Wong & Wong, 1987).

In current programmes of nurse education the students are supernumerary to the clinical team (United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC), 1999, now NMC). This allows the student nurse to practise and learn within a safe learning environment with the use of skills or practical laboratories, manikins, role play, case studies and simulated patients (actors).

The use of these strategies enables the "real world" of nursing to be simulated. This however leads to questions concerning what student nurses view of this teaching, learning and assessment strategy are when practising on a manikin or actor within a Higher Education Institution (HEI) environment and when then applying this learning in the clinical environment. This study therefore researches - Simulation in nurse education: The students' experience.

1.2 Rationale and Background

The move from the apprenticeship model of nurse education to the HEI student model has taken place over the last 60 years. The Nursing Reconstruction Committee (Royal College of Nursing (RCN), 1943) examined nurse education prior to the commencement of the National Health Service (NHS) and concluded that the first essential of nurse education should be the clear separation between the training of nurses and the inclusion of them as a part of the workforce. Despite this, in 1953, the report of a job analysis published by the Nuffield Provincial Hospitals Trust found that student nurses were still students in name only. Therefore, in 1964 the Platt Report (RCN and National Council of Nurses of the UK, 1964) advocated an urgent need for reform of the basic education of nurses. The recommendations made were that the student nurse would have a two year course in a school covering the academic study and practical experience, but should not form part of the basic staff in the hospital. A further third year would be pre-registration in full time service, under supervision, in wards and departments.

Eight years later the Briggs Committee (Committee on Nursing, 1972) considered that placements for clinical experience should be the responsibility of a training institution (College of Nursing and/or Midwifery) and therefore provide a firmly controlled learning environment. These Colleges were linked geographically to hospitals where the clinical areas continued to be used for student nurse experience.

The main thrust of all these reports was the desire to improve the quality of the total learning environment. This emphasis was continued in 1986 when the UKCC developed the Project 2000 (P2000) programmes. Although entitled P2000 the programmes were actually implemented in Scotland from 1992 following from some evaluation studies on demonstration sites in England. Consistent with the previous reports P2000 implementation

resulted from the clinical learning environment being viewed as crucial to student learning. An important development of the P2000 process was that student nurses should become more like students in the Higher Education sector. Supernumerary status was therefore supported but more importantly so was the enhancement of the relationship between education and service in order to produce the 'knowledgeable doer' (Hilton, 1996). Subsequently the Colleges of Nursing merged with the HEIs and nurse education moved into the Higher Education sector.

The most recent national review of nurse education came in 1999 with the Fitness for Practice Report (UKCC, 1999). The recommendations identified the need for nurse education to respond to the changing demands of the patient/client of the NHS. The first principle identified in this report was that "the primary aim in pre-registration nursing programmes is to ensure that students are prepared to practise safely and effectively, to such an extent that the protection of the public is assured" (National Board for Nursing, Midwifery and Health Visiting for Scotland (NBS), 2000a p10).

Worryingly, research conducted by While et al (1995); Luker et al (1996); MacLeod Clark et al (1996); May et al (1997) and Runciman et al (1998) demonstrated that following qualification and registration there were a number of skills deficits in newly qualified nurses. Two main areas were identified in which newly qualified nurses required considerable support. These were practical skills, such as communication, decision-making and drug administration and managerial/organisational skills such as delegation and running a ward (Luker et al, 1996). Reasons suggested for these inadequacies were the reduced time on placement and students not working shift patterns and therefore not gaining the professional socialisation required (Runciman et al, 1998).

As a result of this research, core skill competencies were developed which the student nurse was required to achieve prior to completion of the nurse

education programme (NBS, 2000b). Unfortunately Scholes et al (2004) who carried out a further review of nurse education in England found limited improvement in the skills of student nurses. Since then the Nursing and Midwifery Council (2004b) have developed standards of proficiency for pre-registration nursing education.

Teaching practical skills in nurse education continues to be an emotive topic and one that is high on the research agenda. O'Neill (2002) comments that due to nurse education being a knowledge and practice based profession it requires appropriate and adequate clinical placements. Unfortunately due to changes in the clinical areas with long-term traditional institutions no longer having in-patients available for clinical experiences (Scottish Office Health Department (SOHD), 1997 and SOHD, 1998) there are growing concerns about the opportunities available for students to practise and refine their clinical skills. Compounding this is the fact that the current Labour government has increased the student nurse intake numbers without a corresponding increase in clinical placements, especially in community settings (Wilkie & Burns, 2003). The NBS (2000a) supported the SOHD (1997 and 1998) view and advocated that these pressures in practice areas should prompt interest in the teaching, learning and assessment of skills in laboratory/simulated conditions. However, time in these laboratories within the HEI cannot be used as practice hours.

Due to these constraints related to clinical placements and the evidence that newly qualified nurses have certain skill deficits, the focus is on nurse educators to provide innovative teaching, learning and assessment strategies. The School of Health Studies at Bell College validated their most recent nurse education pre-registration courses in 2001 following the Fitness for Practice Report (UKCC, 1999). This curriculum acknowledged the need to introduce more practical skills into these programmes (Appendix I). Simulation is not for the faint hearted as it represents a more labour intensive commitment than traditional face to face teaching and the recruitment of staff

and their development has become focused on this aspect of service delivery. A number of newly appointed staff (the researcher being one) onto the Diploma of Higher Education/Bachelor of Science (DipHE/BSc) Adult Nursing Course had expertise in practical skills as well as experience in being taught using manikins and performing simulation, for example on the Advanced Life Support (ALS) Course. At the same time there was a commitment over a five-year time frame for allocating a curriculum budget to this method of teaching and learning. A range of simulators such as the medium fidelity Sim Man were purchased and staff training was provided by Laerdal Medical.

There is however a need to carry out further research on the efficacy of the range of teaching, learning and assessment strategies utilised. The UKCC (1999) advocated the increased use of 'skills laboratories', however MacLeod Clark et al (1996) claimed that there was a shortage of empirical evidence regarding either the value or validity of laboratory based learning on the concurrent performance in practice. Much of the previous research concentrates on the students' skill performance. Therefore the question of what simulation means to the student nurse is raised.

1.3 The Study

Simulation in nurse education: The students' experience.

Research Aim, Objectives and initial Questions

Aim

To illuminate the meaning of lived experiences of simulated education utilised as a teaching, learning and assessment strategy, as narrated by student nurses.

Objectives (prior to the literature review)

1. To critically review the current and relevant literature on the concept of simulation in teaching, learning and assessment.
2. To examine the development of simulation as a teaching, learning and assessment strategy within nurse education.
3. To determine student nurses' attitudes and feelings towards simulation as a teaching, learning and assessment strategy.
4. To compare and contrast the use of simulation with reality within the clinical environment.
5. To identify if the use of simulation improves the student nurses' reported self-perception level of competence.

Chapter 2: Literature Review

Simulation in nurse education: the students' experience.

The purpose of this literature review is to provide an analysis of our current understanding of simulation and its use as a teaching and learning methodology in nurse education.

This literature review was obtained by searching a range of databases principle among which were the international bibliography of the social sciences (BIDS), CINAHL®, OVID® and the national library of medicine (MEDLINE). The initial search commenced in 2004 and was restricted to the decade 1994 – 2004, however some important original studies in this area of research took the literature search back to the 1980s. Subsequently while the data was being collected, analysed and discussed, further monitoring of the literature took place in search of newly published work. Reports, articles, books, unpublished work and the Internet providing primary and secondary sources of information were retrieved.

It is notable that research exploring social and health care environments that include real situations can never be the ideal situation for research. Specifically in nursing research there has been debate that it lacks rigor and in many instances is either descriptive or subjective in nature. This is partly due to the research being small in scale, but as Tierney (2003) suggests mostly due to inadequacies in design and analysis. Research authors explain this can lead to bias and could bring the results into question (Polgar & Thomas, 1995 and Polit & Hungler, 1995). In this study the literature pertaining to simulation in nurse education and teaching clinical skills begins in the 1980s and as such there are deficiencies in their sample sizes, methods and data analysis. Therefore one single study cannot be generalisable since it does not provide definitive answers. However Parahoo (1997) explains that there has been an increase in nurses being trained as

researchers over the past two decades. At this time there has also been an increase in the funding of nursing research, thus an increase in studies over this time. Consequently, although there are flaws in the research used for this literature review Parahoo (1997) explains that examining an accumulation of the research leads to a greater body of knowledge about the area under study.

The study of the research and literature was focused on to two main areas, the concept of simulation and simulation in nurse education. Research and literature pertaining to all disciplines conducting simulation was initially explored, thereafter only literature pertaining to nurse education was utilised. Only English translations were used. The area of gender was explored, however after examining the literature it was decided not to include this.

The Concept Map

In order to provide a focus for the literature review a concept map was developed. Concept maps have been utilised in many disciplines since they provide formal visual representation of knowledge structures (Gaines & Shaw, 1995). The first step was to include all possible subjects that related to the topic under study (Appendix II) and from this the following concept map (Figure 2.1) was devised by forming links and choosing subjects that emerged as headings.

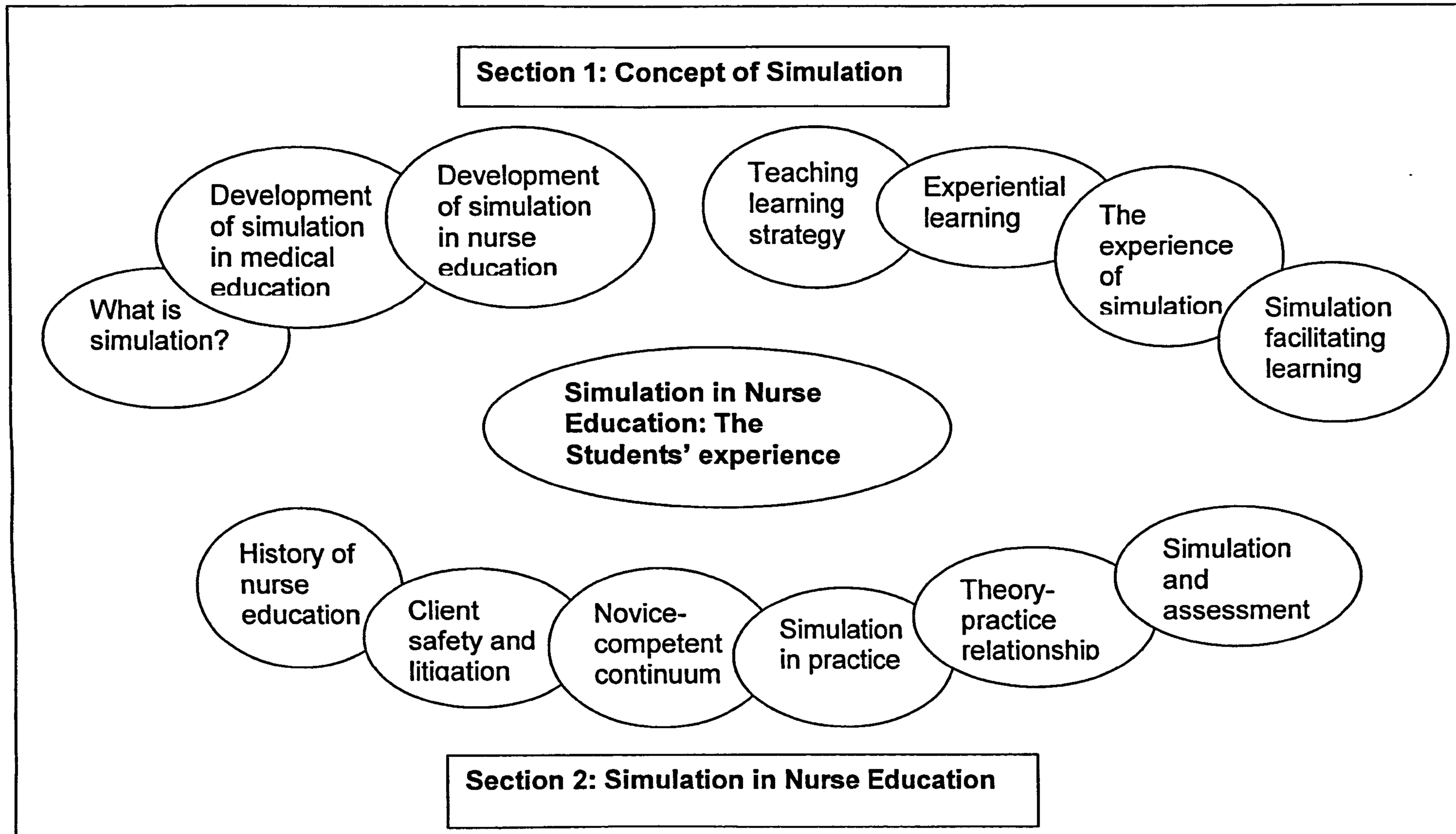


Figure 2.1: The Concept Map

Section 1: Concept of Simulation

pretend to be

imitate the condition

made to resemble the real thing but not genuinely such

(The Oxford English Dictionary, 2005).

A dictionary may not have high academic credibility, but the above definition does provide a starting point from which to explore the meaning of the term simulation. Hertel & Millis (2002) suggest that there is no generally accepted definition of simulation rather there are descriptions of it.

2.1. What Is Simulation?

It is important to provide a working definition at this point for simulation education in this research study. Within the nurse education curriculum simulation is carried out with manikins referred to as task trainers used to perform single skills, for example catheterisation. However simulation is recognised as recreating all the elements of a situation that are perceptible to the student.

Thus the environment is intended to closely resemble that of the clinical area (for example the Intensive Care Unit, or community room) including all the equipment required with mid-fidelity manikins that provide physiological changes such as breathing and communication. This is possible by the lecturer wearing a microphone headset that is relayed to a speaker in the manikin's throat. Thus providing a realistic scenario. Furthermore the procedure is carried out in real time with the student in their student nurse role.

The students are provided with a clinical scenario and are expected to provide the nursing care suitable for that patient and their level of learning including psychomotor, cognitive and affective skills.

There are a number of key points for simulation as a learning and teaching strategy. Fry et al (1999) explain that education simulations can be very simple with single skill models to full-scale replication of healthcare environments, which demonstrate complex relationships. The advantages are that since it occurs in a learning environment the learning outcomes can be set and controlled (Kneebone, 2003). This allows only certain aspects of a situation to be dealt with at the particular time taking into account the prior learning of the student and their stage of the course. However it is crucially important to take credence of the student's prior knowledge and integrate the simulation with the theory (Rauen, 2001) otherwise the experience will be meaningless.

Rauen (2001) suggests that one key characteristic of a simulation is that it is based on reality. Cioffi (2001) makes the further point that simulation does not replace the actual clinical experience, rather it develops skills that can be transferred to the real clinical setting. Johnson et al (1999) describe simulation as role-play. In contrast the literature describes education simulation as placing the student in true-to-life roles with modification only taking place for learning purposes (Gaba & DeAnda, 1988; Ker et al, 2003 and Maran & Glavin, 2003). Simulation should not be confused with games. Games have rules of play, which can be rigid or fixed, in contrast Hertel & Millis (2002) explain this is more fluid in simulation and there is often a degree of fantasy with games, whereas simulation aims to be as realistic as possible. Gaba & DeAnda (1988) suggest that simulators were built to allow learners to practice applying their knowledge in a realistic environment.

Cioffi (2001) suggests clinical simulations enable experiential learning. It can provide the student with a 'hands on' experience (Taylor & Cleveland, 1984) which replicates the situation found in real life (Dahl, 1984).

Simulation can allow for 'trial and error' or making mistakes (Glavin & Maran, 2003), which allows the student to practise over time until they have mastered the skill. The student can receive feedback and reflect on their performance which Johnson et al (1999) propose can lead to the skills becoming embedded into their long-term memory and develop deep learning (Entwistle et al, 2000). Additionally Hanna (1991) proposes that simulation can teach in two domains at the same time, such as psychomotor and cognitive or cognitive and affective. Cognitive learning theory defines a process whereby the student becomes actively involved in it, thus simulation can provide cognitive learning (Roberts et al, 1992 and Johnson et al, 1999).

Simulation is more traditionally recognised in diverse fields such as military aviation, space flight, automotive driving, locomotive control, ship handling, fire fighting, combat and the operation of nuclear power and petrochemical plants (Flexman & Stark, 1987).

In aviation the impetus for simulation started in the 1970s after a series of well publicised plane crashes involving human error i.e. not due to technical failure. This is now termed as non-technical skills (NTS). As a result the aviation authorities ensure that all pilots pass the NTS training to retain their license, thus reducing the incidence of error. Similarly recently in medicine there has been the 'Bristol enquiry' (Smith, 1998) which stimulated the development of training methods to not involve real patients. These training methods are not entirely new and their development into the health care professions requires explanation.

2.2 Development of Simulation in Medical Education

The first application of NTS to health care was by Professor David Gaba of Stanford, California. Professor Gaba already had a pilot's license and therefore knew the concepts of the Crew Resource Management (CRM) training which was developed for NTS. He designed a course for

anaesthetists focusing on the use of CRM skills to manage crisis and reduce error in the operating theatre. This course utilised a high fidelity patient simulator in a realistic clinical environment to create scenarios where a crisis occurred and the participants had to manage the challenge. As a result of the success of this implementation and the resultant reduction in errors by the anaesthetists (Gaba & DeAnda, 1988; Gaba, 1989; Gaba & DeAnda, 1989 and Gaba et al, 1994) the basic principles of this course were adapted to other healthcare environments such as the emergency room and the labour ward.

Recent research by Professor Flin (Flin et al, 2004), a psychologist at the University of Aberdeen demonstrated that this NTS simulation training is transferable to the workplace and can play an important role in prevention of accidents. In Scotland the basic principles of NTS training have been introduced in the training of all anaesthetists. The University of Aberdeen has formalised a training programme called Anaesthetists' Non-Technical Skills System (ANTS) (Flin et al, 2004). The programme utilises a highly technical full body patient simulator, which can mimic most of the physiological responses of a human. This development was the result of a four-year collaborative research project. The aim was to educate anaesthetists with a combination of medical knowledge, clinical skills and NTS who would be able to perform safe and effective tasks in every day situations as well as unplanned emergency situations.

Fletcher et al (2003) in a study of anaesthetists using ANTS evaluated a behavioural marker system, which was a tool devised to assess these non-technical skills. Fifty consultant anaesthetists were trained to use the tool. The results demonstrated a satisfactory level of validity, reliability and usability in an experimental setting, provided that the users receive adequate training. The basic components of the NTS are four skill categories, namely task management; team working; situation awareness and decision-making (Flin et al, 2004). These components were based on the anaesthetists' role.

Further development has taken place to focus learning on other members of the multi-professional team. Glavin & Maran (2003) provide an example adapted for a surgeon with simulated laparoscopic surgery and paramedics, fire, police, medical and nursing staff in major incident scenarios (Paramedic UK, 2004).

Within the NHS major incident simulations take place every three years (Department of Health, 2005) aimed at developing protocols for swift treatment of casualties. This involves the majority of services within the acute hospitals. Such simulations have taken place for rail and multiple car crashes and more recently terrorist attacks. The multi-disciplinary team each work in their own roles, with actors as simulated patients. These simulations involve the interpersonal, communication and critical thinking (cognitive) skills that are required by many health care professionals to ensure safe and effective patient care. Development of simulation within nurse education has taken a different progressive path to that of medicine and major incident training and therefore merits exploration.

2.3 Development of Simulation In Nurse Education

In nurse education teaching clinical (psychomotor) skills in the HEI was abandoned in the U.K. with the implementation of the P2000 programme in favour of learning in the clinical setting. In Canada this development took place 30 years earlier (McAdams et al, 1989) with the move of training from Schools of Nursing into Higher Education Institutions (HEI) and the emphasis changing to producing 'thinkers' rather than functioners. It was found that the second year students who were taught skills in such self-directed, self-taught modules developed poor skill mastery. In response to this the McMaster University in Canada in the 1980s carried out a randomised-controlled trial to determine whether students learned better in a teaching laboratory or by self-directed self-taught modules (Love et al, 1989) which follows the principles of problem based learning (PBL).

The study consisted of a sample of 77 second year students at the University. The self-directed control group (SDL) consisted of 39 students and the laboratory experimental group (LABS) consisted of 38 students. Ten skills packages were chosen and assessed using Objective Structured Clinical Examination (OSCE). Despite this only six skills were randomly selected to be taught in the laboratory with the remaining being taught by the self-directed method.

The results concluded that there was no difference from being taught psychomotor skills in a laboratory or by SDL. Interestingly only the psychomotor aspect of the skill was assessed which in the NTS is the task management. Cognitive skills such as decision-making, team working and situation awareness were not assessed. The authors do however agree with the fact that clinical competence should be evaluated in the cognitive, affective and psychomotor domains (Love et al, 1989).

There is now resurgence in the use of simulation for teaching clinical skills in nurse education (Nicol & Glen, 1998 and O'Neill, 2002) which would not seem to follow from these results and therefore requires further explanation. Some have argued that this is just going back to the old practical laboratories again, however Hilton (1996) defends the practice by emphasising that the differences are in the holistic approach to care taken with simulation in current practice. The emphasis of learning is on cognitive skills as well as the psychomotor skills that were taught in the old practical rooms. Examining our understanding of the teaching and learning strategy behind simulation may offer further explanation to this resurgence.

2.4 Teaching Learning Strategy

2.4.1 The concept of learning

Pendleton (1991) identifies four different ideologies of education, namely instrumentalism, liberal humanism, progressivism and social reconstructionism. Scrimshaw (1983) describes ideologies, as sets of values and beliefs. Each of these ideologies Pendleton (1991) argues is required for curriculum planning. The question in nurse education is who is this aimed at, the individual student or the society as a whole?

It is difficult to explore these ideologies in isolation but instrumentalism can be seen as justifying education by reference to the needs of society and the creation of a skilled workforce. Instrumentalism, Scrimshaw (1983) suggests, can be achieved by the traditionalist apprenticeship model and vocational skills training or the adaptive style of more complex systems of performing group work and problem solving. Liberal humanism differs from instrumentalism by its focus on the content and learning experiences in the curriculum. This relates back to Plato (Osborne, 1992) who accepted that knowledge has an objective reality which, is not affected by experience and has value in itself. Progressivism is embodied in Rousseau's (Osborne, 1992) work that natural growth and active learning from individual experience alone would let people learn, grow and develop. Finally, social reconstructionism based on the work of John Dewey (Osborne, 1992), proposes the acquisition of ethical and educational knowledge individually which can greatly influence and improve society. Pendleton (1991) warns that this view of education could be interpreted to give the teacher authority to indoctrinate students.

Education based on the social reconstructionism ideology could be argued (Pendleton, 1991) as being an appropriate platform for nurse education and indeed the nursing curriculum (UKCC, 1999) includes social, political and

economic studies. However all four could have an impact on nurse education. Instrumentalism focuses on competence and skill development and may be viewed in nursing as being related more to the health care assistant style of training in Scottish Vocational Qualification (SVQ) than nurse education. Stenhouse's (1975) discussion on nursing being an education and not training is appropriate here. Progressivism could be viewed as too individualistic and places value on the development of the individual student however this can be balanced by the reconstructionist's view that such individual development can lead to the development of a better society. Conversely, Pendleton (1991) explains this could be equated with discovery and PBL and life-long learning of today. Thus the teacher is a facilitator of their learning and has commonalties with Knowles' (1978) theory of andragogy and Rogers' (1983) view of education.

Liberal humanism could be criticised as being too cognitive and places too much emphasis on content, however the style of teaching will have an important impact on the learning.

Therefore nurse education is complex and difficult to answer whether it is solely for the individual or for society, and could indeed argue a case for both. Thus the traditional role of the teacher, adult learning and learning styles must also be examined.

2.4.2 Traditional role of the teacher

The teacher's role in simulation is one of facilitator (Hertel & Millis, 2002) and not the traditional classroom teacher. As a strategy simulation allows students an opportunity to engage in learning in an alternative environment that is non-threatening and safe (Dearman et al, 2001). Rauen (2001) proposes that such learning is reinforced because the students are active, not passive participants of their education. Despite this Puntillo & Duncan (1980) warned that introducing new teaching techniques where the students

are more active could result in teachers being viewed as lazy since they do not fulfil traditional student expectations. Knowles (1990) disagrees stating that the adult learner welcomes the more relaxed atmosphere between teacher and student and this friendlier, relaxed atmosphere will improve learning. Additionally nursing today no longer attracts the traditional school leaver student and therefore exploring how adults learn is beneficial.

2.4.3 Teaching adults – adult learning

In nursing the traditional student (school leaver age 17/18) is now the minority with more mature students entering nurse education. Knowles (1990) advises that the educator must remember this and not teach students as if they were children. Hertel & Millis (2002) argue that simulation is better suited to the adult learner, than listening to lectures, memorising, digesting text books and multiple choice tests. Additionally research carried out by Simpson (1980) suggests that the personal experience of adult learners could help with the learning process. Indeed many student nurses are working as care assistants to supplement the student bursary and therefore have a wealth of relevant experience (Burnard, 2002) to assist learning.

2.4.4 Learning styles

Adults it is argued learn differently. Honey & Mumford (1990) have identified four main learning styles; activist; reflector; theorist and pragmatist. Additionally Rose & Nicholl (1997) suggest that if the adult knows their particular learning style this can help facilitate learning. The activist involves themselves fully in any new experiences and thrive them. The reflector likes to stand back and ponder experiences and observe them. The theorist likes to think problems through with every detail step by step. Pragmatists are keen to try out new ideas and put them into practice. Honey & Mumford (1990) suggest that the learner should seek out their own preferred learning style, to learn more effectively and suggested that using a combination of

teaching styles appropriate to the different learning style should be more effective for more students.

2.4.5 Deep and surface learning

Entwistle (2002) suggests that effective adult learning depends on practise and motivation on how and why they learn. Marton et al (1984) distinguished between deep and surface approaches to learning, which they describe as being dependent on the student's intention to learning. Surface learning was explained by Entwistle et al (2000) as just coping with the task in hand. This relates to the old practical rooms that were used in the Colleges of Nursing teaching single task skills. The intention is to be able to reproduce the parts of the content and memorising the facts (Entwistle et al, 1992). Later Entwistle et al (2000) explain that deep learning involves active learning, relating ideas and understanding the concepts being taught. It is however recognised that the whole curriculum has an important role to play in the way a student learns and not just the individual student characteristics (Entwistle, 1996). This includes the teacher and their style of teaching, group work, individual work, assessment techniques and workload levels. Considering this Entwistle (2002) supports the proposition that courses can be altered to promote a deep approach to learning. Entwistle et al (1992) go on to suggest two ways to promote deep learning; one being experiential learning; and the second being group work.

Simulation education as a teaching and learning strategy in which students learn together from experiences could therefore encourage deep learning. Deep learning according to Entwistle et al (1992) will occur if the simulation involves a realistic problem. In order to produce a meaningful simulation exercise in nurse education the clinical placement environment must first be reproduced. In contrast it will not be effective if the task is not perceived as meaningful or if there is no constructive feedback (Brown & Atkins, 1998).

2.4.6 Confidence building and self-esteem

Worryingly many studies have shown that by the end of the nurse education programme many nurses feel a lack of self-confidence in performing clinical skills (Erler & Rudman, 1993; Elzubeir & Sherman, 1995 and Knight & Mowforth, 1998). Many authors are in agreement that simulation as a teaching and learning strategy may assist in improving this lack of self-confidence (Thiele et al, 1991; Hilton, 1996; O'Neill & McCall, 1996; Ker et al, 2003 and Mayne et al 2004). This according to Aronson et al (1997), Johnson et al (1999) and Cioffi (2001) can improve their clinical judgement with Aronson et al (1997) suggesting also their critical thinking and problem-solving abilities. Jeffries (2005) suggests that these are due to teaching procedural skills which have checklists and therefore lead to quicker acquisition of the skill. Knowles (1990) suggests that the relaxed friendly atmosphere that can develop between student and teacher during simulation make the student feel more valued. Alinier (2003) reported that 86% of the students felt more confident after the simulation lesson. Additionally, Ross (1988a) proposes that simulation can enable the students to assess their own level of confidence, this can be enhanced by individual reflections or by peer review.

2.4.7 Peer review

Simulation can also provide additional assessment opportunities such as peer review, where the students review and critique their own and other students' actions and behaviours in a climate conducive to learning thus providing constructive feedback (Johnson et al, 1999). Boud (1989) supported peer assessment for four main reasons. Firstly since the students are active in the assessment, this should consolidate their learning. Second the students are in a good position to contribute to the assessment process. Third a negotiated approach to assessment can lead to an improved relationship between teacher and student. Lastly it is more in keeping with

the experience the student will have in the real world. Brown & Knight (1998), recommend that simulation with peer assessment involving the interchange of ideas, involvement, group work, leadership, teamwork, creative thinking and problem-solving lead to motivated students.

2.5 Experiential learning

Applying the theory gained in the classroom to practice has been problematic in nursing. In 1980 Knowles described the central dynamic of the learning process as the experience of the learner confronting the interaction between the individual and the environment (Knowles, 1980). Eight years later Gibbs (1988) expressed the opinion that experiential learning can bridge this gap. It is suggested that this produces an increased awareness of the students' behaviours and actions and an emphasis on critical thinking as opposed to memorisation (Lev, 1998 and Johnson et al, 1999). Additionally Gibbs (1988) contends that it is not enough just to do, neither is it enough just to think and that Steinaker & Bell's (1979) experiential taxonomy or Kolb's (1984) experiential learning theory could be a way of modelling the link between doing and thinking. Kolb (1984) proposed that his model of experiential learning encouraged students to reflect on their learning and link the academic world with the outside world, thus making the learning more relevant. However the criticism of Steinaker & Bell and Kolb is that they are linear models which fail to recognise the complexity of learners (Burnard, 1991). An alternative may be the more recent integrated skills teaching model developed by Simmons & Bahl (1992) (Appendix III) which views learning as a spiral continuum.

This model refers to three areas:

1. Integration of theory and practice, the art and science of nursing, within skills teaching.
2. Integration of the work of several learning theorists, in particular, Steinaker & Bell (1979), Rogers (1983) and Kolb (1984).

3. Integration of the problem solving approach of the nursing process.

This model was developed at the Polytechnic of East London in an attempt to produce a curriculum which incorporated the development of the learners professionally, educationally and personally providing an integrated approach in nurse education while striving to develop a holistic approach to nursing care. The model, evolved from Knowles (1984) work on andragogy, recognises that adults learn most effectively by using life experiences to build their learning on and is a foundation for future learning.

Historically in nurse education this experiential learning took place in the clinical environment. Unfortunately the clinical learning environment can provide problems for learning. Nolan (1998, p623) examined the experience of six Australian student nurses while on clinical placement. She stated that the "clinical experiences require difficult adjustment for the students as they move from an environment which encourages thinking to an environment which encourages doing". In this interpretive study six second year second semester students who were on a two week placement were interviewed daily. These were analysed to examine emerging themes. Three categories emerged, "I don't belong", "doing and practising", "progress at last and transitions in thinking". From this study a number of points are raised about what can make a good or bad placement and how this affects the students learning. Importantly it was found that feelings of not fitting into the ward and fear of this or "not belonging" can prevent the student from learning. Additionally it was only by actually "doing" that the students learned and could put this learning into context and critical thinking could develop. Unfortunately this cannot occur until the student begins to feel part of the team.

2.6 The experience of simulation

2.6.1 The student nurse

Student nurses appear to appreciate (Love et al, 1989) simulation experiences. The explanation for this may be that due to shorter clinical placements students are fearful of their clinical experience, due to lack of preparation in the appropriate skills (du Boulay & Medway, 1999). Alternatively, time available on placement may not be used effectively (Nolan, 1998) and furthermore, less opportunity to consolidate practical skills (Jowett & Walton, 1994 and Donaldson & Carter, 2005) and as Kneebone et al (2004, p1096) explain the old saying of "use it, or lose it".

The McMaster University in Canada developed a curriculum focused on self-directed learning which appears to be a PBL approach. This approach was therefore focussed on cognitive problems largely rather than actual confrontation with situations, context and environment. Pressure from students concerned about their needs resulted in the University conducting a randomised-controlled trial comparing self-directed learning and a structured laboratory experience. The results found no difference in either group's psychomotor skills performance (Love et al, 1989). Interestingly, similar to Gomez & Gomez (1987) study only psychomotor skills were assessed ignoring the additional cognitive and affective development that simulation could stimulate.

After the randomised-controlled trial (Love et al, 1989) the McMaster University conducted a survey to explore the students preferred method of learning psychomotor skills (McAdams et al, 1989). Despite the fact that the initial study found no difference in the self-directed teaching method compared to the laboratory method the students repeatedly requested more laboratory teaching (Love et al, 1989). McAdams et al (1989) conclude from this that if there is no difference in effectiveness of the teaching methods in

attaining the specific outcomes principles of adult learning and the views of the students should be sought concerning which teaching method is preferred.

Although this study is almost 20 years old it is renowned for being rigorous in its execution. However this quantitative survey consisted of only 59 students. Furthermore only the students who had received the SDL teaching could answer all the questions, therefore the sample size of 26 students is small and makes this ungeneralisable to the whole population (Polit & Hungler, 1995).

The aspects identified for laboratory method were a confidence in belief that they were learning, a reduction in anxiety and a belief in their competence. The negative aspects identified problems with laboratory equipment failure and the size of the groups. Finally 92% of the sample group requested the teaching of skills in the laboratory setting prior to attending placement. The faculty therefore concluded that although this was not their preferred style of teaching, the students were requesting it and it should be given further consideration for inclusion in the curriculum. SDL was viewed by faculty as being a learner-centred style of teaching, and that one possibility for students preferring the laboratory method, was that some students did not have the maturity for the student-centred teaching style. However it is acknowledged that the laboratory style of teaching is still experiential learning which according to Entwistle et al (1992) can produce deep learning and is viewed as student-centred since they are actively involved in the practising of the skills.

More recently, Cook & Hill (1996) conducted a quantitative study utilising a questionnaire with student nurses after having teaching in a laboratory and then attending clinical placement. One hundred and twenty two students who had just completed the laboratory course formed the sample.

The results demonstrated that 40% of student nurses strongly agreed and a further 53% agreed with the statement that "the learning in skills lab is meaningful and helpful". Additionally 91% agreed or strongly agreed with the statement "it was easy for me to transfer skills practice in the lab to the clinical area". Many researchers (Hilton, 1996; Lev, 1998 and Johnson et al, 1999) have supported this.

In addition the report claims that the faculty staff reported that the students were less anxious on clinical placement and therefore had improved their levels of confidence and competence compared with groups which had not attended a laboratory class in that area.

Johnson et al (1999) in a more recent quantitative study devised simulations depicting actual nursing situations and provided the students with the opportunity to learn and even make mistakes in a controlled learning environment. These were videotaped and played back to the students along with feedback from the lecturers.

Originally 13 videotaped simulations were constructed that depicted potential complex patient care situations and were as realistic as possible. Students working in groups of 12 to 16 took part in these activities.

This study was evaluated using a six-point Likert scale. The students rated the simulation experience as very positive with the mean rating for all responses being 5.39. Interestingly some students disliked the simulation experience. This research attributed this to prior experience of role-play. It is worth noting however that these students were very much in the minority (3 out of 51). Significantly, Rauen (2001) claims that simulation puts the student in their true-to-life roles which is not role-play.

This study does have the disadvantages of having a small cohort of 51 students all from the one university in Chicago, therefore makes it difficult to generalise to other nurse education programmes. Similarly the Likert scale

asked specific questions and did not allow the students to explain in more detail their feelings of the simulation experience. To balance this criticism the study did allow comments from the students and here again the comments were very positive; "simulations turned out to be a great experience"; "discussions were very useful"; "I did not realize how much I really knew". However only one student's qualitative comments are provided in the article.

Thus we can conclude that the limited amount of quantitative research on students' experience of simulation appears to be positive. In contrast the attitudes of the lecturers (McAdam et al, 1989) towards simulation and laboratory style teaching are of equal importance and therefore require further investigation.

2.6.2 The lecturer

Students' appreciation of the experience of simulation appears to be more positive than that of lecturing staff. The disturbingly short time span following the development of skills and its decay is well documented and this may leave experienced lecturers feeling vulnerable (Wilkerson & Lee, 2003). Simulation exercises take a great deal of planning and Knowles (1990) argues that the timing must be right in the curriculum for it to have any meaning for the student. Furthermore over two decades of nursing research provided inconclusive evidence of the effectiveness of simulation as an educational tool (Gomez & Gomez, 1988 and Love et al, 1989). Despite this a commissioned report for NHS Education Scotland (NES) O'Neill (2002) found that there was a current enthusiasm for developing simulation. Furthermore the recent consultation document on the review of fitness for practice at the point of registration (NMC, 2005) advocates the increased use of simulation education for curriculum planners of pre-registration nursing programmes. The reason for this must therefore be examined.

2.7 Simulation Facilitating Learning

In 2001 Rauen proposed that, simulation provides supervision and access to a menu of experiences for skills acquisition that is both planned and facilitated. Consistent with this Ellington et al (1995) explain that simulation can be tailored to meet the learning objectives of the students whereas the real situation can often be too complicated for the students level of learning. Ellington et al (1995) furthermore contend that simulation can be used to achieve objectives in all parts of Bloom's cognitive and affective domain. In particular it can be valuable in teaching high-level cognitive skills of analysis, synthesis and evaluation.

In order to produce competent newly qualified nurses HEIs delivering nurse education are introducing new innovative ways of teaching practical skills. New curricula, according to Heath (1983) should be concerned with higher level skills, such as problem solving, decision-making, interrelationship skills, team building, personnel management and development. These were the areas the newly qualified nurses from the P2000 programmes were found to be deficient in (Runciman et al, 1998). In addition, O'Neill (2002) has the opinion that effective preparation for practice should focus on the integration of not only psychomotor elements but also cognitive and affective skills which can be achieved through simulated experiences.

2.8 Summary

Simulation is a teaching and learning strategy developed to encourage deep learning (Entwistle, 2002) through experiential learning (Cioffi, 2001) and hands on practice (Taylor & Cleveland, 1984) of the skill or skills being taught. Fry et al (1999) explain that education simulations can be very simple with single skill models to full-scale replication of healthcare environments, which demonstrate complex relationships placing the student in true-to-life roles with modification only taking place for learning purposes

(Gaba & DeAnda, 1988; Ker et al, 2003 and Maran & Glavin, 2003). Rauen (2001) suggests that one key characteristic of a simulation is that it is based on reality. Cioffi (2001) makes the further point that simulation does not replace the actual clinical experience, rather it develops skills that can be transferred to the real clinical setting.

The application of simulation in education of professions has gained momentum over the last 40 years (Flexman & Stark, 1987). During the move of nurse education into the HEI it was thought that the clinical environment was the best place to learn clinical skills. Student experience of simulation constructed in the non-clinical environment showed that they liked this method of teaching and wanted more of it (Love et al, 1989). There has been a recent resurgence (Nicol & Glen, 1998 and O'Neill, 2002) in the use of simulation education in the HEI for learning clinical skills. There is a need therefore to examine the literature on the history of nurse education and the current implications of applying simulation education into the nursing curriculum.

Section 2: Simulation in Nurse Education

2.9 History of nurse education

The implementation of the P2000 programmes for nurse education took place from the late 1980s in England and from 1992 in Scotland. This moved nurse education into the HEI following the Canada example. Following this a number of studies examined the qualities and skills of newly qualified nurses exiting from these programmes (Phillips et al, 1994; While et al, 1995; Luker et al, 1996; Macleod Clark et al, 1996 and Carlisle et al, 1999) to examine if they were 'fit for practice' and 'fit for purpose' with the current programmes examined in 2004 (Scholes et al, 2004) in England. In Scotland a similar study was conducted by Runciman et al (1998) with current programmes being examined in 2006 (NMC, 2005).

In 1995 the first cohort of students to complete the P2000 programmes in Scotland entered the workforce. The project by Runciman (1998) utilised both qualitative and quantitative methodology.

The sample included all 15 Health Boards in the NHS in Scotland at the time, 4 out of the 22 acute and primary care Trusts are included as well as 3 out of the 10 private hospitals and 10 out of the 80 nursing homes in Scotland. Some areas were not included as they did not as yet have P2000 qualified nurses working in their areas.

Information regarding job descriptions were sought from the employers and a small group (n=12) of D grade staff nurses. The data was gathered in a number of ways, namely questionnaires, focus groups and interviews. This consisted of 80 postal questionnaires to NHS staff (preceptors), 59 NHS preceptors at audio-recorded focus groups (N=17) and from individual audio-recorded interviews from 43 managers. The latter group consisted of 25 NHS

nurse managers, 4 practice development co-ordinators, 10 nursing home managers and 4 private hospital managers.

The questionnaire provided both qualitative and quantitative data. However measures taken to test the validity and reliability of the questionnaire are not discussed and therefore the reader is unsure of the value of this questionnaire (Oppenheim, 1992). Additionally the poor response rate of 27% makes the results difficult to generalise.

Despite this the results yielded a number of positive attributes of the newly qualified P2000 nurse. However, disappointingly there were areas where the newly qualified nurse was lacking in clinical skills. These were practical, managerial and organisational skills. These results were strikingly similar to the earlier studies by Phillips et al (1994); While et al (1995); Macleod Clark et al (1996) and Luker et al (1996) which were conducted in England.

The following year Carlisle et al (1999) published the results of a similar study conducted in England. This national study took place between 1994 and 1996, about the same time as the Runciman et al (1998) study. Triangulation of data collection methods were utilised with individual and group interviews (nine focus groups) of nurse managers (n=132) and a national survey of P2000 diplomates and traditionally prepared registered nurses (n=5417). This publication (Carlisle et al, 1999) provides only the results of the qualitative interviews (individual and focus groups). The individual interviews included a convenience sample of 60 nurse managers who had a diversity of responsibilities and represented the NHS/Trusts and the private sector. Detail is not provided however on how many were from the NHS or from the private sector. The national survey utilised a stratified random sample of recently qualified registered nurses on the UKCC register both from the traditional route and P2000. There is however no details on whether this was a 50:50 split. Similarly there is no detail into which

NHS/Trusts or private sectors were included or if all were included in England.

The findings reported that there were discrepancies in the managers' expectations of the newly qualified P2000 nurses and what they could actually do. The main areas focussed upon were the practical or core skills, or what the managers called "basic nursing skills". Additionally there were problems with team working and professional socialisation that comes with working the same shift patterns as the qualified staff on the ward. It is worth noting however that although the P2000 nurses were viewed as being deficient in these areas the managers did comment that once qualified the nurses were quick to adapt and acquire these skills.

The findings of both studies were strikingly similar with problems with nursing skills in both studies and team working in the Carlisle et al (1999) study and managerial/organisation skills in the Runciman et al (1998) study. These three areas are part of the NTS training developed by Flin et al (2004) that the medical student can gain through the experience of simulation. Further study is required however to explore if this is the same in nursing.

In response to these findings simulation in nurse education is being developed despite the doubts cast by earlier findings from such nursing research as Love et al (1989). The most recent review of nurse education the Fitness for Practice Report (UKCC, 1999) highlighted the need for more practical skills training in nurse education and in Scotland programmes taking credence of this report were validated in 2001. England made the curriculum changes earlier and Scholes et al (2004) conducted similar evaluation as the previous studies on the P2000 programmes. Unfortunately these curriculum changes resulted in limited improvement with emphasis on the need to improve patient safety. Since then the 'patient simulator' user community is growing and national and international simulation societies (Alinier et al, 2004) are appearing.

2.10 Client safety and litigation

One possible reason for the new popularity of simulation is that "the primary aim in pre-registration nursing programmes is to ensure that students are prepared to practice safely and effectively to such an extent that the protection of the public is assured" (UKCC, 2000 p4). Additionally decreases in public confidence and reported increasing litigation in healthcare are prevalent (Thornton, 2004). In healthcare it is estimated that 11% of admissions to hospital were associated with adverse events (Vincent et al, 2001) and that this was an estimate and the true affect could be higher. Glavin & Maran (2003) provide a more graphic analogy estimating 850,000 adverse incidents a year occur in the U.K. and in the U.S.A. These are largely reported as being due to poor communication and teamworking errors (Davis, 2005). Hence the need for simulation to be focussed on the holistic nature of nursing (i.e the technical skills and the NTS) rather than merely on the task/psychomotor aspect.

Miller (1990) and Schon (1991) explain that many professions fail to prepare people adequately for the jobs/practice that they are qualified to do. This was reflected in the evaluation of the P2000 nursing programmes (While et al, 1995; Luker et al, 1996; MacLeod Clark et al, 1996; May et al, 1997 and Runciman et al, 1998) with qualified nurses unable to perform certain clinical skills. Following from this a set of core competencies (UKCC, 2000 and NBS, 2000b) was produced, which the student nurse must show for the attainment of qualification and registration. Interestingly the NMC (2004) are now referring to "standards of proficiency" instead of "competency". The acquisition of skills and the demonstration of competencies are currently high on the political and health professionals' agenda (Macleod Clark et al, 2000). However Milligan (1998) argues that these nurse education competencies have been based on the NVQ initiative competencies which are the goals for the training to permit entry or progression in their employment. Nursing however requires education not training and the criticism here is that higher

education should facilitate students to develop critical thinking (Barnett, 1994) for the knowledge, social, political and economic issues of patient care and that the use of competencies would set restrictions on the critical faculties on the students. Burnard (2002) conversely suggests that nursing requires education and training and therefore a combination of both.

Existing research on the relationship between safety and simulation education is taken from aviation and medicine where safety is of course paramount (Glavin & Maran, 2003). In nursing the question is whether the successes of simulation in these different professions can be transferred to acquiring nursing skills and their application in practice.

Thorndike's connectionism (Knight, 1997) theory of learning can explain some of the techniques of learning by simulation and thus reducing mistakes. This theory believed that there was an initial trial and error aspect to learning and that from this repeated practise correct responses are strengthened and incorrect responses eliminated. Thus Thorndike believed that learning should first take place in a controlled environment to allow for this trial and error to take place.

Consistent with this Good (2003) explains since the environment is safe the students have permission to fail in a way that would be unthinkable in the real situation. More importantly however is that they can learn form these failures and repeat practice until they get it right. Furthermore Rauen (2001) explains the cause and effect of a particular practice can be explored in detail with feedback. Additionally Honey & Mumford (1990) state that if handled correctly making mistakes can allow the student to think harder about what they did and how to avoid this in the future. This repetition of practice could therefore lead the student to obtaining the level of competence required for registration.

Kushnir (1986); Windsor (1987); Pagana (1988) and Jowett et al (1992) reported that students themselves expressed anxiety and fears in clinical placement, which arose from lack of practical skills and fear of failure and making mistakes. Additionally Elkan & Robinson (1993) reported that practitioners stressed how 'unsafe' it was to have ill-prepared students performing clinical skills. Utilising simulation, it can be argued students can practise and rectify mistakes, without risk to patients and with minimum risk to themselves (Erler & Rudman, 1993; du Boulay & Medway, 1999 and Johnson et al, 1999). Furthermore Jones (1987) suggests that simulation provides experiences which permit learning from mistakes which improve the student's performance. Despite this claim there is a dearth of nursing research literature on learning from making mistakes.

Kleehammer & Keck (1990) conducted a study into anxiety on clinical placements. Their results found that the highest levels of anxiety occurred in the initial clinical experience and from fear of making mistakes. The sample studied consisted of 39 junior and 53 senior nursing students from a degree programme in a large midwestern city in the U.S.A. Ethical considerations were discussed with their human rights being protected. A questionnaire was development and its validity and reliability are explained in detail. This questionnaire utilised a Likert format that ranged from 'strongly agree' with a score of 5 and 'strongly disagree' with a score of 1.

The junior student scored a higher level of anxiety with a mean score of 55 than the senior students who scored 51 which was significant ($p<0.03$). Ninety seven percent of the students asked answered the qualitative question on which was the most anxiety producing aspect of clinical placement. This as stated earlier was entering a new clinical area and fear of making mistakes. The authors discuss future research required in the area of what can be done from a teaching perspective to help reduce the anxiety of the students and how to prevent mistakes.

Erler & Rudman (1993) carried out just such a study. A quasi-experimental pre-test, post-test design consisting of a convenience sample of 50 student nurses undertaking a medical-surgical and Intensive Care Unit (ICU) clinical rotation was conducted. Group I consisted of the experimental group who received ICU simulation classes one week prior to going to the ICU clinical placement. Group II (the control group) received the simulation classes after the clinical placement.

The ICU simulation consisted of six hours of group instruction with one lecturer to every six students. Demonstrations, discussion and practise took place for many pieces of equipment that the student would encounter in the ICU. Additionally areas such as ventilation, haemodynamic monitoring, cardiac arrhythmias, and medication in the ICU were simulation sessions.

The students were assessed via a written examination and performance on clinical skills observed by one faculty member. These skills were such things as endotracheal suctioning, tracheostomy care and drawing arterial blood gas samples.

The State-Trait Anxiety Inventory (STAI) was used to collect the data on anxiety levels. This self-report instrument was developed by Speilberger et al (1983). This is based on a four point Likert type scale. The validity and reliability of this instrument is discussed, however not in the context of nursing. The STAI was given to the students during the orientation week (pre-test) to the module and then just prior to performing the examination (post-test). The results were analysed using a *t* test to determine a difference in means in the pre test and post test scores of both the control and experimental group.

The results found no significant difference between the anxiety scores of those students who attended the simulation experience prior to clinical practice than those who did not. In addition however there was no difference

in anxiety scores before and after attending the ICU as a clinical placement. This study does however only address psychomotor skills and not cognitive and affective skills, which could also affect anxiety in the clinical placement. Furthermore the six hours on simulation may not have been long enough to impact on their learning and anxiety levels.

2.11 Novice-competent continuum

The term competence is used to describe "...the skills and ability to practice safely and effectively without the need for direct supervision..." (UKCC, 1999, p35). According to Benner's model of the development of expert practice (1984), there are five stages through which a nurse passes as expertise grows – novice; advanced beginner; competent; proficient and expert. Chambers (1998) emphasises that newly qualified nurses should achieve the level of competence. However Elkan & Robinson (1993) in a study examining P2000 students reported that the student felt "awkward" and "ill at ease" on some of their early placements due to having a feeling of lack of competence. Cook & Hill (1996) contend that by performing procedures in a safe controlled environment this would not only produce a competent student, but they would also have less fear of performing the skill in the clinical area.

The well-known study by Benner (1984) was conducted to examine the differences between the experienced nurse and the novice. In order to do this the Dreyfus Model of Skill Acquisition (Benner, 1982) was utilised in order to examine whether nurses go through the same levels of proficiency explained by Dreyfus and Dreyfus (1980) in their examination of chess players and pilots.

This qualitative study utilised the philosophy of Heideggerian interpretive phenomenology. This was a federal funded study in the San Francisco bay area in America which had seven schools of nursing and five hospitals. The

study was called the AMICAE study, which was an abbreviation for Achieving Methods of Intra-professional Consensus, Assessment and Evaluation. The sample consisted of 21 pairs (preceptors and preceptees) from three of the hospitals. The 21 pairs consisted of newly graduated nurses and the preceptor. Additionally interviews and/or participant observations were conducted with 51 experienced nurses (who had at least five years experience, still working in clinical practice and viewed as being highly skilled), 11 newly graduated nurses and five senior nursing students. The interviews were conducted in six hospitals, two private community hospitals, two community teaching hospitals, one university medical centre and one inner city general hospital.

Interviews collected data on the 21 paired groups in particular trying to examine any differences in their description of the same critical incident. The term critical incident proved to be problematic and later required further explanation. It was interpreted as being an emergency or a life saving episode, whereas Benner intended to gather information on the nurse's perception of an episode of care which changed her own practice.

Additionally data was collected by a series of four two-hour group interviews with between four and eight experienced nurses as well as individual interviews with all 51 and participant observations on 26 of them. Four people altogether, the author, a nurse researcher, a graduate student and a research psychologist conducted the interviews. This could then have led to problems with interrater reliability and the author does not make any attempt to explain how this was combated. Additionally in Heideggerian phenomenology the researcher not only conducts the interview, but becomes part of it which can help with the interpretation later (Wimpenny & Gass, 2000), consequently if there is more than one interviewer then the interpretation of the results may become clouded.

Benner (1982, p404) discovered from her research that competence in nursing is usually typified by the nurse who has two to three years experience and can "...see his or her actions in terms of long range goals or plans". However they lack the speed and flexibility of the proficient or expert nurse. In standard and routine procedures they can cope well, however it is in unexpected events that the expert can shine. In nurse education it is this level of competence that is expected when students are on clinical placement. However gaining this competence in clinical practice is difficult and Donalsdon (2003) found during her PhD study that the students felt more competent if they had been exposed to good role models, had a planned learning experience, were able to learn new skills and able to consolidate skills already learnt. Thus can incorporating simulation education into the nursing curriculum assist the students to gain this level of competence?

2.12 Simulation In Practice

2.12.1 Laboratory situation

The nursing literature provides a variety of names for learning in the laboratory such as the simulation, clinical practice or skills laboratory. Nevertheless, the laboratory provides opportunity for students to learn and practise skills in a controlled environment mainly with models and manikins, prior to performing them on patients (du Boulay & Medway, 1999). As described earlier following the implementation of Project 2000 such laboratories became unpopular and the nursing profession believed that the artificial situation did not help students to learn about real life (Neary, 1994). This unpopularity emerged from evidence based research provided by Gomez & Gomez (1987).

Gomez & Gomez (1987) carried out a quantitative study to investigate practice versus laboratory conditions when learning a psychomotor skill. This study concentrated on one aspect of the NTS (task management) developed

in simulation classes (Flin et al, 2004). The student could have been learning more in these sessions, however this was not assessed or even acknowledged.

The sample consisted of 63 baccalaureate nursing students from Houston, United States of America (USA) who had not yet worked in a patient care setting. The students were randomly assigned to the laboratory group (control) or patient care setting group (experiment).

Both groups of students received theory of taking a blood pressure (BP) recording as well as watching a video on it that conformed to the American Heart Association recommendations for recording systolic and diastolic BP recordings. They were also allowed to have two practice sessions on taking a BP. The laboratory group was then given eight additional practice sessions on one fellow student while in the school of nursing and feedback was given by a trained instructor. The eight sessions turned out to be four times on the left arm and four times on the right arm. The patient care setting group were given the opportunity to practise four times on a real patient (twice on each arm of each patient) while the students were on clinical placement on a post-partum gynaecology floor in a general hospital again receiving feedback by an instructor. Thus the students were given the same amount of practice the difference being the place the learning occurred.

Evaluation was carried out the next day in a nursing home. This change of placement was to confirm the transfer of learning to another setting. The students were scored using the Index of Accuracy, which consisted of a yes/no format on whether the student could perform individual parts of the task.

The results were then analysed using correlation. The results found no statistical difference between the quality of performance on blood pressure recording between those students who had had simulation experience and those who had not. However they did find that the patient care setting group

(experiment) exhibited a greater index of confidence (U=340.5, p (one tail) <.05) and greater index of accuracy (U=325.5, p (one tail)<.05) than the control group. However they did not show a lower index of discrepancy than the control group. There are fundamental problems however with the fact that both student groups received very similar practise of blood pressure recording, i.e. both practised the same amount on a real person, only the place differed. Simulation is not expected to take over from the clinical environment, but be additional and supportive to it (O'Neill, 2002). Subsequently the comparison should have been the difference between students having practice in the school of nursing, versus those not having any practice.

Additionally this study is almost 20 years old and although it advocated that students learned quicker in the clinical environment, clinical areas have changed in that time and may not be now providing the same quality of learning environment (Frost, 2004 and Scholes et al, 2004) e.g. supervision.

The view in the nursing literature was that the laboratory situation should not be perceived as a replacement for clinical placement, rather as a complementary element to learning clinical skills (Gomez & Gomez, 1987; Erler & Rudman, 1993; O'Neill, 2002 and NMC, 2004). In contrast however a recent discussion paper from the Council of Deans (Frost, 2004) suggests that there should be a debate into whether student nurses should spend less hours in clinical practice and have this replaced by simulation education in the HEI. Indeed NHS Education Scotland (NES) have already allowed one Scottish HEI to trial one week block of simulation replacing clinical practice in the common foundation programme (CFP) (Mayne et al, 2004). Furthermore, the current review of pre-registration education programmes by the NMC are considering 'relaxing' their rules on the use of skills labs (Duffin, 2005).

The NBS in 2000 also reported the increase in skills laboratories in order to strengthen skills learning, however were sceptical identifying that there was

little known about the processes and outcomes of learning in such laboratories or the costs involved (NBS, 2000c). As a result a project was commissioned as one of a series of research projects related to the acquisition of nursing and midwifery skills competencies. The project had three main aims. First to examine the different combinations and sequences of practice based and laboratory learning on the development and acquisition of competence and skills in blood pressure measurement. This was the same clinical skill that Gomez & Gomez (1989) examined. Secondly to examine the potential influence of personal learning styles and lastly to explore the cost implications.

Three cohorts of students from one large city School of Nursing and Midwifery were recruited at the beginning of their courses. These were graduates entering the accelerated course (n=64 out of 66), the Dip/HE midwifery programme (n=24 out of 29) and the Dip/HE adult programme (n=277 out of 337). The students were subsequently randomised to one of three groups. Group one was the control group who was exposed to training in the practice area only. Group two was exposed to training in the clinical skill laboratory first and then on clinical placement while group three had their clinical placement first and then clinical skills laboratory training. All three groups received theoretical teaching to support their understanding of the physiological basis of blood pressure measurement.

There was a number of data collection methods utilised. Each student was tested on four separate occasions as well as using different testing methods, these were the British Hypertensive Society (BHS) video (BHS, 1990), a model arm and an actor patient. Additionally, qualitative data about the learning process was collected through focus groups and questionnaires.

The key findings from the study were that the students who received clinical skill teaching in the laboratory (groups two and three) consistently outperformed the students only taught in the clinical area (group one). The

qualitative data showed that the students preferred to have the clinical skills teaching first prior to clinical practice (group two) largely because they reported having more confidence to perform the skill. Additionally the students reported extremely different experiences while on clinical placement with only a few encountering skilled mentors who took time to teach the student blood pressure recording using the protocol provided. The students had varying learning styles and were exposed to a number of different teaching styles however there appeared to be no preference in teaching style. Finally a careful cost analysis provided a costing of £35 per student in the clinical skill laboratory.

This study was not without its problems. As the project progressed there was high attrition over the four test points with only 23% attendance at all four. The teaching sessions were however higher with 77% attendance. This was thought to be due to pressures of academic assignments. Additionally it was found that the student could still obtain an accurate BP recording from the manikin however perform the procedure incorrectly. The authors support therefore that practising on the patient actor would prevent this. Finally they conclude that the data overwhelmingly supports the use of the skills laboratory for skill acquisition. Recognising the problems of the study the authors make the point that it may not be the skills laboratory that influences the students learning rather the structured theoretical underpinning of evidence based practice, the confident and knowledgeable teacher, the opportunity to practise in a safe environment and being observed and given feedback.

More recently, Alinier et al (2004) conducted a study where the Hertfordshire Intensive Care Simulation Centre (HICESC) has been developed which utilises the SimMan medium fidelity simulator. This study unlike most other nursing research on simulation examined technical and non-technical skills (NTS) as described by Flin et al (2004). This may give some explanation as

to why the results proved to be different to the older studies examining only psychomotor skills.

The study followed a quantitative methodology since in the authors' view (Alinier et al, 2004) many of the previous studies were qualitative (McIndoe, 1999; Treadwell & Grobler, 2001; Cleave-Hogg & Morgan, 2002 and Murray et al, 2002). In contrast on further examination, all of these are from the medical profession and not nursing.

The study received full ethical approval and a pilot study was conducted prior to the main study. Additionally a panel of experts from clinical and academic backgrounds validated the simulation scenarios. Furthermore the assessment tool was piloted to ensure validity and reliability (Polit & Hungler, 1995).

A convenience sample of 101 student nurses in second year at Hertfordshire University took part. It is explained that this is an interim result and that the final study will include 120 students. Unfortunately not all the students completed the study 34 withdrew, which the authors argue was due to their recognition of not being in the experimental group and that the students were taking part in their own time. Therefore the study provides the results from 67 students randomly assigned to the control group (n=38) and the experiment group (n=29). The randomisation method is not discussed and due to the fact that there was an equal amount of males/females in each group this could suggest researcher bias in the randomisation process.

There were several phases to this study. Firstly both groups were tested using a 15 station OSCE. This determined the two groups initial skills level. Next the experimental group were split into groups of four and attended two simulation sessions. Each session was identical for all groups. Aspects of communication, teamwork and simulation training were presented to the students. This allowed the students to become familiar with all equipment

utilised. The two simulation exercises consisted of two groups at one time. One group actively participated in the scenario, the other watching and providing feedback. A final OSCE was conducted on the control and experiment group with a confidence questionnaire given to the students to complete prior to the OSCE.

Alinier et al (2004) concluded that both the control and experiment groups obtained similar scores in the first OSCE. This shows a similar level of competence in both groups at the start. The second OSCE showed that the control group had improved by 6.76%, however the experimental group had improved by 13.43%. The difference being 6.67% ($p<0.05$) in favour of the experimental group. Thus the authors conclude that simulation education in a pre-registration nursing programme can lead to improvement in clinical skills performance. Nevertheless the small sample size and one HEI in the U.K makes it difficult to generalise these results. What is important is that nearly 20 years on from the original studies (Gomez & Gomez, 1987 and McAdams et al, 1989) which examined only psychomotor skills development from simulation this study warrants further interest and research into the area of simulation in nurse education in the 2000s.

Additionally the authors acknowledge that the simulation design will have a significant impact on the outcome of what the students learn and therefore the trainer's skills and appropriate use of the sessions has to be taken into consideration. In order to implement and design simulation for teaching, learning and assessing practical skills it must reflect the reality of the clinical environment, which Maran & Glavin (2003) explain is referred to as fidelity.

2.12.2 Fidelity

In order to implement simulation for teaching and assessing practical skills it must reflect reality, which is referred to as fidelity (Maran & Glavin, 2003). Engineering fidelity relates to the degree in which the simulation depicts the

real environment and equipment within which the learner is required to perform (O'Neill, 2002). This can play an important part in making the transition to the real setting as smooth as possible, to reduce the reality shock of entering clinical practice (du Boulay & Medway, 1999). It is when this is not adhered to that students do not see the benefit of the simulation (Ross, 1988a and McAdams et al, 1989). Many Universities are in fact developing and building simulation skills centres that depict actual ward areas such as four to six bedded rooms (Studdy et al, 1994; Dacre et al, 1996; Hilton, 1996; Freeth & Nicol, 1998; Knight & Mowforth, 1998; Johnson et al, 1999; Alinier, 2003 and Ker et al, 2003). The focus on a realistic patient scenario enables the development of clinical and communication skills. This enables the student to view the patient holistically (as a whole, all their problems and needs) rather than an individual problem, therefore a variety of skills are used together in the context of addressing the patient's needs (Freeth & Nicol, 1998).

Due to engineering fidelity patient simulators have advanced greatly in the last 40 years since the first development of the Sim One (Abrahamson et al, 1969) and the Gainesville Anaesthesia Simulator (GAS) in the 1980s (Good & Gravenstein, 1989). Modern day simulators have been developed to look and respond to interventions with more and more realism. In fact Roberts et al (1997) demonstrated that the simulation manikin for airway management could be as effective as using real patients. Good (2003) however contends that the simulator's skin colour does not change and that pre-hospital personnel rely heavily on the patient's skin colour to assess the patient. Good (2003) does however remark that it will only be time before a simulator will be produced which can change skin colour.

There are currently two levels of advanced full body scale simulators. These are medium and high fidelity simulations. Alinier et al (2004) explains the difference as being either partly or fully interactive patient simulator that can respond to treatments given. Interestingly more often standardised patients

(actors) being used in simulation classes are increasing where they can portray patients with specific clinical symptoms and conditions.

Psychological fidelity relates to how realistic the student finds the simulation and subsequently how they respond. Neary (1994) refers to the adrenaline gap which affects psychological fidelity, since the students are aware they are not nursing real patients and, therefore, do not feel the same pressure burdens. In contrast this lack of pressure could actually assist with the learning process and the "adrenaline" which Neary (1994) refers to could be detrimental and reduce the student's confidence. Davis (2005) disagrees with this and actually reports students crying if the patient (simulator) dies.

Ker et al (2003) at Dundee University have created a realistic ward, which involves an interprofessional simulated ward environment for junior medical and nursing students. The timing at which this is introduced in the curriculum is acknowledged as being controversial, however this study introduces the simulated ward in year two. Similarly a well-structured and planned simulation will be required to develop a climate conducive to effective team working (West & Pillinger, 1996).

The resources required for this type of interprofessional simulation are therefore many. These consist of a number of medical and nursing lecturers who can also assess the students as well as staff to provide phone calls, set up the equipment and help with the timetabling of the scenarios and simulated patients who require having prior preparation on their role. In fact 12 simulated patients were used in these scenarios within a clinical skills centre fully equipped to represent a ward with areas for 12 patients.

A total of 151 students participated in the study with qualitative comments being taken for feedback from a semi-structured questionnaire. Most of the responses from the students were very positive. However some negative comments related to the reality such as "the ratio of medical to nursing

students did not reflect the reality of practice", and that there was not enough activities/tasks for the number of students.

2.12.3 Resources required

While maintaining fidelity, simulation represents a more resource and labour intensive commitment than traditional face-to-face teaching (Neary, 1994). As Rauen (2001) explains a 2-hour simulation using 5 groups of 4 students will mean a minimum of 10 hours for the lecturer. Due to cost, this can be an insurmountable hurdle for managers, even if they have a developed strategic plan. Kurrek & Devitt (1997) tallied the initial cost of setting up a simulation centre as $665,000. This included the cost of the manikins, maintenance, the room renovation, personnel, room equipment, office equipment and audio-visual equipment. Davis (2005) reported the cost of the Medical Education Technologies Inc (METI) simulator as being £150,000. This is however a high fidelity simulator which is not always necessary in pre-registration nursing programmes.

Simulation is reliant on the students viewing the lecturing staff as credible in clinical and technological competence (Nicol & Glen, 1998). Students expect the lecturer to be knowledgeable in their subject (Daines et al, 1992) and have a firm grasp on the material. With the fast changing pace in technology in health care this requires lecturers to keep up to date with clinical practice. Recruitment and investment in staff development therefore becomes more focused on this aspect of service delivery. Khattab & Rawlings (2001) believe that the educational benefits as well as the students' satisfaction to have learned something useful outweigh the running cost of the simulation. Furthermore Seropian et al (2004) suggest that more informed and efficient lecturing staff will lead to better programme development.

2.13 Theory-Practice Relationship

A further reason for the increase in simulation education could be the 'theory-practice gap' referred to in nursing. Milligan (1998) has argued that knowing relevant theory is not enough if it cannot be put into practice and recently Nunn (2004) suggested that knowing about a procedure does not ensure that they can carry it out. Rauen (2001) further emphasised the ultimate goal in nurse education is the ability to apply the information to patient care. Moreover, the NMC (2004, p13) states that "safe and effective practice requires a sound underpinning of the theoretical knowledge, which informs practice, and is in turn informed by that practice".

Pre-Project 2000 programmes identified the existence of a 'theory-practice gap' and the nursing literature is bountiful of this i.e. what was taught in theory was different to what was observed/carried out in practice (Ferguson & Jinks, 1994 and Elkan & Robinson, 1993). It is stressed by Elkan & Robinson (1995) however that although P2000 has not solved the 'theory-practice gap', it did not cause it. McCaugherty (1991) believes that there will always be a theory practice gap since the real situation is always more complex than the books and the nursing curriculum. Disputing this however Gallagher (2004) believes that the student nurse must and does bring theory and practice together. Ferguson & Jinks (1994) suggest that a student-centred approach to teaching and learning with experiential learning techniques may be useful in bridging the gap. The UKCC (1986) stressed the need for theory to relate closely to practice in the new Project 2000 programme.

It has been reported that students complain earlier on in the programme, particularly the first year (CFP) of the failure to link theory to practice. Indeed Elkan & Robinson (1995) found from a literature review that students during the CFP felt insecure and incompetent with their clinical skills compared to pre-project 2000 students. Despite this however earlier studies found that

once in the branch programme this 'theory-practice gap' lessened (Leonard & Jowett, 1990; Robinson 1991; 1993; Jowett at al, 1992; Elkan et al, 1993; White et al, 1993 and Robinson, 1993).

Hislop et al (1996) conducted within a Scottish College of Nursing a qualitative exploratory study examining theory and practice. A random sample of 19 student nurses were interviewed utilising a semi-structured interview schedule to obtain their view on the relationship between the college course and their experience on placement at the end of the CFP. The results found that effective learning from theory only happened when there was a direct link to practice, and when practice followed quickly on from the theory.

In 1996 Parker & Carlisle published their research on the Project 2000 students' perceptions of their training. This article pays particular attention to theory and practice. A sample of 131 final year student nurses completed a quantitative Hoste scale questionnaire. The Hoste scale has been validated previously within the field of nursing (Cameron-Jones & O'Hara, 1989 and Vaughan, 1990). This is strikingly similar to the Semantic Differential (Osgood, 1969) questionnaire where bi-polar adjectival pairs are put opposite each other with a seven-point scale in between.

The overall results showed 62% of the students answered positive responses to their training. In examining theory and practice the students rated practice above theory, which the authors suggest explains that student nurses learn more effectively in practice but they do not explain why. Despite this the students understand that the theory is complementary to their placement, however it is suggested that the students may not be utilising this theory fully while in placement.

MacLeod Clark et al (1997) explored this concept further by in-depth interview and questionnaires of Project 2000 students (n=494) and newly

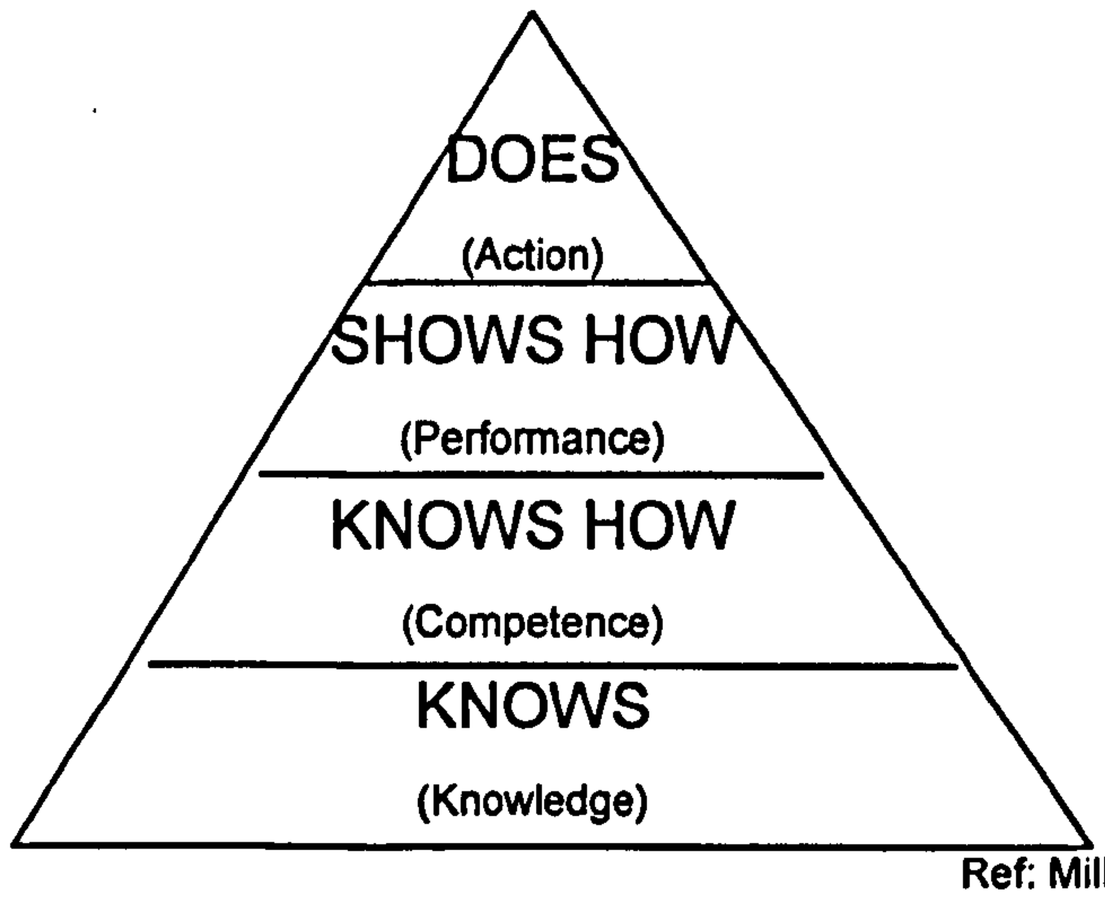
qualified diplomates (n=76) and practitioners and managers took part in focus groups in two sites in England.

The results from the newly qualified diplomates (6 months qualified) consistently showed excellent theoretical preparation, however not enough practical experience. Despite this they did feel this was only an issue right at the beginning and that they quickly made up on the practical skills. Additionally they could not suggest ways of improving the programme. The overall data from the students, diplomates, practitioners and managers was that there was now too much theoretical emphasis on the programme at the expense of practice. Despite this no one wished to go back to the old apprenticeship style of nurse education thus giving opportunity for introducing simulation as a means to increase the practical skills.

2.14 Simulation and Assessment

2.14.1 Practice

In clinical placement the student is supported by a mentor and sometimes a link lecturer who perform summative assessment of the student's level of competence on clinical placement. Miller (1990) explains that the student cannot only have the knowledge, but must know how (competence), show how (performance) and actually do (action) the skills. He describes this as a framework for clinical assessment (Figure 2.2).



Ref: Miller (1990, pS63)

Figure 2.2: Framework for clinical assessment.

There are however problems with effective assessment in clinical practice. Traditionally this has relied on direct observation and personal judgements of an assessor, which may be biased and subjective. Furthermore Ross et al (1988) suggest that the rating of clinical competence is influenced by the interpersonal relationship between the mentors and the student rather than on the actual performance. Students have also expressed dissatisfaction with the mentorship process (Miller, 1990; Roberts et al, 1992 and du Boulay & Medway, 1999). Chambers (1998) and more recently Scholes & Albarran (2005) further remark that with the shorter clinical placements of the P2000 programmes and supernumerary status there is a less substantive relationship with the mentor. Less time working together and therefore watching them perform makes assessment for the mentor more difficult.

2.12.2 Link lecturer/mentor

The summative assessment in clinical placement is based on the core skills competencies/proficiencies (NMC, 2004), which the student nurse must show achievement of for qualification and registration. Unfortunately Registered Nurses often feel ill prepared to undertake the mentor role, especially the learning, teaching and assessment related aspects (Andrews & Roberts, 2003 and Scholes et al, 2004). The P2000 proposal warned that teaching in the clinical area should not be entirely left to the practitioner (UKCC, 1986).

Despite this there appeared to be confusion and uncertainty regarding the nurse teachers' role in the practice setting (Elkan and Robinson, 1995) and most lecturers were found not to provide 'hands-on' teaching to their students. The academic credibility and teaching demands in the classroom proved too difficult for lecturers to also maintain a clinical input (Payne et al, 1991; Jowett et al, 1992; Crotty, 1993; Elkan et al, 1993; Luker et al, 1993; White et al, 1993; Kirk et al, 1997 and May et al, 1997). Therefore in many clinical areas the summative assessment for clinical placement is the sole responsibility of the mentor. Unfortunately Scholes et al (2004) found wide discrepancy in the quality of mentoring.

Considering this, Duffy (2004) undertook a PhD study funded by NES researching factors that influence the assessment of students using a grounded theory methodology. During this study Duffy (2004) became aware through the interviews or 14 lecturers and 26 mentors that many mentors did not see it their responsibility to fail students, which is a similar view in schools. Thus students were passing clinical placements without reaching competence in the NBS (2000b) core skill competencies (now NMC, 2004) in order to obtain registration. A number of explanations for this occurring are given, the conflict of retention of students; adequate support for the mentors; following HEI procedures; the time commitment of failing a student; and the emotionally draining experience. Four recommendations were made for mentorship courses, first that the practical aspects of failing a student are discussed in detail; secondly mentors are reminded of their responsibility and that failure can happen especially early in the programme; thirdly the support mechanisms are made explicit to the mentors and finally mentors are reminded of their professional responsibility and accountability. Due to these problems NES (2004) have developed quality standards for practice placements.

There are therefore problems with assessment of students in the clinical area. Norcini (2004) suggests that there is still an unproved assumption that

the assessment in clinical practice is better at reflecting the routine performance rather than assessments carried out under exam conditions such as in the laboratory. Furthermore Scholes et al (2004) advocate the widespread use of Objective Structured Clinical Examination (OSCE) assessment to determine clinical competence.

2.14.3 Clinical Simulation Laboratory

Skills laboratories offer according to Ross (1988b) and Hilton (1996) the means of alternative assessment methods, such as OSCE, which was originally developed in Dundee in the mid-seventies (Harden & Gleeson, 1979). This form of assessment has been utilised frequently in nursing and has been shown to be effective in formative and summative assessment (O'Neill & McCall, 1996 and du Boulay & Medway, 1999). Indeed Ross et al (1988) are noted as being the first to research the use of OSCE in the nursing setting evaluating competence in performing clinical skills. Generally the OSCE is composed of 15 to 20 short exercises or stations through which the students rotate individually. Significantly however, in the nursing research the OSCE has been utilised for formative assessment only with clinical practice still being the preferred choice for summative assessment (O'Neill, 2002).

In the original study by Ross et al (1988) student nurses' competence in performing clinical skills was evaluated utilising the OSCE. A five station OSCE was set up to evaluate the performance of the clinical skills associated with the nursing neurological examination. Sixty-nine students in the final year of a generic baccalaureate programme in nursing at the University of Ottawa were randomly assigned to one of two groups. The experimental group received laboratory experience while the control group was students on clinical placement in a neurological unit. All students underwent the OSCE and a 20 item multiple choice test (MCT) used to measure the knowledge base as well as the clinical skills associated with neurological

nursing. Interestingly there was no correlation found between the OSCE scores and the MCT scores. There was however a correlation between the students' OSCE scores and their clinical performance grades. Surprisingly this indicated that students who had higher clinical grades did not always do well on the OSCE. These results conform to the theory that high performers at school do not always make the best clinical nurses, hence the entry requirement of a minimum of five standard grades or equivalent for the DipHE/BSc in adult nursing. This could have been due to feelings of anxiety during the OSCE. However the students generally reported positive feedback.

Nicol & Freeth (1998) who are both senior lecturers in nursing at St Bartholomew's School of Nursing developed "the Bart's Nursing OSCE" to formatively assess the students. This development came from some dissatisfaction with the contemporary OSCE where students rotated around a large number of stations and spent a short amount of time at each (5 minutes). Their concern was over not being able to assess communication and interpersonal skills in this short time. Subsequently in "the Bart's nursing OSCE" the student does not rotate around a number of stations, instead remains at one station providing the care for one simulated patient. All the station scenarios include communication, infection control, recording of temperature, blood pressure and pulse, and expands onto other skills such as subcutaneous injection, oral drug administration or care of an intravenous cannula. These are all skills that the student should be competent in by the end of the CFP. This means that the student spends a total of 25 minutes at the station; 20 minutes performing the skills and 5 minutes reflecting on their performance with the assessor. Nicol & Freeth (1998) conclude that this type of OSCE leads to a more holistic simulation of the care of the patient and therefore presents a more realistic scenario. This type of OSCE is still expensive to run, requiring 9 to 10 hours of teacher time per station with a substantial amount of careful planning and administration, however they manage to assess 140 students in one day. Although at the time or writing

the article this was used as formative assessment Nicol & Freeth (1998) in their discussion state the intention of utilising this as summative assessment. What they do not discuss is whether this will replace clinical assessment while on practice placement, or be in conjunction with it.

More recently, Alinier (2003) successfully demonstrated in a study funded by the British Heart Foundation the OSCE to formatively assess the knowledge and skill level achieved when simulation was utilised as the learning/teaching and assessment strategy in undergraduate nurse education. In this study at the Hertfordshire Intensive Care Simulation Centre (HICESC) a 15 station OSCE was conducted. This formatively assessed the students on the undergraduate nurse education programme at two different stages on the course. Firstly at the middle of the second year and secondly at the beginning of the third year. Eighty six students voluntarily took part in the study and received a certificate of attendance to enhance their professional portfolio. In addition 39 lecturers took part in the study. This was a quantitative study with the students and lecturers completing questionnaires after the OSCE sessions had taken place. The results showed that the students wanted the OSCE to take place more often throughout the curriculum (n=3.39 times), which was slightly more than the lecturing staff (n=3.03 times). The difference was noted to be constraints on resources. Similarly 93% of the students thought the OSCE was beneficial and should be repeated more often. Alinier (2003) concluded that the running cost of the OSCE was far outweighed by the educational benefits to the student. One defence of this was that the sessions help students recognise their own weaknesses and also enables the lecturers to realise what the current students' abilities are.

When any assessment tool is utilised the question of reliability of the instrument must be asked. Miller (1990) proposes that the inter-rater agreement, inconsistency of the standardised patient performance or variation in the examinee's performance could affect the OSCEs

reproducibility of scores across the different stations. In contrast, simulation can provide standardised patient scenarios, the same each time unlike clinical placement. Utilising the laboratory setting for clinical assessment is therefore a final reason for the increase in the use of simulation within the HEI.

2.15 Summary

Nurse education has moved over the last 60 years from being apprentice based learning in the clinical placement to the HEI with 50% theory and practice. The move into the HE sector however showed a reduction in the development of clinical skills, (Phillips et al, 1994; While et al, 1995; Luker et al, 1996; Macleod Clark et al, 1996; Runciman et al, 1998 and Carlisle et al, 1999) which were however quickly learned once qualified. The Project 2000 programme was thought to produce the 'knowledgeable doer' however it was quoted by one nurse that she ' was the knowledgeable doer who didn't know what to do' (Macleod Clark et al, 1996). This reduction in emphasis in the development of clinical skills came about from research (Gomez & Gomez, 1987 and McAdams et al, 1989) showing that the laboratory learning was not as good as the clinical placement for teaching clinical skills. However clinical placements have changed over the 20 years since these studies were conducted. There is additional worry of patient litigation and making mistakes. The validated pre-registration nursing programmes from 2001 and programmes currently being validated in 2006/7 have many institutions concentrating on more clinical skills in their curriculum (O'Neill, 2002) and the study by Alinier et al (2004) has shown that simulation in nurse education can improve clinical skills. However, due to the theory-practice gap (Elkan & Robinson, 1993 and Ferguson & Jinks, 1994) these simulation exercises must be timely and show realism to the clinical placement.

Developments in the nurse education curriculum must therefore take place to produce nurses who are "fit for purpose" and "fit for practice" (UKCC, 1999).

The question is how these skills should be taught. The recent research points towards clinical simulation, as the method of choice (Alinier et al, 2004), however there is older conflicting research (Gomez & Gomez, 1987) which questions this. Both simulation and learning in clinical practice have advantages and disadvantages. If as Love et al (1989) found, there is no difference in performance where the skills are taught, then further research is required into the students' lived experience of simulation and their feelings on this as a teaching and learning method.

Chapter 3: Methodology

Simulation in nurse education: the students' experience.

3.1 Introduction

This chapter will explain the underpinning philosophies, which led to the choice of methodology along with a detailed explanation of the process to conduct the study in order to meet the aims of the research.

Aim

To illuminate the meaning of lived experiences of simulated education as a teaching, learning and assessment strategy, narrated by student nurses.

Research Questions

1. What is the experience of participating in simulation education like for the student nurse?

2. What are student nurses' attitudes towards and feelings about the use of simulation as a teaching, learning and assessment strategy?

2.1 What are student nurses' beliefs and understanding of how simulation impacts on their learning?

2.2 What are student nurses' attitudes to learning by this teaching, learning and assessment strategy?

2.3 What have been the advantages and disadvantages of including simulation in nurse education?

3. To what extent does simulation education mirror the experience of reality within the clinical environment?

3.1Does the student nurse experience simulation as similar or different with the clinical environment?

4. Does the experience of simulation impact on the student nurses' reported self-perception level of competence?

4.1 What impact does simulation have on learning clinical skills?

4.2 Does simulation education prepare student nurses for practice in a clinical environment?

3.2 Research Design (methodology and method)

The aim of the study is to illuminate the experience of students in terms of skill learning in a simulated environment. In order to achieve the research questions a range of research methodologies were explored and utilised. The research questions aim to explore the students' experience of simulation and in this chapter the decision for choosing a qualitative methodology using phenomenology is explained. Additionally question four expects the research to assess on the student nurses perceived level of competence and the choice of a quantitative methodology using a Semantic Differential questionnaire is explained.

This study, according to the principles of Morse et al (2001) is QUAL + quant (simultaneously conducting a qualitative and a supplemental quantitative study in a qualitatively driven project). This type of study is the methodology of choice according to these authors when some component of the study does not lend itself to one form of measurement.

A qualitative approach subscribes to the view that the empirical world is studied from the perspective of the participants (Duffy, 1987) as opposed to quantitative research, which is normally studied from the perspective of the researcher (Farley & McLafferty, 2003). There are a number of strategies that can be employed within the qualitative arena: ethnography, action research, grounded theory and phenomenology (Streubert & Carpenter, 1999). Each

approach is now briefly discussed, together with a rationale for rejection, and accepting the method chosen.

Ethnography, although it has its roots in anthropology, has been used by a number of nurse researchers in studying nursing culture (e.g. Boyle, 1994 and Leininger, 1985a). Essentially ethnography is the description of the culture by understanding the participants' lives. In order to do this the researcher has to become part of that cultural scene and must learn from the people (Spradley, 1980). Ethnography requires the researcher to become immersed in the culture and to carry out fieldwork. As a qualified nurse and a lecturer, it would be difficult to become 'immersed' in the student culture as the literature suggested.

Kemmis & McTaggart (1988) proposed that in any cycle of action research, the problem must be diagnosed, corrective strategies planned, then implemented. The corrective strategies would then be evaluated, and followed by another planning phase to further improve/refine practice. Hyrkas (1997) sees action research being more characteristic of a spiral-like progress with alternating phases and cycles that evolve over a period of time. However in this study the teaching strategy being evaluated had already been implemented and therefore was not action research.

"The Discovery of Grounded Theory" was written by sociologists Glaser & Strauss in 1967. Glaser & Strauss (1967) argued that from their perspective and within the grounded theory framework, theory is generated from data. Grounded theorists do not begin with a theory, but instead, they generate the theory from the data collected and analysed. Published comments on qualitative nursing research (Stern, 1985; Streubert & Carpenter, 1995; Benton, 1996 and Keddy et al, 1996) have stated that the methodology is ideal for identifying nursing problems of practice, finding a solution and applying the findings to nursing settings. Since nursing is a relatively new discipline, grounded theory provides an ideal methodology for investigating

topics about which little is known (Benton, 1996; Gray, 1997 and Parahoo, 1997). In examining the research questions however this study is not attempting to generate a theory.

In examining qualitative research approaches further it became apparent that part of the philosophical underpinnings of this research study are based on phenomenology. As Jasper (1994) explains phenomenology focuses on the person's unique experience. Similarly, Omery (1983) proposes that this methodology is the most appropriate to investigate and describe human experience, and the meaning of this experience to them. Beck (1994) describes parallels between phenomenology and nursing. Both emphasise observing, interviewing and interacting with subjects so that a deeper understanding of their experience can be grasped. However, there are numerous phenomenological philosophers each with a distinctive perspective and the researcher must distinguish which view is concurrent with their thinking and the study taking place (Koch, 1995 and Walters, 1995).

3.3 Philosophical Underpinnings of Phenomenology

"The word phenomenology comes from two Greek words: *phainein* meaning to appear and the other *logos* meaning reason" (Walters, 1995 p 791). Immanuel Kant in 1764 (Priest, 2002) first expressed the term phenomenology. For Kant, knowledge came from a synthesis of experience and concepts (Osborne, 1992). This developed as a reaction to the reductionist approach in science, which tended to explore factors in isolation (Jasper, 1994). Phenomenological philosophy tries to explain the ontological question "what is being" from their experience by participants (Holloway & Wheeler, 1996).

Two main philosophers (although many more), both German are regarded as having their philosophical assumptions based on phenomenology. Edmund Husserl (1859-1938) is designated as the founder of the modern

phenomenological movement (Stewart & Mickunas, 1990). This is based on the French philosopher Descartes (1596-1650) who represented a model of the mind and the mind-body split known as Cartesian duality (Osborne, 1992). This is further explained as the way in which we encounter things, as subjects directed toward objects (Draucker, 1999). For Husserl the attraction of the phenomenological method was as an investigative strategy for a new science of being (Laverty, 2003). The aim of phenomenology was a description (descriptive phenomenology) of how the world is constituted and experienced through consciousness (van Manen, 1990). Phenomenology was therefore seen as a movement away from the Cartesian dualism of 'reality' being something 'out there' or completely 'separate' from the individual (Jones, 1975 and Koch, 1995).

Husserl insisted in this methodology on an initial suspension of belief in the outer world (Koch, 1995). This was termed "reduction" and Husserl believed that this was necessary if a rigorous foundation for the natural and social sciences was to be established (Paley, 1997). Husserl also referred to the term "bracketing", which meant that the researcher must eliminate all preconceived notions (Schutz, 1970) and judgements about the external world and that they should be suspended or temporarily put out of question thus discounting prior knowledge of what is being researched (Jasper, 1994; Koch, 1995; Walters, 1995; Paley, 1997 and Priest, 2002). Husserl believed that in this way by freeing ourselves from supposed detachment as observers then we could encounter things as they really are (Korab-Karpowicz, 2001). Phenomenologists follow Husserl in attempting to provide descriptions from interviews and the text produced. The debate however is whether the phenomenological "reduction" can actually be performed.

The second modern philosopher is Martin Heidegger (1889-1976). Heidegger was actually a student of Husserl, and dedicated his world famous book "Being and Time" first published in 1927 to Husserl (Heidegger, 1962, translated version). Despite this their views on phenomenology were very

different. Heidegger rejected the notion that we are observing subjects who can be separated from the world of objects about which we try to gain knowledge, rather we are being (Sein) inseparable from an already existing world and human experience (Dasein) (Magee, 1988). Heidegger (1962) referred to this as "being-in-the-world" and that our presumptions cannot be suspended because understanding is impossible without them (Ray, 1994). For Heidegger we are always in the world and experiences can only be understood in terms of one's background, or historically, and the social context of our experience (Ray, 1994; Draucker, 1999 and Mulhall, 2003). Heidegger rejected the Cartesian duality subject-object relationship (Annells, 1996). Instead we must accept that the researcher and their beliefs, perceptions and experiences in the world will influence the research and indeed are an important part of the whole process included in how the findings are interpreted (interpretive phenomenology) (Farley & McLafferty, 2003). In other words "all knowledge emanates from persons who are already in the world, seeking to understand persons who also are already in the world" (Leonard, 1994, p55).

Heidegger refers to "being-in-the-world" and what this means to people can be interpreted through language and therefore written as text which, although not the first philosopher to use the term refers to this as hermeneutics (Leonard, 1994 and Koch, 1995). Fleming et al (2003) warn that hermeneutics and phenomenology should not be confused as the same thing. The term hermeneutics originates from the 17th century when it was introduced as a method for biblical and classical literary interpretation and is known as the art of interpretation (Dowling, 2004). Heidegger (1962) and Gadamer (1976) accept prior knowledge and understanding on the part of the interpreter (Walters, 1995) and suggest bringing to understanding the experience of others where the process involves the report of and in language (Leonard, 1989). It is according to Annells (1996, p705) "the interpretation of texts, but also to the relation of experiences interpreted in them and in our communicatively unfolded orientations to the world".

The goal of a hermeneutic or interpretive account is to understand everyday skills, practices and experiences (Leonard, 1994). The interpretation occurs through the deliberate act of describing aspects of experience (phenomena) in textual form (Annells, 1996 and Van der Zalm & Bergum, 2000). "The goal being to construct a text that is both strong and insightful..." (Kleiman, 2004, p8). Heidegger (1962) claims that there cannot be a world and one cannot have life at a cultural level without having acts of interpretation. "For Heidegger, understanding is no longer conceived of as a way of knowing but as a mode of being, as a fundamental characteristic of our 'being' in the world" (Koch, 1995 p831).

Heidegger (1962) describes "forestructure" in phenomenology where the researcher has a preliminary understanding of the human action being studied. This forestructure has three parts: "fore-having" which Paker & Richardson (1991, p343) explain as "the totality of relations that constitutes the phenomena", "fore-sight" which is that we approach the research question with a point of view and "fore-conception" which is there is always a preliminary sense of what counts as a question and what would count as an answer. The interpretive effort goes beyond publicly available understandings of a problem to reveal new and deeper possibilities.

Heidegger in his book, 'Being and Time' refers to time as not being experienced in a linear way. The past influences the present, which are our actions now. Walsh (1997) argues that this non-linear sense of time adds to the richness of the experience. Johnson (2000) clarifies that things are directly and indirectly related and this therefore gives meaning to the things that people encounter.

Gadamer (1976) was well known for developing and clarifying Heideggerian hermeneutical phenomenology. Indeed his contribution to phenomenology was the requirement to focus attention on the detail of how the researcher can develop a deep understanding of the text, unfortunately he did not offer a

method for carrying it out (Fleming et al, 2003). Gadamer (1976) believed that the researcher had prejudgements (one's preconceptions or prejudices). This is consistent with Heidegger (1962) in that pre-judgements and prejudices have a special importance in interpretation and cannot be ignored, in fact have a profoundly pervasive power in the phenomenon of understanding (Linge, 1976) and indeed that understanding is not possible without pre-understanding. Heidegger gives the example that someone could not fully interpret someone else's pain unless they had experienced pain themselves. Thus, the researcher and research participant must share common practices, skills, interpretations and every day practical understanding because of their common culture and language (Leonard, 1994).

The interpretive process is necessarily circular since there is a moving back and forth between what is being revealed in the text and what was found in the inquiry as a whole. Heidegger refers to this as the hermeneutic circle. This form of phenomenological inquiry is therefore referred to as Heideggerian hermeneutical phenomenology.

The challenge for the nurse researcher is to choose which philosophy best suits their research study. Ray (1994) expresses the concern that many nurse researchers have not been explicit or there is confusion as to which type of phenomenology underpins their research, or the philosophical understanding of it. Similarly, Corben (1999) agrees that there has been a misunderstanding by nurse researchers over the philosophical underpinnings of the method. Lopez & Willis (2004) help to clarify this by stipulating that there should be a linkage between the philosophical underpinnings of the study, the research questions and the method utilised.

Taking cognisance of this, the researcher of this study undertook to ensure that the most appropriate philosophy was chosen. Since the researcher is a lecturer in nurse education and takes part in delivering simulation sessions to

student nurses and has also had personal experience of being taught by simulation it would be extremely difficult to follow what Husserl refers to as bracketing. Indeed many researchers claim that the researcher can never be free of bias (Merleau-Ponty, 1964 and Beck, 1994) and that to try and ignore what you already know and your presuppositions is impossible since they persistently creep back into your reflections (van Manen, 1984). Annells (1996) argues for the use of the Heideggerian hermeneutical phenomenology method in nursing citing positive comments from different continents, the positive gains that this approach can provide and evidenced by an increase in publications of phenomenological research studies (Beck, 1994). Despite this there are a number of current researchers who argue that nursing research approach has mutated throughout the years and no longer represents a true phenomenological approach (Crotty, 1996; Corben, 1999; Caelli, 2000; Fleming et al, 2003 and Paley, 2005). Despite this Lopez & Willis (2004) contend that phenomenology is a dynamic philosophical movement where the ideas will not remain static, but be modified, just as Heidegger developed his ideas from Husserl phenomenology.

The difficulty is that neither Husserl nor Heidegger outlined a method of carrying out phenomenological research. Due to the 'Chinese whispers' effect on the nursing phenomenological research, the researcher went back to the original philosophical ideas of Heidegger for clarification. The English version by Macquarrie and Robinson (Heidegger, 1962) was used. Compounding this problem was that many of the words Heidegger used are non-existent in the English language and indeed non-existent in the current German language thus there is misinterpretation and ambiguity of the original. Thus nursing phenomenological research may have evolved through reading nursing research literature rather than reading the original Heidegger text. Despite this possible flaw in nursing research it could be argued that the emphasis should instead be on the rigour or truthfulness of the study method instead of trying to produce a pure phenomenological study. Indeed it could be argued that such a person as Benner (1984) who

was regarded as one of the first nursing researchers to use Heideggarian phenomenology in her well known doctoral study should be praised for using this philosophy of inquiry to further the knowledge of nursing and nurse education rather than criticised.

Hence the following is a description of the method adopted on a methodology evolved from and based on philosophical underpinnings of Heidegger and the notion of the hermeneutic circle. This may not be in its purest form of phenomenology as Heidegger would have advocated.

3.4 Study Site, Population and Sample

This was a case study undertaken in one HEI in Scotland where the researcher was a lecturer. The population studied was convenient and consisted of all student nurses on a three year DipHE/B.Sc. Adult Nursing course.

Due to time constraints on this study, a cross sectional rather than a longitudinal approach was employed. A cross-sectional study involves "... the collection of data at one point in time" (Polit & Hungler, 1995, p145). The advantages of using a cross-sectional design is that in practical terms there is a relatively short data collection period and therefore more economical and easier to run than a longitudinal design. Consequently, two groups of students were chosen, the first being semester four (one and a half years into their course) since they had only one introductory session of simulation and most of their clinical experience had been in community with only one placement in an acute hospital setting. The second group of students were semester six (the last six months) in order to explore the student development of core skill competencies as he/she progressed to completion of the nurse education programme (research question four). It was felt that those students who were to be assessed on clinical placement by the

researcher could have felt more pressure to perform better than those who were being assessed by another member of staff thus were excluded.

The major assumption for this study, and other cross-sectional studies designed in such a way that the processes evolving over time can be inferred, was that the behaviours, attitudes and characteristics of the students were consistent throughout their educational programme i.e. to make this inference, the researcher must assume that participants in the later stages would have responded as participants in the early stages had they been questioned years earlier (Polit & Hungler, 1995). This type of design is often referred to as a cohort comparison design (Polit & Hungler, 1995). This was recognized as a potential limitation of the study at the outset.

Due to attrition rates by the time each intake is half way through the programme (semester four) the student numbers are about 80-90. Due to the nature of the programme the cohorts are split into two streams, A and B thus about 40-45 students per stream to facilitate smaller group teaching. There are two main nursing modules in each semester, which are delivered by the lecturer to each stream. For simulation and practical skills the streams are subdivided further into six small groups of seven students.

A sample according to Clifford (1997) is the group drawn from the population that actually participates in the study. The aim in hermeneutical phenomenology is to select participants who have lived experience of the focus of the study and who meet these criteria and are diverse enough to provide rich and unique stories of that experience (Polkinghorne, 1989; van Manen, 1997 and Laverty, 2003). Creswell (1998) refers to this as criterion sampling. In determining the sample size in qualitative interpretive research it is preferred to approach a small number of people and spend some time explaining the depth of how they feel (Silverman, 2000). There is no testing of hypothesis or proving statistical significance thus Dukes (1984) suggests a sample size of three to ten participants. Furthermore Beck (1994) found from

literature review that 13 nursing phenomenological studies used five to 47 participants, with the mean for the sample sizes being nine.

The study took a mainly qualitative phenomenological research approach with a small quantitative questionnaire therefore a small criterion sample was required. Due to the group sizes for simulation classes the sample size was one small group of seven from stream A, semester four (February 2003 intake) and one small group of seven from stream A semester six (February 2002 intake). Participants volunteered, and students' names were drawn randomly to give each participant an equal chance of being selected and therefore reducing researcher bias (Polit & Hungler, 1995).

3.5 Access

Initially, the study required some preliminary measures be taken, including gaining access to the participants, and ethical considerations. These were addressed before commencement of the research project.

Morse (1997) warns that gaining access can take as long as the data collection but should be viewed as a learning experience. Access was therefore sought from the Head of School, the co-ordinator for semester six and the accommodation officer. Semester four co-ordinator was the researcher and so did not require access. Letters (Appendix V) were written to gain access to the students, facilities and accommodation for interviewing. Procedures for recruiting subjects and a copy of the research proposal were also given. A letter of confirmation was necessary for the research to proceed (Swanson, 1986).

Initially students were contacted via an informal meeting, which took place within a classroom at the institution containing all students in semester four and then all students in semester six. During the informal meeting, discussion took place in general terms rather than specific terms to limit bias

on the information sought from the informant at interview (Field and Morse, 1985). A checklist was used at each informal meeting to ensure that the participants were informed of all the necessary details to allow them to make an informed choice to participate in the study. Initially, participants were informed that five semantic differential questionnaires would be completed for semester four and one for semester six. Also participants were informed that one individual interview was required that could last approximately one hour (plus or minus 15 minutes). They were advised that they could refuse to answer particular questions, withdraw from the research at any time, and an assurance of confidentiality and anonymity was given. Students were also informed of the meaning of, and need for, reading their text to support a correct transcription of it, which would mean that they would be contacted again at a later date. A written information sheet was issued to students detailing what would be required of them should they volunteer for the study (Appendix VI). This initial meeting provided an opportunity to arrange suitable dates and times for subsequent interviews (Field & Morse, 1985). Making acquaintance with the students was not necessary since the students already knew the researcher.

3.6 Ethics Approval and Ethical Issues

Research should not bring harm to the participants (Burns & Grove, 1987). Beauchamp & Childress (1994) expand on this contending that the research must take cognisance of respect for autonomy, beneficence, nonmaleficence and justice. Therefore research involving humans must have ethical approval prior to commencement.

Ethics approval was sought from the HEI's Research Ethics Committee. After discussion ethical approval was given and that access was appropriate. This approval was received in writing from the chairperson of the research Ethic Committee (Appendix VII).

All data collected was rendered anonymous prior to analysis, known only by a number and initials for cross analysis of data. Becker (1964) and Ramos (1989) state that although confidentiality was promised, the small number of respondents and depth of detail within qualitative research make it difficult to disguise identities. Minor details, for example age, could be changed if the participants could be recognised by the other students and/or staff (Archbold, 1986). Each participant was therefore given a code. Thus Couchman & Dawson (1990) explain participants are ensured of confidentiality and anonymity. The students in semester four were known as 4:1 to 4:7 and semester six likewise, 6:1 to 6:7. Prior to analysis information was stored on a personal computer and complied with the Data Protection Act of 1984 and 1998. The list of codes was kept securely in a different place from the transcripts. In addition the participants' views were respected and treated with dignity. Participants were thanked for their time and effort in the research.

3.7 Informed Consent

Since the Nuremberg trials as a result of the medical experimentations in the concentration camps, informed consent must be obtained from patients and subjects prior to any substantial intervention (Beauchamp & Childress, 1994). Polit & Hungler (1995) explain that informed consent means participants have adequate information regarding the research, are capable of comprehending the information, and have the power of free choice, enabling them to voluntarily consent to or decline participation in the research. Therefore after reading the information sheet (Appendix VI) and verbally agreeing to participate, written informed consent (Appendix VIII) was obtained personally by the researcher prior to commencing the interviews.

3.8 Data Collection

Begley (1996) states that a combination of methods (can be qualitative and quantitative) for data collection and analysis can give a fuller and more

accurate picture of the phenomenon being studied. Utilising multiple methods of data collection can be referred to as triangulation (Polit & Hungler, 1995). Denzin (1989) identified four types of triangulation: data, investigator, theoretical and methodological and Kimichi et al (1991) added a fifth category called analysis triangulation.

Three data collection methods were chosen these being one-to-one semi-structured in-depth interviews; the semantic differential questionnaire and the researcher's reflective journal.

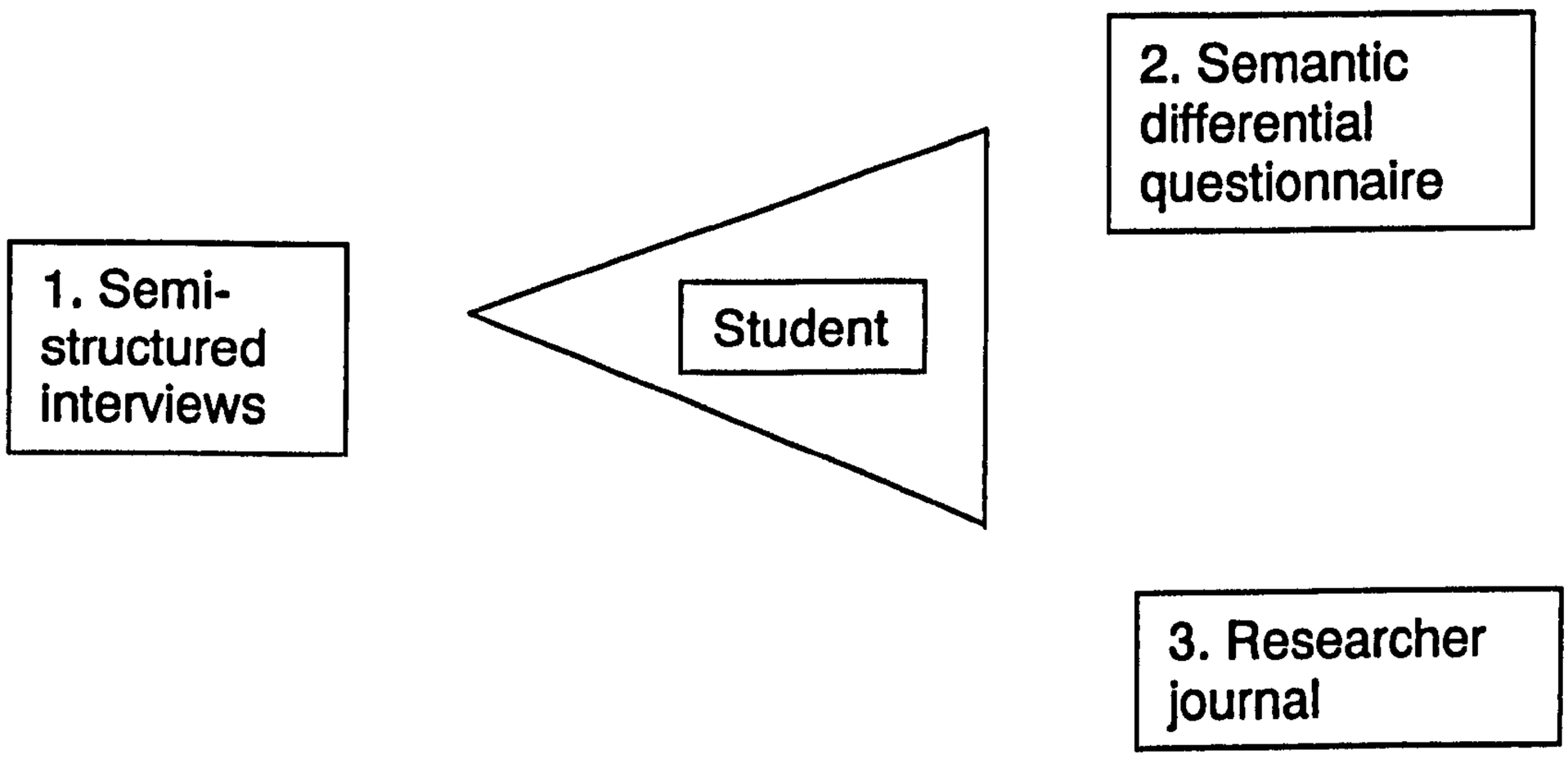


Figure 3.1 Triangulation of data collection

3.8.1 Interviews

Various interview methods are described in the literature, including unstructured, semi-structured and structured interviews. Polgar & Thomas (1995) warn that there are many interview techniques and that these can vary greatly in their structure, content and the data they elicit. Creswell (1998) assists with the choosing of a type of interview by explaining that whichever type will provide useful information in answering the research question is the correct one.

Unstructured interviews may involve the researcher not actually asking questions, rather prompting the respondent to reflect on a subject (Polgar &

Thomas, 1995).

Semi-structured interviews have a set of questions, however these can be deviated from and other questions asked depending on the answers elicited from the respondent (Polgar & Thomas, 1995). This can ensure that all the topics are covered while still being individual to each respondent (Polit & Hungler, 1995). Additionally according to Rubin & Rubin (1995) the semi-structured interview can keep the interview on course, yet still allowing for flexibility to explore new concepts that develop from the interview. Questions that are not understood can be rephrased and reluctant or anxious respondents can be helped and given encouragement to answer (Keats, 2000). Therefore semi-structured interviews allow the subject to talk freely about certain areas the researcher directs them to.

Structured interviews generally have a pre-arranged script that the questions are read from and answers taped or written into an answer space thus each respondent is asked exactly the same questions in the same order (Polgar & Thomas, 1995) and leave little room for the participant adding anything that the researcher may have missed from the questions.

Seidman (1991) states that in phenomenology the aim is to gain the lived experience of the respondent and therefore suggests three parts to the interview. These parts being firstly establishing the respondent's experience, second a construction of the experience and lastly a reflection on the meaning it holds. This would consequently suggest a semi-structured approach. Ring & Danielson (1997) similarly support the use of an interview guide, which acts as a reminder of the questions to be asked. Additionally Parahoo (1997) stated that completely non-directed interviews could be difficult to manage, and suggests a 'focussed' interview as a method of giving the interviewer some degree of control. A focussed interview uses a list of topics to provide the researcher with a guide on what they want the participants to talk about, but should not restrict any new ideas or perspectives the participants may wish to state (Parahoo, 1997).

Furthermore, Laverty (2003) explains in hermeneutical phenomenology the participants are asked to describe in detail their experience of the subject being investigated, but involves discussion, openness, critical exchange and direct questions by the researcher. Thus the semi-structured interview allows the interview to gain the students' experience of simulation education but also to ask more in-depth questions and as Britten (1997) points out, be based on the research questions.

Tape recording the in-depth interview is important since the interviewer's memory is limited and what they remember may be shaped by their past experience and differ from the actual conversation (Johnson, 1995). Therefore a verbatim record was utilised to grasp the interviewee's experience.

Therefore after critiquing the literature pertaining to the different types of interview audiotaped, one to one, in-depth semi-structured interviews were chosen in order to answer the research questions. Additionally the face-to-face interview was chosen to allow for the observation of non-verbal cues to supplement the verbal information being given.

<u>The role of the interviewer</u>

Stern (1980) noted that, it is impossible to have control over the presence of the interviewer and their reactions. However instead of being viewed as an intrusive factor, which influences the interviewee (Hutchinson, 1993), Stern (1980) believes that the personal experience of the interviewer may enhance the understanding of the problem. Strauss and Corbin (1990, p18) also hold the view that the interviewer draws "... upon past experience and theoretical knowledge to interpret what is seen, with astute powers of observation, and good interactional skills". More importantly in Heideggerian hermeneutical phenomenology the interview is co-created, therefore both the researcher and participant are reflected in the data where each affects the responses of the other (Lowes & Prowse, 2001).

The interviewer was known to the students and was their current or previous lecturer. The interviewer had previous experience at the interview process for qualitative evaluative research asking open and closed questions, although no experience in interviews for phenomenology. Creswell (1998) warns that in phenomenological interviews, asking appropriate questions and relying on the students to discuss their lived experiences requires patience and skill. Seidman (1991) supports this by highlighting that a basic requirement for phenomenological interviews is the interest that the researcher has for the participant's stories. Additionally Jasper (1994) and Polit & Hungler (1995) identify the use of reflection, clarification, requests for examples and the conveyance of interest through listening techniques as important interview aspects.

It was anticipated that a number of open-ended questions would be used during the interview, such as "Tell me what the term simulation .....?" , or "How did you feel...?" This, according to Field and Morse (1985), would help prevent leading the thoughts of the participant. Morse and Field (1996, p73) state that "... the important point is that the participants often know better than the researcher exactly what is and what is not relevant to the topic." Therefore, questions were used which would focus the discussion without leading or causing bias in the question.

Additional questions were only asked if the conversation became confused or there was a need to clarify or further investigate a particular point (Morse and Field, 1996). Gorden (1975) and Ely et al (1991) identify this as one of the characteristics of a good interviewer.

Developing trust and communication between researcher and respondent has been commented upon by a number of authors. For example, Parahoo (1997, p302) stated that it was important that participants revealed "... their inner thoughts if the researcher is skillful enough and if a trust is built up with the respondent." However, Parahoo (1997) does not reveal how this trust

should be developed, but recognises trust as being achieved when the researcher extracts the information from the respondent. Streubert & Carpenter (1999, p23) describe the importance of making the respondent as comfortable in space and time as possible: "The more comfortable each participant is, the more likely he or she will reveal the information sought". This guidance however lacks substance, is anecdotal, and does not provide researchers with verbal or non-verbal actions to aid the process. Gorden (1975) argued that throughout the interview, the role of the interviewer is to observe the participants' emotional needs, empathize and communicate warmth, with the aim of putting the participant at ease. Polit & Hungler (1999, p346) also state the need for a good relationship between respondent and interviewer, in order that the respondent will "... feel comfortable in expressing their honest opinions". Polit & Hungler (1999) explain the need for the interviewer to be reliable, punctual, courteous and friendly. They also state that all opinions of the respondent should be accepted, the interviewer generally not expressing surprise, disapproval, or even approval. It has to be acknowledged that this could prove difficult if the interviewer was to communicate normally, or even to express empathy as advised by Gorden (1975).

At the end of each interview, the student was always asked: "Is there anything you would like to ask me?" and "Is there anything else I should have asked you?" (Morse & Field, 1996), and thanked the participant for taking part. If there were discussions after the audiotape was switched off these were noted in the memos. The need for member validation was explained, but expressed that there would be a time lapse between the interview and the transcription and data analysis.

<u>The interview</u>

An interview schedule was devised which included the three parts of the interview explained by Keats (2000) (Appendix IX). Field & Morse (1985) suggest a quiet, uninterrupted interview, where the researcher listens

carefully, is receptive and non-judgmental. The interviews were planned to take place in an unused apartment in the Hall of Residences. This was viewed as a non-threatening environment instead of the college. A sign was placed on the outside of the interview door to 'warn off' intruders and provide information for anyone arriving for their interview appointment. The seating was arranged so that the researcher was at right angles to the participant to allow eye contact and observation of non-verbal gestures without appearing threatening, which helped to establish rapport and trust in the relationship (Gray, 1994). The closing of the interview was equally as important (Keats, 2000).

Time

An in-depth interview could last as much as two hours (Polkinghorne, 1989). These took place after the theoretical input of the course and the related practice placement. The semester four students had a remedial week where they could use the time for study and therefore were not in class or on practice placement (Appendix X). The interviews were therefore carried out during the week of 25th October 2004. The semester six students had a study day every second Friday and were only in class form 9 to 11am on these days. The students were contacted via e-mail to arrange a suitable date and time (Appendix XI). The interviews therefore took place on Friday 12th and 26th November and 10th December 2004. At least one hour was given between each interview to allow for over running and the interviewer to have a break.

Pre-testing

Waltz et al (1984); Leininger (1985b); French (1993 cited by Gray 1997) and Gray (1994), suggest that interviews should be pre-tested. French (1993 cited by Gray, 1997) advocated the testing of two to three trial interviews before commencing the study. As a result the interview schedule was pre-

tested on three semester five students. These students volunteered to take part and had previously had the experience of simulation in semester four as well as receiving it in semester five. With the help of these students as well as the supervisor and lecturing colleagues the interview schedule was devised (Appendix XII, details of development are in the reflective journal, Appendix XIII).

Interview Data: recording and transcribing

The next stage within the interview process involved the recording and transcribing of the interview data. Transcription is an immensely time consuming process. Review of the literature suggested that an hour's worth of interview would take between six and seven hours (Britten, 1997), from three to 12 hours (Swanson 1986), or from four to six hours (Holloway & Wheeler, 1996) to transcribe. Self-transcription stimulates analysis of the data (Swanson, 1986) and immerses the researcher in the data (Holloway & Wheeler, 1996). Six to seven hours were initially allowed to transcribe one hour of interview. The researcher completed the transcriptions with the shortest taking five hours and the longest eight hours to transcribe. The transcriptions were page-numbered, and a fact sheet was attached containing the date, location and time of interview, as well as the code name for the informant(s).

3.8.2 The Semantic Differential Questionnaire

Secondly, the student, during clinical placement, completed a Semantic Differential (SD). The SD technique is a method of quantifying meaning, which was developed by Charles Osgood and his associates in 1957 cited by Flagler (1989). This was originally developed to specify the meaning of words for research on communication and language however has been developed in nurse education to measure competence and attitudes (Kerrick, 1969; Bowles, 1986 and Flagler, 1989). The student rates their competence against a checklist of specific word pairs, such as good/bad and

active/passive. These word pairs are at either end of a Likert-type scale with a seven-point scale in between (Appendix XIV).

In developing the SD the related adjective pairs belong to one of three common SD factors, these being: evaluative, potency and activity (EPA) (Osgood et al, 1957). These factors represent the three dimensions of semantic space typically used to specify aspects of meaning (Flagler, 1989). For example the evaluative factor represents good/bad, the potency factor represents weakness, frailty and competencies and the activity factor represents the amount of motion or engagement involved in the concept, such as active/passive (Kerlinger, 1973). Subsequent research has shown these three dimensions to be common to people in vastly disparate cultures (Arnold et al, 2005).

To construct a SD, concepts relevant to the phenomenon were determined (Flagler, 1989). In this study the phenomenon studied was the student's competence at clinical skills. Therefore an equal number of adjective pairs were selected from previous studies using the SD with relevance to the factors EPA. In nursing research most SD questionnaires have used one to four concepts with 10 to 20 adjective pair scales (Flagler, 1989), however Osgood (1969) reported as many as 20 concepts with 50 adjective pairs each could be conducted at the one time. The development (details are in the reflective journal, Appendix XIII) of the SD for this study involved one concept, namely competence with eight pairings for each factor E,P and A being brought together to form a new SD. These 24 adjective pairs were chosen with the assistance of three lecturers in the adult branch who teach simulation.

<u>Pilot</u>

In devising the SD a pilot was conducted to allow checking of the wording, layout, directions for completing and understanding of the SD (Polit &

Hungler, 1995). Therefore the SD was given to semester four students in both A (37) and B (35) stream (August 2002 intake) after completing their clinical placement. The data analysis for pilot of the SD was handled the same as for the whole study. The students found the instructions for the completion of the SD easy to understand with no ambiguity in the adjective word pairs and therefore completed the questionnaire with ease.

Timing

The SD was given to the semester four students to complete after their first, second, third, fourth and fifth week in clinical practice, thus to follow any differentiation in their perception of their competence in clinical skills. The semester six students completed one SD during the final weeks of their last placement (14 weeks long) on the course just prior to registration and qualification.

3.8.3 Reflective Journal

Lastly the researcher maintained a reflective journal (Appendix XIII) as described by Koch (1994) and Silverman (2000) during the course of the study. This involved the researcher engaging in a process of self-reflection on observational, methodological, theoretical and personal notes, which Silverman (2000) and Moon (2002) express can encourage the researcher to be meticulous in record keeping and reflective about the data. Additionally, Draucker (1999); Lowes & Prowse (2001) and Laverty (2003) advise that since hermeneutics is based on the belief that the researcher's personal experiences, values and beliefs enrich the interpretation of the data gathered they should consider ways that they can reveal this in their writing.

Leonard (1994) explains that the interpretive process is circular and this moves back and forth between the initial forstructure and what is being revealed in the data. Therefore the researcher's understanding as well as the available literature on the topic is made clear. Thus Benner (1985)

concludes that objectivity takes place in a sense that the skills, practices and meanings are verifiable by both the research participants and colleagues.

3.9 Rigour

3.9.1 Reliability

Reliability according to Clifford (1997) is difficult to achieve in qualitative research designs. In asking open ended interview questions the researcher would not expect each person to answer in the same way. Leininger (1994) states that it is inappropriate to consider reliability in qualitative research designs, however the researcher should address issues of credibility. To ensure credibility Leininger (1994) states that the researcher should obtain evidence from the participant on the researcher's findings or interpretations. Additionally Guba & Lincoln (1981); Koch (1994); Abbott & Sapsford (1998) and Whitehead (2004) suggest an audit, or decision trail can assist the reader to follow the decisions made throughout the study and therefore increase the trustworthiness of the study. The researcher should create an account of the method and data so that another trained researcher could analyze the same data in the same way (Glaser & Strauss, 1967; Sandelowski, 1986; Guba & Lincoln, 1989; Hagemaster, 1992; Mays & Pope, 1995 and Nolan & Behi, 1995). This can be achieved through the completion of a reflective journal. Additionally this can increase the self-awareness and reflection of the researcher (Koch, 1994; Leininger, 1994 and Silverman, 2000). This, according to Koch (1994) adds to the credibility, transferability and dependability of the study.

In quantitative research design (SD questionnaire) reliability reflects the degree to which an instrument used for data collection provides consistent responses when used in similar conditions (Polit & Hungler, 1995). Clifford (1997) explains one way to test reliability is the test-retest approach. This determines the degree of consistency when individual responses are

compared on two separate occasions. Therefore a pilot study was conducted of the SD and the responses compared.

3.9.2 Validity

Validity according to Polit & Hungler (1995) has four dimensions-

1) Face validity, which is whether on the face of it the data collection instrument appears to measure what it is supposed to.
2) Content validity is how well the content appears to measure what it is supposed to.
3) Construct validity focuses on the theoretical base of the questionnaire and asks whether the theory underlying the test is measured.
4) Criterion-related validity questions how well the data collection instrument relates to other external measures of the same phenomenon.

The SD questionnaire and interview schedule were given to lecturers in the Adult branch who had experience of running simulation classes, since Clifford (1997) states that they can be valuable in determining the face, content and construct of the questionnaire or assessment tool.

The main goals of triangulation according to Begely (1996) are confirmation and completeness of data. Triangulation assists with the verification of inquiry by ensuring completeness of the research and counteracts the threats to validity (Morse, 1991). Thus the researcher does not expect multiple sources of data always to confirm one another, rather, each source will contribute an additional piece to the puzzle (Jick, 1983 and Fielding & Fielding, 1986). Leininger (1985b, p5) in agreement states that "the goal in qualitative research is to document and interpret as fully as possible the totality of what is being studied". The advantages of using triangulation in nursing research are described by Redfern & Norman (1994, p52) as "overcoming the bias of the single-method, single-observer, single-theory studies; increasing confidence in the results; allowing development and

validation of instruments and methods; providing an understanding of the domain; ideal for complex social issues; overcoming the elite bias of naturalistic research; overcomes the holistic fallacy of naturalistic research and allowing divergent results to enrich explanation". This is supported by Guion (2002) who argues that triangulation is a method which should be used by qualitative researchers to check and establish validity in the study.

Validity is said to be high, if it measures what it is supposed to measure, in asking the patients to respond in their own words (Clifford, 1997) or as Oiler (1982) explains whether the data is recognised as being true by the participants. Pope & Mays (2000) suggest that this is a more beneficial way of testing truthfulness of a study. Despite this Leonard (1994) argues that there is no technical procedure for validating interpretive accounts, rather there are tools for evaluation. Sandelowski (1993) argued that rigour is espoused in the scientific tradition of research and as such can threaten the artfulness and creativity of the data analysis. Jasper (1994) however does suggest several ways of achieving validity in phenomenological research: those concerning the participants and those related to the researcher. The aim therefore is to maintain quality, but not at the expense of creativity (Sandelowski, 1993).

3.9.3 Trustworthiness

In concerning the participants, researchers completing qualitative studies commonly endeavour to check the reliability or affirm the validity of their findings by returning the analysis of the data to the participants of the study to ask them to check if it sounds 'true' to them. This is known as 'member check' or 'member validation' (Polit & Hungler, 1995 and Selvin & Sines, 2000), however Jasper (1994) refers to it as 'participant validation'. Despite this Walters (1995) makes the argument that the involvement of the participants is not an attempt to seek the absolute truth or validity, rather to make better interpretations of the data. Heideggarian phenomenology does

not seek the participant to check the accuracy of the final data analysis since it is an interpretation of the researcher and as such is unique to them (Lowes & Prowse, 2001). Fleming et al (2003) however suggest the participant check their own text for accuracy and refer to this as confirmability suggesting this as part of providing trustworthiness of the study. Thus once the qualitative one-to-one interview was transcribed by a word processor the text was given to the participant to check for accuracy. Transcribed interviews were sent to the participants and a form completed and returned stating whether the transcribed interview was indeed a true transcription (Appendix XV). All participants returned the form stating it was a true reflection of their interview.

In relation to the researcher Jasper (1994) explains that inter-rater reliability can by used to ensure the researcher does not manipulate the data. Fleming et al (2003) suggest that this can demonstrate the truthfulness of the analysis. However using Heideggarian phenomenology Barkway (2001, p192) explains it as being "a first-person experience" of the analysis of the data. Sandelowski (1993, p3) illustrates this superbly by stating "Just as Dali's art is no less valid than Picasso's by virtue of differently re-presenting common phenomena, so too may be different qualitative re-presentations of common phenomena all be valid ones". Instead one transcribed interview chosen at random (student 6.5) by the supervisor was given to another nurse lecturer at a different HEI who also had experience in research (PhD) and clinical simulation. This was to check the initial stage of establishing the meaning units and not the final data interpretation. The meaning units and coding system was given and explained and the lecturer then carried out coding on this transcription to compare it with the researcher's coding for the study. This showed a large degree of agreement (Appendix XVI).

In this study, outside truthfulness of the results could be achieved through a conference presentation and report, writing articles on the study findings for publication (being considered by professional journals) and providing copies

of the results to other students outwith the study groups (Appendix XVII).

Whittemore et al (2001) defend that quality in qualitative research is dependent on honest and forthright investigations. Thus the researcher should demonstrate how they came to their interpretive decision and not that it is true. Lincoln & Guba (1985) refer to the audibility of the research being able to follow the interpretive effort of the researcher. Furthermore Lowes & Prowse (2001) explain that the quality of the data generated the way in which the interviews were approached and conducted and the researcher's openness of their preconceptions all lead to demonstrating rigour and trustworthiness.

3.10 Data Analysis

Data analysis in Heideggarian hermeneutical phenomenology has the aim of understanding the meaning of the text itself (Wiklund et al, 2002) relating the parts to the whole (hermeneutic circle). Although many would argue that there should be no focus on specific steps in the analysis process since this is more suitable for the reductionism approaches, however in reality many methods have been devised (Priest, 2002).

Having reviewed the literature on data analysis an analytical seven-stage process as recommended by Diekelmann et al (1989) was utilised. This data analysis technique has been used in a number of nursing research studies using Heideggerian hermeneutical phenomenology over the past ten years (Moloney, 1995; Wray, 1995; Krasner, 1996; Nelms, 1996; Rohde, 1996; Stanton et al, 1996; Totka, 1996; Nehls et al, 1997 and Neil & Munjas, 2000). Barnett (2005) suggests that this particular framework has been used since it can provide a good level of rigour, particularly trustworthiness. The interviews and reflective journal were transcribed and treated as text analogues for interpretive analysis (Leonard, 1994) utilising a computer-

assisted analysis of qualitative data (CAQDAS). The interviews were transcribed between 17th February and 14th April 2005.

The seven stages of analysis:

1. Reading the interviews, reflective journal, literature and SD results to obtain an overall understanding.
2. Writing interpretive summaries and coding for possible themes.
3. Analysing selected transcripts as a group in order to identify themes.
4. Returning to the text or to the participants for clarification of disagreements in interpreting and writing a composite analysis of each text.
5. Comparing and contrasting texts to identify and describe shared practices and common meanings.
6. Identifying constitutive patterns that link the themes.
7. Eliciting responses and suggestions on a final draft from a colleague familiar with the content and or methods of the study.

Software packages capable of analysing qualitative data have rapidly increased in number and have developed considerably over recent years (Pateman, 1998). Their uptake by qualitative researchers has been influenced by beliefs that computers are too numerical and scientific to deal with words, and that the computer and not the researcher is analysing the data (Pateman, 1998). Becker (1993) stated that the use of computers in qualitative data analysis results in "... flat and oversimplified descriptive results ...". As Russell & Gregory (1993) and Morse and Field (1996) point out, a computer cannot analyze the meaning of the text. The researcher had to read and engage in the text and code it, but the software has several advanced functions that can make the process faster (Pateman, 1998).

The first interview was transcribed and the written text examined to decide which form of data analysis would be most suitable. After examination and debate QSR NVivo 2.0 (Qualitative Solutions and Research Pty Ltd, 2003)

was determined as being the most suitable for managing the data and user friendly for the researcher.

The package chosen (QSR Nvivo) has several advanced functions such as 'automatic coding'. Auto-coding is described by the manufacturers (Qualitative Solutions and Research Pty Ltd, 2003) and can be used to search for actual words or strings of characters in the text, and then brings the pieces of text together to form meaning units and/or categories. The software eases the researcher's workload, saves time, and generally enhances the power of qualitative analysis (Kelle, 1995 and Pateman, 1998). The indexing system in NVivo allows for meaning units and retrieval of the text, with a facility to attach memos (Weitzman & Miles, 1995) and field notes (Tait & Slater, 1999).

The main disadvantage foreseen at this stage was the researcher's unfamiliarity with the programme. However, training packages and on-line help were provided with the software.

Meticulous records of interviews and memos were kept via NVivo. Analyses of these were documented in detail, such that other researchers could follow the 'audit trail' (Hinds et al, 1990; Rodgers & Cowles, 1993 and Mays & Pope, 1995). For example, each window containing a transcript can record the meaning units in the margin beside the text of the document (Qualitative Solutions and Research Pty Ltd, 2003) (Appendix XVIII). This allows the 'audit trail' to follow all researcher-initiated changes (Tait & Slater, 1999). This helped to demonstrate credibility, again allowing other researchers to follow the 'decision trail'.

3.10.1 Meaning units and themes

Initially the tapes and transcripts were read to sensitize the researcher to the relevant ideas and themes (Wiklund et al, 2002) and acquire a general sense of how what simulation education meant to the students. A system of coding

was then employed producing meaning units, which involved examining the data line-by-line and identifying the processes in the data (Streubert & Carpenter, 1995), and unraveling the complexity of the concepts which underlie them (Strauss, 1987). A thorough examination of the data was carried out, and meaning units were identified using the QSR NVivo (Qualitative Solutions and Research Pty Ltd, 2003) package.

Memo writing is an important activity associated with coding. Memo writing provides a way of focussing on the emerging meaning units and themes and their interrelationships (Corbin, 1986). Any thoughts, ideas, and facts about the data were written in the memo as data collection and analysis was carried out. If there were any 'flashes of insight' these were immediately written in a memo. Smith (1997) also stated that the memo could contain other information, such as alternative ideas, or could consolidate existing thoughts.

The literature review is to find out what other people have said about the subject being investigated and help structure and support the research (Hart, 1998; Stark, 1998 and Silverman, 2000). This literature according to Morse et al (2001) along with the researcher's personal experience is used to recognize, compare and contrast developing knowledge with what is already known.

In qualitative research there is debate about the extent to which the literature should be used to guide the research (Morse & Field, 1996 and Priest, 2002). Koch (1995) however contends that the literature may then guide the researcher, is continuous and can inform the research process. This is the argument that Heidegger uses in that we are inseparable from an already existing world (Magee, 1988) and that the researcher should take cognisance of what they already know (van Manen, 1984). The literature review therefore becomes very much part of the research. The literature review, the data generated and the researcher's experience becomes an important part of the

whole process including how the data is interpreted (Koch, 1995 and Farley & McLafferty, 2003) and is used to inform the memo writing and compare and contrast with the resultant data.

3.10.2 Data analysis of the SD

The SD questionnaires were analysed using the computer package Microsoft Excel. By giving each point on the scale a score of –3 to +3 with zero representing the neutral point in the middle these scores can be compared between the seven different students (semester four) over the five questionnaires and within each student and also comparing them to the semester six results. These scores can be added to give a cumulative score (Flagler, 1989). Thus for each factor E, P and A a mean score can be achieved and compared over the five weeks to interpret any differences. Thus the score can be recorded by one person on the same concept over a period of time.

Additionally each question E, P and A can be analysed individually adding the scores of each student, for instance question 1 student 4:1 to 4;7 added. This provides the smallest and largest word pairing for each factor in the first to last week. These words are then analysed to interpret the feelings of the students to do with competence from week one to week five along with the semester six.

The resulting three approaches to data collection and their subsequent analysis involving the student provides data, investigator, methodological and analysis triangulation (Kimichi et al, 1991). In addition by executing the data collection and analysis by the movement between the part and the whole of the text (in this case the text being the interview transcript and the whole being all the interview transcripts) the philosophy of the hermeneutic circle described by Heidegger is maintained (Koch, 1995).

Chapter 4: Results

Simulation in nurse education: the students' experience.

The purpose of this chapter is to provide the results that were obtained from the 14 student nurses who participated in the study. These are presented in the order that the data was collected. Thus the quantitative data from the Semantic Differential questionnaire is presented followed by the semi-structured one-to-one interviews.

Section 1: Quantitative results

4.1 The student characteristics

Sample one was semester four students (n=7, one male and six female). The age range was 19 to 41 years old with a mean age of 27.3 years and standard deviation of 8.44027 (Table 4.1.1 and 4.1.2).

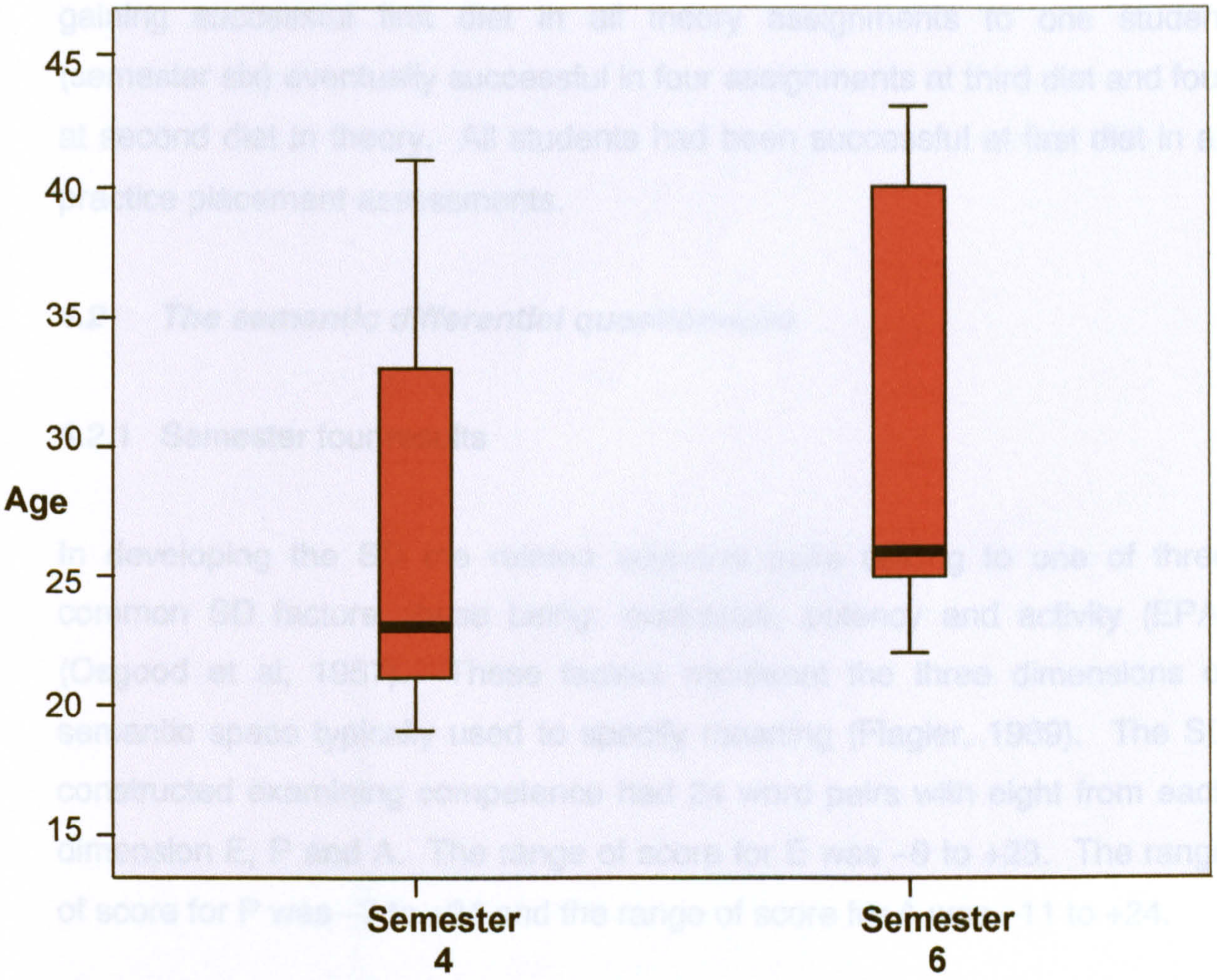
Sample two was semester six students (n=7, one male and six female). The age range was 22 to 43 years with a mean age of 31.5 years and standard deviation of 8.96023 (Table 4.1.1 and 4.1.2).

The age range for both groups combined was 19 to 43 years. The mean age was 29.4 years.

Table 4.1.1 Descriptive Statistics of Age

	N	Minimum	Maximum	Mean	Std. Deviation
Semester 4	7	19.00	41.00	27.2857	8.44027
Semester 6	7	22.00	43.00	31.5714	8.96023
Valid N (listwise)	7				

Table 4.1.2 Semester four and six ages



The previous experience of any healthcare was examined since this could have an impact on the student's competence of clinical skills. Five of the semester four students and three of the semester six students had been or still were care assistants either in acute or primary care settings such as care homes. Thus eight (57%) of the students had care experience prior to commencing the course.

Academic qualifications on starting the course demand a minimum of five points with English mandatory at standard grade. The qualification range at entry was five to 10 points with both groups having similar qualifications.

The student's attainment of assignment results for theory and practice up to the point of the course where they were interviewed was also accessed.

These ranged from six students (three semester four and three semester six) gaining successful first diet in all theory assignments to one student (semester six) eventually successful in four assignments at third diet and four at second diet in theory. All students had been successful at first diet in all practice placement assessments.

4.2 The semantic differential questionnaire

4.2.1 Semester four results

In developing the SD the related adjective pairs belong to one of three common SD factors, these being: evaluative, potency and activity (EPA) (Osgood et al, 1957). These factors represent the three dimensions of semantic space typically used to specify meaning (Flagler, 1989). The SD constructed examining competence had 24 word pairs with eight from each dimension E, P and A. The range of score for E was –9 to +23. The range of score for P was –7 to +24 and the range of score for A was –11 to +24.

The factor scoring is the sum or average over the adjective pair scales for a dimension. Table 4.2.1 displays the factor scores (Appendix XIX) for semester four students from week one to week five. The semester four results show each dimension receiving a small, but positive score in the first week. There is significant improvement in the scores over the five weeks and for all three dimensions there is an increase in the score each week. The P dimension has the largest range over the five weeks starting with a mean score of zero to 18 in week five.

Table 4.2.1 Semester four factor scores for each dimension E, P and A.

Sem 4	E					P					A				
Week	1	2	3	4	5	1	2	3	4	5	1	2	4	5	6
Median	2	8	10	14	17	4	8	9	15	17	3	9	11	15	19
Mean	2.7	7.7	9.3	13	18	0	5.1	9.1	15	18	1.3	6.9	10.4	15	16.8

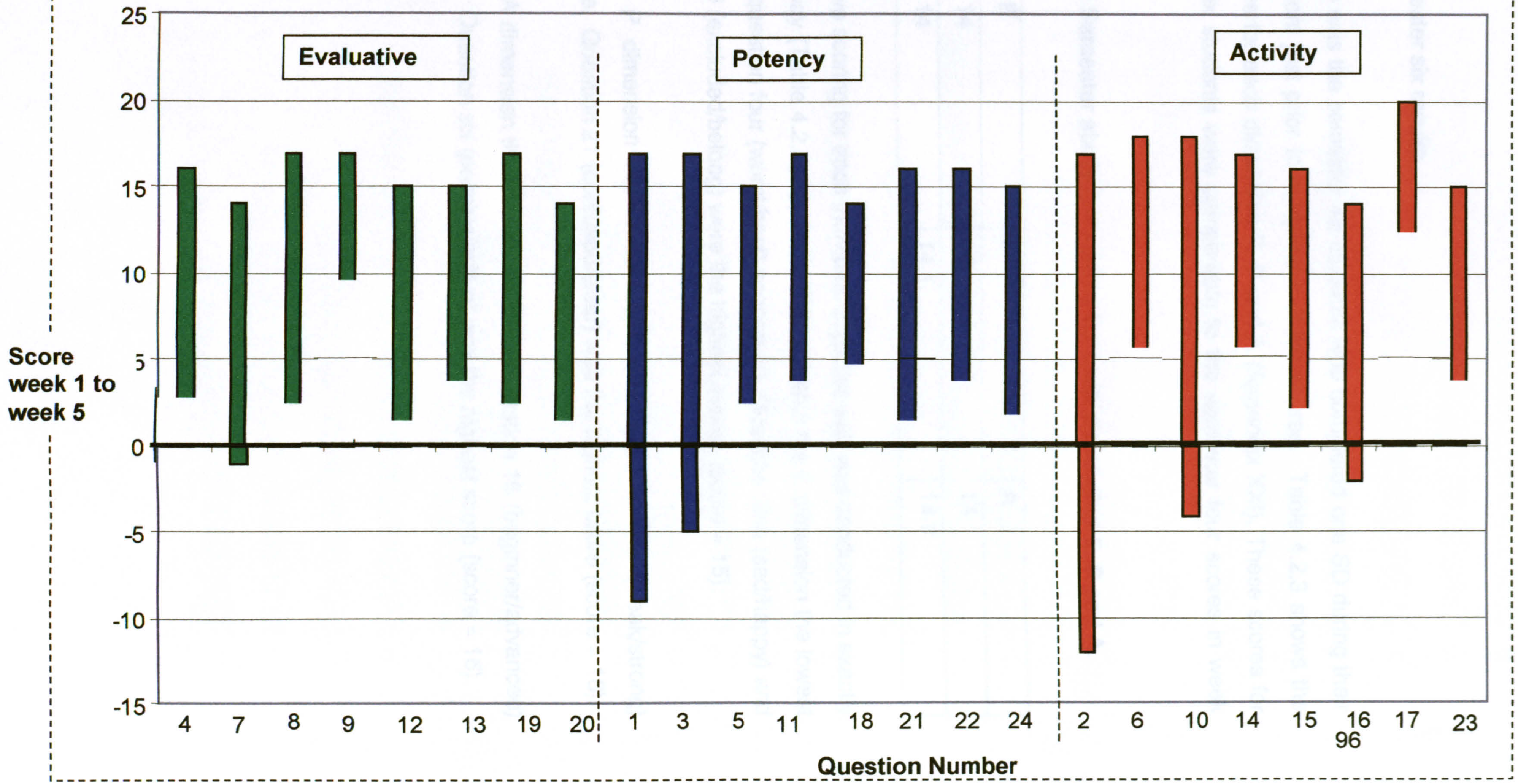
Measurements were also calculated for accumulative scoring for each individual adjective pair within each dimension of E, P and A from week one through to week five (Table 4.2.2, Appendix XX) for sample one (semester four students). This allowed for individual adjective word pairs to be examined by the lowest score to highest score through the five weeks.

Within the E dimension (green) the semester four students scored (Table 4.2.2) question seven the lowest in week one, (score = -1) which was vague/accurate. This remained the lowest score in week five (score= 14) along with question 20 which was worst/best. The largest scored pairing for week one was question nine (score = 9) which was sad/happy. In week five the students still scored question nine (sad/happy) the highest (score = 17) along with question eight (timid/confident) and question 19 (excluded/belong) obtaining the same score.

Within the P dimension (blue) the students scored (Table 4.2.2) question one (anxious/reassured) as the lowest score (score = -9) which became one of the highest scores in week five (score = 17) along with question three (unsure/sure) and question 11 (worthless/valuable). The highest score in week one was question 18 (blunder/prepared) scoring four, however this became the lowest score (score = 14) in week five.

Within the A dimension (red) the students scored (Table 4.2.2) question two (nervous/calm) as the lowest in week one (score = -12) and question 16 (beginner/advanced) the lowest in week five (score =14). The highest score in week one was question 17 (avoid/eager) which remained the highest score in week five.

Table 4.2.2 Accumulative semester four scoring for individual factors E, P and A.



4.2.2 Semester six results

Sample two was the semester six students who completed one SD during their last placement just prior to completion of the course. Table 4.2.3 shows the factor scores for each dimension E, P and A (Appendix XXI). These scores for semester six students were comparable to the semester four scores in week four.

Table 4.2.3 Semester six factor scores for each dimension E, P and A.

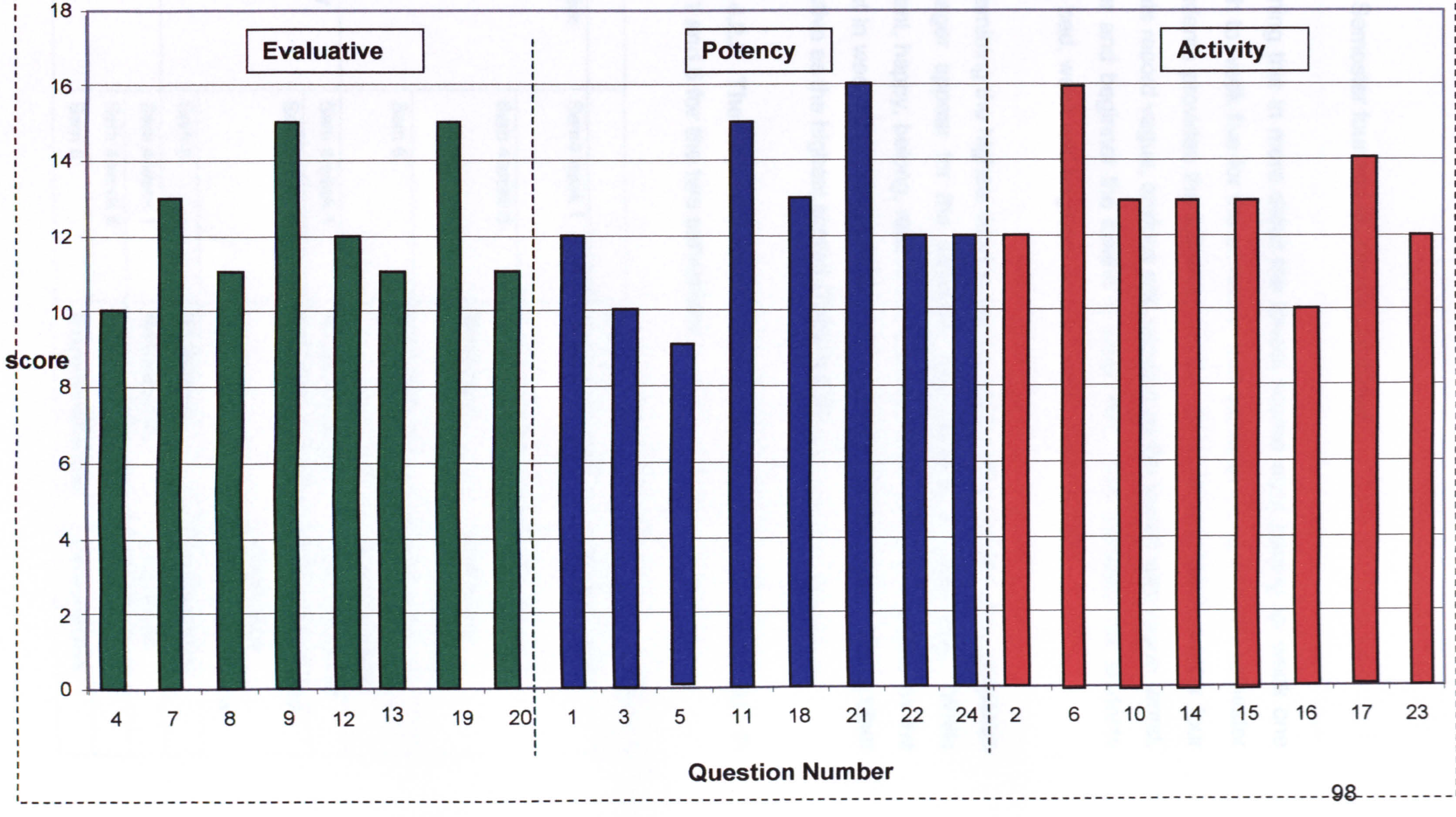
Sem 6	**E**	**P**	**A**
Median	14	16	14
Mean	14	14.1	14.7

Accumulative scoring for each individual adjective pair was conducted in exactly the same way (Table 4.2.4, Appendix XXII). Within the E dimension the lowest score was question four (worst/best) scoring 10. Question nine (sad/happy) and question 19 (excluded/belong) were the highest scores (score = 15).

Within the P dimension the lowest score was question five (weak/strong) scoring nine. Question 21 (confused/clear) was the highest score (score = 16).

Within the A dimension the lowest score was question 16 (beginner/advanced) scoring 10. Question six (passive/active) was the highest score (score = 16).

Table 4.2.4 Accumulative semester six student scoring for each dimension E, P and A



4.2.3 Semester four and six results combined.

Examining this in more detail the lowest scored word pairing for week one through to week five for the semester four students along with the semester six students provides the following words. In week one the semester four students record vague, anxious and nervous as the lowest with vague, worst, blunder and beginner the lowest in week five. The semester six students record bad, weak and beginner as the lowest (Table 4.2.5).

On examining the highest scoring word pairs then the words happy, prepared and eager appear for the semester four students in week one. While confident, happy, belong, reassured, sure, valuable and eager appear as the highest in week five. The semester six students' score happy, belong, clear and active as the highest scored (Table 4.2.5).

Table 4.2.5 The adjective word pairings for the lowest and highest in week 1 and 5 for the two semesters.

		Lowest score	Highest score
Evaluative	Sem4 week 1	**Vague**/accurate	Sad/**happy**
	Sem 4 week 5	**Vague**/accurate **Worst**/best	Timid/**confident** Sad/**happy** Excluded/**belong**
	Sem 6	**Bad**/good	Sad/**happy** Excluded/**belong**
Potency	Sem 4 week 1	**Anxious**/reassured	Blunder/**prepared**
	Sem 4 week 5	**Blunder**/prepared	Anxious/**reassured** Unsure/**sure** Worthless/**valuable**
	Sem 6	**Weak**/strong	Confused/**clear**
Activity	Sem 4 week 1	**Nervous**/calm	Avoid/**eager**
	Sem 4 week 5	**Beginner**/advanced	Avoid/**eager**
	Sem 6	**Beginner**/advanced	Passive/**active**

The Semantic Differential questionnaire has thus shown that change occurs in all dimensions E, P & A and within each dimension. Specific word pairings have different patterns, which probably relate to the stages through which the learner goes. This will be explored more fully in chapter five, the discussion.

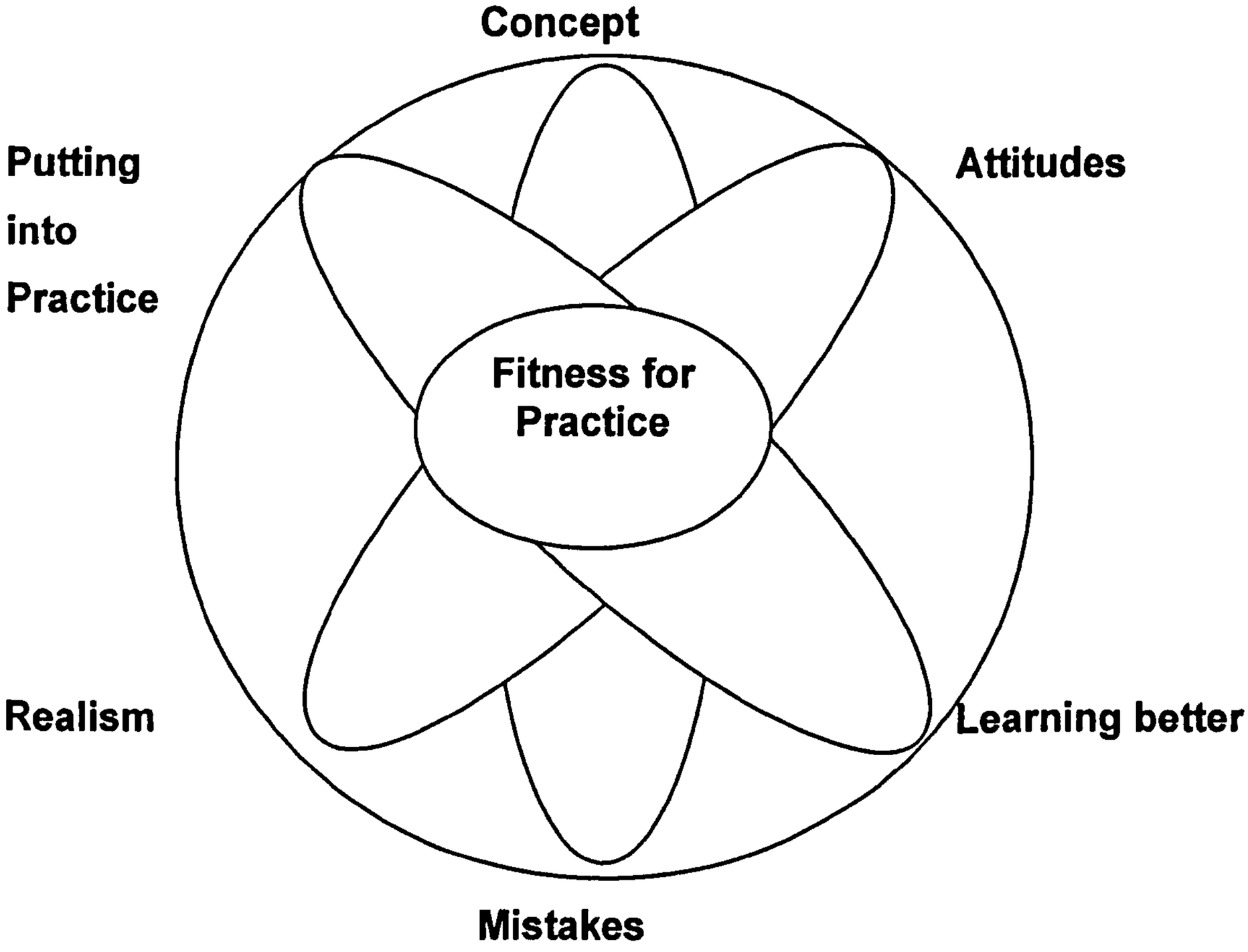
Section 2: Qualitative results

The following qualitative results were from the fourteen narrated one-to-one semi-structured interviews from sample one who were seven semester four students and sample two who were seven semester six students.

4.3 Development of the themes

In order to provide focus for the presentation and discussion of the results a concept map (Figure 4.3) was developed in the same way as the literature review. This was devised from the coding and memos created from the one-to-one student interviews, the literature review and the researcher's journal (Hermeneutic circle) to produce themes. The narrated experience of the fourteen students who received simulation education as a teaching, learning and assessment strategy were found to cluster into six main themes around the well known concept of 'Fitness for Practice'.

Figure 4.3 The concept map for the themes of the qualitative results



4.4 Theme 1: The concept of simulation education

Most of the students referred to simulation education as learning skills in different ways, such as individually but also in groups. This was also seen as being more like clinical practice where nursing staff work in teams, but can also work in isolation. Therefore simulation education is seen to be either.

> *It was group work and individual skills but mostly group work.*
>
> (student 4.1)

> *you have to learn to prioritise and work in a team.*
>
> (student 6.4)

More importantly the students recognised that the skills being taught would be the skills that they would be expected to carry out while on the clinical placement and so are useful to them for their 'Fitness to Practice'. The students also recognised the fact that simulation is experiential learning with 'hands on' experience.

> *It means learning things and practising them that you would be doing on the wards such as injections or the wounds and what technique you use and stuff like that and as for the Sim Man that's actually scenarios that might happen. It's all about stuff that you see on the wards and what have you.*
>
> (student 6.1)

The students also viewed clinical simulation as a way of being taught how to do the clinical skills correctly. There was much discussion over being shown the skill and practising it, but also being watched to ensure that they were doing it correctly. This concept was repeated by many of the students.

So it's the repetition of the skill as well rather than just doing it once. You can do it over and over until you get it perfect.

(student 6.5)

Expanding on this concept of learning how to do things properly the students also recognised that they were using critical thinking and cognitive skills as well as psychomotor skills. They did not always use the terminology of psychomotor, affective or cognitive skills, however they did differentiate the different skills.

It's the physical doing of the skill. The physical doing with your hands is obviously the visual part of it that you see, but other skills would be coming in to it, like using protocols or you'd be following a specific procedure related to that skill and you would be doing that cognitively while you're doing the practical side of it.

(student 6.7)

Additionally, the students recognised it as not just about learning how to do single skills. Simulation education can put the students in scenarios where a wide range of clinical skills is required at the one time. This can provide for a more realistic scenario of life on clinical placement.

Because in Sim Man you don't just get one thing happening it's almost like a cascade of things happening and I think Sim Man does that better than some of the smaller manikins. It's not just a single skill and so it's more realistic then. I feel that anyway.

(student 4.3)

Therefore when examining the descriptions of simulation education, the students, not individually, but as a whole expressed the key concepts of what the literature suggests simulation education actually is. These key concepts

are that simulation education is experiential learning; can promote deep learning; the learning outcomes can be set for the stage the student is at; it helps integrate theory and practice; allows feedback; teaches in the psychomotor, cognitive and affective domain; replicates the real situation; allows repetition of the skill to gain mastery and can allow the student to learn through making mistakes. Most of these concepts were discussed at length by the students and therefore merit a complete section for discussion.

4.5 Theme 2: Attitudes

4.5.1 Likes

All the students said that they really enjoyed the simulation sessions. Not only that, but they looked forward to the sessions and a couple of the students found them a refreshing change from the traditional teaching style.

> *Well it's different from sitting about in a lecture. It's active and hands on. That's what I liked about it.*
>
> *(student 4.3)*

> *It was practical, I enjoyed that. It was a change from the lectures, a refreshing change.*
>
> *(student 6.7)*

A number of students felt that they liked it so much because they felt it helped their confidence in performing clinical skills (n=7). There were in fact a large number of reasons the students really like simulation classes and these are therefore provided in detail in individual sections. The areas talked about the most were the experiential learning technique. The students referred to this as getting to actually do the thing that they will be doing in practice, and so the repetition of practising the skill before they have to do it on a real patient. This then leads to making mistakes and being able to

make mistakes on a manikin, which would be unthinkable on a real patient and could have dire consequences. Because they have already practised the skill they are seeking these out once they get to the clinical area and so could increase their ability to get more practise on the real patient. The students also discussed teamwork and likened this to the clinical area as well as being able to link theory to practice better. Therefore all of these aspects will be discussed in detail within the remaining themes.

4.5.2 Dislikes

The attitude of the students on the whole was very positive and in some cases they found it extremely difficult to actually find something to say that they didn't like about it. In fact four students stated they did not dislike anything in the simulation classes (4.1, 6.2, 6.6 and 6.7) and even after a lengthy time and probing could not provide an answer.

Many of the students stated that they found it nerve wracking at the beginning. However this was due to not knowing what to expect and when they had done one or two sessions they were more at ease therefore as they moved through the semesters they became more at ease with doing the simulation sessions.

> *I think I felt quite nervous in the classes initially.*
>
> (student 4.4)

Rather than nervous, three students said they felt embarrassed (4.5,4.6 and 6.5) at the beginning performing in front of other students and lecturers. This was attributed to not knowing what to do and so not wanting to look stupid in front of their peers. However they got used to this and so again the more simulation was used the more they became comfortable with it.

Very embarrassed. Very self conscious.

(student 4.5)

I think that's embarrassing because you think that you should know that.

(student 4.6)

This details the importance of explaining what is happening at the beginning of the simulation exercise and providing sessions where they can become familiar with participating in the simulation exercise. Also as the student progressed through the course, the more it was used the more the students settled their nerves.

Only two students in semester four did not like having to talk to the manikin and found this hard. He/she found the situation much more difficult speaking to a manikin rather than a real person. But this was only two out of the fourteen students.

Whereas on placement I would have no problems at all about talking to the patient which I find very strange for myself with the manikin and how awkward I feel, practising it and I find that quite strange.

(student 4.3)

Three students said they disliked the fact that the sessions were too short (30mins) and would have liked more time to practise (4.6,6.2 and 6.4). This could be viewed as not an actual dislike as such, rather that they wanted more time to practise.

but sometimes I thought it was too short I think, I think I would have liked a wee bit longer.

(student 4.6)

This has implications for lecturing staff planning simulation sessions with restrictions on their teaching time and time they can spend on each group of students. Ideally longer would be preferable. The conundrum is however that simulation education represents a more resource and labour intensive commitment than traditional face-to-face teaching. Interestingly the students did not complain of the group sizes or any problems with the laboratory equipment. An interpretation of this could be that the group sizes in this case were appropriate. Additionally the School of Health Studies had spent a great deal of time, energy and resources (both staff and funds) on ensuring that the equipment was the same as that being used in the clinical placements.

4.5.3 Anxiety on clinical placement

Two students, both in semester four (4.1, 4.2) discussed the anxious feeling about going to a new placement for the first time and that doing simulation helps relieve this since they were getting practise at some of the situations they might see and be involved in.

Six students discussed the problem with actually getting to practise the skills in placement and that it's just your luck of the draw if you are put into a good ward. As student 4.1 explained "*I never got the opportunity to do the injection in the ward that I was in*". She went on to explain further, that this was not that the skill was not being carried out, rather the ward was too busy and as a result did not have time to let her practise "*they were too busy*". This was a problem repeated by many of the students. Even if they had not experienced this, they knew of students who had been in this situation.

> *Sometimes the quality of your learning in the clinical environment may not be what people hope that it would be, you know due to current climate there's a lot of pressures in the clinical environment and there isn't the time and there isn't the quality*

time sometimes to do the skills maybe as you would require as a student to learn these skills.

(student 6.7)

The students recognised that there are difficulties on the wards with resources, however the students also recognised that they have to get the practise in these skills and this can lead to further anxiety while on the clinical placement.

4.5.4 Good mentors/bad mentors

Following on from the problems and anxieties with clinical placement, the students also recognised that it may not be the placement that is at fault, rather the mentor. Some students refer to the fact that it is the luck of the draw if you have a good mentor who likes to teach.

I know it's good to speak up so that when on practice you get to do things, but it depends who you're working with and how good they are at teaching you.

(student 4.1)

It is not only the ability of the mentor that is discussed by the students, but also their attitude to teaching and having a student to mentor. As student 6.3 explained "*Some of the attitudes from preceptors are different*". Furthermore after having had simulation education the students viewed this as being more supportive of their development than their experience of learning skills while on clinical placement, as student 6.3 explained "*In college they tell you what you did wrong, but it's more supportive*".

4.6 Theme 3: Learning better

All (n=14) the students explained that the simulation helped them learn better. Some explained this further in relation to practising the skill in that

because they are actually doing the skills and participating in it this is why they learn better.

> *Most of the learning has been sitting in class, but actually getting to put it into practice was better...*
>
> (student 4.2)

> *I found that I learned more by practising it. People learn different ways and for me getting to handle and practise certain things and seeing how things work that definitely helped me learn.*
>
> (student 6.3)

Student 6.3 explained this further as a way of being able to remember things better.

> *I might have remembered the bit of paper with the steps on it, but having had the practice I really remembered it.*
>
> (student 6.3)

Others commented on being motivated since it made them read their lecture notes more, mostly because they didn't want to look a fool in front of their peers.

> *...it did make you go back over a lot of the theory that you did.*
>
> (student 4.5)

> *Some theory classes you would file the notes and that would be it, although you could go back to them at a later date. Whereas the simulation classes you could go home and think, oh well we did this today, we practised this and that and it sinks in better, well I feel it does.*
>
> (student 6.6)

Also the simulation made them test themselves. It made the students aware of what they knew, but also what they didn't know, but they thought they did.

> *The respiratory patient I really hadn't got a clue how to, what to do and I realised I didn't know as much about it. I think it made me think and maybe read the notes for it. It made me read the notes for the next week. I probably wouldn't have done this.*
>
> (student 4.3)

Student 4.3 openly admits she did not know how to do something, as a consequence however this led to her carrying out further studying to correct this deficit in her knowledge. This is very encouraging, especially for topics that the students are deliberately ignoring, but may have an important consequence for practice. Certain subjects may not catch the students' attention the same as some subjects deemed as interesting such as cardiology. However the student will come into contact with a varied range of patients during their three year education programme thus consequently have to learn all these subjects. Simulation education may well therefore be suited for such subjects that the students find less interest in studying and learning about.

4.6.1 Peer support

All students (n=14) discussed the group work or teamwork and that they liked working in teams, especially since the groups had continued from previous semesters, therefore they all knew each other, which made them less self conscious about being watched and providing peer support.

> *I liked the feedback for the group but also the discussion we had afterwards.*
>
> (student 4.2)

Some of the students liked the peer support because it can highlight the mistakes they make and they are very conscious of this. Not only this, but also some students recognised that while watching and observing the other students they learn more from recognising their mistakes so that they can provide feedback.

...getting the feedback from the mistakes it does help especially when you are working in your groups when quite a few of you are working on it.

(student 4.7)

The students acknowledged that the feedback was also about getting praise for things they had done well.

If you see certain situations it benefits you people working with you and people that are maybe good at doing certain things.

(student 4.4)

After it was good being able to speak to the group about what you did right and what you did wrong.

(student 6.1)

The students were viewing feedback as supporting and letting them know what they knew which could be encouraging to them. This was therefore viewed as a positive aspect to help their learning. The feedback was not seen as threatening by the students as they recognised the college as being a more relaxed atmosphere.

And when you're in college doing it as well you've got lots of support and a good atmosphere as well. You can be a bit more relaxed. (student 6.2)

Indeed one student (6.2) explained that they felt it was more stressful being watched on clinical placement than in the simulation scenarios.

> *In practice you have a mentor watching you and that makes you nervous when you're doing something.*
>
> (student 6.2)

However a few students did feel self conscious about the other half of the group watching.

> *You felt as though when you were being watched and supervised in the simulation that you need the knowledge and really know and that put pressure on you. And I don't do exceptionally well under a stressful situation so I felt very self conscious because of that.*
>
> (student 4.5)

In contrast some commented that it made the situation feel more real because it reminded them of when they were being watched and judged on their performance while on clinical placement.

> *The watching you and telling you how you did things and making it more real and judging you.*
>
> (student 4.7)

Being able to watch a group meant the students could learn what the other students knew and compare that to what they knew. Therefore they could learn from the other group. The visual aspect of watching them helped them learn.

The students on the whole liked the feedback from the other half of the group. All bar one found it helpful. The one student (4.4) felt that the

feedback could actually have been more critical and therefore more helpful to their learning.

> *We kept telling them what they were doing well. The feedback was fine, but our group didn't maximise on that. So as a group we couldn't point out enough like how you done it. Maybe that's something we need to learn how to do better. Maybe we need to learn how to have a critical eye.*
>
> (student 4.4)

This was not therefore viewed as a complete criticism of feedback, instead that she felt the group could have had more teaching on how to carry it out to the best learning advantage of the groups that they were watching.

4.6.2 Reflection

Ten students discussed carrying out reflection on the simulation scenarios. This seems to be on an add hoc and informal basis. The students discussed talking amongst their group after the session, maybe at lunch or break.

> *There was a good chance for the group to do this practical thing and then talk about it afterwards.*
>
> (student 4.2)

Also they talked about discussing what went on in the scenario and the outcome between other groups to compare how they got on.

> *You would speak to others in the class to see how they got on and maybe how you did.*
>
> (student 4.4)

Reflection-on-action was taking place, however the students were not writing it down formally. This was possibly because the students were not encouraged to do so by the lecturing staff. This could however be introduced into the clinical portfolio. Although this experience is still in college and not placement, there is no reason why their experience and reflection on the scenario could not be used to show evidence of achieving competence in the NMC outcomes (standards of proficiency). Additionally if the scenario or skill was carried out the student could readdress it and write a second reflective piece after their participation in clinical placement.

Reflection was actually taking place if they saw the scenario or something similar in clinical placement. If the student was involved or watched a situation in clinical placement they would reflect back to what they saw in the simulation class and note if it was the same or if there was any differences.

> *I found that when I was watching the situation I was thinking back.*
>
> (student 4.1)

This demonstrates that the students were watching situations, even though they were not taking part. Rather than be unable to follow the scenario unfolding in front of them, they discussed being able to follow it and reflect back to the simulated scenario and compare if they were the same. This has implications for assisting to put theory into practice.

Many of the students (n=9) discussed in detail being able to follow whatever procedure or emergency situation they are seeing. The students explained that they "*make like a checklist*" (student 4.4) in their head of what they saw in simulation in college and whether this is the same in placement. They found that it was the same and that this helped them to follow what was happening, or as student 4.5 explained as "*knowing the chain of events that was going to occur*". This allowed the students to know what was coming next and prepare them for these events in clinical placement. The fact that

this happens appears to make the students more comfortable with their placement and less anxious about what may happen as student 4.5 goes on to elaborate.

> *The chain of events, I was more confident in and that I could remember them.*

4.6.3 Repetition

Half (n=7) of the students discussed the ability to use the simulation laboratory to practise a skill over and over again. This was initially used so that the student could feel competent before doing it on a real patient. This appeared to be an important aspect of learning the skill and the students appeared to be taking control of their learning.

> *Or when you're in college it gives you the opportunity to say to the nurse technicians to give you the equipment to practise the skill again.*
>
> (student 6.4)

Certainly blood pressure recording was highlighted by three of the students as a skill that they did have problems with and required the extra practice.

> *In semester 1 we did blood pressures and I found it difficult to hear. So when we were in college we got the equipment and just went into the open area to practise it until we were more comfortable at doing it.*
>
> (student 6.3)

Therefore the students recognised that they had deficiencies in practising certain skills and therefore had the opportunity to practise and refine these skills prior to placement. This was not solely refined to blood pressure

recording, although this is recognised as a difficult skill to master initially. One student mentions the repetition of practising aseptic technique rather than blood pressure.

> *In semester 3 I wasn't quite sure about aseptic technique I came in and did a few practice sessions in the lab in semester 3. I would then go and do a couple of extra sessions to back up what I was doing to make sure I was doing it right. I did the skills in the afternoons, but I also went to the skills lab just to practise.*
>
> (student 4.7)

Only one student discussed the fact that they never needed the practice at repeating a skill. However they did acknowledge that this was available to them had they required it.

> *I never needed to get any extra practice in the lab cause I felt quite comfortable at doing the skills. If I really felt that I was struggling with something then I would do the extra practice.*
>
> (student 4.3)

It was also recognised that a few students (n=3) said that it was helpful if they had not carried out a skill in a long time. The opportunity was there for them to practise it in the simulation laboratory again. This decay in skills is certainly recognised within the lecturing staff, but now also appears to be a concern by the students.

> *So if you can't do something, when you're in college you can go back up to the technicians. I'd rather practise it in here than get it wrong on a patient.*
>
> (student 6.2)

The simulation laboratory however gives them the opportunity to keep practising the skill and therefore prevent the skills decay.

> *Plus you've got the fact you can come back up and practise for instance putting the catheters in, in college, because say for example that you were not getting a lot of opportunity when you're out in placement you can always have another shot in college.*
>
> (student 4.1)

It appears that it is not only that the students have practised the skill already and have had opportunity of repeating the skill, but also that they are now familiar with the skill. This is linked later to the familiarity with equipment section. The students felt more at ease since it was not seen as something new. They have seen it before and actually carried it out before, even though it was in college using manikins.

> *The catheterisation was great, it was brilliant, but the main thing that was similar was that I had already put a catheter in situ, so this wasn't the first time doing it you know what I mean.*
>
> (student 4.4)

The semester six students discussed more complicated skills such as performing in an arrest situation or where the patient is acutely unwell that they were becoming involved in. This could be that they have had one and a half years more experience than the semester four students and therefore more opportunity to be in these critical situations.

> *Also that during a real cardiac arrest I would remain calm, because I know it, I've done it. During the arrest that I saw I remained fairly calm.* (student 6.5)

4.7 Theme 4: Mistakes

4.7.1 Making mistakes before placement

The students (n=11) recognised the importance of being able to perform the clinical skill prior to going to placement. Additionally that doing the skill for the first time on a patient could mean that they make a mistake and would have more consequences than if it were in the college performing on a manikin.

> *Obviously it allows you to make mistakes and you get the opportunity to practice it instead of out in placement. Especially when you're dealing with people you can't afford to make a wee silly mistake.*
>
> (student 4.1)

This was discussed as not only making a mistake, but also recognising that a mistake could cause harm to a patient.

> *Well if you're getting taught on a manikin then you can practise and if you find you are doing it wrong then you can't cause it harm, but if you do it first on a patient then you might hurt them.*
>
> (student 4.7)

The students also recognised that making a mistake is allowable. They see that it can actually be a good thing if they make mistakes since they will only learn from them. More importantly they viewed it as a way of not causing harm to patients, as student 6.4 explained

> *I think it's really good that you can make mistakes because at the end of the day you're not gonna harm the Sim Man.*

Being able to make a mistake was also viewed as being able to let the student practise and refine their skills and therefore become more competent in these skills.

> *It's all right to make a mistake in simulation and go on and become more confident because that's what it's there for.*
>
> (student 4.6)

Some students discussed the fact that they felt more relaxed since there was no pressure on them to get everything correct within the simulation since they could not do any harm to the manikin and that making a mistake was something they did not want to do, but was permissible.

> *So doing it in simulation was easier because you know you're not causing any harm if something happens.*
>
> (student 4.5)

Additionally the semester six students recognised that it was common to get things wrong the first time. This could have been from their own personal experience and that they had more experience than the semester four students on clinical placement and therefore more opportunity to have been in these situations.

> *Sometimes you don't get something right first time and so it helps you learn so that you can get it right. It's a manikin so you're not putting someone at risk. On a real patient you can't get it wrong.*
>
> (student 6.2)

4.7.2 Feedback on mistakes

As discussed within the peer review section the students found the feedback on doing the skill important and some (n=5) students recognised the importance that if they were making a mistake then someone should be watching and then show them how to do it correctly. Interestingly these were all semester four students.

> *It was good to learn from mistakes and told what we did wrong because you don't get a second chance on a real patient.*
>
> (student 4.4)

The same student recognised that if a mistake is not highlighted then the student may not know that they are doing something incorrectly and therefore carry on doing it wrong once they are on clinical placement.

> *You go through your simulation and think oh I've done that right and that right and you've done it wrong, it means you'll do it wrong wherever else you go. It's like seeing something like that you then turn that into your experience.*
>
> (student 4.4)

Subsequently feedback on making mistakes was seen as positive and a way of learning so that they perform the skill correctly when caring for the patient.

Additional to the feedback on mistakes, half the students (n=7, both semester four and six) discussed being able to remember more from mistakes they have made for when they go into clinical placement. If they did something wrong in simulation, they talked about remembering this and never getting it wrong in clinical placement.

Like in the Sim Man the one thing we always forgot was the Guedel airway. The one thing that stuck in my mind and I knew I had to do at this arrest was the airway.

(student 4.2)

4.8 Theme 5: Realism

4.8.1 The same as the real situation

Many of the students (n=9) said that *"simulation is as real as you're gonna get to an actual patient"* (student 4.1). They didn't dwell on the manikin not being human, rather *"I know it's a dummy but you're thinking more if that's a person" (student 4.6).* It appears to be the situations that the students could be in and find themselves in and how to handle this that is important.

I think when you do it in simulation obviously because it isn't a real patient but it's great to know what you learn in simulation does actually happen when you're on a ward.

(student 4.6)

The students are saying that they know this is a manikin and not the real clinical situation, but it doesn't matter to them. The students recognised that this was as real as it is going to get for them and it is more about seeing scenarios and working through them that are similar to the real clinical situation that is important. The fact that it is a manikin was of little importance to them. Certainly the semester six students recognised this, possibly due to them having seen scenarios while on clinical placement that were the same as those performed in the clinical simulation.

I think if you think of it like a real situation that could happen then you could in a couple of weeks even though you're a student be in that real situation. Maybe because I saw a

couple of situations that were the same as the scenarios made it more real for me. You have to just accept it as a real person and a real situation and you learn more from it then.

(student 6.4)

This was demonstrated from admission procedures to complex cardiac arrests.

The Sim Man was so real. I suppose it felt a bit like being on the ward with a patient who was quite unwell.

(student 6.1)

What also has to be considered here is the possible fact that due to the effort and resources used in the simulation education scenarios the lecturing staff had achieved engineering fidelity. Therefore while achieving the correct scenarios that related exactly to clinical practice and with the equipment being exactly the same; as a consequence the students reported it as being exactly the same. Student 6.2 reflected back on a situation she saw in clinical practice as being the same as the scenario she saw in the simulation class.

So it was quite similar to the Sim Man classes, there was someone bleeding and so we were putting up bags of fluids. So everything they were doing was exactly the same as in class, absolutely everything. If you shut your eyes you could think it was the Sim Man.

(student 6.2)

This statement demonstrates that the students were indeed visualising the simulation class as being exactly the same as the real clinical situation.

4.8.2 Technique the same

The students (n=10) discussed the technique being taught in college as being the same as they had then witnessed and practised while on the clinical placement. Some felt that when it came to getting the practice on clinical placement that it wasn't them doing it for the first time.

> *I was following the steps we had practised in class. Although it was the first time doing it on a real person we had done it before on the manikin, so it wasn't really the first time I had experienced it, doing the skill you know in front of people.*
>
> (student 4.3)

Many (n=11) students mentioned the fact that "*its the same equipment that you're using out in placement*" (student 4.7). Also the practice of knowing what it is called, examining the equipment, knowing what it is for and what it looks like and how to use it is important as student 4.2 explained "*you can familiarise yourself with all the instruments and stuff*". The students felt they were of more help to the ward if they can get equipment and know how to use it, especially in an emergency situation.

> *Because if you are in a situation like that you don't have time to stand and look and think oh how does that work or what is that called. When you're in with the Sim Man you can actually see it and see what is going to happen next. You just get used to the equipment.*
>
> (student 6.4)

This had particular importance when there was equipment to set up or when there was a trolley to prepare with the equipment that was required for the skill. If the student had practised it in simulation they could remember what

was required and felt more competent at doing it as student 4.3 explained "*I could set up the trolley, and know what I was doing*".

It appears that the hands on learning was important such as using the same equipment, not pretending and the actually doing. They were seeing the same in practice additionally the semester six students appreciated the simulation even more because they knew they could be faced with the same real situation themselves.

4.8.3 Part of a team

A small number (n=3) of students commented on learning in groups and that they found this beneficial. They saw this as being the same as teams in clinical placement. Further to this however when students were discussing similarities with the clinical placement, team working was mentioned by most of the students (n=10) and that they "*hadn't been able to work in a team before in other situations in college*" (student 6.1). Simulation education however enabled them to get this kind of experience.

The students recognised that the teams were "*like the size of teams you see in practice*" (student 4.3) and that "*it just shows you that you can get on as part of a team*" (student 4.2).

4.8.4 The adrenaline rush

When a patient becomes unwell and/or develops into an emergency situation there is a physiological response called the adrenaline rush. The students reported this same response happening within the simulation classes.

> *I've came out the simulation sweating sometimes. You do, you get all, oh, the adrenaline goes, even though it's a dummy the adrenaline goes.* (student 4.6)

Student 6.4 explained this in more detail.

> *In the Immediate Life Support course in the afternoon and doing the scenarios at that time I can remember doing arrests that were similar to what I had seen on practice and I can remember the feeling of the adrenaline pumping round it was like the scenarios were real, so I really did feel an adrenaline rush at that point. But then I'm almost getting the same feeling of anxiety that I get when I'm looking after a real patient. It's not the anxious feeling of not knowing what you're doing, it's more the adrenaline anxious feeling you get when a patient's not well.*

This was therefore differentiated from the feelings of anxiety and "*It's different from the feeling of being nervous. It's not nerves, you just want the patient to get better*" (student 6.6).

4.8.5 Differences, not a real patient.

Some students in semester four found it difficult to relate to the manikin as if it was a real patient. Two semester four students described this as being due to their problem in communicating with the manikin and so found it a false situation because of this.

> *Whereas on placement I would have no problems at all about talking to the patient which I find very strange for myself with the manikin and how awkward I feel, practising it and I find that quite strange.*
>
> (student 4.3)

Both semester four and six students did mention the fact that it was not a real person. However most of the time it was just a matter of fact comment. The

student can overlook this, they know that it's not real, but that doesn't matter, especially when they can see how much it is helping their learning as student 4.6 explained

> *It might be a dummy, you know it's a dummy, it's not a real person, but you can learn so much related to the time you're out in placement and that's what I found.*

The students were however able to recognise that there are very different types of manikins and that some are more realistic than others.

> *It's obviously different from the manikins that can't move it does give you the real affects of a living person. I suppose that's on your mind a bit that this manikin's moving, it's breathing and everything. It makes it more realistic for us.*
>
> (student 4.7)

There are many manikins being used in the current pre-registration adult nursing curriculum each with a specific purpose for skills attainment. The students were recognising this, and so could compare how life-like some manikins are.

Some students (n=5) found it difficult to find any differences between simulation and practice as student 6.5 explained "*no differences between simulation classes and placement well nothing that I can think of*".

Two students, when probed further said it was "*just the way the staff do things, I mean just their technique for certain things* (student 6.4) that they found different.

One difference that was mentioned by four students was the technique in giving a subcutaneous Clexane injection. The students had the theory and

were now practising it in placement, however they said that the registered nurses were doing it differently on clinical placement compared to what they had been taught in college. The students reported that they checked their notes and went back to the nursing staff with the evidence based research and found that the college were right and the nursing staff had not up-dated their knowledge. This could have major implications for patient care. People argue that nurse lecturers cannot keep themselves up-to-date, but this would seem that they are and it is practice that is not keeping themselves up-to-date with the evidence based research.

> *With the bubble thing with the injections I went back and read my notes. I took my notes in to the ward to let them read it, but they weren't aware of that. So the college were right and teaching the most up-to-date research but the ward weren't aware of it. But that's really the only thing that I've seen that's different.*
>
> (student 6.3)

4.9 Theme 6: Putting into practice

4.9.1 The theory-practice gap

Many of the students explained that *"it helped link the theory to practice."* (student 4.5) because of the simulation. They felt that although they had the theory, this didn't help them with doing the skill in practice. However getting the hands on experience during simulation made all the difference as student 4.1 explained.

> *Because as I say you could read it in a book, but you're better to see it on a model and then see it on a person.*

Some of the students expressed simulation education as the step in the middle of theory and practice. Most of the students therefore referred to three stages of learning, one being the theory, second the simulation and third the practice of it in clinical placement.

> *I find that in simulation you get to practise it before doing it on a real patient. So it's in between the theory and the doing it in practice. I think the theory, then doing it in practice and then doing it for real on a patient.*
>
> (student 6.2)

4.9.2 Competence

All the students (n=14) felt an increase in their confidence and competence due to being able to practise the skill prior to placement.

> *I think I learned so much more from the simulation classes and my skills would not have developed as much if I hadn't had the simulation classes. Certainly they wouldn't have fully developed because I wouldn't have had the confidence.*
>
> (student 6.5)

Two students talked honestly about getting involved in some clinical skills that they would have avoided if they had not already had the practise, such as arrest or emergency situations. They discussed that they were now getting involved and taking on a role within the multidisciplinary team during this critical event.

> *I knew what was going on and I heard them talking to each other like, get me an airway and stuff so I could, well I knew what they were doing so I sort of helped and got some stuff together that they needed so I was just helping out*

a wee bit...

(student 4.2)

It is important to point out that one of these students was in semester four and therefore this is a fairly junior student who discusses being able to follow an arrest situation and prepare equipment that they know will be required. Thus they were thinking ahead of what was happening in the situation.

Eleven of the students felt more prepared for practice. This may have therefore had an impact on their reporting of feeling more confident and more competent.

Doing the classes myself it did help and gave me the confidence to go back out to the ward and if the nurse said go and prepare a trolley for me to catheterise someone then I would know how to do it.

(student 4.7)

Additionally, already discussed in the feedback section, the feedback from peers increased their confidence since the feedback was generally good and encouraged and motivated them since they were performing well and competently. Also their own evaluation of how they performed increased their competence and confidence.

Others commented on feeling more competent in performing in groups (4.4, 4.5 and 6.4) which reflected on their confidence in teams on clinical placement.

Two students (one semester 4 and one semester 6) recognised the fact that after practising the skill in college and then doing it on clinical placement they got to the stage that they were so competent at the skill that it was second nature. One student described it like driving.

But it's the same as when you're driving. Because when you're first driving you have to make sure you do everything, but now it just comes automatically. So I know it's just the same sort of idea.

(student 4.1)

These two students were recognising a stage where the clinical skill becomes second nature and they are very comfortable with this procedure. Furthermore the semester six student recognised that she should be this competent in all the skills that she was performing since she was only weeks away from qualification and registration. Additionally she recognised the skills that she was not able to do to this level of confidence. As a result she was able to identify these deficits which could be rectified by further practise.

I found that if I just practised then I could do it right. So it comes to the stage that the skill becomes second nature, you just go and do it. You can do it and you don't even think about it. You don't have that fear anymore, so experiencing that doing blood pressures I want to be able to do that with every kind of skill.

(student 6.2)

This has major implications for the student nurse who is just about to obtain their registration and therefore become a newly qualified nurse. Simulation education may provide the student with the ability to recognise the skills they are deficient in. As a consequence future newly qualified nurses having undergone simulation education may no longer be in the situation of the research from the P2000 newly qualified practitioners who were deficient in many skills that the managers thought they should be able to do competently on registration.

The students recognised that they did not want to be at in a position when they qualified where they could not perform a certain skill that they should be able to do, as student 4.1 explained

> *Cause obviously you want to gain as much experience as you can because I can always remember someone saying back in semester 3 that there was a nurse just qualified and she'd never put a catheter in and this Sister thought that was disgraceful.*

Thus they reported that after practising the skill during simulation this gave them confidence to practise the skill and seek out the skills while on clinical placement as student 4.2 explained "*I was asking to do more skills, quite a lot.*". Student 4.5 expressed this with more conviction as "*It inspired me to do other skills in the ward*". The students also discussed the fact that "*it makes the skills fresh in your mind and so you can go looking for it in clinical placement*" (student 6.4). This could have a huge impact on the students gaining quicker competence in clinical skills earlier in the programme. It makes them seek out the skills and have more confidence that they can perform them since they have already done so on the manikin.

Furthermore the students stated that they could tell the mentor that they have practised this skill in college and as student 4.4 explained "*You know what to expect and what they expect of you*" thus the mentors know what experience they should be giving to the students.

> *So if the mentor in placement knew what skills you were being taught in class, then they would say, ok you can do this, you can do that. That happened to me more in semester 3 and 4, you know the skills we were being taught we got to practise in the placement. So it helps you target certain skills to practise when on placement.* (student 6.2)

Similarly the students reported searching out any skills that the student had recognised during simulation that they were not yet competent in as student 4.3 explained

> *But also when I'm out on placement I was looking for skills that I thought I needed more practice at from the simulation.*

Lastly, the students felt that because they had already practised the skill during simulation they found that they were missing out the step of watching it again on clinical practice. The students reported that they felt competent to go and do the skill while being supervised.

> *So you're almost missing out the step of observing, because you have already done that and practised it in simulation so you're able to just get on with doing it. You know what you're doing, you know what's going on, you know why the doctor's asking for it which is good.*
>
> (student 6.4)

Again this has implications for practice since the students were reporting carrying out skills quicker and thus gaining more experience in the real clinical situation.

The students discussed being able to make decisions for themselves about situations that they found themselves in. This was linked to competence and confidence since the students felt they had the confidence to now make the correct decisions as student 6.5 explained

> *So in practice you're able to go ahead and do it, you've practised it so you have the confidence to do the scenario and make the right decisions.*

4.10 Similarities and differences between semester four and six

From the analysis of the data it appeared that there were many similarities between the semester four and semester six students. There were however also some differences in what they said at interview, or more to the point topics they did not discuss. Table 4.10 demonstrates the areas where there were differences.

Table 4.10 Similarities and differences at interview between semester four and six students

Theme			Sem 4	Sem 6
Theme 2 Attitudes	4.5.2 Dislikes	Communicate with manikin	√	
	4.5.3 Anxiety	Anxious	√	
Theme 3 Learning Better	4.6.3 Repetition	Complicated skill practise		√
Theme 4 Mistakes	4.7.1 Before placement	Making mistakes the first time		√
	4.7.2 Feedback		√	
Theme 5 Realism	4.8.1 The same as the real situation			√
	4.8.5 Differences		√	

The individual one-to-one interviews between the two groups of students therefore showed some differences between the two groups and these would not have been apparent if only one group had been chosen for the sample. The possible reasons for these differences will be examined in more detail in the discussion in chapter five.

Chapter 5: Discussion

Simulation in nurse education: the students' experience.

This chapter will provide a discussion of the results. The aim of this phenomenological study was to illuminate the meaning of lived experiences of simulated education utilised as a teaching, learning and assessment strategy, as narrated by 14 student nurses. Many examples have been presented to illustrate what participating in simulation education means to the student nurse. These will be discussed in the order of the student characteristics; the research questions; implications for practice and lastly the methodology.

5.1 Student characteristics

Two groups of students were chosen for this study to examine the effects of simulated education half way through the programme and when the students were almost completed. As such a cross sectional rather than a longitudinal approach was employed. This has advantages of taking less time to collect data (Polit & Hungler, 1995), however it does presume that the behaviours, attitudes and characteristics of the students are consistent. This is a limitation of the study. Despite this the student characteristics, and through the discussion the students' attitudes and behaviours can be examined to see if the two student groups are similar.

The two groups had seven students. The ages in table 4.1.1 and table 4.1.2 show that there was similar age ranges in the two groups, although the semester four students were younger than the semester six students. This is to be expected since the semester six students had been on the course for one and a half years longer than the semester four students. Thus the minimum age of the semester four group was 19, semester six being 22. The maximum age of the semester four group was 41, semester six being

43. Therefore there was a three year age difference in the youngest students in each group and a two year difference in the oldest student in each group. Thus both groups were comparable. This meant that there was a mix of school leavers and mature students in each group.

The previous experience of health care work, academic qualifications and assessment on the course of both groups was also comparable. Therefore although a cross sectional approach was utilised the student characteristics of both groups was comparable. The attitudes and behaviours of the two groups is compared and discussed in the following sections and more specifically in section 5.7.1.

5.2 What is the experience of participating in simulation education like for the student nurse?

It was interesting to find through the experience of participating in simulation education as a teaching, learning and assessment strategy the students were able to provide a comprehensive view of the concept of simulation that covered all the aspects referred to in the literature. This provided further evidence that the sample size was adequate to ensure that important information was not being missed. Each student did not mention all aspects of the concept of simulation, rather as a whole all the aspects were covered. Some students only mentioned one aspect, others mentioned many. These were learning in groups; experiential learning; cognitive, affective and psychomotor skill learning; mastering a skill; and providing realism.

5.2.1 A better way to learn

All the students discuss simulation education as a better way to learn. The reasons given for this were due to being able to practise the skill thus remembering what they have learned; being motivated to learn; and being aware of their own knowledge. Each of these will be examined individually.

The students discussed the actual doing, rather than sitting in a lecture and that by doing the skills and participating in the scenarios they can remember more. This was partly the psychomotor skill aspect that the early studies on simulation education had concentrated on in order to show whether the laboratory or clinical placement setting was better at teaching this skill (Gomez & Gomez, 1987 and Love et al, 1989). Historically nurse education was experiential learning within the clinical environment. This reflects what Cioffi (2001) has suggested that clinical simulations enable experiential learning and as Taylor & Cleveland (1984) stated provides 'hands on' experience. However the students are also discussing cognitive skills and thinking as well as doing while performing the skill and scenarios. Many educationalists have expressed this. Kolb (1984) proposed that his model of experiential learning could be a way of linking doing (psychomotor skills) with thinking (cognitive skills) thus making the learning more relevant. This is consistent with Knowles (1990) work on andragogy and his earlier work (Knowles, 1980 and Knowles, 1984) where he proposed that the central dynamic to learning is the student confronting the interaction between the individual and the environment. Additionally Hanna (1991) proposed that simulation education could teach in two domains at the same time. Thus the students in this study are reiterating what has previously been expressed in the literature.

By actually getting to perform the skills, rather than just listening to a lecture the students felt this helped their learning. This is in agreement with Lev (1998) and Johnson et al (1999) who suggested that by actually doing, the students increase their awareness of their learning and as such there is an emphasis on their critical thinking skills and not on memorisation. Earlier Entwistle et al (1992) contended that this is therefore a student–centred teaching, learning and assessment strategy. In agreement Rauen (2001) proposed that the students are active, rather than passive recipients of their learning. Hertel & Millis (2002) contend that simulation education is more suited to the adult learner as opposed to just listening to lectures. This is

important in nurse education since the characteristics of the typical nursing student has changed over the past 10 to 20 years, with the typical student now being mature and not a school leaver. The average age of the student in this study was 29.4 years and as such falls into the mature student age group. The students in this study preferred this style of teaching. Additionally many nursing students today are working as a care assistant or in the caring field in addition to being on the course (Burnard, 2002). Due to this simulation education enables them to use life experiences which Simpson (1980) and Knowles (1984) recognised helps adults learn most effectively.

The learning style of the student has to be taken into consideration. It appears that the students interviewed all enjoyed this teaching, learning and assessment strategy and became more motivated to learn because of it. A possible reason for this could be that simulation education is suitable for all learning styles. Not all students will have been given the opportunity to know what their learning style is, as suggested by Rose & Nicholl (1997). However two students in semester six came to realise through simulation education that this was more suitable to their learning and preferred this. Neither will they be able to seek out their preferred learning style as suggested by Honey & Mumford (1990). However lecturing staff involved in curriculum development can ensure that a mix of learning styles is incorporated into the curriculum. Simulation education may therefore provide a way of ensuring this since it has something to offer each of the learning styles, thus providing a reason as to why the students are motivated and like this as a teaching, learning and assessment strategy.

Gaining feedback from peers and the lecturing staff was viewed as a very positive aspect of the student learning. This is in agreement with Boud (1989) who proposed that peer assessment could make the whole experience feel realistic with the real world (i.e. clinical placement). The main criticism of peer assessment is that it can be subjective. Entwistle et al (1992) described a way around this by using criterion-referenced assessment

and so the student has to make a judgement against pre-determined achievement criteria. This was actually used each week during the simulation classes. One student however felt the feedback could have been better. This student may not have been involved in actually completing the feedback form on any of the occasions and hence they had feelings that they were not being critical enough with the other group and vice versa.

Providing feedback also helped their learning since they were watching the other group perform and comparing this to what they would do. The peer support was highlighted further by the semester four students since they felt that any mistakes made could be identified by this. The students felt this had a huge impact on their learning. The students felt that it was very important to be aware of any mistakes made so that they could rectify these. The consequences of not doing this could have been making errors with patients. Additionally the students could watch any good techniques that they could learn from, thus again helping their learning. The students found the feedback very supportive, since not only were mistakes highlighted, but they were also given praise for things they did well. Students are often not praised enough for doing well and therefore they found this encouraging and motivating. In fact one student in semester six found it more stressful being watched in clinical placement rather than in simulation. Additionally because the feedback was taking place in the form of peer assessment, this made the situation all the more realistic.

Although no formal reflection session was set up for the student after the simulation class, from the interviews it was identified that the students were reflecting on these classes. Reflection-on-action as described by Schon (1991) was taking place. The students were consciously exploring the experience they had participated in during the simulation scenario. This took place between their own group and with other groups to compare how they had performed. This was viewed as an enjoyable part of the learning process and again helped their learning. This was in agreement with the

work of Kolb (1984) who expressed that by reflecting on their learning the student would link the academic world with the outside world. Simmons & Bahl (1992) expressed this as the integration of theory and practice and the art and science of nursing.

Although the students were not formally writing down their reflection, there would be no reason for them not to do this. In fact when the students are on clinical placement they are expected to reflect on the core competencies (proficiencies) outlined by the NMC (2004b) for registration so that the student can provide evidence of competence in these. Thus reflection on the simulation scenario could also be added to this clinical portfolio to provide further justification for competence in these competencies by the end of the three year programme.

5.2.2 Taking control of their learning

The students discuss in detail being able to recognise what they know and more importantly what they do not know in relation to the theory, and in the case of clinical skills what they are not yet competent in (discussed in section 5.5.1). This is consistent with the work by Entwistle (2002) on deep learning and that simulation education can encourage a deep understanding of what the student is learning. Additionally, with the students recognising what they do not know, this links to Kolb's (1984) theory that experiential learning can encourage the students to reflect on their learning, thus making it more relevant.

More importantly when the students identified something they did not know with the theory aspect of the simulation they discussed going back to their notes to read up on this further. The students are therefore taking control of their own learning. Some students talked about subjects that had been taught in theory that they had no interest in and therefore would not look at these again. However if there was a simulation class on this subject they did

not want to look fools in front of their peers and so would read and learn the theory. In nursing the student could be faced with a patient while on clinical placement who has the condition that they have not bothered to read about and this could have dire consequences for the patient. This is important for the lecturer to understand and reflect upon these results when devising simulation scenarios. Simulation scenarios can be devised to match the particular theory that the students are learning at that time. In addition in nurse education they are focused around patient conditions that the student will see while on clinical placement. In order to ensure that the students learn about these patient conditions collaboration with clinical practitioners can take place to ensure that the most appropriate clinical conditions are used for the simulation scenarios. This suggests a dichotomy between using simulation in a student-centred way and the need to have some control over the students' context of learning, ensuring that the students obtain the necessary knowledge for practice. It might be argued that students will determine their own learning, however this has demonstrated that the lecturing staff can shape that learning to include essential course content depending on the simulation scenario presented to the student.

5.3 What are student nurses' attitudes towards and feelings about the use of simulation as a teaching, learning and assessment strategy?

All the students felt that they really enjoyed the simulation sessions and some even said they looked forward to the sessions. There were two main reasons expressed by the students as why there was such an overwhelming sense of enjoyment from it. These were helping their confidence (discussed in section 5.5.1, 5.5.2 and 5.6.4) and experiential learning (already discussed in section 5.2.1). It should be recognised that there were many more reasons (real situation; feedback; working in teams; repetition of skills; making mistakes; the theory-practice gap; the clinical placement and the mentor) and these are discussed within their corresponding sections.

5.3.1 Dislikes of simulation

Many of the students found it hard to find any dislikes. It was only after long silences and probing that some students were able to give an answer. Negative views towards simulation education were directed towards the beginning and the first experiences of simulation. The semester six students expressed that these feelings go over time. Presumably this is because the semester six students have had more experience of participating in the simulation scenarios and therefore were aware of how their view of this changes over time. The more they participate in simulation, the more they start viewing the simulation classes as very important educationally. This details the importance of explaining what is happening at the beginning of the simulation exercise and providing sessions where the students can become familiar with participating in the simulation exercise. Also as the student progresses through the course, the more it is used the more the student's nerves settle. This links with the spiral curriculum view of Simmons & Bahl (1992) which evolved from the work of Knowles (1984) on andragogy and that learning is ongoing. This proposes that adults learn from and build upon past experiences to enable a foundation for future learning.

During writing the pre-understandings in the journal from personal experience it was presumed that the students would mention having to communicate with the manikin as something they found difficult to do. Interestingly only two students in semester four did not like having to speak to the manikin. An interpretation of this could be that the other students, having become accustomed to simulation had forgotten about it, or did not find it a strong enough topic to mention at interview. None of the semester six students mentioned communication as a dislike and an interpretation of this could be that they had become accustomed over time to communicating with the manikin and no longer felt it was an issue. Surprisingly the remaining 12 students did not mention communication at all during their interview. There was no discussion about having to communicate with the manikin, or the

other members of the team. However there was a great deal of discussion on "team work" which was an area of the NTS that Flin et al (2004) advocated simulation could help develop. The discussion on "team work" (section 5.4.4) was in relation to how realistic this was to the clinical environment and possibly the students were inadvertently discussing communication here.

Many of the students felt that the simulation sessions were too short in time. This has implications for lecturing staff planning simulation sessions with restrictions on their teaching time and time they can spend on each group of students. Ideally longer would be preferable. The conundrum is however that simulation education according to Neary (1994) represents a more resource and labour intensive commitment than traditional face-to-face teaching. This problem of time constraints and lack of resources is not new and was highlighted in the studies using OSCEs for assessment (Ross et al 1988; Nicol & Freeth, 1998 and Alinier, 2003). Considering this Khattab & Rawlings (2001) believe that the educational benefits as well as the student satisfaction to have learned something useful outweigh the running costs of the simulation. The School of Health Studies had spent a great deal of time, energy and resources (both staff and funds) on developing simulation education as a teaching, learning and assessment strategy and as Seropian et al (2004) suggested more informed and efficient lecturing staff leads to a better programme development.

Interestingly the McMaster University (Love et al, 1989) also found that the students complained of too large groups and problems with the laboratory equipment. This was not the case in this study. An interpretation of this could be that the group sizes in this case were appropriate. Additionally the equipment used was, where possible the same as that being used in clinical practice. Furthermore, Johnson et al (1991) found that three out of 51 students disliked simulation due to role-play. In contrast this study followed simulation guidelines where the students were in their true-to-life roles i.e

student nurses (Gaba & DeAnda, 1988; Rauen, 2001; Ker et al, 2003 and Maran & Glavin, 2003) and as such is not role-play. All these areas could be interpreted as when the simulation education literature is adhered to in terms of developing and running simulations then the students' dislikes are minimal.

During the interviews none of the students mentioned using simulation as a means of formative or summative assessment. Although they do discuss being watched/supervised in placement and preferred peer review and feedback in simulation to this. This was not because the students had never had assessment by this means. In first year during the CFP simulation was used to assess basic life support and communication skills and in the last year OSCEs are performed as well as the Immediate Life Support course. Possibly the students did not view this as a traditional form of assessment and as such at the time of interview was not deemed important enough for them to discuss.

5.4 To what extent does simulation education mirror the experience of reality within the clinical environment?

An important finding from this study is that the students viewed the simulation education classes as very similar to the clinical placement. The students found it extremely difficult to actually come up with differences between the simulation classes and the clinical placement environment. Even after probing and silences students could not think of anything. This was very reassuring from a lecturer's point since it shows that all the planning and development that had taken place and following the literature with reference to maintaining fidelity had been successful.

5.4.1 Engineering Fidelity

The students felt that the experience was as close to reality as they think it possibly could be. This was possibly due to a great deal of planning and

development on the part of the lecturing staff within the programme. A spiral curriculum incorporating the work of Simmons & Bahl (1992) on experiential learning had been planned and implemented. Furthermore all the staff involved knew the curriculum and as such the detailed student experiences for skills teaching throughout the course. Additionally the lecturing staff all had current clinical skills experience which Daines et al (1992) and Nicol & Glen (1998) state are necessary for the lecturing staff to be viewed as being credible. The resources required had all been purchased and where possible were the same as those being used within the clinical areas. A clinical simulation floor had been created from existing classrooms and therefore time and money had been utilised to ensure that the reality of the clinical environment was maintained. Not only the simulation equipment provided but the whole environment was adapted to look like the clinical area. Thus there was a high dependency room, a clinical practice room and a four bedded ward environment. Engineering fidelity as described by O'Neill (2002) and Maran & Glavin (2003) was an important factor that lecturing staff ensured for all the simulation scenarios that were developed. This attention to detail in planning, developing and teaching has shown that this can all add to how realistic the student views the learning opportunity.

Additionally the semester six students were able to discuss in more detail simulation classes that they had carried out that they had then experienced in the real situation and could express how similar these situations were. Ross (1988a) and McAdams et al (1989) explain that when engineering fidelity is not adhered to the students do not see the benefit of the simulation. In this case however the semester six students were expressing that they had a greater insight into how valuable and realistic the simulation scenarios were.

A range of manikins and actor patients were used throughout the curriculum and therefore the reality expressed by the students was not due to one manikin in particular. Single task trainer manikins, the mid fidelity Sim Man and actor patients were used at various stages throughout the course. The

choice of manikin used was highly dependent on the learning outcomes and the stage of development of the student.

The students were aware that they were working with manikins, however they felt this did not matter. The point being made by the students was that if they could almost forget the fact that it was a manikin then the more realistic the scenario became. This was particularly identified again by the semester six students. Therefore the more accurate and realistic the surrounding environment, the equipment and the scenario then the more realistic the simulation appears to the student and they forget that they are caring for a manikin.

The simulators today are highly developed and the companies making them have invested a great deal of time and resources into listening to the medical profession and producing what is required in terms of fidelity. Due to the advances in technology this may be having a profound effect on how real the situation now can be produced compared to 40 years ago with the development of the Sim One (Abrahamson et al, 1969) and 20 years ago with the GAS (Good & Gravenstein, 1989). In fact the students in particular discussed the Sim Man manikin produced by Laerdal Medical and refer to the manikin being able to move, speak and breathe and so this has a great impact on making the situation feel even more realistic.

The fact that the equipment used in the simulation scenarios was the same as that being used in clinical practice was also very important to the student. Being able to recognise equipment, know what it was for, and what it was called helped the student to assist staff with certain clinical skills. This became even more important when there was equipment to set up for a certain procedure or a trolley to set up with equipment. The students felt more prepared to assist the clinical practitioners and therefore felt more competent and more socially and professionally accepted by the clinical team.

5.4.2 Psychological Fidelity

The adrenaline rush so frequently felt while caring for an acutely ill patient is known as psychological fidelity and is reported as not happening in simulation (Neary, 1994) since the student knows it is a manikin and therefore does not feel the compelling desire to save its life. Recently however Davis (2005) disagreed with this. Certainly within this study five students discussed the feeling of the adrenaline rush which they had experienced in the real situation while dealing with an acutely ill patient, thus agreeing with Davis (2005). The students were able to differentiate this with the feeling of anxiety. The adrenaline rush feeling was different and since the student had experienced it on clinical placement they were aware that they had the same feeling during the simulation scenario. These students did in fact feel the adrenaline rush during the simulation classes and stated they had a real fear of not managing the situation and making the correct decisions thus allowing the manikin to die, thus demonstrating affective learning skills from the simulation scenarios. The students were discussing two points here. One was psychological fidelity and that it was the same as the real thing, but also about decision-making and being very aware that they wanted to make the right decisions; even though they knew they were working with a manikin. Decision-making (part of NTS by Flin et al, 2004) was one of the clinical skills that the newly qualified practitioner from the P2000 courses were found to be deficient in (Luker et al, 1996).

A further point that added to the realism was that the simulation education scenario reflected the clinical experience the students would be involved in while on clinical placement. As such the students were caring for the patient holistically. This includes caring for the patient from a social, political and economic perspective as well as the basic nursing care. This differs from the old practical rooms (Hilton, 1996) where only psychomotor skills were taught. The students expressed that they were learning in the psychomotor, cognitive and affective domains at the same time. This was therefore more

realistic with the patients that they would be expected to care for in the clinical settings.

5.4.3 Situation Awareness

Many of the students (n=9) discussed being able to follow the procedure or emergency situation that they were watching while in clinical placement because they were going through a checklist in their mind of what they had seen in the simulation scenario. The students referred to this as *"knowing the chain of events that was going to occur"*. Flin et al (2004) refer to this as "situation awareness". Jeffries (2005) suggested that these checklists for procedural skills can lead to a quicker acquisition of the skill. The students, although in some instances were not actually taking part, were able to follow what was happening and know what should happen next. Although the students did not discuss decision-making, the interpretation here is that they are saying that they knew what decisions should be made in the situation they were watching. Students who witnessed this expressed a greater insight into the link between the reality of the clinical placement and the simulation scenario. This was probably why it was the semester six students who saw this connection more than the semester four students, since they had more opportunity to be in some of these situations while on clinical placement.

The students referred to this as reflecting back on simulation scenarios when they saw them on the clinical placement. This again was viewed as very helpful towards their learning, especially if while watching something on the placement they were thinking back to what they saw in the simulation and could then follow exactly what was happening in the clinical placement.

Most of the students (n=10) refer to the technique of performing certain skills as being the same as when they saw it being performed while on clinical placement. In terms of fidelity du Boulay & Medway (1999) expressed that if

fidelity is maintained in a simulation then this could reduce the reality shock of entering clinical placement. In this study the students felt so familiar with the skills they had practised during simulation that they expressed it felt as if it was not their first time performing it on a real patient, when indeed it was. The situation, resources and technique were so familiar to them that it did not feel like the first time performing the skill.

5.4.4 Working in Teams

During the simulation classes the students were working in small teams. This was felt to make the scenario even more realistic since it was teams just like this that the students were working in while on clinical placement. This allowed them to gain experience of team working prior to the clinical placement. Runciman et al (1998) refers to this as professional socialisation which was a suggested reason for the P2000 newly qualified nurses not being competent in some clinical skills, such as communication and managerial skills, such as running a ward. The student did not discuss group work with reference to their learning style rather that this was how practitioners work. It was this link that made it more realistic. Furthermore the students (n=10) were aware that they had not had the opportunity to work in teams like this at any other time during the three-year programme. Therefore if they had not participated in simulation, they would have missed out on this valuable experience. Team working was another skill that the newly qualified practitioner from the P2000 programmes were found to be deficient in (Carlisle et al, 1999) and part of the NTS that Flin et al (2004) advocated simulation could help develop. During the simulation scenarios the students were in groups of seven, which meant that four students performed the scenario while three watched and provided feedback and then they swapped over. Therefore working in groups of three or four was seen as being the same as clinical practice. This was a point that was highlighted by Ker et al (2003). The medical and nursing students in their study felt that it did not reflect reality since there were too many medical students to nursing

students and there were not enough activities/tasks for them to perform. Therefore it appears that getting the number of students correct for the scenario being performed is crucially important to maintain the level of reality.

5.5 Does the experience of simulation impact on the student nurses' reported self-perception level of competence?

A number of students felt that they liked simulation education so much because they felt it helped their confidence in performing clinical skills (n=7). This is consistent with the early study by Love et al (1989) and later studies by Cook & Hill (1995); Hilton (1996); Lev (1998) and Johnson et al (1999). All of these studies were quantitative, nevertheless the qualitative data of this study is consistent with these studies and shows that the students do like simulation education.

Eleven out of the fourteen students felt they were more prepared for going out to clinical placement after attending the simulation class. In contrast ten years earlier Elkan & Robinson (1993) in a study of P2000 students reported that they felt "awkward" and "ill at ease" on some of their placements due to a feeling of lack of competence. Supporting this however, in this study two students discussed being anxious about going onto clinical placement. Despite this they felt that the simulation classes helped this since they were getting the practice and seeing some situations that they might be involved in.

5.5.1 Recognising their own competence

Two students (semester four and six) recognised that the skills they were learning should get to the stage that they felt like second nature to them. One student expressed this to being able to drive a car. Initially, even though they had passed their test they may not be that competent, but through time and practice would gain this. More importantly the semester six student

recognised that she should be at this stage with all the clinical skills prior to registration. She was also able to identify the skills that she had not reached this stage with. Thus she was able to identify the skills that she required more practice in before registration. Additionally other students recognised that they did not want to reach registration and be deficient in some skills. Miller (1990) and Schon (1991) explain, many professions fail to prepare people adequately for the jobs they are qualified to do. This was the criticism of the P2000 nursing programmes evaluated by While et al (1995); Luker et al (1996); MacLeod Clark et al (1996); May et al (1997) and Runciman et al (1998), which found that there were certain clinical skills that the newly qualified nurse could not do, however they became competent within six months.

Following these studies the most recent review of nurse education (UKCC, 1999) which was implemented into pre-registration nursing programmes in Scotland from 2001 advocated for more clinical skills training in order to address this shortfall. Additional to this core competencies were developed (UKCC, 2000 and NBS, 2000b) (now standards of proficiency NMC, 2004b) that the student must demonstrate achievement of by the end of the course. Thus by providing the students with this list of competencies they were now aware of what they must achieve prior to registration. The students in this study were therefore demonstrating further taking control of their learning of practical skills as well as the theory. This was also demonstrated during the completion of the SD questionnaire. The semester four students during week five demonstrated the words vague, worst (E dimension), blunder (P dimension) and beginner (A dimension) as the lowest scoring. The semester six students had bad, weak and beginner as their lowest scoring. Thus the students were aware that they were still learning and that they had to practise more to become competent in the clinical skills. This would in turn ensure that they were competent at the point of registration and qualification, thus as the UKCC (1999) advocated 'fit for practice' and 'fit for purpose'.

5.5.2 Reported self-perception of Competence

The semantic differential results showed that the semester four students were less confident in their competence at the beginning of the placement, however this improved greatly over the five weeks and after the four simulation classes. All three dimensions of the SD, which were E, P & A, improved over the five week placement. At the beginning of the placement the students felt vague but happy (E dimension), anxious but prepared (P dimension) and nervous but eager (A dimension). However by week five they felt happy, confident, belong, (E dimension) reassured, sure, valuable, (P dimension) and eager (A dimension).

Two word pairings started very high in week one and remained high by week five (Table 4.2.2). These were sad/happy (E dimension) and avoid/eager (A dimension). Thus in the first week of placement the students were happy and eager to be on clinical placement. Two word pairings started very low, but eventually scored high in the last week. These were anxious/reassured (P dimension) and nervous/calm (A dimension). Thus the students were anxious and nervous during their first week of placement, however this changed to reassured and calm by their fifth week of placement.

The semester six students completed one SD while on their last clinical placement prior to registration and qualification. The scores for each dimension E,P and A (Table 4.2.3) were similar to those scored in week four by the semester four students. Therefore they were slightly less than the semester four score in their last week. An interpretation of this could be that the students were aware that they were just about to qualify and as such felt that they were not competent in everything at that point. Additionally the skills expected by the semester six students were more complicated and numerous compared to those of the semester four students.

The semester six students scored each dimension very similarly with E=14, P=16 and A=14. The students felt worst but happy and belong (E dimension), weak but clear (P dimension) and beginner but active (A dimension). The lowest score overall was weak (P dimension) and the highest score overall was clear (P dimension) and active (A dimension).

The results from the semantic differential questionnaire therefore show that the students are apprehensive and anxious prior to going to placement, however once they are there and are given time to settle into the environment they change to feeling more confident, calm and reassured in their practice. This shows that the placement requires to be a certain length in time in order for the students to gain the level of confidence which then leads them into gaining competence in the clinical skills they are required to achieve for that placement. Indeed Runciman et al (1998) demonstrated that reduced time on placement was a factor as to why the newly qualified P2000 nurses were not yet competent in some clinical skills. Therefore the UKCC (1999) report suggested a minimum length of time for a placement. Interestingly Scholes et al (2004) are suggesting shortening the placement length of time if the experience of the student can be enhanced by ensuring a dedicated practice teacher is available to them. Thus it is not the quantity of placement rather the quality of learning in the placement that is important.

The students at interview however reported conflicting results to that of feeling anxious according to the SD. As discussed earlier eleven out of the fourteen students felt they were more prepared for going out to clinical placement after attending the simulation class. The interviews with the semester four students had taken place after the theory and practice placement during a time that the students were on study leave, therefore they were reflecting back on their experience. The SD was completed at the point in time that they were on placement and completed each week. This could explain the discrepancy here since at the time the students felt apprehensive and anxious initially, but this passed quickly with the length of time in the

placement and the more simulation education they took part in. Thus by the end of the placement and theory for the module, at interview the students were aware that the simulation education helped them be more prepared. An interpretation of this could be that although the students reported feeling anxious at the time of placement, reflecting on this later the anxiety had passed and they no longer felt this. This was in fact corroborated by two of the semester four students who discussed being anxious about going to a new placement, however stated that simulation education helped relieve this anxiety since they were getting to practise the skills that they would be performing while on placement.

5.5.3 Repetition of Skills

Repetition of the skill was seen as being very important. This is the final aspect of the NTS development described by Flin et al (2004) as "Task Management". The students were able to recognise deficiencies in skills just as they did in their knowledge. Providing extra time and availability of the resources allowed the students to gain further practice in clinical skills that they identified as not yet being competent in. The skill most commonly discussed by the students as requiring more practice was recording of blood pressure. It was this skill that the earlier work on simulation had concentrated on (Gomez & Gomez, 1987 and Love et al, 1989) and later by the NBS (2000c). Only one student expressed that they had not required using this extra learning time. Allowing the students to become more familiar with the clinical skill and obtain extra practice also made them feel more at ease when it came to actually doing the skills for the first time on clinical placement. Feeling more at ease made them feel more confident and this in turn led to an increase in their competence. Additional to this the feedback from the peer review also made them feel more confident and again led to an increase in competence.

The students recognised that if they did not practise a skill regularly then the skills they have obtained decay over time. It is well documented that there is a disturbingly short time span when this skills decay occurs (Wilkerson & Lee, 2003). Kneebone et al (2004, p1096) refer to this as "use it or lose it". Despite this the opportunity to practise the skill again in the simulation laboratory insured that the student was maintaining their level of competence that they had previously gained in the skill, especially if they had not managed to practise it on clinical placement.

5.5.4 Making Mistakes

The students recognised that if they make mistakes it is important to know this and be allowed to practise the skill until they perform it correctly. The students in agreement with Erler & Rudman (1993); du Boulay & Medway (1999) and Johnson et al (1999) commented that mistakes are allowable on manikins, however not on patients, therefore they found there was less pressure in practising the skills during the simulation sessions. Indeed the original application of NTS in the medical profession was originated in order to help manage crisis and reduce error in the operating theatre (Gaba & DeAnda, 1998; Gaba, 1989 and Gaba & DeAnda, 1989). In nurse education Scholes et al (2004) demand that there is considerable room for improvement to assure patient safety. Semester six students recognised that it is common while being a student to get it wrong the first time, but to learn from the mistakes. The students recognised this would be unthinkable on a patient and indeed according to the UKCC (2000 p4, now the NMC) "the primary aim in pre-registration nursing programmes is to ensure that students are prepared to practise safely and effectively to such an extent that the protection of the public is assured". However the students recognise that it is acceptable to make mistakes on a manikin. The students did not regard making a mistake as a bad thing, on the contrary they viewed it as a good learning experience. They were in agreement with Jones (1997) who suggested that simulation could provide experiences which permit learning

from making mistakes which would improve the student's performance and reinforce becoming competent in the skill. As Good explains (2003) the environment is safe and so the students have permission to fail which would be unthinkable in the real situation. This was consistent with Thorndike's connectionism (Knight, 1997) theory of learning where through repeated practise correct responses are strengthened and incorrect responses weakened. Thus simulation education ensured a controlled environment to allow this trial and error to take place.

Furthermore both semesters four and six students felt that they learned more through making mistakes and then practising the skill again until they could perform it competently. The students discuss situations where errors had been made in the simulation scenario, but then while on placement performing the same scenario they did not make the same error, in fact it was uppermost in their mind not to make the same mistake again. Thus the students were in agreement with Honey & Mumford (1990) who expressed that by handling correctly feedback on making mistakes this allowed the student to think harder about what they did and then how to avoid it for the future.

Making mistakes was found to be one of the important issues to cause anxiety for the student while on clinical placement (Kushnir, 1986; Windsor, 1987; Pagana, 1988; Kleehammer & Keck, 1990 and Jowett et al, 1992). Disappointingly Erler & Rudman (1993) did not find that clinical simulation prior to clinical placement helped this anxiety. In this study the students do not mention whether anxiety was reduced, however they do express that they practised more clinical skills and felt more confident and therefore competent to perform them. Furthermore the results from the semantic differential questionnaire showed the students changed from feeling anxious and nervous in week one to feeling happy, confident, belong, (E dimension) reassured, sure, valuable, (P dimension) and eager (A dimension) in week five.

5.5.5 Performing Complicated Skills

The semester six students discuss being involved in care of critically ill patients and performing more complicated skills that occurred unexpectedly. By the end of the three year programme some of the semester six students had taken part in caring for acutely ill patients, or patients who had a cardiac arrest. Benner (1982) in her study discovered that it is during these times of unexpected events that the expert nurse can shine. What is important here is that these students discuss taking part and knew what they were doing and what correct decisions should be made while caring for these patients. This as Benner (1982) explains is being a competent nurse. It must be acknowledged however that it is the students' viewpoint on their decision-making skills and these were not being assessed for this study. As such there is no way of knowing if these students were actually competent in the decision-making skills that the previous research (While et al, 1995; Luker et al, 1996; MacLeod Clark et al, 1996; May et al, 1997 and Runciman et al, 1998) found the P2000 to have problems with.

5.5.6 Factors Influencing Competence

It appears that there are a number of factors that lead to the student feeling more confident and once this is achieved it leads to them being more competent. The students discuss areas that lead to the increase in confidence as the team work; peer feedback; repetition of practising the skill and learning from making mistakes. Importantly once the students felt an increase in their confidence and therefore became more competent in their clinical skills they also reported having competence to make decisions about the patient's care knowing that these would be correct. This links to Benner's (1984) stages 'novice to expert' that a nurse goes through. This provides further information that the students felt that they were improving their decision-making skills and in fact getting practise at performing this skill in order to gain competence.

5.6 Implications for practice

5.6.1 The Theory-Practice Gap

When the students were asked to explain any differences in reality between the simulation classes and the clinical placement four students discussed the technique for giving the drug 'Clexane'. This is a very commonly used drug which contains Heparin and is used for prevention of deep venous thrombosis. Therefore most patients on bed rest are on this drug as a prophylactic measure. This simple injection technique is an example of the theory-practice gap debate. Nurses in some clinical areas were not keeping themselves up-to-date with the current literature on how this drug should be given. This was in agreement with Ferguson & Jinks (1994) and Elkan & Robinson (1993) who suggested that what was taught in theory was different to what was observed/carried out in practice. It is interesting to recognise however that the students were saying that the HEI was giving them the correct information and that the students were then passing this on to the clinical area. Therefore the theory-practice gap was in existence, however not in the normal way. The students were aware of the up-to-date theory and were disseminating this out to practice. This is in agreement with Gallacher (2004) who believed that the student nurse brings theory and practice together. Therefore although there was a difference between what was seen in the HEI and practice, this was not in the conventional sense, rather it was the clinical practitioners who were not up-to-date. This shows major implications for maintaining evidence based practice and reducing the theory-practice gap, and in fact the students have a part to play in helping reduce this.

The theory-practice gap was discussed further by the students. The students felt it was difficult putting into theory something that they had learned about only by reading books and gaining knowledge this way. Milligan (1998) has argued this point and Nunn (2004) suggested that knowing the theory of a

procedure does not necessarily mean that they can perform it. There is no disputing the fact that "safe and effective practice requires a sound underpinning of the theoretical knowledge...." (NMC, 2005, p 13). However as Rauen (2001) emphasises the ultimate goal in nurse education is having the ability to apply the information to patient care. Nolan (1998) discovered in her research that the student found this difficult going between an environment that encourages thinking to an environment that encourages doing. McCaugherty (1991) believes that there will always be a theory practice gap because the real situation is always more complex than books.

However simulation education may be a way of bridging this gap since it can provide a realistic environment and be as complex as real life situations. Many researchers support this statement (Cook & Hill, 1996; Hilton, 1996; Lev, 1998 and Johnson et al, 1999) since they found that students could transfer practice in the lab to the clinical area. Ferguson & Jinks (1994) in particular are in support of this statement since a student centred approach to teaching and learning with experiential learning techniques may help bridge the gap. As discussed earlier the students during interview discussed in section 5.2.1 simulation education being experiential and a student centred approach, which they preferred, and that this provided hands on learning of the clinical skills. Additionally the simulation scenario can be tailored to the learning outcomes (Gaba & DeAnda, 1988; Ker et al, 2003; Kneebone, 2003 and Maran & Glavin, 2003). With the advances in manikins highly complicated clinical scenarios (Fry et al, 1999) can be conducted such as the major accident scenarios (paramedic UK, 2004) involving the multiprofessional team. In further support, Gaba & DeAnda (1988) explain that simulation can be as complex as the real situation as they demonstrated when setting up complicated scenarios within the operating theatre using high fidelity manikins. Finally in nurse education Scholes et al (2004) advocate for the use of OSCE which they propose has the tools to explicitly link theoretical learning with clinical decision-making and is particularly effective in capturing students' applied knowledge.

The students referred to three parts of their learning, these being theory, simulation and practice. It is interesting to note that the students do not suggest replacing clinical practice with simulation education rather that there is a need for theory, simulation and practice. Simulation is expressed by these students as beneficial to their learning however at present it does not take the place of the real clinical environment and dealing with real patients. Currently there is 50% theory and practice. What still remains unanswered therefore is the balance required between providing theory, simulation and practice.

5.6.2 The Clinical Placement

Six students discussed the problem with some wards not providing what they need educationally with them sometimes being too busy to show students procedures or let them perform them. Both groups of students referred to this as good or bad wards. This was leading to further anxiety on placement since the student was aware that they were required to become competent in their skills. Nolan (1998) in her study of Australian student nurses found that what made the difference between a good or bad ward was the availability to actually allow the student to perform the tasks and put their knowledge into practice. This corresponded with what the students in this study were saying and that some wards were too busy to help supervise the student. This was also demonstrated recently by Scholes et al (2004). This inadequacy in supervision of students has been suggested as due to the increase in student intake numbers by the labour government, without a corresponding increase in placements (Wilkie & Burns, 2003). Nicol & Glen (1998) suggested that there was a lack of supervision for the students due to increasing workload. The Scottish Office Health Department (1997 and 1998) further suggested that it was due to the clinical area not participating in the skill the student is seeking to practise. Finally Jowett & Walton (1994) and Donaldson & Carter (2005) explain that there is shorter time available on placement and they may not use the available time effectively to consolidate their practical skills. This

demonstrates what Frost (2004) refers to as changes that have taken place in clinical practice over the past 20 years or more. Nurse education was based on the apprenticeship model however due to the many changes of the NHS over the past 60 years nurse education has had to change. However the quality and standard of the performance in clinical skills by the newly qualified practitioner should not change. Compounding this is the fact some skills have become more complicated, technical and increased due to taking over junior doctors' roles. Therefore due to these pressures the NBS (2000a) advocated interest in the justification for teaching and getting practice of the skill in the HEI by simulation rather than leaving it to the clinical placement.

This study shows that these problems in clinical placement still exist, however simulation education allows the student the opportunity to practise these skills even though it is not in the clinical environment. This fuels the current debate (Frost, 2004) for replacing clinical practice hours with simulation education within the HEI. Indeed there is a suggestion of 'relaxing the rules on the use of skills laboratories' (Duffin, 2005). Currently simulation is seen as being complimentary to the clinical placement and not a replacement for clinical practice hours (Gomez & Gomez, 1987; Erler & Rudman, 1993; O'Neill, 2002 and NMC, 2005). However the debate is fuelled if the students are not gaining the experience required while on clinical placement as reported by the students in this study. As already discussed the students found that the ability to be able to have repeated practice of the skill within the clinical simulation laboratory important with reference to gaining competence in the skills. This becomes even more important if they are not getting the practice of the skill on the clinical placement.

The students in this study expressed further problems with the effectiveness of feedback by the clinical placement. Many students while discussing feedback supported the view that the simulation education within the HEI provided a more relaxed atmosphere for their learning. Thus the students

were more at ease with the lecturers. This could be due to what Dearman et al (2001) suggest that the HEI is a non-threatening environment to the student compared to clinical practice. Additionally Knowles (1990) suggests that the HEI has a more relaxed, friendlier atmosphere which suits the adult learner and thus improves learning.

5.6.3 The Mentor

This theme continued with good/bad mentors. The students said that it could be luck of the draw if they got a mentor who was good and could meet all their needs with regard to learning clinical skills. This is not a new concept with Miller (1990); Roberts et al (1992) and du Boulay & Medway (1999) all expressing that students were dissatisfied with the mentorship process. Indeed the NBS (2003c) in their study of skills acquisition of blood pressure found that only a few students reported encountering skilled mentors who took time to teach the student blood pressure recording. By "good" the students are referring to a mentor who takes time to show them things, organise skills for them to see and remember what skills are being carried out that day on the ward and allow the student the opportunity to watch, or carry them out. Donaldson (2003) refers to this nurse as a role model.

Supervising student nurses is part of the code of conduct (NMC, 2004a) and as such all registered nurses must at some point be a mentor. This however has problems when clinical nurses do not like supervising students and view it as a burden and extra workload. As mentioned the length of time on placement has shortened giving the mentor less time to work with the student (Chambers, 1998 and Scholes & Albarran, 2005). Because of this the students viewed the feedback from the lecturing staff after the simulation classes as being more supportive than when in clinical placement. Lecturers have chosen to go into HE and as such enjoy teaching. Additionally they have continued with life long learning and completed a post graduate teaching certificate in teaching and learning which is registerable with the

NMC. Therefore the lecturers have a greater insight into teaching, learning and assessment strategies and are more aware of how to help the student learn. This has therefore become obvious to the student when comparing how well they have learned clinical skills within the HEI to that on clinical placement. A way of improving this according to Scholes et al (2004) is to have direct supervision contact of the student by a specialist practice educator. NES (2004) on the other hand have decided to have practice placement standards, which are audited in order to improve the student experience. From the discussion with the students on this study however it is debatable whether these standards are being achieved.

With these problems on clinical placement and with the mentoring process this calls into question the way competence in clinical skills is assessed. At present this is carried out in the clinical practice area by the mentor and in some places also a lecturer. However Norcini (2004) suggests this may not be the best way of assessing performance. Recently Scholes et al (2004) has advocated the use of OSCE to determine clinical competence. Although using formative assessment Alinier et al (2004) found that OSCE could be used to determine student performance in clinical skills. Additionally when examining the origins of simulation each pilot must complete and pass flight simulation in order to retain their license. This is in fact what happens when qualified clinical staff wish to practise and gain experience of clinical skills turning to simulation rather than learning on the clinical environment with such courses as the ALS course. These courses are summatively assessed in the simulation environment.

5.6.4 Simulation within the HEI

The students expressed that having performed the skill during simulation in the HEI this kept the skill fresh in the student's mind and could inform the mentor on placement that they had practised this skill. The mentor in turn

knew what skills the student should be seeking more practice in during the placement, which was appropriate for their stage in the course.

The students felt more confident to practise the skill and seek out the skill while on clinical placement since they felt confident and competent at their performance during simulation in the HEI. This is in contrast to what Erler & Rudman (1993); Elzubeir & Sherman (1995) and Knight & Mowforth (1998) suggested in that many nurses felt a lack of confidence in performing clinical skills. However in agreement with this study Thiele et al (1991); Hilton (1996); O'Neill & McCall (1996); Ker et al (2003) and Mayne et al (2004) all expressed that simulation education could assist in improving this lack of self-confidence. In fact Alinier (2003) reported that 86% of the students in his study felt more confident after the simulation lesson.

Furthermore since the students in this study felt competent at one skill, they then felt more confident to seek out other clinical skills that they had not had practice in, but could gain practice while on clinical placement. The students expressed that normally they would spend time watching a skill being performed in clinical practice before attempting it themselves. However the students were expressing that since they had performed the skill during simulation they felt there was no need for this and so the students went straight to performing the skill while being supervised on clinical placement. This meant that they were in fact missing out a stage of learning while on placement, which in effect gave them more opportunity to practise more skills during their time on placement. Less time was taken up by just watching, instead they were doing the skill. Interestingly the studies on the newly qualified P2000 students (While et al, 1995; Luker et al, 1996; MacLeod Clark et al, 1996; May et al, 1997 and Runciman et al, 1998) found that although deficient in competency in some of the clinical and managerial skills required, they were quick to catch up within six months of qualifying. Thus the students in this study expressed that they felt they were quicker at performing skills on clinical practice due to their practice within the HEI and

therefore may well be competent in these clinical and managerial skills on qualification. However this would require further research.

From analysing the interviews from the 14 students is appears that the students confirm that simulation in nurse education can aid learning in all four areas of the NTS described by Flin et al (2004), these being task management; team working; situation awareness and decision-making. These four components are the areas that the research studies examining the clinical skills performance of the newly qualified practitioners of the P2000 course found they were lacking in (Phillips et al, 1994; While et al, 1995; Luker et al, 1996; Macleod Clark et al, 1996; Runciman et al, 1998 and Carlisle et al, 1999). Therefore by gaining skills in the four NTS areas it could be argued that the students performing simulation as a teaching, learning and assessment strategy would now have these skills on qualification. In order to prove this however further research would be required to examine the newly qualified practitioners from the current programmes. This research is planned for 2006 in Scotland. Scholes et al (2004) carried out this research in England, however minimal improvement was found. A criticism of this research is that there is no differentiation between HEIs using simulation education in their curriculum and those that are not. Therefore there is no way of knowing what curriculum changes made the slight improvements. Subsequently there is a need to compare the courses that use simulation education as a teaching, learning and assessment strategy with those that do not.

5.7 Methodological considerations

Using a mainly qualitatively driven methodology with a small quantitative questionnaire appears to have been appropriate to answer the research questions. There are some aspects of this however that require further discussion. While investigating the methodology underpinning this study, namely phenomenology it became apparent that there have been few nursing education research studies using this methodology in the last ten

years. The nursing research utilising phenomenology was predominantly the investigation into the patients' experience and not the student nurse. The research on the student nurses' experience of simulation as a teaching, learning and assessment strategy was mostly quantitative with a few qualitative questions added at the end of the questionnaire (McAdams et al, 1989; Cook & Hill, 1996 and Johnson et al, 1999). This study however has shown that a great deal of valuable information can be discovered by using phenomenology to explore the students' experience.

The researcher must take care however when using this methodology. As a nurse, the researcher initially went to the nursing literature on phenomenology, however quickly found that there was criticism of this and that it had moved away from what Heidegger had philosophised. This led the researcher back to the original book by Heidegger (1962) 'Being and Time'. Having gone this route could be criticised, however it gave the researcher a clearer picture of the philosophical underpinnings of phenomenology. Finding a critical reader who had conducted Heideggarian phenomenology and could read German therefore had read the original text was invaluable for debate and discussion and is highly recommended.

5.7.1 Time

What becomes evident in this mainly phenomenological study is the changes that take place over time that affect the student nurses' experience. This aspect of change of opinion over time is highlighted with the semester six students who generally had a more positive outlook of simulated education than the semester four students, although this was also favourable. The semester six students were more aware of the advantages of simulation in relation to how they performed on clinical placement and how close to reality the simulation scenarios were. They were identifying no differences between simulation and the clinical placement. In fact they discuss being able to perform more complicated skills while on placement such as patients

becoming acutely unwell and even cardiac arrests. Additionally they were aware that mistakes happen the first time they practise a skill and simulation allows them to practise the first time on a manikin, therefore eliminating this fear. They did not discuss being anxious at the simulation class, nor any problems communicating with the manikin. This was a difference with the semester four students where two students did discuss communication with the manikin as a dislike. Thus as Walsh (1997) explains this non-linear sense of time adds to the richness of the experience. Gaining this information would have been difficult if a quantitative methodology alone had been chosen. Heidegger (1962) in his book 'Being and Time' highlights this concept of time as crucial to the experience and that past influences present.

However it must also be recognised that this study used a cross sectional approach with the two student groups. Although it could be presumed that the differences in the two groups was due to the semester six students having more experience of simulation education and clinical practice, it could be that their behaviours and attitudes were different to the semester four student group. Even if this is the case the findings from this study provides interesting information about the students' experience of simulated education.

5.7.2 Triangulation

Triangulation was utilised in this study in order to answer the research question number four. Using phenomenology through one-to-one semi structured interviews did provide valuable insight into the students' perception of their competence, however this was after the practice placement had taken place. The SD questionnaire was completed at the time of practice and therefore provided information on the students' competence at the time of clinical placement. The two methodologies provided conflicting as well as corroborating information. When the students discussed being able to acknowledge what they knew and what they did not

know, therefore taking control of their learning, the SD also showed that they were vague, worst, blunder and beginner. Thus the students were again aware that they still had much to learn. This is in agreement with Begley (1996) who states that one of the main goals of triangulation is confirmation of data which can aid validity.

However this is not the view of many authors such as Jick (1983); Fielding & Fielding (1986) and Leininger (1985) who propose that triangulation assists with ensuring the completeness of the data. When considering anxiety the SD showed that the students were anxious prior to going to clinical placement scoring low in the first week (score = -9). However later at interview only two semester four students commented on being anxious, however had felt more prepared due to the simulation education. The researcher's interpretation of this is explained due to their reflection back on the situation being different to that at the time. Thus providing completeness of data and showing the effects of time on the students' perception. However this may not be the case and it would be beneficial to explore this concept of anxiety prior and while on clinical placement further.

This study has therefore been thought provoking and interesting to listen to the students' experience of simulation education. This has led to an increased body of knowledge about this subject area. As such from the researcher's interpretation and discussion it has led to the development of some conclusions, limitations and recommendations. These will be discussed in chapter six.

Chapter 6: Conclusion and Recommendations

Simulation in nurse education: the students' experience.

6.1 Conclusion and limitations

The aim of the study was to illuminate the meaning of lived experience of simulated education as a teaching, learning and assessment strategy, narrated by student nurses. The six broad themes developed from what simulation education means to the student, educationally and professionally incorporate a breadth and depth of perspective by the student nurses interviewed. However it must be clear that it is only the illumination of the narration of the 14 students included in the study.

The following provides a conclusion to answering the research questions from chapter three followed by limitations of the study. The conclusions to the research questions are in the same order that they appear in chapter three rather than priority.

The experience of participating in simulation education by the student nurse is extensive but appears to be enjoyable (further details on this are in the reflective journal Appendix XIII). The main reasons were due to helping their confidence and experiential learning. There was some trepidation at the beginning with feelings of anxiety and embarrassment, however this passed over time. The semester six students valued the experience more than the semester four students and this may have been due to the fact that they had more clinical experience and therefore had participated in similar patient care that they had participated in during simulation.

Simulation education as a teaching, learning and assessment strategy was viewed as being of great benefit to the students learning in a number of ways. These were due to experiential learning; teamwork; peer feedback;

reflection; repetition and making mistakes. The advantages were that the student became more in control of their own learning recognising their weaknesses in both theory and practice and providing them the opportunity to rectify this. The disadvantages were that the students wanted more simulation education throughout the course. This is however constrained by the availability of time and resources.

When discussing the reality of simulation education with the real world of clinical placement the students expressed that it was "as good as it gets" providing psychomotor, cognitive and affective skills development. This suggests that there are still some differences, however the students viewed this as close to the real situation as they could possibly conceive. This does however take a great deal of effort on the part of the lecturers, management and the HEI to ensure engineering and psychological fidelity.

On the whole the students felt more prepared for clinical practice. They felt more confident in performing the clinical skills, which in turn led to them being more competent. The students expressed that they were seeking out more clinical skills to practise and were aware of what they had to achieve for registration through the professional proficiencies. Unfortunately the students still expressed problems with practising these skills while in the clinical placement.

True to the phenomenological approach, the author's experience of exploring the students' experience of simulation education has been immensely exciting and enriching. However due to time this has constrained the size of the study, which could have been more fully developed.

When examining the literature on qualitative research and then in more detail phenomenology it would have been beneficial to start with Heidegger's book 'Being-in-time' rather than reading the nursing literature first. Despite this, having carried out the literature search in this order helped the researcher to

explore and take recognition of the issues regarding phenomenology in nursing.

This study took a mainly qualitative with a small quantitative approach. The sample size is small with one study site and the results are the interpretation of one researcher, as such the results cannot be generalisable. Nevertheless, the findings are still of interest and it is hoped that through this discovery those writing, developing and delivering pre-registration nursing curriculum may consider a number of issues.

6.2 Recommendations

First, to those HEIs delivering pre-registration nursing programmes who do not use simulation education as a teaching, learning and assessment strategy I suggest researching the evidence base for the advantages and disadvantages of its inclusion.

Secondly, to those HEIs who already include simulation education into their pre-registration nursing programmes I suggest exploring

- the use at various stages of the nursing programme building on the simulation scenarios to meet the learning outcomes.
- Maintaining the skill mix and team size as appropriate with clinical practice.
- Using simulation education for formative and summative assessment of clinical skills within the HEI.
- Developing detailed scenarios through collaboration with practitioners from clinical placement.
- Keeping well-stocked resources and equipment which is the same as that used in clinical practice placements.

Thirdly, to nurse researchers I would suggest utilising Nvivo for handling of data as well as phenomenology as a research methodology to enlighten nurse education about the students' experience. Additionally this study has provided areas where further research is required for example comparing the newly qualified practitioners from HEIs who utilise simulation education and those who do not.

Fourthly, to clinical practitioners who are mentors I would suggest keeping in close contact with the HEI which sends students to their clinical placement and attending mentor updates to familiarise themselves with the current nurse education curriculum, especially where clinical skills are taught.

Fifthly to policy makers such as NES and the NMC I suggest examining the current literature, but also funding future research into this teaching, learning and assessment strategy. Furthermore a definitive list of clinical skills required at certain points in the curriculum would assist clinical staff to recognise what skills they should be assisting the student to gain practise in.

Finally, I end with an unsolicited letter given to the programme leader for the adult branch by semester six students (who were not the cohort included in the study). The students had wrongly heard news that the Sim Man was being withdrawn from the pre-registration programme. Due to this a very poignant and heartfelt letter was written and signed in support of keeping simulation education using the Sim Man manikin (Appendix XXIII). This shows just how strongly they felt they benefited from this teaching, learning and assessment strategy.

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Appendices

Appendix 1
Sim Man Patient Scenario's

Semester 3: Promoting Healthy Adulthood & Holistic Care 1
• Post-op bleeding / Fluid Management
• Airway problems in a post-op patient [hypoxia following anaesthetic opiate overdose / re-metabolisation
• Haemodynamic and physical assessment of surgical patient
• Recognition and treatment of Paralytic Ileus

Semester 4: Promoting Healthy Adulthood & Holistic Care 3
• Acute M.I. [Arrhythmia identification and management]
• Haemorrhage following interventional cardiac investigations
• Recognition and treatment of severe asthma [status]
• Recognition and management of renal failure [prostatic enlargement]

Semester 5: Trauma Module
• Assessment and management of trauma patient
• Primary and secondary trauma survey / resuscitation
• Principles of trauma resuscitation

Resuscitation Training

Semester 3:
• Adult BLS
• Airway management
Semester 4:
• Adult BLS
• Rhythm recognition
• AED Training
Semester 5:
• Management of Life Threatening Events
• MEWS
• ATLS Principles
Semester 6:
• Immediate Life Support Course [Resuscitation Council UK]

Professional Patient Scenario's / Workshops

Semester 3: Promoting Healthy Adulthood & Holistic Care 1
• Wound assessment & aseptic dressing techniques
• Management and removal of sutures / clips
• I.V administration and Volumetric Pump operation
• Principles of safe suctioning

• Gastric intubation and management of patients with NG / PEG tubes
• Pre-op check list workshop
Semester 5: Cell Dysfunction / Trauma Module
• Breaking bad news [Cancer & Palliative Care Management]
• Dealing with Sudden Death [Trauma Module]
• Wound management [Trauma / Amputation]
• Immobilisation techniques in SCI and multi-trauma
• Management of fractures
Semester 6: Total Management of Care
• Mock Ward Round [students design patient scenario using Integrated Care Pathways]

Appendix II First stage of Concept Map

Teaching lecturer/practitioner manniquins cognitive affective psychomotor

Skills preceptorship equipment experiential learning theory

Practical mentorship high fidelity research based practice

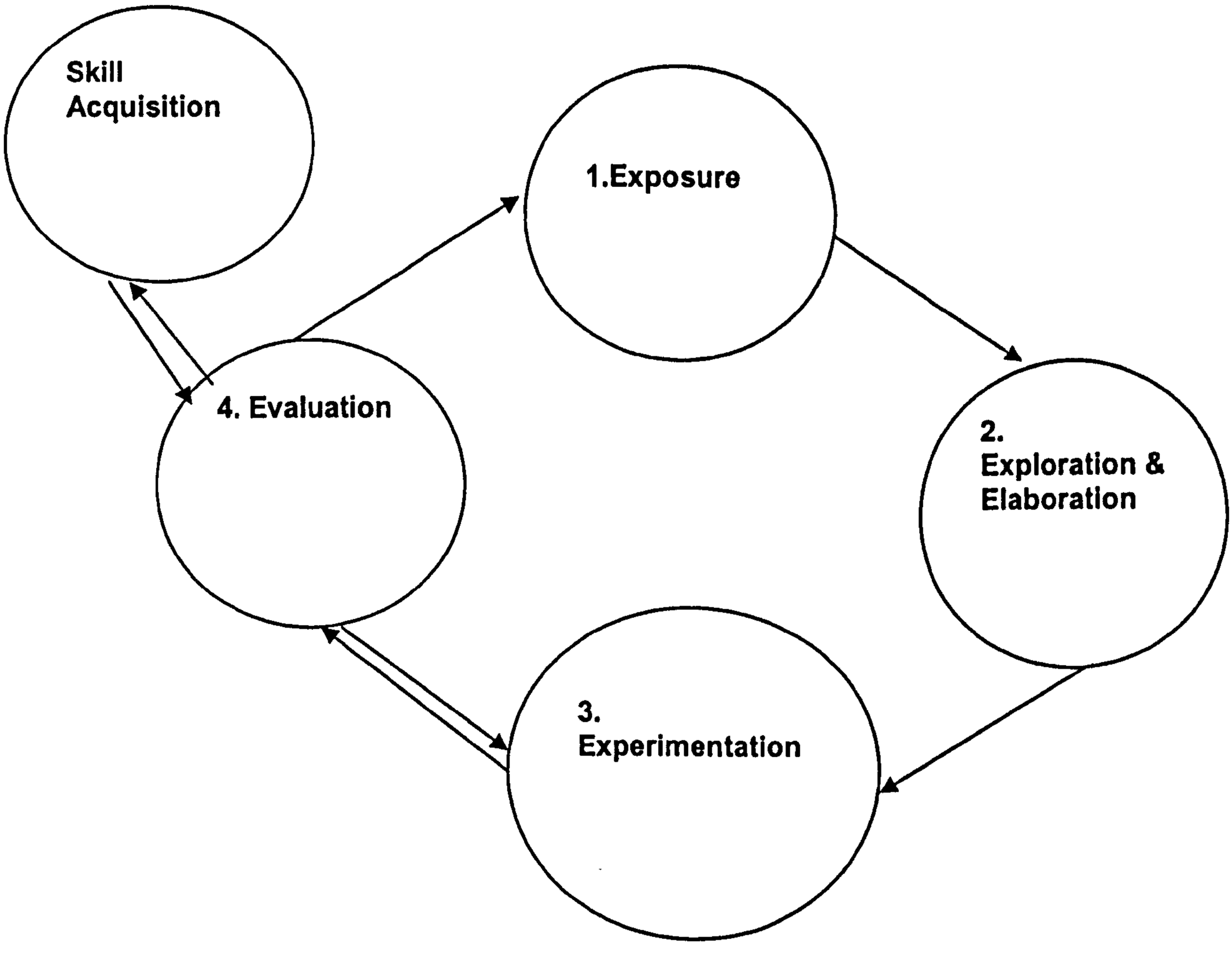
Theory/practice gap skills labs practice competence learning through doing

Assessment of practical skills practical labs dexterity critical thinking skills

Novice to expert simulation real world situations correlated theory/practice thinking

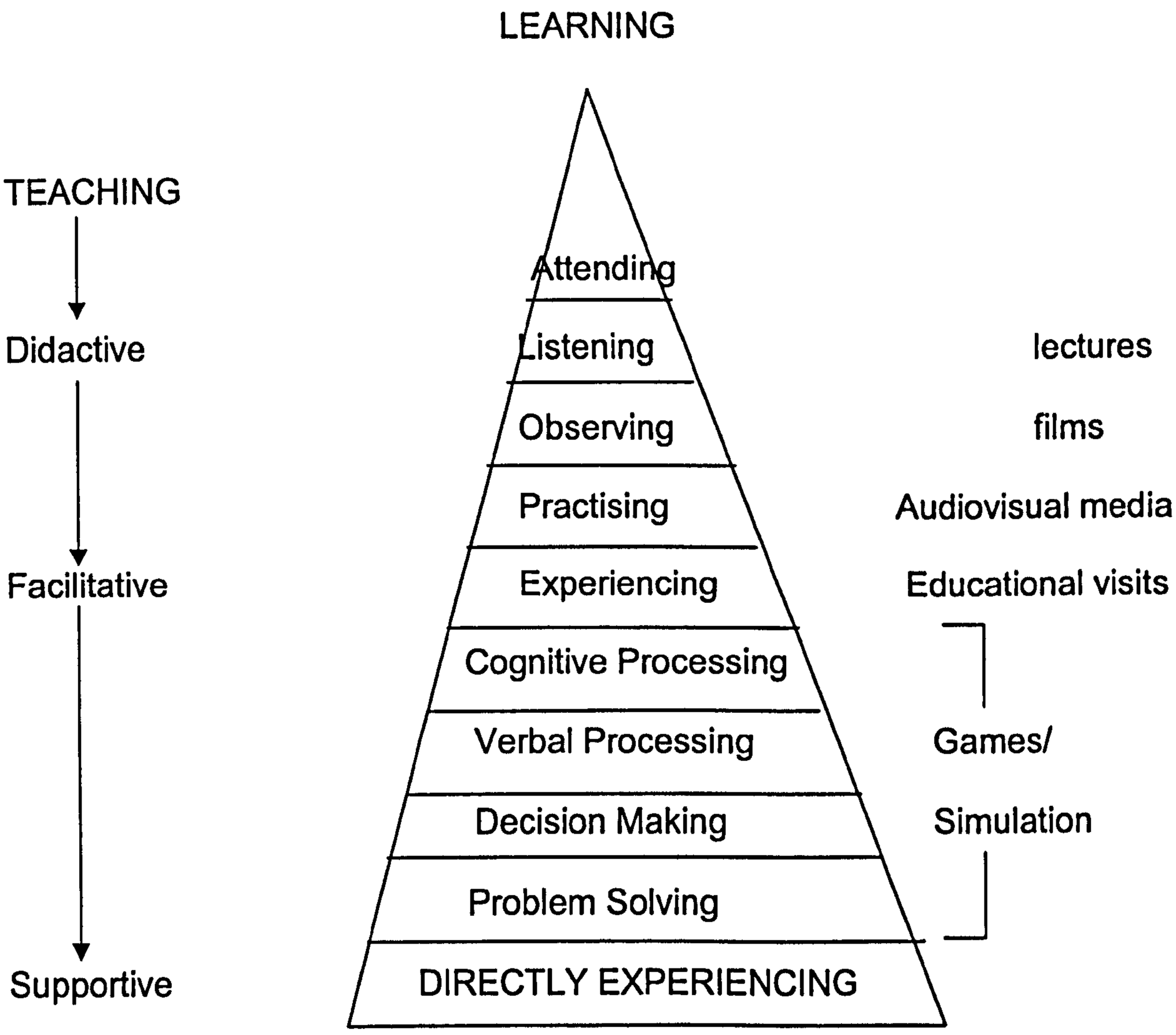
Nurse education

Appendix III Experiential Learning Cycle



Ref: Steinaker & Bell (1979)

Appendix IV Figure 2: A Learning Hierarchy



Ref: Heath (1983)

Appendix V Letters for access

Your reference

Our reference

Date

Jacqueline McCallum
Room 431 ex 654
j.mccallum@bell.ac.uk

6th June 2004

Heather Simpson
Head of School
School of Health Studies
Bell College
Almada Street
Hamilton

Dear Heather

College Mission Statement
To provide high quality education, training and advice at Higher Education level by a variety of modes and a range of disciplines to cater for local, regional, national and international needs and in support of the economic development of Lanarkshire, South West Scotland and beyond

As you are aware I am currently undertaking the Doctorate of Education course at Strathclyde University, Jordanhill campus. Due to the nature of the research I am proposing to undertake I require permission from you for access to the students on the Diploma of Higher Education/Bachelor of Science in Nursing (Adult) during theory time to take part in the study. The study will involve one-to-one interviews with seven students in semester 4 and 6 and completion of a small questionnaire.

I have included a copy of the research proposal for you.

Member of Universities Scotland

Could I also ask that you return your reply in writing in order that this is included in the final written documentation.

Yours Sincerely

Head of School of Health Studies
Heather Simpson
RGN SCM RCNT RNT BEd

Jacqueline McCallum M.N., B.A, R.G.N., P.G.cert.

Lecturer in Adult Nursing

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Your reference

Our reference HS/LS

Date 10 June 2004

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Mrs Jacqueline McCallum
Lecturer
School of Health Studies
Bell College
HAMILTON
ML3 0QA

Dear Jacqueline

Doctorate of Education

Thank you for your letter of 8 June 2004 enclosing your research proposal.

I hereby give written permission for you to access students in Semesters 4 and 6 in relation to one-to-one interviews and completion of a questionnaire.

I wish you continued success with your studies.

Yours sincerely

Heather Simpson

Heather Simpson
Head of School of Health Studies

Head of School
of
Health Studies
Heather Simpson
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Your reference

Our reference

Jacqueline McCallum
Room 431 ex 654
Date j.mccallum@bell.ac.uk

15th September 2004

Lorraine Duers
School of Health Studies
Semester 6 Co-ordinator
Bell College
Almada Street
Hamilton

Dear Lorraine

As you are aware I am currently undertaking the Doctorate of Education course at Strathclyde University, Jordanhill campus. Due to the nature of the research I am proposing to undertake I require permission from you as co-ordinator for access to the students in semester 6 on the Diploma of Higher Education/Bachelor of Science in Nursing (Adult) during theory time to ask for volunteers to take part in the study. The study will involve one-to-one interviews with seven students in semester 6 and completion of a small questionnaire.

Could I also ask that you return your reply in writing in order that this is included in the final written documentation.

Yours Sincerely

Jacqueline McCallum. M.N., B.A, R.G.N., P.G.cert.
Lecturer in Adult Nursing

Head of School of Health Studies
Heather Simpson
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Your reference

Our reference LD/EC

Date 28 September 2004

Jacqueline McCallum
Semester 4 Co-ordinator
Bell College
The Caird Building
Caird Park
HAMILTON
ML3 0QA

Dear Jacqueline

I am writing to you in response to your letter dated 15 September 2004 requesting permission to access semester 6 nursing students.

As semester 6 co-ordinator I hereby grant your request.

The semester 6 students will be available on the 1 October 2004 and you may ask for volunteers to take part in your study on this date.

I wish you every success with your studies.

Yours faithfully

E. Galin

P.P.

Lorraine Duers
Semester 6 Co-ordinator
Hamilton Campus

Head of School
of
Health Studies
Heather Simpson
RGN SCM RCNT RNT BEd MN

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Your reference

Our reference

Date

Jacqueline McCallum
Room 431 ex 654
j.mccallum@bell.ac.uk

29 September 2004

Nicky O'Brien
Accommodation Officer
Bell College
Almada Street
Hamilton

Dear Nicky

I am writing to ask for your permission for access to a vacant flat within the hall of residence in order to conduct one-to-one student interviews. These interview will take place approximately in the last week in October (7 in all) and in December (7 in all). Each interview is estimated to take no longer than one hour.

Please do not hesitate to contact me if there are any details you wish to discuss further.

Could I also ask that you return your reply in writing in order that this is included in the final written documentation.

Yours Sincerely

Jacqueline McCallum M.N., B.A, R.G.N., P.G.cert.
Lecturer in Adult Nursing

Head of School of Health Studies
Heather Simpson
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Appendix VI

Student Information Sheet **Semester 4**

You are invited to take part in an educational research study exploring simulation as a teaching methodology. This study is part of a Doctorate of Education course being undertaken by Jacqueline McCallum at Strathclyde University.

You are in semester 4 of the pre-registration adult student nurse programme and as such have taken part in simulation at least once in the surgical module in semester 3. During the semester 4 medical module you will take part in simulation on Friday mornings when in college.

The study will involve you completing a short questionnaire after each simulation class when you are on clinical placement. This will include five questionnaires in total. Additionally, after the theory and clinical placement for the module are completed a one-to-one semi- structured interview will take place in college with Jacqueline McCallum. This will be audiotaped to aid data analysis at a later date. Once this data has been collected you will be invited, as a group to examine the data to ensure it is a true reflection of your interview account.

Your initials will identify you, date of birth and a number on all study related material and this will be treated in strict confidence.

If you decide to take part then you will be required to sign a consent form, which will remain confidential. If you decide not to take part, or if you decide to take part but then change your mind, then please say so as soon as possible. It is your choice to participate and the educational quality you receive in college will not be affected.

Student Information Sheet **Semester 6**

You are invited to take part in an educational research study exploring simulation as a teaching methodology. This study is part of a Doctorate of Education course being undertaken by Jacqueline McCallum at Strathclyde University.

You are in semester 6 of the pre-registration adult student nurse programme and as such have taken part in simulation in the surgical module in semester 3, during the semester 4 medical module, the semester 5 trauma module and the Intermediate Life Support (ILS) Course in semester 6.

The study will involve you completing a short questionnaire after you have completed the ILS course and just prior to registration. Additionally, at the same time a one-to-one semi- structured interview will take place in college with Jacqueline McCallum. This will be audiotaped to aid data analysis at a later date. Once this data has been collected you will be invited, as a group to examine the data to ensure it is a true reflection of your interview account.

Your initials will identify you, date of birth and a number on all study related material and this will be treated in strict confidence.

If you decide to take part then you will be required to sign a consent form, which will remain confidential. If you decide not to take part, or if you decide to take part but then change your mind, then please say so as soon as possible. It is your choice to participate and the educational quality you receive in college will not be affected.

Appendix VII Ethics committee approval

Bell College

MEMORANDUM

From : Kenneth Scott, Chair, College Ethics Committee

To : Jacqueline McCallum, School of Health Studies

Date : 14th September 2004

Subject : Research Proposal

The Ethics Committee has received notification from you of your intention to conduct interviews with students in the School of Health Studies for your EdD research study.

The Committee has decided that in this case its approval is not required, but that approval for access to students should be sought from the Head of School of Health Studies.

Good luck with your study !

KBS.

Appendix VIII

Student Consent Form Semester 4

I _____ (print name) hereby give fully and freely consent to take part in this study.

I confirm that I have read and fully understand the (attached) student information sheet. I have been given the opportunity to read the information sheet in my own time and to ask questions about this information. I have been given a copy of the information sheet to keep. My confidentiality will not be violated.

I understand I will have to complete five short questionnaires and a one-to-one semi-structured audiotaped interview. I understand that I may withdraw from the study at any time. If I withdraw from the study, this will not prejudice my quality of teaching received in any way.

Student's signature_____date _____

Student Consent Form **Semester 6**

I _____ (print name) hereby give fully and freely consent to take part in this study.

I confirm that I have read and fully understand the (attached) student information sheet. I have been given the opportunity to read the information sheet in my own time and to ask questions about this information. I have been given a copy of the information sheet to keep. My confidentiality will not be violated.

I understand I will have to complete one short questionnaire and a one-to-one semi-structured audiotaped interview. I understand that I may withdraw from the study at any time. If I withdraw from the study, this will not prejudice my quality of teaching received in any way.

Student's signature_____date _____

Appendix IX

Semi-structured one-to-one interview schedule **semester 4**

(Researcher copy)

Checklist

Tape recorder

Extension cable

Spare batteries for microphone and recorder

Tapes

Arrange a room

Arrange a time

Arrange the seating

Check the recorder is placed in a way that it will pick up all the voices

Introduction

The interviewer already knows the students in this study, since being their lecturer in semester 4 and may possibly have been their link lecturer for clinical placement.

How are you? How is the semester going? Wait for reply.

Thank you for agreeing to take part in this study examining simulation. It will be tape recorded, so if you don't mind we will do a sound check first.

Rewind tape and play back to them. This is what you sound like on tape.

Information for the student

As I have already explained this is confidential and as such what you say will have no affect on the course you are taking. Indeed I want you to be as honest as you can with your answers. I have an interview schedule and I will ask all these questions, but not necessarily in this order. There is a copy of the questions for you to follow. I expect the interview to last no more than an hour. As stated when you completed the consent form you have no

obligation to take part or to answer all the questions and you may withdraw from the study at any time.

Opening Questions

- Can you remember during semester 3 and 4 doing classes which were called Clinical Simulation?
- Can you tell me what the term clinical simulation means to you.
- How do you think clinical simulation helps you learn.
- In what way
- How did you feel during the simulation classes in
  - Sem 3 - surgical
  - Sem 4 - medical
- What did you personally gain from doing the simulation classes in sem3 and 4?
- Tell me what you liked about simulation?
- Tell me what you disliked about simulation?
- Clinical simulation can allow you to make mistakes and be given feedback, what do you think about this.
- Can you describe to me any similarities between the simulation classes and your clinical placement. (Comparisons means similarities and differences)
- Can you now describe to me any differences between simulation classes and your clinical placement.
- Final Question – In what way did having clinical simulation sessions have an impact on your skills competence in practice placement.

Ending the interview

- Is there anything you would like to ask me?
- Is there anything else I should have asked you?
- Could I contact them again if required?
- Could I meet with them again so that they can read the findings of the study and gain their views?

Semi-structured one-to-one interview schedule **semester 6**

(Researcher copy)

Checklist

Tape recorder

Extension cable

Spare batteries for microphone and recorder

Tapes

Arrange a room

Arrange a time

Arrange the seating

Check the recorder is placed in a way that it will pick up all the voices

Introduction

The interviewer already knows the students in this study, since being their lecturer in semester 4 and may possibly have been their link lecturer for clinical placement.

How are you? How is the semester going? Wait for reply.

Thank you for agreeing to take part in this study examining simulation. It will be tape recorded, so if you don't mind we will do a sound check first.

Rewind tape and play back to them. This is what you sound like on tape.

Information for the student

As I have already explained this is confidential and as such what you say will have no affect on the course you are taking. Indeed I want you to be as honest as you can with your answers. I have an interview schedule and I will ask all these questions, but not necessarily in this order. There is a copy of the questions for you to follow. I expect the interview to last no more than an hour. As stated when you completed the consent form you have no

obligation to take part or to answer all the questions and you may withdraw from the study at any time.

Opening Questions

- Can you remember during semester 3, 4, 5 and 6 doing classes which were called Clinical Simulation?
- Can you tell me what the term clinical simulation means to you.
- How do you think clinical simulation helps you learn.
- In what way
- How did you feel during the simulation classes in
  - Sem 3 - surgical
  - Sem 4 – medical
  - Sem 5 – trauma
  - Sem 6 – Immediate Life Support Course
- What did you personally gain from doing the simulation classes in sem3 to 6?
- Tell me what you liked about simulation?
- Tell me what you disliked about simulation?
- Clinical simulation can allow you to make mistakes and be given feedback, what do you think about this.
- Can you describe to me any similarities between the simulation classes and your clinical placement. (Comparisons means similarities and differences)
- Can you now describe to me any differences between simulation classes and your clinical placement.
- Final Question – In what way did having clinical simulation sessions have an impact on your skills competence in practice placement.

Ending the interview

- Is there anything you would like to ask me?
- Is there anything else I should have asked you?
- Could I contact them again if required?
- Could I meet with them again so that they can read the findings of the study and gain their views?

Appendix X Correlated theory/practice calendar

	Week commencing	Group A	Group B
1	16/8/04	Theory	Theory
2	23/8/04	Theory	Theory
3	30/8/04	Theory	Practice
4	6/9/04	Practice	Theory
5	13/9/04	Theory	Practice
6	20/9/04	Practice	Theory
7	27/9/04	Theory	Practice
8	4/10/04	Practice	Theory
9	11/10/04	Practice	Practice
10	18/10/04	Practice	Practice
11	25/10/04	Remedial	Remedial
12	1/11/04	Theory	Theory
13	8/11/04	Theory	Theory
14	15/11/04	Practice	Theory
15	22/11/04	Theory	Practice
16	29/11/04	Practice	Theory
17	6/12/04	Theory	Practice
18	13/12/04	Practice	Theory
19	20/12/04	Theory	Practice
	27/12/04	Annual Leave	Annual Leave
	3/1/05	Annual Leave	Annual Leave
20	10/1/05	Practice	Practice
21	17/1/05	Practice	Practice
22	24/1/05	Remedial	Remedial
23	31/1/05	Remedial/leave	Remedial/leave
	7/2/05	Leave	Leave

Appendix XI E-mail to students

Hi all

Thank you very much for volunteering for my research. I am aware that you are in college on Friday however I am at a conference. I would like to arrange dates and times for the interview if that is ok.

I believe the next date you are in college is the 29th October, however I am doing the sem 4 interviews on this day.

Your next date is Friday 12th Nov and I could do two interviews that afternoon.

Friday 26th Nov I could do 3/4 interviews over the course of the day.

Finally Friday 10th Dec I could do 3 interviews.

I only need seven students and nine of you have volunteered so I will take first come first served if that is ok.

The best way is to e-mail me back your preference for two dates and times and I will confirm this with you.

Thanks

Jacqueline

Appendix XII

Semi-structured one-to-one interview schedule semester 4

(student's copy)

Questions

- Can you remember during semester 3 and 4 doing classes which were called Clinical Simulation?
- Can you tell me what the term clinical simulation means to you.
- How do you think clinical simulation helps you learn.
- In what way
- How did you feel during the simulation classes in
  - Sem 3 - surgical
  - Sem 4 - medical
- What did you personally gain from doing the simulation classes in sem3 and 4?
- Tell me what you liked about simulation?
- Tell me what you disliked about simulation?
- Clinical simulation can allow you to make mistakes and be given feedback, what do you think about this.
- Can you describe to me any similarities between the simulation classes and your clinical placement. (Comparisons means similarities and differences)
- Can you now describe to me any differences between simulation classes and your clinical placement.
- Final Question – In what way did having clinical simulation sessions have an impact on your skills competence in practice placement.

Semi-structured one-to-one interview schedule **semester 6**

(student copy)

Questions

- Can you remember during semester 3, 4, 5 and 6 doing classes which were called Clinical Simulation?
- Can you tell me what the term clinical simulation means to you.
- How do you think clinical simulation helps you learn.
- In what way
- How did you feel during the simulation classes in
  - Sem 3 - surgical
  - Sem 4 – medical
  - Sem 5 – trauma
  - Sem 6 – Immediate Life Support Course
- What did you personally gain from doing the simulation classes in sem3 to 6?
- Tell me what you liked about simulation?
- Tell me what you disliked about simulation?
- Clinical simulation can allow you to make mistakes and be given feedback, what do you think about this.
- Can you describe to me any similarities between the simulation classes and your clinical placement. (Comparisons means similarities and differences)
- Can you now describe to me any differences between simulation classes and your clinical placement.
- Final Question – In what way did having clinical simulation sessions have an impact on your skills competence in practice placement.

Appendix XIII Reflective Journal

Pre understandings

Before I begin this journal I need to express my pre understandings of what I am studying. This is what Heidegger suggests so that it is clear from the outset what my ideas, feelings and understandings of the subject are before gathering any data.

I have been taught by simulation education during the Advanced Life Support course (ALS) and as such found this a stimulating way to learn. At the time I was working in the coronary care unit (CCU) where cardiac arrests are very common and patients inevitably die. There were a number of issues that I wish to discuss on an educational viewpoint as well as cognitive, affective and psychomotor skills levels.

What struck me was that the simulation sessions were very close to reality, in fact in some cases the team had to be stopped since we hadn't heard the command to end the scenario and were carrying on as if it were real. Additionally during a real situation you experience an adrenaline rush and this was also felt during the simulation classes.

The teams that we were put into were exactly the same as the real situation. These were not too many and sometimes just two qualified nurses, which can happen. Thus the team work was the same.

The experiential learning from this course made it much easier to learn the theory, but also to put it into practice, which was not long after the course. Although I didn't think about this at the time, since I wasn't in education it definitely helped to form deep learning.

Initially having to communicate with a manikin was quite strange, however the more you did it (about four scenarios per day) then the more you got used to it and eventually forgot about it being a manikin.

This course, although very intensive was thoroughly enjoyable. There was a great deal of team spirit and people trying to help each other. The first ALS course I did I remember feeling that this was unlike any other course I had done. There was short sharp lectures intermixed with single skill stations and then two half days of full scenarios. This was an innovative teaching method which motivated the student and kept your attention.

There was definitely an anxiety about passing the course. At the end of the three days there was a multiple choice exam as well as an OSCE test. This was extremely nerve wracking. It did however make you determined to get everything correct so that you did not look a fool in front of your peers. Additionally you were going to be caring for patients in these situations and you wanted to know what you were doing.

Thus some of the techniques used in this course were used in the pre-registration nursing curriculum. Obviously the literature pertaining to how best to carry out simulation had been scrutinised so that we were implementing simulation as to the best of our ability. A great deal of time was taken in ordering the correct equipment that was being used in the clinical situation as well as staff training and ensuring the correct scenario level was introduced at specific points of the curriculum. The scenarios included were in consultation with clinical staff.

12/9/04

The study

I start this journal just after completing the first year of the Doctorate of Education. At this stage I am just about to start the data collection for the

study and a more in-depth review of the literature as well as writing up the method in more detail as I am actually carrying it out.

I have already gained access to the students from the head of School and ethical approval was sought from the research ethics committee, but was deemed by them not to be required because of the nature of the study.

I had help in constructing the semantic differential questionnaire from lecturing colleagues who were also involved in running the simulation classes for different semesters. This involved discussion, reflection and examining the literature on the SD questionnaire to aid construction. Eventually eight word pairs for each concept evaluative, potency and activity was chosen that would be suitable for the student to answer around their competency with clinical skills.

Once the SD was constructed a pilot study took place with the semester four students who were the August 2002 intake. There appeared to be no problems with the questionnaire. The students were asked to reflect on it after completion and they found it easy to complete with no ambiguous areas.

A colleague then very kindly set up an excel spreadsheet for the data analysis. This was carried out exactly the same as intended for the actual study.

The current semester four (Feb 03 intake) and six (Feb 02 intake) commenced on Mon 16th August and it is these cohorts that I am using for the data collection. Student information sheets and consent forms have been compiled and the sample of semester four is a convenience sample of the stream A. Seven students were asked to volunteer for the study and one as a standby in case someone dropped out. All eight students completed the

consent form with no hesitation. The same will be carried out for semester six but at a later date.

The first data collection has taken place without a problem. After the first simulation class the eight students completed the questionnaire with ease. The second simulation class was followed by a week in clinical placement and the second questionnaire will therefore be completed on Mon 13th September 04.

Semi-structured one-to-one interviews are planned for the week beginning 25th October, which is a remedial week for the students. This, after discussion with my supervisor should take place in a non-threatening environment and therefore will probably take place in the hospital they have been working in rather than the college. The semester six interviews will take place in Dec/Jan which is just before they qualify.

More reading is taking place for the literature review (part of the hermeneutic circle) and the methodology. Also attending a simulation conference for networking.

The simulation

The students have had two simulation classes so far. Having taught these classes three times before the setting up and running of them takes little time and effort. A teaching plan consists of the simulation scenario and the potential outcomes and expectations of the students. The nurse technicians ensure all the equipment required be in the room and so after refining this on several occasions, all equipment has been present. The simulation room is timetabled to semester four on Friday mornings and so there is no problem with this. Thus the actual planning and delivery of the class runs like clockwork.

As usual with the first simulation the students are quite withdrawn and unsure of what is expected. However after the first feedback session which always starts with the good points starts to break the ice and they become much more relaxed with each other. The second session has shown more confidence in some students especially with communicating to the manikin as if it were a real person. In one particular case the student became very concerned and afterwards stated that she felt very anxious and worried just as she would have been in the real situation. After reflecting on this, as a group the students agreed that the more realistic they think the situation is then the more they learn from it.

However one particular group it has been obvious to myself that they are not learning as well as some of the other groups and this shows particularly in the simulation classes. On the second simulation it was also very obvious to the students that they were struggling with some basic tasks such as patient assessment (vital signs) and basic life support. Again on reflection the good points were highlighted first, but thereafter the students were very critical of themselves and very aware of their own poor abilities. This will be interesting to watch in the next simulations to see if they try and learn more theory prior to the classes.

A couple of groups have stated how beneficial they find the peer review. Not getting it, but giving it. While sitting observing one half of the group give peer review at the end of the simulation. This has been noted as being very beneficial in that you can pick up on subtle things that the group do not do, or miss and this can help your own learning. This was not something I had anticipated or read much on, but after reflection with the students it certainly helps their learning.

Interestingly, so far no-one has stated that they hate, or dislike the simulation classes. In fact it is the exact opposite, with many students asking when they get it again, in which semesters and which modules. They also wish they

had got more of it in semester three (one session only). Again it will be interesting to get feedback from practice on Monday (13th Sep) to find out any relationship with what they have already had in the simulation class and what they saw in practice.

3rd October 2004

All simulation classes have now taken place for the module and the students are on a three-week placement block. The SD 3rd questionnaire is completed and the students have week four and five with them with the dates for completion. I will e-mail them to remind them to complete these at the correct times.

After more reflection and discussion with other lecturers carrying out research I have decided to hold the interviews in a vacant flat in the hall of residences. After speaking to the accommodation officer I have sent her a formal letter for access to one. They are all full at present, but one should be free by mid October and the interviews are planned for the week beginning the 25th October.

Simulation sessions are now complete until the next cohort of students. Interestingly two students out of 41 did not like the simulation classes. There was a discussion around this and one of the students said she just did not like having to talk to the manikin. She also tends to let the remainder of her team do all the work and have as little involvement as possible. Coincidentally I am her link lecturer on clinical placement and at interim assessment her preceptor spoke very highly of her.

This will be discussed with the whole class on the 1st November when they return from placement for the remaining nursing module in this semester.

Semester six students were approached on Friday 1st October to inform them of the study and to ask for volunteers. Seven names will be randomly

chosen to form the sample. These students are in every second Friday until they qualify in mid January. Therefore the interviews are planned for December and early January.

11th October 2004

Development of the semi structured interview schedule has taken place. The first draft was constructed with the research questions in mind. However this was far too formal and academic and in no way sounded how I would ask a question. Therefore with the help of two lecturers and a nurse technician I reworded the questions and discussed this with my supervisor. A few minor adjustments were made and then it was piloted on some students.

The pilot consisted of a group of three semester five students who volunteered. The questions were asked in turn and their responses sought, as well as their thought on the wording of each of the questions. All three students agreed that the questions were answerable and that they understood them.

Some interesting answers were

Q3. Liked being able to watch other students in action.

In class might think you know something, but in the simulation you can demonstrate to yourself that you know.

More time to practice a skill and retain that skill over the three years of the course.

Q4. Nervous, anxious, then liked it and wanted more.

Q5. More confidence. Got to know the group better, since I had just joined the semester from interrupted study, more social interaction.

Learning from mistakes

Q6. Very realistic, thinking for yourself.

Q7. Things didn't go wrong, all the equipment was to hand.

Q8. Didn't want this to happen in practice – always remember thing now that you forgot in the simulation. Don't have to worry, it's not real. Mistakes happen in practice and you learn from them, less mistakes might happen.

Q9. Chest pain patient, all activities carried out in the simulation happened, e.g. ECG, bloods etc.
Hypovolaemic shock did not see this, but the nursing staff were reflecting on something that had just happened. Discussed fast fluids and squeezing the bags.

Q10. All equipment is always there, not so in placement.

Q11. Feel much more confident that I will be competent in placement, just knowing names for equipment, what they are for and what they look like helps. Keeps up the level of competence of a skill because you keep practising it in simulation.

18th October 04
Semester six students who were selected for the study have been contacted by e-mail since they are on clinical placement and interviews have been set up for three Fridays that they are in college. These are 12 and 26th November and 10th December.

Accommodation officer met with me and showed me a suitable flat to hold the interviews. The semester four interviews take place next week and the flat is available for me all week and I can keep the key and return it when finished.

Tape recorder is available and tapes have been purchased as well as spare batteries, although these should not be required since there is a mains socket in the flat. Meeting with supervisor after the first two interviews.

2nd November 2004

Interviews with semester four have taken place. On the Monday morning the first student was due at 10am. At 9am however I discovered that the accommodation officer had not left me the key for the flat and that she was on a weeks-annual leave. At this point one of the mental health team overheard the conversation I was having with one of the lecturers I share an office with. He suggested a new room that the mental health nursing team had just had renovated and was going to be used for interviews. This was in the college, but after inspection it was set up like a sitting room and was very informal. Therefore the last minute decision was taken to use this room.

All the interviews (n=7) went very well. All students attended for the interview and delivered the two semantic differential questionnaires that they had completed in placement. The shortest interview took 35 minutes and the longest one hour. Some students were very easy to gain information from, others required a lot of questioning and repeating questions to elicit information.

These are now ready for transcribing. This will have to wait until I have been on an introductory course on how to use N Vivo. This is currently being organised by me supervisor.

16th December 2004

All interviews are now completed and it feels as if there is a great deal of information gained from the students having gone through the interview process. Especially since I have been reflecting on what the students have said with other lecturers involved in simulation in the adult branch programme. One lecturer commented on the fact that the students learn

more than he even thought, especially with teamwork, decision making and confidence building. Also we were not aware that many of the groups are reflecting on their session afterwards which can have an important impact on learning.

A meeting is arranged for the beginning of January with my new and old supervisor. This is to introduce my new supervisor to where I am in the research process, but also he has an expert knowledge of N Vivo, which is the computer package I am using for the qualitative interview data analysis. I have not transcribed any of the interviews yet since I did not have this package, or the knowledge of how to use it. This will mean that in the New Year I will be able to start analysing the data. Although in grounded theory the interviews should be analysed as the research carries on, in this study the interview questions have remained similar throughout. Thus analysing the data all at the one time or in a block may make me more involved with the data and immersed in it.

8th March 2005

I have had my meeting with my new and old supervisor, which went very well. Since then I have had another meeting with my new supervisor to look at one transcribed interview and decide how to analyse this. On reflection Nvivo was decided as being appropriate. At the moment I am now transcribing the semester four interviews (7). The first one took five hours and my supervisor explained that I would get quicker the more I did. Oh how I wish that were true. The shortest one was the first one. The longest has taken me eight hours and it is exhausting mind blowing stuff to do. I need to transcribe all seven semester four interviews and put them onto Nvivo for our next meeting as well as put the quantitative data onto excel. This has turned out to be a large amount of work, which I am trying to achieve, however I do not think I will complete it all and I do not want to rush the transcribing in case I miss anything.

The children are now fighting me for the computer and I wish I had bought a laptop. I could take it anywhere and do little bits of Nvivo wherever I am. Never mind the next few months of Saturday and Sundays of doing this will fly by. Also I see the benefit of doing the data analysis early to give me enough time to write up the results and discussion. So back to it.

1st April 2005

No this is not an April fool. I did manage to get all the work completed for my last visit with my supervisor, so all the semester four transcripts and onto Nvivo as well as the excel spreadsheet for the SD questionnaire. I think he was quite impressed when he asked what I had been doing. We went over a few questions I had about Nvivo and also the spreadsheet. This takes a bit of explaining how to do the data analysis for it. We agreed that I would send a copy of an article, which used and SD and talks about the analysis. I have to confess that I didn't set up the spreadsheet on my own. A colleague is a whiz at this and so he helped me out.

I have transcribed all the semester four interviews and have given them back to the students to read and confirm that this is a true reflection of what they said. All students returned them swiftly. I am now transcribing the semester six interviews and finding them a little easier to do, but still very time consuming. At the same time I am writing more of the methodology as I am doing it. This is a good way of keeping it up-to-date and easier to write when it is fresh in your mind from actually doing it.

The Nvivo coding for the semester four group I found fairly easy to do. Nvivo is very user friendly and the book and on-line support is excellent. I found it good doing all seven semester four students over the course of about one and a half weeks. This meant the coding was fresh in my head and I remembered what I put where for each student, thus keeping it consistent. I will do the same with the semester six students' transcriptions. Once this is complete I will get a couple of members of staff who are involved in the

simulation to examine my codes and see if they are in agreement (validation).

The current semester six students (Aug 02 intake) approached me about a letter with signatures attached in support of the Sim Man, which they have submitted, to the Adult branch co-ordinator. It turns out that through a series of Chinese whispers the students thought that the Sim Man was being withdrawn and signed a petition against this. What had actually happened was that the adult and midwifery lecturers were playing practical jokes on each other. At one point for one week the Sim Man was sharing a room with the newly purchased midwifery manikin named Noelle. This manikin goes through labour simulations and therefore produces a baby. A rather real looking lawyers letter was sent from the midwifery team to the adult team claiming that the Sim Man was the father of Noelle's baby and so claiming child support from him. From this a series of practical jokes have taken place like a valentines card being sent to Noelle. It transpires that the semester six students thought that there had been an official complaint made against the Sim Man and he was being withdrawn. The letter from the students states very clearly that they thought him to be beneficial to their learning and a real loss if he was withdrawn. This letter has been kept and I shall use it as an appendix. After discussion with my supervisor I will use this information in the discussion section of my study as a piece of unsolicited support from the students.

10th April 05

Felt I had to make this short entry. I have just completed the last transcription. Student 6.7 has just been completed and I am so glad that is finished. It is so time consuming doing the transcription and one colleague likened it to sticking needles in your eyes! Anyway I have finished. Actually during the week I was searching the Internet for some information on interview and came across a site that transcribed your interviews for you and put them into Nvivo and did the coding. I was sorely tempted. However one

of my points in the methodology is about getting immersed in the data and after transcribing all 14 of them this would have been impossible had I not gone through that experience myself. So on to the next step of putting these onto Nvivo.

19th May 2005.

I have now put all 14 interviews onto Nvivo and coded them. Next I will look at memo writing for each of these code. Also I have carried out some simple analysis of the SD from the excel spreadsheet. Some interesting things are appearing and so I am going to continue with some simple stats and looking at what these mean. In particular I am looking at which word pairs score the lowest or highest initially and examine what these words mean. Are they specific to either E,P, or A.

Additionally I have been writing more of the methods section to get this up-to-date and also it means I am writing it when I am doing it.

A new group of students are going to get simulation for the first time tomorrow. This should be interesting.

Also looking at inter-rater reliability. A previous colleague, who has a PhD and is a senior lecturer in clinical skills, has agreed to look at one transcript interview. I will give her the codes and she will perform this individually and then I will compare them. My supervisor chose randomly which transcript was to be used which is student 6.5.

1st June 2005

Last night in the sunshine I read over the literature review section, which I have not looked at for a couple of months. Having done this today I have moved some sections to ease the flow of the reader and added a couple of points to emphasise the reason for using simulation within the HEI. A couple of new up-to-date references have been added.

Started to write memos for the Nvivo. Finding this quite difficult to get into. I think I need to do it in small parts, rather than spend a whole day at it. Maybe I should spend 15 minutes per night doing this, or when an idea occurs to me. Will do some more of this later today. At least it is raining outside now so that I can be indoors doing the computer work!

New group of students have now carried out two simulation sessions. The difference in them from one week to the next is amazing. They were so much more organised the second time. The basic nursing skills of checking observations, recording, communicating with the patient and getting expert help was much improved. Also the students were more relaxed and many reported that they were enjoying the sessions. One student reported that he was that excited about it he couldn't sleep. He likened it to when he was a child and going on holiday, or Christmas eve when you can't sleep for excitement and then wake up very early in anticipation.

12th August 2005

Realised I haven't written in the journal for a couple of months now. This however does not mean that I have not been doing any work. Memo writing continues and this will keep going until I have completed each section in detail.

I have been concentrating on the methodology section for the past month due to the last feedback from my supervisor. Unfortunately his ideas differed from my first supervisor and this is now giving me more revisions to do. However I think my new supervisor has more experience at phenomenological research and so I am following his advice. Doing more reading around phenomenology so that I get this section correct.

More detail is being added on the semantic differential quantitative section of the research. Explaining some of the tables in more detail.

Received the inter-rater transcript back from the colleague who was coding it for me. This interestingly has shown her to code it almost exactly the same as I did, which helps with the validity/reliability of my data.

16th October 2005

Results are coming along. The quantitative results are basically written up, with just one graph to do more work on.

The qualitative results are now being written as well as refining the introduction, literature review and methodology section. The more reading I do on phenomenology the more contradictions I find. There seems to be a number of current writers who are saying that much of the nursing research is not true to the philosophy of phenomenology and it is this research that I am reading, which makes it difficult to be sure you are doing it correctly. Furthermore Husserl and Heidegger did not provide methods for doing their research, just the philosophy behind it. I just have to be aware of this when writing up and ensure that I am being true to Heidegger.

7th December 2005

Methodology has been reviewed by my supervisor and he appears to be pleased with this. Minor revisions have been done. The quantitative data analysis is completed and written up, as has the qualitative data. I have now commenced on the discussion. I have used the research questions as a basis for the discussion. I am very aware of 'Time' that Heidegger refers to and the difference between the semester four and six students. I need to make sure that this comes across in my results and discussion.

Thinking back to my pre understandings I was surprised that the students did not discuss the fact that manikins are used in more detail. I thought they would have referred to this more and said that it did not reflect reality because of this, however they did not. It appears, just as I found, that the more you do simulation the more you forget that it is a manikin.

I am attending research seminar lunch classes which is helping me to focus on the discussion section. Today a PhD student had used phenomenology and it was helpful to hear how she used her pre understanding in the discussion section. I will have to do this.

4th February 2006

Mock viva by the programme leader on my methodology chapter took place today. This was very beneficial since it gave a fresh pair of eyes to critique my methodology and ask me questions which will help for the full viva. I am very happy on how this went and it is encouraging for continuing with the remaining chapters.

7th February 2006

Presented my discussion section to the research forum group at Caledonian University today. I found this very helpful. It made me focus on the main points that I found in my research. Furthermore I gained valuable feedback from some of the research lecturers/professors who attended and made suggestions for adding to the discussion. I have now added these.

Reflecting back I have found that writing up the results and then the discussion the easiest parts of the whole process so far. This is possibly due to the fact that I did all the transcribing of the interviews myself and therefore the data was fresh in my head. I knew what I wanted to put into the discussion before I had started it. I would recommend to anyone doing the transcribing of data themselves since it saves time in the long run. Additionally using NVivo has turned out to be an extremely easy process.

3rd March 2006

Meeting with supervisor today was discussing the discussion and recommendations/conclusions. This went very well and I am now at the stage I am ready to submit the whole thesis for a mock viva. Dates have been forwarded to the programme leader and my supervisor for the end of

March. This will provide me time for any changes prior to the final submission date of the 28th April. This is quite an exciting, but time consuming process. I have kept all the appendices and now need to photocopy them and print all the chapters out and proof read them. In preparation I have bought numerous amounts of paper and ink cartridges. I only hope my printer can cope with it all.

This will probably be the penultimate entry to the journal, the last being after the mock viva. It has been interesting reading over it again while proof reading, since you sometimes forget what exactly you had to do at some stages. However the whole point of the journal was to show the audit trail, in order for another researcher to follow what I did and see my reasons for decisions I made. Therefore I hope I have achieved this.

Having carried out research, while working as a research nurse this has given me invaluable prior experience in conducting a research study. This was especially pertinent in organising things at the beginning such as access, ethical approval and recruiting students. All these aspects can take a huge amount of time, and in fact while speaking to other students on my year of the course it is these problems that they are facing.

Conducting the study has convinced me further that there is a need for simulation education in the nursing undergraduate curriculum. In fact it has shown me that a greater emphasis is required on clinical skills and assessment of these. It was a pleasure interviewing these students and gaining their experiences of simulation.

28th March 2006

Well the mock viva took place yesterday. The reason I have time today to do this reflective entry is that the University is closed due to strike action, therefore I am using my free time well.

I was pleased with the way the mock viva went. I didn't feel there were any questions that threw me or that I couldn't answer. I found that since I had completed every stage of the research process and completely immersed myself in the data as Heidegger suggests then it was part of me and so made the process easier.

The discussion and recommendations and conclusions sections discuss the whole study, however they do not let the reader know what I gained professionally from the whole process. There are a number of points I will reflect upon, these are to do with the subject of simulation and the methodology.

Simulation had been something I was enthusiastic about as a lecturer and practitioner. However completing this study has convinced me further that it should be in all pre-registration nurse education programmes. Granted there needs to be more research, but I think this should be in the area of how much practice hours can be replaced by simulation hours, much like pilots do.

Up until the point of this study I had only ever been involved in quantitative research, working as a research nurse and completing my thesis for the master of nursing course. Therefore not only was phenomenology new to me, so was qualitative research. Completing this study and using Heideggerian hermeneutical phenomenology has widened my knowledge of qualitative methodologies and shown me just how rich and rewarding the results from this type of research can be.

Appendix XIV **Semantic Differential Questionnaire** **week** ☐

Student ☐

Instructions: Please describe what the concept 'competence' means to you by marking the following word pairs as to how closely related 'your competence' is to one or the other word in each line.

1.	*Anxious*	_____	_____	_____	_____	_____	_____	*Reassured*
2.	*Nervous*	_____	_____	_____	_____	_____	_____	*Calm*
3.	*Unsure*	_____	_____	_____	_____	_____	_____	*Sure*
4.	*Bad*	_____	_____	_____	_____	_____	_____	*Good*
5.	*Weak*	_____	_____	_____	_____	_____	_____	*Strong*
6.	*Passive*	_____	_____	_____	_____	_____	_____	*Active*
7.	*Vague*	_____	_____	_____	_____	_____	_____	*Accurate*
8.	*Timid*	_____	_____	_____	_____	_____	_____	*Confident*
9.	*Sad*	_____	_____	_____	_____	_____	_____	*Happy*
10.	*Tense*	_____	_____	_____	_____	_____	_____	*Relaxed*
11.	*Worthless*	_____	_____	_____	_____	_____	_____	*Valuable*
12.	*Slow*	_____	_____	_____	_____	_____	_____	*Fast*
13.	*Unskilled*	_____	_____	_____	_____	_____	_____	*Skilled*
14.	*Unable*	_____	_____	_____	_____	_____	_____	*Able*
15.	*Inadequate*	_____	_____	_____	_____	_____	_____	*Adept*
16.	*Beginner*	_____	_____	_____	_____	_____	_____	*Advanced*
17.	*Avoid*	_____	_____	_____	_____	_____	_____	*Eager*
18.	*Blunder*	_____	_____	_____	_____	_____	_____	*Prepared*
19.	*Excluded*	_____	_____	_____	_____	_____	_____	*Belong*
20.	*Worst*	_____	_____	_____	_____	_____	_____	*Best*
21.	*Confused*	_____	_____	_____	_____	_____	_____	*Clear*
22.	*Flounder*	_____	_____	_____	_____	_____	_____	*Cope*
23.	*Inept*	_____	_____	_____	_____	_____	_____	*Grasp*
24.	*Ignorant*	_____	_____	_____	_____	_____	_____	*Knowledgeable*

Appendix XV **Student authentication form**

Dear student

Thank you once again for doing the interview with me on clinical simulation. Attached is the printed copy of the transcribed interview. Can I ask you to read it and complete the bottom section of this form and return it to me in my office room 431.

Thanks you

Jacqueline McCallum
Lecturer in Adult Nursing
Room 431
Tel: 01698 283100 ex654.

I _____ (print mane) have read the attached typed transcript of my interview in clinical simulation.

I agree/disagree (delete one) that this is a true reflection of what I said.

Signature _____ date _____

Appendix XVI Coding by external lecturer

Coding

1. Realism	-anything to do with reality and the seeing the same in placement
1.1Differences	-any differences seen to do with realism
2.Learning	-how they learn
2.1Reflection	-using reflection to learn
2.2Peer support	-evidence of peer support in assisting learning, good or bad
3.Attitudes	-attitudes about simulation
3.1Placement	-attitudes about placement
3.2Dislikes	-negative attitudes to simulation
3.3Likes	-positive attitudes to simulation
4.Competence	-anything to do with competence and confidence
5.Theory-practice	-anything to do with theory-practice.
6.Concept of Simulation	-what they think simulation is.
7.Practise	-any comments about practice
7.1Repetition	-anything to do with learning by repetition
7.2Mistakes	-anything to do with making mistakes and learning by making mistakes.
7.3Placement	-anything to do with getting practice at skills in placement.

Student 6.5
Introduction – student already knows me.
Confidentiality explained.

Thank you for agreeing to do this interview
What I want to do is ask you some questions on simulation.

Firstly can you remember during semester 3, 4, 5 and 6 doing classes which were called simulation?

Em I suppose I remember better semester 4 em and that was the one where we did cardiac because that was more interesting to me I suppose, it sticks in my mind. Em semester 3 I don't really remember that much about it. Em, I though that was because it was a bit overwhelming. It was the first time doing it and seeing how it works. In semester 5 and 6 it would be back to the training, the ILS training as well, I remember that one.

Can you tell me what the term clinical simulation means to you.

It's where you can I suppose simulate a situation you could be in em in the wards, but you're able to practise it, go through it, you can make a mistake but nobody will get hurt. Em you've got your peer there who will be able to go through where you went wrong and hopefully you can learn from it. But at the end of the day nobody is getting hurt. So you get to practise it before you go out to placement and if you make a mistake it doesn't matter you can practise it again and learn from it. Em, I suppose it's also about learning practical skills em, and putting the theory that we're learning into the practical skill to practise. And certainly for some of them it was learning about teamwork, working in a team. That was an interesting part of it. Em, I would say we mainly only got this in the simulation. So the teamwork was similar to what you see in placement, very similar. Although it's different in college because you don't know how everybody's gonna react and where everybody's strengths are in regarding taking control of a situation or delegating jobs whereas out in placement everybody kind of knows their role and knows who's gonna take charge. That did develop though staying in the same team, Especially in semester 5 and 6. It seemed to work out that you were in the same team for most of the simulation and it does help because of the teamwork aspect you all got to know where you had good strengths.

How do you think simulation helps you learn?

I think again it's back to practising the clinical skills, em, learning them and developing them. But again the reassurance there that you're not gonna hurt anybody. And the fact that you can

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not in coding although might be 3.3
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do it over and over especially if you have made a mistake you can put yourself in that scenario again. So it's the repetition of the skill as well rather than just doing it once. You can do it over and over until you get it perfect. I suppose if I go back to the chest compressions em, and the fact that I've been fortunate enough to see cardiac arrests em and I remember doing them in simulation in semester 3 and 4 and then I saw a cardiac arrest and it's quite different from doing it on the Sim Man. Em but I wasn't involved I was just watching, but I went back and practised it. Just to check the rate and everything, just to make sure.

7.1

How did you feel during the simulation classes in semester 3 to 6?

In semester 3 I think I found it a bit overwhelming and the fact that it was the first time we had done it. It was the first time we had done the scenario. Em it was someone who collapsed that we did and again it was all about getting it in the right sequence. So I did find it a bit overwhelming. In semester 4 it was slightly easier. You were more aware of these things, why you do things and the sequence. You're able to come up with it straight away instead of thinking what you need to do in character. You just make the straightforward decisions. The decisions come quicker and the priorities are easier. So the anxiety from the first one goes away. In semester 5 I found it a lot easier. Certainly I would say by the end of semester 5 and almost semester 6, I wouldn't say automatic, but the decisions just seemed to come. I don't know whether it's because I've been at a few cardiac arrests and I know what goes on and I've been involved but it was a lot easier to say, right this is the next step, this is what we're doing, you know being able to talk and shout out to somebody to do something. So you're more aware if a patient becomes unwell and recognise it and do something quickly rather than waiting to the very last minute, when it's too late. I suppose as well because we know one another as well we know our strengths and weaknesses, you're aware of who could do what and who would be best at what.

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What did you personally gain from doing the simulation?

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I would probably say confidence. With the Sim Man all the skills you get to do and practise. Also that during a real cardiac arrest I would remain calm, because I know it, I've done it. So in practice you're able to go ahead and do it, you've practised it so you have the confidence to do the scenario and make the right decisions. During the arrest that I saw I remained fairly calm. The first one that I had seen I was just observing and it was different from semester 4 and I couldn't remain calm although I wasn't involved, there was so much happening the adrenaline

was pumping and understanding why people were doing things I hadn't got quite a good grasp on it. But certainly now in a cardiac arrest I know what the next step is. I know where somebody is going and why they are doing a certain thing and being able to get the equipment that I know they're gonna use. It's being able to spot what's happening with the patient and what they're gonna do next and go and do it. It's almost like being a step ahead. The adrenaline rush that you get in a real arrest I think in semester 5 and 6 I also got in the simulation. I think because I have been to an arrest and it was almost like, I know in simulation it is putting into real life at this stage we should be able to make these decisions. So you feel like it's a real patient and get worried that they're gonna die. Semester 3 I think it was more stress and worry, of doing the whole situation and not knowing what to do and so you sort of panic. Whereas in semester 5 and 6 there is more control. There is control, but also the adrenaline rush. You know what you have to do and you have to do it. Whereas in semester 3 it was more, oh, what are we doing now and I'm glad this is not real. Em so I gained confidence in being able to do the skills. You know sometimes you think oh I can't believe this is happening, but it is having the confidence to recognise it and having the skills to be able to deal with it. It is communication skills, so if you see something that is not being done, then being able to say to someone to do it. Like saying this needs done can you do it and vice versa they might see something and ask you to do it. So there's nothing meant in the way it's said or questioning one another it's just that you might recognise something and they might see something else.

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Again like teamwork, communication is part of the skill — does this fit with 7.3?

Tell me what you liked about simulation?

It was god fun, being able to make mistakes, but being able to step back from it and analyse it and keep it light-hearted. It was also being able to practice the skills and also being able to talk to my friends. Everybody has slightly different ways of doing things so being able to talk to them about it was good. You could talk through the scenario and reflect on it. Afterwards we would talk through what we did. So you get the theory, you do the skill and practise it and then do it in practice. I would probably say that the simulation made you keep up-to-date with the theory. You know like checking the resuscitation council site for any changes. Since we started and now there have been changes with resuscitation. So I suppose it also keeps you up-to-date with your skills that way.

7.2

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Tell me what you disliked about simulation?

I suppose it's the initial in semester 3 of the embarrassment. But by the time you are in semester 5 and 6 you appreciate that

3.2

you are in a simulation and if you make a mistake then it's ok and just to use those opportunities. So I suppose once you get past the initial embarrassment, it's just that. Em, I don't think there is anything else.

Clinical simulation can allow you to make mistakes and get feedback on this. What do you think of this?

I suppose that most of us make mistakes. We seemed to be making them with sequence of events. It wasn't actually what we did but the order in which we did it. So maybe we wouldn't do something and then realise and do it later. I think I've definitely learned from these mistakes. Regarding getting it into your head with the theory first and then the simulation you rush in and you get all the equipment first and you should check the patient first so that they are having a cardiac arrest and that they aren't just sleeping. So it's made me focus more on the patient and the sequence of events and not to focus on what the monitors are saying but to check the patient. So being able to make mistakes is good and you learn from them. There's been some arrests that I've been at when I've only been observing and I've been trying to think what the next step is and in my head I've got it the wrong way round. Or there' s been arrests where they've done something and I would have done something else, but I've been able to reflect why they've done it and understand that way.

7.2

The feedback has been good. I mean you peers, some haven't seen a cardiac arrest and some have seen a few, there's others working as care assist and they're seeing them more often and they're able to give you advice. So they can give you tips on how to do something to make it a bit easier, or tell tale signs that something is about to happen and how to recognise it. When you were giving the feedback you were observing it. I suppose you were going through I suppose what you would do in their place and the sequence of events that you would do and how you would communicate with one another and tell one another if you miss something. Sometimes it's easier when you're sitting watching to spot mistakes, rather than when the adrenaline is pumping.

7.2

Can you describe any similarities between simulation classes and your clinical placement.

I suppose there was one arrest that we were at where I was maintaining the airway and we had done that in class. I had put in a Guedel airway and a trauma mask and all I was doing was supporting the airway and holding on the trauma mask, which was similar to what I had done in simulation. Although it was a slightly different feeling. It's not quite the same feeling as the

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rubber manikin. But the skills that I was doing were the same. Being in the simulation that we did we allocated jobs we did amongst ourselves and I was doing airway and so I was able to do it on the real patient and making sure that they were getting adequate oxygenation. With everything that was going on you know to concentrate on your own job. I couldn't have done this at that stage if I hadn't had the simulation classes. I don't think I would have stepped in to do it, not the airway, I maybe would have got the equipment or done the running, but not the airway. I volunteered to do the airway and the person taking charge asked if I felt ok about doing that. He said go ahead and that they would be there if I had any questions, but I felt quite comfortable and confident to go ahead. There was two of us there when we had to use the ambubag the other person was squeezing so I had that extra support, but I don't think I would have done that if I hadn't had it in simulation.

I suppose other similarities was that being there during the arrest you were counted as part of the team and being able to say what do you need me to do. In semester 3 doing the first simulation I wouldn't have volunteered and said what do you want me to do I would have just stepped back. I don't think I would have known what equipment to use. But from the simulation I've learned and looked back and now know what equipment they were using and what they're talking about. So the other thing about simulation is being able to see the equipment and learn what it's called and what it does and look at it and become comfortable with it.

I suppose overall all the skills that we used were the same, like the catheterisation and cannulation and getting these into the patient, getting them the drugs that they need. Again it's the sequence of events that are the same, it's not completely different, although some things are slightly changed depending on the different patient. But generally it's the same.

Can you describe any differences between the simulation class and clinical placement.

Em, no differences between simulation classes and placement well nothing that I can think of. Certainly when I've done chest compressions they feel very different on a real person than on the Sim Man. But the technique etc is still the same. But nothing else different that I can think of.

In what way did having clinical simulation classes have an impact on your skills competence?

I think it had a big impact regarding having confidence in myself to do everything, to be able to volunteer to do it and to feel

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confident in myself that I know what I'm doing. In a cardiac arrest you don't have any time to say oh, am I doing this right or checking that you have done everything. The more basic skills I practised them at least once in college and things like catheterisation I managed fine. The first one I did it was similar in what I did, the actual equipment you used, but the actual doing it was different, it was a lot more difficult and with the situation you were under a lot more pressure to do it. It went well after the second catheter, but there has been some times that it hasn't went well, but I'm aware that this can happen.

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7.3

Is there anything you want to ask me about simulation?

Em, no I don't think so.

I there anything else I should have asked you about simulation?

Pause No, not anything specific, but I would say regarding the course I would have liked more simulation although I don't know how practical that is with the timetable, but certainly I would say more of, very much so. I think it would give you more confidence in your skills earlier, rather than in semester 5 and 6. Even maybe in the CFP, not what you're doing in semester 5 and 6, but just an introduction to the Sim Man and just getting a fell for it, so that come semester 3 you're not so stressed, worried and panicking about it. Being there already then you've seen it. Maybe just being introduced to the practical equipment as well. You maybe wouldn't necessarily use it straight away but you would know what it is for and what it's called.

1 (although not sure!)

The only other things is to say that I will need to contact you again to read through the transcript to ensure that it is a true reflection of what you have just said.

That's fine.

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Student 6.5
Introduction student already knows me.
Confidentiality explained.

Thank you for agreeing to do this interview
What I want to do is ask you some questions on simulation.

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Can you tell me what the term clinical simulation means to you.

It's where you can I suppose simulate a situation you could be in em in the wards, but you're able to practise it, go through it, you can make a mistake but nobody will get hurt. Em you've got your peer there who will be able to go through where you went wrong and hopefully you can learn from it. But at the end of the day nobody is getting hurt. So you get to practise it before you go out to placement and if you make a mistake it doesn't matter you can practise it again and learn from it. Em, I suppose it's also about learning practical skills em, and putting the theory that we're learning into the practical skill to practise. And certainly for some of them it was learning about teamwork, working in a team. That was an interesting part of it. Em, I would say we mainly only got this in the simulation. So the teamwork was similar to what you see in placement, very similar. Although it's different in college because you don't know how everybody's gonna react and where everybody's strengths are in regarding taking control of a situation or delegating jobs whereas out in placement everybody kind of knows their role and knows who's gonna take charge. That did develop though staying in the same team, Especially in semester 5 and 6. It seemed to work out that you were in the same team for most of the simulation and it does help because of the teamwork aspect you all got to know where you had good strengths.

How do you think simulation helps you learn?

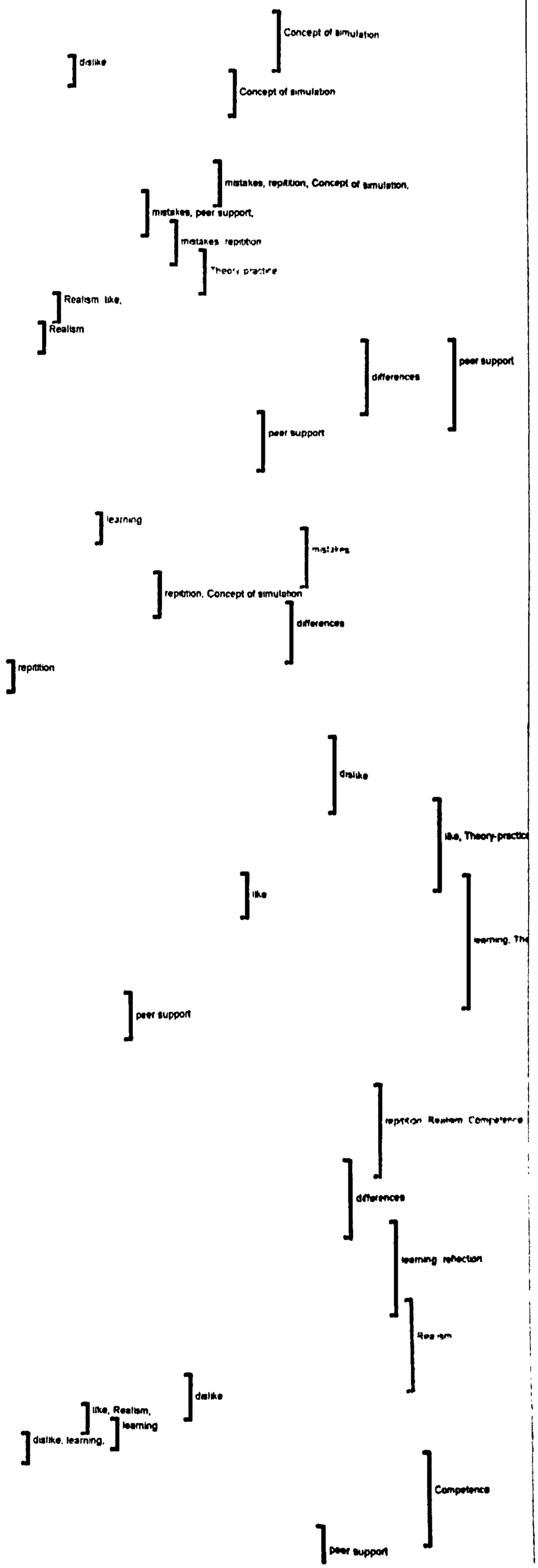
I think again it's back to practising the clinical skills, em, learning them and developing them. But again the reassurance there that you're not gonna hurt anybody. And the fact that you can do it over and over especially if you have made a mistake you can put yourself in that scenario again. So it's the repetition of the skill as well rather than just doing it once. You can do it over and over until you get it perfect. I suppose if I go back to the chest compressions em, and the fact that I've been fortunate enough to see cardiac arrests em and I remember doing them in simulation in semester 3 and 4 and then I saw a cardiac arrest and it's quite different from doing it on the Sim Man. Em but I wasn't involved I was just watching, but I went back and practised it. Just to check the rate and everything, just to make sure.

How did you feel during the simulation classes in semester 3 to 6?

In semester 3 I think I found it a bit overwhelming and the fact that it was the first time we had done it. It was the first time we had done the scenario. Em it was someone who collapsed that we did and again it was all about getting it in the right sequence. So I did find it a bit overwhelming. In semester 4 it was slightly easier. You were more aware of these things, why you do things and the sequence. You're able to come up with it straight away instead of thinking what you need to do in character. You just make the straightforward decisions. The decisions come quicker and the priorities are easier. So the anxiety from the first one goes away. In semester 5 I found it a lot easier. Certainly I would say by the end of semester 5 and almost semester 6, I wouldn't say automatic, but the decisions just seemed to come. I don't know whether it's because I've been at a few cardiac arrests and I know what goes on and I've been involved but it was a lot easier to say, right this is the next step, this is what we're doing, you know being able to talk and shout out to somebody to do something. So you're more aware if a patient becomes unwell and recognise it and do something quickly rather than waiting to the very last minute, when it's too late. I suppose as well because we know one another as well we know our strengths and weaknesses, you're aware of who could do what and who would be best at what.

What did you personally gain from doing the simulation?

I would probably say confidence. With the Sim Man all the skills you get to do and practise. Also that during a real cardiac arrest I would remain calm, because I know it, I've done it. So in practice you're able to go ahead and do it, you've practised it so you have the confidence to do the scenario and make the right decisions. During the arrest that I saw I remained fairly calm. The first one that I had seen I was just observing and it was different from semester 4 and I couldn't remain calm although I wasn't involved, there was so much happening the adrenaline was pumping and understanding why people were doing things I hadn't got quite a good grasp on it. But certainly now in a cardiac arrest I know what the next step is. I know where somebody is going and why they are doing a certain thing and being able to get the equipment that I know they're gonna use. It's being able to spot what's happening with the patient and what they're gonna do next and go and do it. It's almost like being a step ahead. The adrenaline rush that you get in a real arrest I think in semester 5 and 6 I also got in the simulation. I think because I have been to an arrest and it was almost like, I know in simulation it is putting into real life at this stage we should be able to make these decisions. So you feel like it's a real patient and get worried that they're gonna die. Semester 3 I think it was more stress and worry, of doing the whole situation and not knowing what to do and so you sort of panic. Whereas in semester 5 and 6 there is more control. There is control, but also the adrenaline rush. You know what you have to do and you have to do it. Whereas in semester 3 it was more, oh, what are we doing now and I'm glad this is not real. Em so I gained confidence in being able to do the skills. You know sometimes you think oh I can't believe this is happening, but it is having the confidence to recognise it and having the skills to be able to deal with it. It is communication skills, so if you see something that is not being done, then being able to say to someone to do it. Like saying this needs done can you do it and vice versa they might see something and ask you to do



another it's just that you might recognise something and they might see something else.

Tell me what you liked about simulation?

It was god fun, being able to make mistakes, but being able to step back from it and analyse it and keep it light-hearted. It was also being able to practice the skills and also being able to talk to my friends. Everybody has slightly different ways of doing things so being able to talk to them about it was good. You could talk through the scenario and talk to them about it was good. You could talk through what we did. So you get the theory, you do the skill and practise it and then do it in practice. I would probably say that the simulation made you keep up-to-date with the theory. You know like checking the resuscitation council site for any changes. Since we started and now there have been changes with resuscitation. So I suppose it also keeps you up-to-date with your skills that way.

Tell me what you disliked about simulation?

I suppose it's the initial in semester 3 of the embarrassment. But by the time you are in semester 5 and 6 you appreciate that you are in a simulation and if you make a mistake then it's ok and just to use those opportunities. So I suppose once you get past the initial embarrassment, it's just that. Em, I don't think there is anything else.

Clinical simulation can allow you to make mistakes and get feedback on this. What do you think of this?

I suppose that most of us make mistakes. We seemed to be making them with sequence of events. It wasn't actually what we did but the order in which we did it. So maybe we wouldn't do something and then realise and do it later. I think I've definitely learned from these mistakes. Regarding getting it into your head with the theory first and then the simulation you rush in and you get all the equipment first and you should check the patient first so that they are having a cardiac arrest and that they aren't just sleeping. So it's made me focus more on the patient and the sequence of events and not to focus on what the monitors are saying but to check the patient. So being able to make mistakes is good and you learn from them. There's been some arrests that I've been at when I've only been observing and I've been trying to think what the next step is and in my head I've got it the wrong way round. Or there' s been arrests where they've done something and I would have done something else, but I've been able to reflect why they've done it and understand that way.

The feedback has been good. I mean you peers, some haven't seen a cardiac arrest and some have seen a few, there's others working as care assist and they're seeing them more often and they're able to give you advice. So they can give you tips on how to do something to make it a bit easier, or tell tale signs that something is about to happen and how to recognise it. When you were giving the feedback you were observing it. I suppose you were going through I suppose what you would do in their place and the sequence of events that you would do and how you would communicate with one another and tell one another if you miss something. Sometimes it's easier when you're sitting watching to spot mistakes, rather than when the adrenaline is pumping.

Can you describe any similarities between simulation classes and your clinical placement.

I suppose there was one arrest that we were at where I was maintaining the airway and we had done that in class. I had put in a Guedel airway and a trauma mask and all I was doing was supporting the airway and holding on the trauma mask, which was similar to what I had done in simulation. Although it was a slightly different feeling. It's not quite the same feeling as the rubber manikin. But the skills that I was doing were the same. Being in the simulation that we did we allocated jobs we did amongst ourselves and I was doing airway and so I was able to do it on the real patient and making sure that they were getting adequate oxygenation. With everything that was going on you know to concentrate on your own job. I couldn't have done this at that stage if I hadn't had the simulation classes. I don't think I would have stepped in to do it, not the airway, I maybe would have got the equipment or done the running, but not the airway. I volunteered to do the airway and the person taking charge asked if I felt ok about doing that. He said go ahead and that they would be there if I had any questions, but I felt quite comfortable and confident to go ahead. There was two of us there when we had to use the ambubag the other person was squeezing so I had that extra support, but I don't think I would have done that if I hadn't had it in simulation.

I suppose other similarities was that being there during the arrest you were counted as part of the team and being able to say what do you need me to do. In semester 3 doing the first simulation I wouldn't have volunteered and said what do you want me to do I would have just stepped back. I don't think I would have known what equipment to use. But from the simulation I've learned and looked back and now know what equipment they were using and what they're talking about. So the other thing about simulation is being able to see the equipment and learn what it's called and what it does and look at it and become comfortable with it.

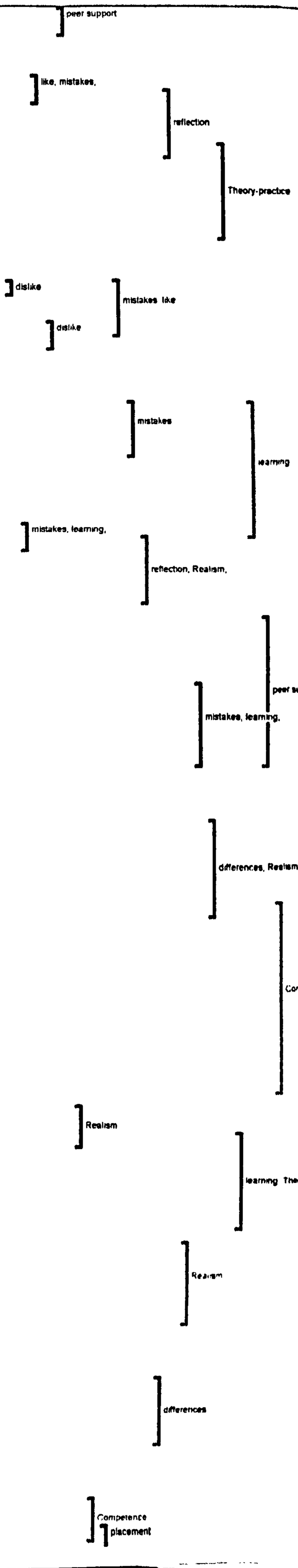
I suppose overall all the skills that we used were the same, like the catheterisation and cannulation and getting these into the patient, getting them the drugs that they need. Again it's the sequence of events that are the same, it's not completely different, although some things are slightly changed depending on the different patient. But generally it's the same.

Can you describe any differences between the simulation class and clinical placement.

Em, no differences between simulation classes and placement well nothing that I can think of. Certainly when I've done chest compressions they feel very different on a real person than on the Sim Man. But the technique etc is still the same. But nothing else different that I can think of.

In what way did having clinical simulation classes have an impact on your skills competence?

I think it had a big impact regarding having confidence in myself to do everything, to be able to volunteer to do it and to feel confident in myself that I know what I'm doing. In a cardiac arrest you don't have any time to say oh, am I doing this right or checking that you have done



everything. The more basic skills I practised them at least once in college and things like catheterisation I managed fine. The first one I did it was similar in what I did, the actual equipment you used, but the actual doing it was different, it was a lot more difficult and with the situation you were under a lot more pressure to do it. It went well after the second catheter, but there has been some times that it hasn't went well, but I'm aware that this can happen.

placement
repitition
Realism, differences,

Is there anything you want to ask me about simulation?

Em, no I don't think so.

I there anything else I should have asked you about simulation?

Pause No, not anything specific, but I would say regarding the course I would have liked more simulation although I don't know how practical that is with the timetable, but certainly I would say more of, very much so. I think it would give you more confidence in your skills earlier, rather than in semester 5 and 6. Even maybe in the CFP, not what you're doing in semester 5 and 6, but just an introduction to the Sim Man and just getting a fell for it, so that come semester 3 you're not so stressed, worried and panicking about it. Being there already then you've seen it. Maybe just being introduced to the practical equipment as well. You maybe wouldn't necessarily use it straight away but you would know what it is for and what it's called.

like
like, Competence

The only other things is to say that I will need to contact you again to read through the transcript to ensure that it is a true reflection of what you have just said.

That's fine.

Appendix XVII Outside Truthfulness

Presentations

Using phenomenology to explore the students' experience when simulation education is utilised as a teaching, learning and assessment strategy. Bell College, Hamilton. March 2005.

Discussing the discussion. Simulation education in nurse education: the students' experience. Glasgow Caledonian University research forum. February 2006.

Publications

McCallum, J. (2006). Implementing simulation into the pre-registration nursing curriculum. *Clinical Skills Matters*. Number 2. Accepted for print January 2006.

Appendix XVIII Example of coding

Student 4.1
Introduction student already knows me.
Confidentiality explained.

Thank you for agreeing to do this interview
What I want to do is ask you some questions on simulation.

Firstly can you remember during semester 3 and 4 doing classes which were called simulation?

I can remember semester 4 better than I can semester 3. We didn't do a lot in semester 3 I think we only did two times maybe. But I can remember semester 4 pause. I think we did things like injections, wound dressing, aseptic technique and one session with the sim man in semester 3. In semester 4 we did a lot of respiratory attacks, cardiac arrests, em, putting in catheters.

OK. Can you tell me what the term clinical simulation means to you?

Em Sim man really is the answer. We were all in a group. In one we were the nursing staff and we had a patient who would have something wrong with him and it was our job to identify this, take blood pressure you know all the observations and one of the groups would have some sort of arrest, whether it was respiratory or heart failure and you had to start the basic life support and all that. So it was group work and individual skills but mostly group work. Well putting in the catheters we didn't do that with Sim Man, but we all eh had the class and had a wee shot at doing it afterwards that was more eh the individual but when it was actually working with the Sim Man it was three of us. So it was mostly group work.

How do you think simulation helps you learn?

I think it does help you learn. Simulation with the Sim Man and doing things like catheterisation I definitely think it helps em because it is its quite a daunting thought, I've never actually done, like put a catheter into human but having that wee experience even though on a model first I don't think I'll be quite so nervous as doing it as if you cause you can read stuff out of text books until your blue in the face, but it's only actually when get hands on experience that its given you the experience really, so I think it really does help you learn. Your also learning the theory of it as well, so you learning the two of them but if you get a wee shot on the model first it just eases your mind a wee bit.

Why do you think you need the two, the theory and the practice?

If you get the theory first, you sort of understand maybe the result of putting the catheter in or doing the blood pressure, like why you're doing it that's what the theory is more involved in but then you need to practice it because it's hands on em the theory is more for like the sort of background of it. Plus you've got the fact you can come back up and practice for instance putting the catheters in in college, because say for example that you were not getting a lot of opportunity when you're out in placement you can always have another shot in college again, which I think is quite useful as well. I've never used this yet, but it is quite useful.

So is it the aspect of being able to practice over and over again?

Well it's there if you need it. I think maybe in semester 1 I did use it with practising blood pressures and things like that. Em obviously it allows you to make mistakes and you get the opportunity to practice it instead of out in placement. Like with the catheters hopefully I'll get a shot when I'm out in the district because I never got a shot in the ward I seen it being done but I never got the opportunity but so if I maybe don't get a shot on the district I can come and practice again in the college. So you see if say six months down the line I hadn't done it, you're getting that much stuff in your brain I think I would need a refresher just to let me know how to do it. So I would go and see Dena and Carol. In semester 1 with the blood pressure I knew how to do it, but I could never hear it so I just wanted a wee bit more practice with it before I went to the ward. So I eventually got the hang of it. The blood pressure I found quite difficult and I've got wee ears so the stethoscope I couldn't hear anything through it so they gave me special ones that I could take around with me which could fit into my ear. I think what I'm trying to say is that it's handy to have that option there em, cause you're not just sort of left if you know what I mean if you're not getting enough clinical experience in whatever area then there is obviously the option to practice again.

How did you feel during the simulation classes in semester 3?

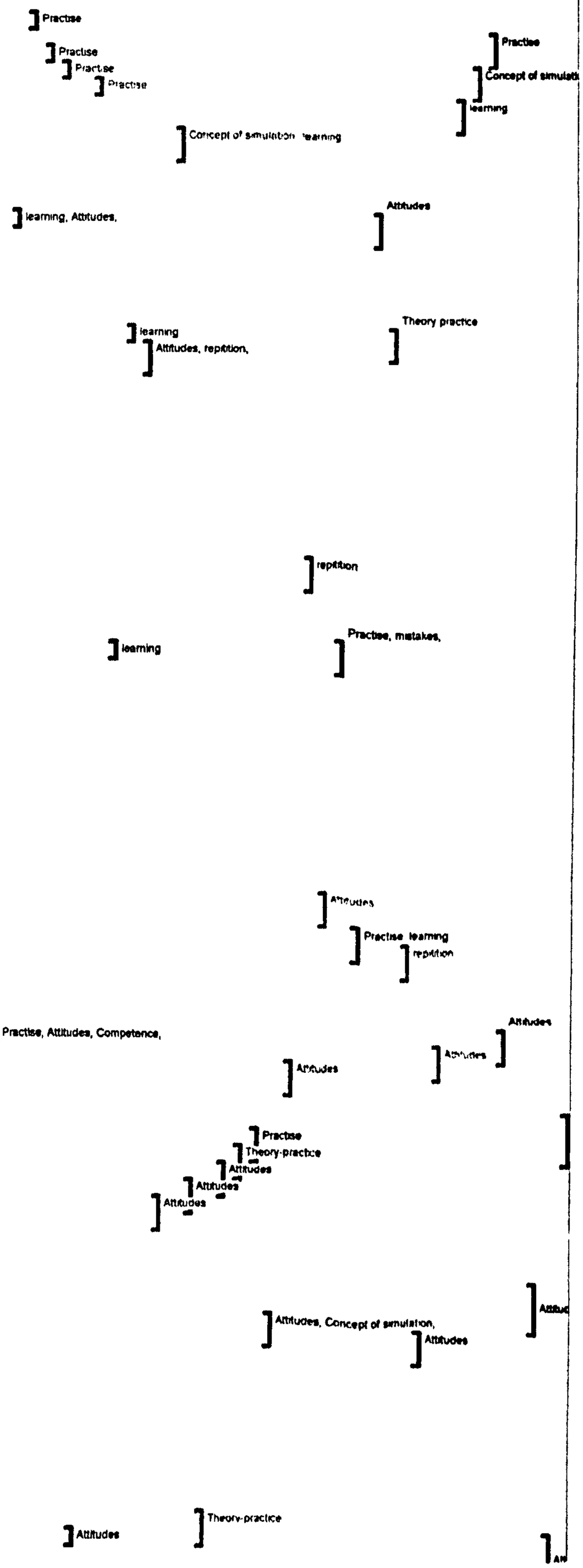
I felt alright, I can remember doing the injection practice em it was quite good because I felt once we got into semester 3 it was more sort of nursing stuff that we were doing em like the injections, cause that's the big thing and quite good, quite nursy. The Sim Man was good I think at the start you feel a bit silly because you're trying to get into the role and all that but I mean it's your friends that you're doing it with. But by the end of it it was really good, it was a really good experience I did a lot and seen a lot, but I know it will be different when I am actually in placement. I suppose I felt a bit daft at the beginning because you're acting out and all that. It wasn't actually doing the clinical skills or anything that was all right. But it was maybe just the first couple of sessions you felt daft.

How did you feel during the simulation classes in semester 4?

Aye that was good as well. I remember feeling a bit anxious the first week going out to placement and if you were doing something for the first time there you would feel a bit anxious. Em, but the Sim Man helped you practice the skills and let you know you could cope. I think you always feel a bit anxious when you're doing something for the first time. And like, in semester 4 when we knew there was going to be a respiratory arrest or cardiac arrest and things like that you were a bit anxious. But not anxious in a bad way.

What did you personally gain from doing simulation classes?

Just as I've said before getting to practice doing something. Em you've already had the theory of doing it, but you actually get a wee shot of doing it. Em you definitely have to practice something after getting the theory. I think I gained a lot more confidence em I would say I'm quite a confident person anyway it you know it doesn't bother me communication



with patients or anything like that it just sort of comes naturally to me. But em semester 3 was really good my first placement the surgical placement that was really good because it was my first time out in a ward em but you were pretty anxious about that. But it was good, my mentor was really experienced and she gave me my own patients and she said that's your patients you deal with them. She made me realise that even though you're there as a student nurse you have to muck in and she said if I give you three jobs you need to do them and if there is other work to be done you have to delegate it. So I really did feel that I was working as a nurse. So she just left me, she was there if I needed any help and she was checking everything. I feel that really stood me in good stead. But I've no really had the opportunity in placement ever since then. But everywhere is different you know em, but I felt personally that I was more like a nurse. I think it was because she gave me responsibility and she says to me, I mean she sat me down and she says right this is what I want you to do, they're your patients you make sure their dressings are done, their care plans em just basically everything to do there for the day. Plus the paper work. You see nurses sitting at the nurses station and you just work away, but when you actually do it you understand. Plus the fact that I was feeling a lot more confident I was doing the medications and giving injections em doing all that sort of stuff em so just the actual doing the work. I mean in the first year you're not actually in a hospital you're out with the health visitor and the mental health placement em but I would say that is more building up the communication all about how you speak to people and then when you go into your second year that's when, don't get me wrong communication is a big part of being a nurse but you just feel it more when you're in a hospital and in the wards. So for instance the injections getting to practice it, I know it is totally different when you're doing it on a person, but you sort of knew half of what you were doing.

Tell me what you liked about simulation.

I liked getting the practice I liked getting the hands on sort of experience em pause.

Tell me what you disliked about it.

I can't really think of anything I disliked. Em. I'm trying to think of what else we did. I couldn't actually say that I disliked it. Even the first couple of sessions where I felt daft, I still didn't dislike it. You're like that with anything that you do in your life the first time. I think it's just the sort of whole role play sort of thing. You know it's good, it's not a bad thing or anything. It's just you feel a bit daft and then you get over it.

Clinical simulation can allow you to make mistakes and get feedback on this. *What do you think of this?*

I think that's useful. I thought it was good because whenever you were doing something if you were doing it well like yourselves and the semester 3 lecturers would say to us that we were doing good. I think that pushed you, you need a wee bit of reassurance as well. But when you are actually doing things wrong criticism doesn't really bother me either so if I am doing something wrong I would rather someone said in a nice way and so I can do it better in the future. Which only benefits you. But I don't really feel that I got bad feedback. It was mostly positive which does give you a wee boost. Even the feedback from my peers was fine. There is also once you get out the class you are all sitting around and everyone would be saying, oh, maybe you felt you did something really badly, and they would be saying oh, you weren't that bad. You were quite good at it you know. So you get some reassurance from that as well. Because I think when you're in your group in college you're all there to support each other and you all text each other to ask how you're getting on. You know what I mean, it's extra support for each other. You can go and say to your pals outside college but I'm trying to explain to them how much work's involved in it and they're saying we don't really understand you know what I mean but you can turn to your college group and it's good that you've got them. Our group was already established and it was good to be able to keep that group.

Can you describe any similarities between simulation classes and your clinical placement.

I saw the end of a cardiac arrest. I was in the ward and one of the patients just collapsed on the bed. It was the semester 6 student that found him. I was in the discharge lounge for the morning so I had just come back up. The curtains were all shut and I could hear stuff going on but I didn't know what it was. The other student said it was a cardiac arrest. So it was the end of it that I saw. Em, so I saw the ECG and the wee pads that the 12 lead ECG use, I seen that getting done. Em but that's really the only kind of cardiac arrest that I've seen. That was the same as college. Like I could pick out the defib and ECG machine and I knew why they were doing things like that.. But I never actually saw the sort of arrest.

I had the benefit from a nurse that was on that let me set up the catheter trolley. I said to her can I get a shot of doing it, but the lady was pretty no well and so ti would have been even harder for me to try and do it, so I never got the opportunity. But I watched it anyway. I would say it was exactly the same as in college. Yeh, she used double gloves. I took the catheter out the pack and put it on the trolley. Aye exactly the same.
I can remember dressings in semester 3 there was quite a big dressing that we done. Em that I had to use my sterile technique and so I watched that getting done once and I done it the second time. It was the same. I just feel when you're first doing these dressings you're so no paranoid but you're just thinking about everything that you're doing, and I know that through time it will all come automatically but you're just sort of thinking right, have I to touch this bit, or have I no to touch this bit. I was saying that to the nurse when I was doing it I just feel that , but I know it'll come through practice, it's just that you're trying to make sure that you're keeping it sterile as you can. But it's the same as when you're driving. Because when you're first driving you have to make sure you do everything, but now it just comes automatically. So I know it's just the same sort of idea.

I would say when you're doing your simulation that's the first time you'll have ever seen it. Then when you're doing it on the person that's when you're hoping that they're doing it the same way as you were shown in at college. For example, whether they were using the two gloves, what water they were using that sort of thing. So it doesn't feel as, although it's totally different when it's on a person but you don't feel as sort of new to it if you know what I mean. Because as I say you could

Attitudes
placement
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read it in a book, but you're better to see it on a model and then see it on a person, it's different every time you see it but you don't feel as strange to it. It's a bit more familiar then. And you're probably maybe able to pick out more things better because you've already seen it. Like as I said the catheter and that was the same. It was a bit like a checklist, ticking off the bits I saw in class.

Can you describe any differences between the simulation class and clinical placement.

The big difference is that they are human so you're more aware that you don't want to hurt them that you're trying to make them feel, depending on what you're doing obviously that I remember the first time I was doing my injection and it was actually the nurse that I gave it to it was her flu injection, em and I remember that my hand was shaking and everything you know because I, I wasn't wanting to hurt her. Em and it's really the same with whatever you're doing you know and trying to make them feel all relaxed and obviously you don't need to do that on a model it's just. The manikin you're trying to kid on that it is a real person so that you do it in the right way, but it's totally different if you've got something there that's no speaking to you or anything then it's different. It's a hard thing to sort of describe you know it's just. Obviously as well, whatever you're doing you're getting watched as well. It was the time when I was doing things I sort of double checked before I had to do anything I wouldn't just blunder in and do it I would say to the nurse and I right doing this. You know maybe for the first couple of times you're doing something until you sort of feel confident. Like wee things like doing suction and peg feeding that was the first time I had ever seen that in my last ward and I got a couple of shots at doing that. But you know I was just trying to get into the way of it and so I was always double checking you what I mean. Especially when you're dealing with people you can't afford to make a wee silly mistake.

The actual skills taught were very similar and simulation it was very similar but obviously everybody is different for example in injections everybody has different types of skin so it's no always going to feel exactly the same when you're doing it to the simulation. The same with catheters everybody is different em all the dressings that you're doing they will all be different, different shapes etc. so it's but the basic is there. The basics of the simulation are the same as in placement.

In what way did having clinical simulation classes have an impact on your skills competence?

It was good as I've said before because it wasn't sort of new to you because you had seen it done before but I think certain skills you need to do quite a few time before you get, well I know exactly what I'm doing there. Em, plus the fact you've maybe done something six months ago and then you're no doing it again for another six months. Em I never got the opportunity to do the injection in the ward that I was in, but just now I've done one, so the next time I go to do one I'll be a wee bit apprehensive, well no apprehensive, but I'll be a wee bit nervous again em just sort of double checking that I'm doing it right. So yeh it has definitely helped my confidence. It definitely helped but you definatley need the experience after it as well to see that link. Sometimes because we have a week in placement and a week in college we might not be doing something until after the placement week and we have already done it. Em you can read the theory of it, but most of the time it links well. I know it's good to speak up so that when on practice you get to do things, but it depends who you're working with and how good they are at teaching you.

I think because there is something going on in the ward like the peg feeding and someone was walking by me and saying the such and such was happening then I would say well can I come and watch you or can I come and have a shot at it. Em, cause obviously you want to gain as much experience as you can because I can always remember someone saying back in semester 3 that there was a nurse just qualified and she'd never put a catheter in and this Sister thought that was disgraceful and god I thought well I've never put one in. What happens when I qualify so if I hear something getting done, for example the injections then in the last ward I did ask on numerous occasions sort of but they were too busy. That's just the way it is. But I do try and get as much experience as I can. You're only there for five weeks, so you have to get as much as you can. I think it is quite exciting as well when it is new things like the PEG feed and such you know because I was wanting to see it being done cause I had already had the theory of it and the practical with the simulation, but I had never actually seen it so it's more exciting to see. Cause if you've seen it and learned about it you want to see it in the flesh if you know what I mean.

Is there anything you want to ask me about simulation?

No, no really. As I say, I couldn't say I disliked it in any way, I think it is a good thing. I would say you definatley need, if you're learning more clinical skills you definitely do need the manikins and things like that. Like the basic life support you definatley need that and the defib machine that was good.

I there anything else I should have asked you about simulation?

Pause No.

The only other things is to say that I will need to contact you again to read through the transcript to ensure that it is a true reflection of what you have just said.

That's fine.

Appendix XIX Semester four factor scores from week one to five for each dimension of the SD

Semantic Differential Data
E

					WEEK 1				
	4	7	8	9	12	13	19	20	
	E	E	E	E	E	E	E	E	ADD
S4/1	0	0	1	0	1	0	0	0	2
S4/2	1	1	1	2	2	2	2	2	13
S4/3	1	1	2	2	0	1	0	0	7
S4/4	0	-1	1	3	0	1	-1	-1	2
S4/5	0	-2	-1	0	-2	1	1	0	-3
S4/6	-1	-1	-2	0	-1	-2	-1	-1	-9
S4/7	1	1	0	2	1	0	1	1	7
								mean	2.7
								median	2

Semantic Differential Data
E

					WEEK 2				
	4	7	8	9	12	13	19	20	
	E	E	E	E	E	E	E	E	ADD
S4/1	1	0	2	2	1	1	3	0	10
S4/2	2	1	1	2	1	2	2	2	13
S4/3	3	1	2	3	2	1	3	2	17
S4/4	1	0	2	3	-1	1	1	1	8
S4/5	1	0	-1	1	1	1	1	0	4
S4/6	-1	-1	-1	0	-2	-1	0	0	-6
S4/7	1	0	1	2	1	1	1	1	8
								mean	7.7
								median	8

Semantic Differential Data
E

					WEEK 3				
	4	7	8	9	12	13	19	20	
	E	E	E	E	E	E	E	E	ADD
S4/1	2	1	2	2	2	1	2	1	13
S4/2	2	1	1	1	1	1	2	1	10
S4/3	2	2	2	3	2	2	3	2	18
S4/4	1	1	1	1	0	0	1	0	5
S4/5	-1	0	-1	0	0	1	-1	0	-2
S4/6	0	0	1	3	0	1	3	1	9
S4/7	1	1	2	2	1	2	1	2	12
								mean	9.28
								median	10

Semantic Differential Data
E

					WEEK 4				
	4	7	8	9	12	13	19	20	
	E	E	E	E	E	E	E	E	ADD
S4/1	1	3	2	1	2	1	2	2	14
S4/2	2	1	1	2	1	1	2	1	11
S4/3	3	2	3	3	2	2	3	2	20
S4/4	2	2	1	3	2	2	0	2	14
S4/5	1	1	0	1	0	2	0	1	6
S4/6	2	1	2	2	2	1	3	1	14
S4/7	2	1	2	2	2	2	2	2	15
								mean	13.4
								median	14

Semantic Differential Data
E

					WEEK 5				
	4	7	8	9	12	13	19	20	
	E	E	E	E	E	E	E	E	ADD
S4/1	2	2	3	2	2	1	2	2	16
S4/2	3	2	2	2	2	2	2	2	17
S4/3	3	2	3	3	3	3	3	3	23
S4/4	2	2	2	3	2	2	2	2	17
S4/5	2	2	1	1	2	3	2	2	15
S4/6	2	2	3	3	2	2	3	1	18
S4/7	2	2	3	3	2	2	3	2	19
								mean	17.86
								median	17

Semantic Differential Data
P

				WEEK1					
	1	3	5	11	18	21	22	24	
	P	P	P	P	P	P	P	P	ADD
S4/1	-1	-1	0	1	1	0	0	0	0
S4/2	-1	0	1	2	2	2	2	2	10
S4/3	-1	0	0	1	1	1	0	0	2
S4/4	-2	-2	0	-1	0	0	2	1	-2
S4/5	-1	-1	1	-1	0	-2	-1	-2	-7
S4/6	-2	-1	-1	0	-1	-1	-1	0	-7
S4/7	-1	0	1	1	1	1	1	0	4
								mean	0
								median	4

Semantic Differential Data
P

				WEEK 2					
	1	3	5	11	18	21	22	24	
	P	P	P	P	P	P	P	P	ADD
S4/1	1	0	0	2	1	1	2	1	8
S4/2	1	1	1	2	1	2	2	1	11
S4/3	1	1	2	2	2	1	2	1	12
S4/4	0	0	0	0	-1	0	1	1	1
S4/5	0	0	1	1	0	1	1	1	5
S4/6	-2	-2	-1	0	-1	-1	-1	-1	-9
S4/7	1	0	1	1	1	1	2	1	8
								mean	5.14
								median	8

Semantic Differential Data
P

				WEEK 3					
	1	3	5	11	18	21	22	24	
	P	P	P	P	P	P	P	P	ADD
S4/1	1	1	1	2	1	2	2	1	11
S4/2	2	2	2	2	1	1	1	1	12
S4/3	2	1	2	2	2	2	3	2	16
S4/4	1	1	0	1	0	1	0	1	5
S4/5	0	0	0	1	1	0	1	1	4
S4/6	1	0	0	3	1	1	1	0	7
S4/7	1	1	1	2	1	1	1	1	9
								mean	9.14
								median	9

Semantic Differential Data
P

				WEEK 4					
	1	3	5	11	18	21	22	24	
	P	P	P	P	P	P	P	P	ADD
S4/1	2	2	2	3	2	2	2	2	17
S4/2	2	2	1	2	2	1	2	2	14
S4/3	3	2	2	2	3	2	3	2	19
S4/4	2	2	1	0	2	2	2	2	13
S4/5	1	3	0	0	1	2	2	2	11
S4/6	1	1	2	3	2	2	2	2	15
S4/7	2	2	2	2	1	2	2	2	15
								mean	14.85
								median	15

Semantic Differential Data
P

				WEEK 5					
	1	3	5	11	18	21	22	24	
	P	P	P	P	P	P	P	P	ADD
S4/1	2	2	2	3	2	2	2	1	16
S4/2	3	3	2	2	2	2	2	2	18
S4/3	3	3	3	3	3	3	3	3	24
S4/4	2	2	2	2	2	2	2	2	16
S4/5	2	3	2	2	3	3	3	3	21
S4/6	2	2	2	3	2	2	2	2	17
S4/7	3	2	2	2	2	2	2	2	17
								mean	18.4
								median	17

Semantic Differential Data
A

				WEEK 1					
	2	6	10	14	15	16	17	23	
	A	A	A	A	A	A	A	A	ADD
S4/1	-1	1	0	0	0	1	2	0	3
S4/2	-1	1	1	2	2	1	2	2	10
S4/3	-2	1	-1	1	1	0	2	0	2
S4/4	-3	2	-1	2	2	1	3	0	6
S4/5	-2	-1	-3	1	-1	-2	1	1	-6
S4/6	-2	-1	-1	-1	-2	-3	0	-1	-11
S4/7	-1	2	1	0	0	0	2	1	5
								mean	1.28
								median	3

Semantic Differential Data
A

				WEEK 2					
	2	6	10	14	15	16	17	23	
	A	A	A	A	A	A	A	A	ADD
S4/1	2	3	1	2	1	1	3	2	15
S4/2	0	1	1	2	2	1	1	1	9
S4/3	1	2	2	2	2	1	3	2	15
S4/4	0	1	0	2	1	0	3	1	8
S4/5	-1	1	0	0	1	0	1	0	2
S4/6	-2	-1	-1	-1	0	-3	-1	-1	-10
S4/7	1	1	1	1	1	1	2	1	9
								mean	6.85
								median	9

Semantic Differential Data
A

				WEEK 3					
	2	6	10	14	15	16	17	23	
	A	A	A	A	A	A	A	A	ADD
S4/1	1	2	1	2	2	1	2	2	13
S4/2	2	2	1	1	2	1	1	1	11
S4/3	2	3	2	2	2	1	3	2	17
S4/4	1	1	1	1	1	1	1	1	8
S4/5	1	1	-1	1	0	-1	1	0	2
S4/6	1	1	2	2	1	0	3	1	11
S4/7	2	2	1	1	1	1	2	1	11
								mean	10.42
								median	11

Semantic Differential Data
A

				WEEK 4					
	2	6	10	14	15	16	17	23	
	A	A	A	A	A	A	A	A	ADD
S4/1	2	3	2	2	2	2	3	2	16
S4/2	2	2	2	1	1	1	2	2	13
S4/3	2	2	3	2	2	2	3	2	18
S4/4	1	2	2	2	2	2	3	2	16
S4/5	2	2	1	2	1	2	3	1	14
S4/6	2	2	2	2	1	1	3	2	15
S4/7	2	1	2	1	2	2	2	1	13
								mean	15
								median	15

Semantic Differential Data
A

				WEEK 5					
	2	6	10	14	15	16	17	23	
	A	A	A	A	A	A	A	A	ADD
S4/1	2	3	2	2	2	2	3	2	18
S4/2	3	2	3	2	2	2	2	2	18
S4/3	3	3	3	3	3	2	3	3	23
S4/4	2	2	3	3	2	2	3	2	19
S4/5	2	3	2	3	2	3	3	2	20
S4/6	2	3	2	2	3	1	3	2	18
S4/7	3	2	3	2	2	2	3	2	19
								mean	16.8
								median	19

Appendix XX **Semester four accumulative scores from week one to five for each dimension of the SD**

Semantic Differential Data
SEMESTER 4

												WEEK 1												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	P	A	P	E	P	A	E	E	E	A	P	E	E	A	A	A	A	P	E	E	P	P	A	P
S4/1	-1	-1	-1	0	0	1	0	1	0	0	1	1	0	0	0	1	2	1	0	0	0	0	0	0
S4/2	-1	-1	0	1	1	1	1	1	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2
S4/3	-1	-2	0	1	0	1	1	2	2	-1	1	0	1	1	1	0	2	1	0	0	1	0	0	0
S4/4	-2	-3	-2	0	0	2	-1	1	3	-1	-1	0	1	2	2	1	3	0	-1	-1	0	2	0	1
S4/5	-1	-2	-1	0	1	-1	-2	-1	0	-3	-1	-2	1	1	-1	-2	1	0	1	0	-2	-1	1	-2
S4/6	-2	-2	-1	-1	-1	-1	-1	-2	0	-1	0	-1	-2	-1	-2	-3	0	-1	-1	-1	-1	-1	-1	0
S4/7	-1	-1	0	1	1	2	1	0	2	1	1	1	0	0	0	0	2	1	1	1	1	1	1	0
ADD	-9	-12	-5	2	2	5	-1	2	9	-4	3	1	3	5	2	-2	12	4	2	1	1	3	3	1

Semantic Differential Data
SEMESTER 4

	1	2	3	4	5	6	7	8
	P	A	P	E	P	A	E	E
S4/1	1	2	0	1	0	3	0	2
S4/2	1	0	1	2	1	1	1	1
S4/3	1	1	1	3	2	2	1	2
S4/4	0	0	0	1	0	1	0	2
S4/5	0	-1	0	1	1	1	0	-1
S4/6	-2	-2	-2	-1	-1	-1	-1	-1
S4/7	1	1	0	1	1	1	0	1
ADD	2	1	0	8	4	8	1	6

			WEEK 2												
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
E	A	P	E	E	A	A	A	A	P	E	E	P	P	A	P
2	1	2	1	1	2	1	1	3	1	3	0	1	2	2	1
2	1	2	1	2	2	2	1	1	1	2	2	2	2	1	1
3	2	2	2	1	2	2	1	3	2	3	2	1	2	2	1
3	0	0	-1	1	2	1	0	3	-1	1	1	0	1	1	1
1	0	1	1	1	0	1	0	1	0	1	0	1	1	0	1
0	-1	0	-2	-1	-1	0	-3	-1	-1	0	0	-1	-1	-1	-1
2	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1
13	4	8	3	6	8	8	1	12	3	11	6	5	9	6	5

Semantic Differential Data
SEMESTER 4

												WEEK 3											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	P	A	P	E	P	A	E	E	E	A	P	E	E	A	A	A	A	P	E	E	P	P	A	P
S4/1	1	1	1	2	1	2	1	2	2	1	2	2	1	2	2	1	2	1	2	1	2	2	2	1
S4/2	2	2	2	2	2	2	1	1	1	1	2	1	1	1	2	1	1	1	2	1	1	1	1	1
S4/3	2	2	1	2	2	3	2	2	3	2	2	2	2	2	2	1	3	2	3	2	2	3	2	2
S4/4	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	0	1	0	1	0	1	1
S4/5	0	1	0	-1	0	1	0	-1	0	-1	1	0	1	1	0	-1	1	1	-1	0	0	1	0	1
S4/6	1	1	0	0	0	1	0	1	3	2	3	0	1	2	1	0	3	1	3	1	1	1	1	0
S4/7	1	2	1	1	1	2	1	2	2	1	2	1	2	1	1	1	2	1	1	2	1	1	1	1
ADD	8	10	6	7	6	12	6	8	12	7	13	6	8	10	9	4	13	7	11	7	8	9	8	7

Semantic Differential Data
SEMESTER 4

												WEEK 4												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	P	A	P	E	P	A	E	E	E	A	P	E	E	A	A	A	A	P	E	E	P	P	A	P
S4/1	2	2	2	1	2	3	3	2	1	2	3	2	1	2	2	2	3	2	2	2	2	2	2	2
S4/2	2	2	2	2	1	2	1	1	2	2	2	1	1	1	1	1	2	2	2	1	1	2	2	2
S4/3	3	2	2	3	2	2	2	3	3	3	2	2	2	2	2	2	3	3	3	2	2	3	2	2
S4/4	2	1	2	2	1	2	2	1	3	2	0	2	2	2	2	2	3	2	0	2	2	2	2	2
S4/5	1	2	3	1	0	2	1	0	1	1	0	0	2	2	1	2	3	1	0	1	2	2	1	2
S4/6	1	2	1	2	2	2	1	2	2	2	3	2	1	2	1	1	3	2	3	1	2	2	2	2
S4/7	2	2	2	2	2	1	1	2	2	2	2	2	2	1	2	2	2	1	2	2	2	2	1	2
ADD	13	13	14	13	10	14	11	11	14	14	12	11	11	12	11	12	19	13	12	11	13	15	12	14

Semantic Differential Data
SEMESTER 4

												WEEK 5											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	P	A	P	E	P	A	E	E	E	A	P	E	E	A	A	A	A	P	E	E	P	P	A	P
S4/1	2	2	2	2	2	3	2	3	2	2	3	2	1	2	2	2	3	2	2	2	2	2	2	1
S4/2	3	3	3	3	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
S4/3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3
S4/4	2	2	2	2	2	2	2	2	3	3	2	2	2	3	2	2	3	2	2	2	2	2	2	2
S4/5	2	2	3	2	2	3	2	1	1	2	2	2	3	3	2	3	3	3	2	2	3	3	2	3
S4/6	2	2	2	2	2	3	2	3	3	2	3	2	2	2	3	1	3	2	3	1	2	2	2	2
S4/7	3	3	2	2	2	2	2	3	3	3	2	2	2	2	2	2	3	2	3	2	2	2	2	2
ADD	17	17	17	16	15	18	14	17	17	18	17	15	15	17	16	14	20	14	17	14	16	16	15	15

Appendix XXI Semester six factor scores for each dimension of the SD

Semantic Differential Data
E

					WEEK 1				
	4	7	8	9	12	13	19	20	
	E	E	E	E	E	E	E	E	ADD
S6/1	1	2	0	2	1	1	2	1	10
S6/2	1	3	3	3	3	3	3	3	22
S6/3	2	3	2	3	2	2	3	3	20
S6/4	1	1	1	1	1	1	1	1	8
S6/5	2	2	1	2	2	2	2	1	14
S6/6	2	1	3	3	2	1	3	1	16
S6/7	1	1	1	1	1	1	1	1	8
								mean	14
								median	14

Semantic Differential Data
P

				WEEK1					
	1	3	5	11	18	21	22	24	
	P	P	P	P	P	P	P	P	ADD
S6/1	1	1	1	1	1	2	2	1	10
S6/2	3	3	1	3	3	3	3	3	22
S6/3	2	1	1	3	2	3	2	2	16
S6/4	1	1	1	1	2	1	1	1	9
S6/5	2	2	2	3	2	2	2	2	17
S6/6	2	1	2	3	2	3	1	2	16
S6/7	1	1	1	1	1	2	1	1	9
								mean	14.14
								median	16

Semantic Differential Data
A

				WEEK 1					
	2	6	10	14	15	16	17	23	
	A	A	A	A	A	A	A	A	ADD
S6/1	2	2	2	2	2	1	2	2	15
S6/2	3	3	3	3	3	3	3	3	24
S6/3	2	3	2	2	2	1	3	2	17
S6/4	1	1	2	1	1	2	1	1	10
S6/5	1	2	1	2	2	1	2	2	13
S6/6	2	3	2	2	2	1	1	1	14
S6/7	1	2	1	1	1	1	2	1	10
								mean	14.71
								median	14

Appendix XXII Semester six accumulative scores for each dimension of the SD

Semantic Differential Data
SEMESTER 6

												WEEK 1												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	P	A	P	E	P	A	E	E	E	A	P	E	E	A	A	A	A	P	E	E	P	P	A	P
S6/1	1	2	1	1	1	2	2	0	2	2	1	1	1	2	2	1	2	1	2	1	2	2	2	1
S6/2	3	3	3	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
S6/3	2	2	1	2	1	3	3	2	3	2	3	2	2	2	2	1	3	2	3	3	3	2	2	2
S6/4	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	2	1	2	1	1	1	1	1	1
S6/5	2	1	2	2	2	2	2	1	2	1	3	2	2	2	2	1	2	2	2	1	2	2	2	2
S6/6	2	2	1	2	2	3	1	3	3	2	3	2	1	2	2	1	1	2	3	1	3	1	1	2
S6/7	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	1	1
	12	12	10	10	9	16	13	11	15	13	15	12	11	13	13	10	14	13	15	11	16	12	12	12

Appendix XXIII Semester six letter

Hamilton Campus
Bell College
Almada Street
Hamilton
Lanarkshire
M15 OJB

Dear Alison

I am writing this on behalf of the semester 6 students. It has come to our attention that future use of the Sim-Man maybe in jeopardy. We feel strongly about this issue, and cannot stress enough the valuable insight into our practice he has contributed. Due to the nature of the practical side to our profession it is impossible to reconstruct situations where we can practice or develop our skills.

Due to this predicament we view the Sim-Man as an invaluable alternative to live patients. We fully realise the Sim-Man is an inanimate object, however, during training sessions we also have the opportunity to be aware of the importance surrounding ethical and legal issues, maintaining good communications skills and the paramount importance of patient confidentiality as these sessions are carried out in such a manner that imitate a true to life scenario. Use of Sim-Man has enriched our course and given us worthwhile experience that we feel is crucial. We feel it would be a tragedy if future students were to be deprived of this.

I have included signatures from some semester 6 students from the adult branch.

Yours sincerely