University of Strathclyde
School of Education
Faculty of Humanities and Social Sciences

Simulation-Based Learning in the Context and Situation that it is Applied: a Case Study

by
Angela Dow

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This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for examination which has led to the award of a degree.

Signed:

Date:

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Abstract

The study developed as a result of the recent introduction of clinical simulation into pre-registration midwifery education. This had followed changes to the undergraduate midwifery programme, in addition to changing trends in maternity care over the past ten years, which meant fewer learning opportunities in the workplace. Confounding factors such as workplace culture and the practical demands of the clinical area may have also impacted negatively on the students' learning.

Clinical simulation provides students with an approximation of clinical reality in a safe environment without harming the mother or baby. However, there is a lack of empirical evidence about the effectiveness of clinical simulation in preparing students for the reality of clinical practice and the application of simulated skills to the workplace. Therefore the overall aim of this case study was to explore the concept of clinical simulation in a particular context where it was applied, that is, the clinical environment.

In order to explore the real setting where there was opportunity to apply simulation, a small scale qualitative instrumental case study was designed, consisting of midwifery lecturers, first year midwifery students and mentor midwives. Primary methods of data collection included one-to-one interviews and focus groups, and also informal and unobtrusive observation of the clinical context was undertaken. Further, a background in clinical practice helped in understanding this environment and the type of conditions where the student midwives learned in the workplace.

Although findings from this small scale study were not extensive, they have provided information about how the effects of simulation may be extended to the clinical area. The application of simulation was largely seen as a transfer of practical skills, even though a holistic approach to learning had initially taken place in the university. Other main themes centred on the realism associated with simulation and its preparatory value for clinical practice. There was also evidence to suggest simulation supported the role of clinical mentors in practice.

Terms of Reference

Introduction

Clinical simulation has been utilised to provide an authentic learning environment in medical education since the late 1960s (Wilford and Doyle, 2006) and is now used to both educate and assess undergraduate medical and nursing students in various simulated clinical settings. Topics include crisis management, team working skills and clinical skills. However, clinical simulation is a relatively new phenomenon in midwifery education and it is only in recent years that it has gradually become a more commonly used teaching method in the United Kingdom (Wilford and Doyle, 2006). This is mainly because midwifery education has undergone significant changes since the early 1990s moving from an apprenticeship-type model where much of the experience was gained in the clinical area, to a three year degree programme in a Higher Education Institution - HEI (Haigh, 2007; Johnson, 1999).

As clinical skills are central to midwifery practice and current undergraduate midwifery education places greater emphasis on their development (NMC, 2004a:2009), educationalists have been challenged with the task of preparing student midwives for their clinical placement in such a way as to maximise clinical ability by integrating theory and practice more effectively, and reduce any disparity between the two (Corlett *et al,* 2000). Clinical simulation can be utilised in the university to provide an educational environment similar to that of the clinical area. Therefore it is expected that simulation will enable student midwives to apply their learning more easily when they return to the workplace (Wilford and Doyle, 2006).

The Study

The inspiration to undertake this research was firmly rooted in my professional background. Until 2006, I held the post of Lecturer Practitioner in Midwifery which had a combined university and clinical remit that divided my working hours equally between practice and education. Around this time, clinical simulation was introduced into the undergraduate midwifery curriculum and my involvement in implementing it was immediate. However as I continued with my clinical role, I developed an interest

in how skills acquired in a simulated setting were applied to the reality of the workplace.

Therefore the overall aim of this thesis was to explore the application of clinical simulation in the maternity practice setting, giving consideration to the nature of that setting as well as the views and perceptions of midwifery lecturers, midwife mentors and midwifery students.

It aimed to address the following research questions:

1. How do students, mentors and lecturers perceive simulation to prepare the student midwife for clinical practice?
2. Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?
3. How does clinical simulation affect work based learning?

These questions were answered by exploring the impetus behind the introduction of clinical simulation to midwifery education, the appraisal of relevant literature to identify key factors relating to clinical simulation, and, the collection and analysis of qualitative data.

Study Site

The local maternity unit provided the setting for the study. It was approximately three kilometres from the university where I worked and was set within a relatively new district general hospital that provided a unique integrated model of maternity care. Traditionally, the organisation of maternity care involves a divided approach which utilises separate wards for antenatal, intrapartum (labour and delivery) and postnatal care. However it had been suggested that this approach contributed to the de-skilling of midwives as they specialised in a particular area of midwifery practice (Standing Nursing and Midwifery Advisory Committee, 1998). The ethos of the integrated model of maternity care, known as LDRP (Labour, Delivery, Recovery and Postnatal) was to facilitate the provision of all stages of care in labour, childbirth

and the period immediately following birth, within the same room of the maternity ward.

At the maternity unit of the study site, the annual birth rate was approximately 5000 births, that is, the third highest of the 19 maternity units throughout Scotland (Dodwell and Gibson, 2008) and therefore considered a busy, specialised unit which dealt with a variety of childbirth cases.

Study Design

Authorisation to undertake the study within the hospital setting required approval from the National Health Service Research Ethics Committee (NHS REC) and the local NHS Research and Development Department. Additionally, access was granted from the Assistant Director of Nursing Services, the Director of the Nursing and Midwifery and Allied Health Professionals and the Maternity Services Manager, all of whom were based at the local maternity unit. The University Ethics Committee of the Doctorate of Education programme and my university workplace also granted approval.

To that end, a small scale instrumental case study was developed which consisted of two midwifery lecturers, six midwifery students in their first year of the undergraduate midwifery programme and seven mentor midwives. Qualitative data were collected using one-to-one interviews with all participants and methodological triangulation of data through focus groups with mentors and students was obtained to confirm findings from individual interviews and reveal any other perspectives or insights. In addition, simple observation of the clinical area was undertaken to provide insight into the clinical context in which simulation was applied. This was an unobtrusive and non-reactive measure, in that the clinical setting was not affected by my presence or observation of it.

However the study was not without its challenges. The busy nature of the clinical environment meant data collection had to be organised, to some extent, around the changing needs of the clinical setting. Further, the small scale nature of the project resulted in data not being as extensive as could have been under different

circumstances. Thus the data generated from the three groups were specific to a local midwifery education and practice culture. Also, as a full time midwifery lecturer undertaking a professional doctoral research project, I had to conduct the study over a short period of time to complete the higher degree course. Subsequently my involvement with the study as a whole was restricted. Nonetheless, findings from the project have provided new insight into clinical simulation in midwifery education which may have implications for professional practice.

Organisation of the Thesis

The thesis is organised into seven chapters. Chapter One provides the socio-political context of midwifery education and the influences that lead to the introduction of clinical simulation into the undergraduate midwifery programme. Chapter Two examines literature relevant to this study. As a paucity of research pertaining to simulation exists within the field of midwifery, literature from nursing and other healthcare disciplines has been included. Chapter Three explains the methodological approach and methods of data collection that were selected to address the research purpose and research questions, in addition to the analytical approach that was used. Chapter Four presents the findings and themes from each participant group. Chapter Five provides the integrated data of all participant groups. Chapter Six discusses the findings, and, Chapter Seven presents the conclusions, recommendations for practice, future research and limitations of the study.

Chapter 1: Introduction

Introduction

This chapter explains the background to the study by exploring the changes to undergraduate midwifery education over several decades.

1. Rationale and Background

The changes to undergraduate midwifery education throughout the 20th and 21st centuries has been vast, culminating in the current provision of midwifery programmes by Higher Education Institutions since 1996 (McGuire, 1999). However, until its dissolution in 1983, the Central Midwives Board for Scotland (CMB) had overseen the education of student midwives (Reid, 2005).

The CMB made rules and as an examining body established a roll of certified midwives. But in a review of the education and training of midwives in the 1970s, the Brigg's report (DHSS, 1972) acknowledged the 'distinctiveness of midwifery' (cited in Reid, 2005, p.282) and recommended that midwifery education be more tightly controlled by Schools of Nursing and Midwifery.

So in 1983, the implementation of the Nurses, Midwives and Health Visitors Act (1979) led to the establishment of the United Kingdom Central Council's (UKCC, now the Nursing and Midwifery Council - NMC) governing body for nurses and midwives. A sub group to the UKCC consisting of four national boards throughout the United Kingdom was formed and the predicted end of the CMB and its role in midwifery education (Reid, 2005).

Albeit several years following the Briggs report (DHSS, 1972), the long association of the midwifery profession with nursing started to collapse in the 1990s (Maggs, 1994). Until 1992 in Scotland, a post-nursing registration midwifery programme preceded the path to registration as a midwife. This was because the pre-registration midwifery training framework resulted in a secondary qualification to nursing (Fleming *et al*, 2001). However the idea that midwives worked with well women and

babies was deemed irrelevant to the training given to nurses, particularly in their role in the treatment of ill health (Briggs, 1972; Maggs, 1994).

Therefore midwives who had campaigned to ensure midwifery was recognised as a separate profession, welcomed the European Council directive (Council of the European Communities, 1980) which stated that midwifery courses must be directed to midwifery throughout a three year Direct Entry Programme. Consequently in 1992, a course leading to the award of Higher Education Diploma in Midwifery was established throughout the UK. This three year Direct Entry programme saw the development of linkages between existing midwifery schools and HEIs (Grant, 1994).

1.1 Apprenticeship

Throughout the CMB era and until the Direct Entry midwifery programme began, midwifery education was taught in an ethos designed to produce safe and competent practitioners (Gordon and Grundy, 1997). This reflected elements of an instrumentalism ideology (Pendleton and Myles, 1991), where the focus of education was on competence and skill development (Caldwell, 1997). Stenhouse (1975), cited in Pendleton and Myles (1991), identifies traditional instrumentalism as being associated with instruction and skill acquisition, which can be effectively achieved through apprenticeship approaches to education.

Indeed prior to Direct Entry, pre-registration midwifery was likened to an apprenticeship type model where midwifery students' education was primarily focussed on professional practice with patients and 'expert practitioners' (Taylor and Care, 1999, p.35). This was seen as the basis to professional learning because learning took place at the side of the *master* midwife and the student developed not only practical knowledge and skills but also adopted the attitudes and cultural beliefs that informed clinical practice (O'Connor, 2007; Taylor and Care, 1999). So, as a newcomer to the workplace, the student midwife made the transition from midwifery school to the clinical area by full participation in the socio-cultural and clinical practices of the maternity unit (Eraut, 2000; Taylor and Care, 1999).

However critics of the apprenticeship type approach believed that it was no longer an optimal educational strategy in contemporary healthcare practice (Taylor and Care, 1999). As the nature of maternity care had been influenced by the socio-political climate of the 1990s and the revolutionary report Changing Childbirth (DoH, 1993), this led to criticism that midwives were inadequately prepared for working in a maternity service that was undergoing rapid organisational change (DoH, 2001; Rushford and Ireland, 1997).

Therefore to enhance the professional status and professional development of midwives, it was envisaged that student midwives would benefit from an education that was more grounded in midwifery knowledge, practice and research (McGuire, 1999). Thus, the perception of midwives as ‘doers’ rather than ‘thinkers’, would no longer apply.

1.2 Academic Approach

Designed to transform midwifery students into ‘knowledgeable doers’ (O'Connor, 2007, p.1), the integration of midwifery education with Higher Education in 1996 not only gave professional identity to midwifery, culminating in the award of Diploma or, from 2001 Bachelor of Science degree, but also changed the education of a midwife from an apprenticeship type model to an academic approach. The move into Higher Education also removed employment status from midwifery students and gave them supernumerary status, thus transferring responsibility for their education from the National Health Service to the university sector (Haigh, 2007).

Although the ethos of Higher Education was to encourage the development and growth of a midwife who thought critically and reflected on practice (McGuire, 1999), competing demands in Higher Education had implications (Woolley and Jarvis, 2007). First, midwifery lecturers had to adapt to a new working environment. Indeed Eraut (1994) highlights how professionals often experience role conflict as the rules and regulations of higher education take priority over the professional aspect of their job. Also, curricula design meant fewer intakes of midwifery students, and instead there was one large intake at the beginning of the academic year (Gordon and Grundy, 1997).

The resultant larger group of students, in conjunction with other factors such as the demise of the clinical teacher and limited time to teach in clinical settings, prompted the use of more teacher centred approaches to learning. Thus the lecture became the dominant mode of transmission of knowledge with less interaction between the midwifery teacher and student (Cavanagh and Snape, 1997; O'Connor, 2007; Rolfe, 1993). Arguably the process of teaching and learning had become a more passive one (Darbyshire, 1993). Also, this educational shift perhaps compromised the important function of the midwifery educator as 'primary socialiser' (Kenny 2004, p.87) from whom the student learned about the attitudes, values and culture of the clinical setting (Lave and Wenger, 1991) - particularly at a time when midwifery students were perhaps experiencing a degree of curiosity and hostility in the workplace as the new baccalaureate student midwife (Chandler, 1991).

1.2.1 National Health Service Re-organisation

Other changes taking place in the workplace arena of the NHS in the 1990s had a direct impact on the students' learning. The reorganisation of maternity services resulted in shorter hospital stays for women (DoH, 1993). This meant that there were fewer clinical placements for the increased numbers of student midwives to fully participate in a work based learning environment where they would not only develop psychomotor and cognitive skills, but also experience the complete socialisation process from theory to practice placement (Nicol, 1998).

1.2.2 Consequences of Change

Overall the changes to the NHS and to the education of undergraduate midwifery students since the 1990s, has resulted in some difficulty for them to make the transition to a style of learning synonymous with higher education (Darbyshire, 1993). Whilst some small-scale surveys have provided evidence disputing any deficiencies in the students' learning (Dike, 2007; Fleming *et al*, 2001), other reports (NMC, 2004b; UKCC, 1999; UKCC, 2001) have expressed concern about the practical skills of newly qualified midwives. As this comes at a time when the media are voicing concern about sub-standard healthcare (Finlay *et al*, 2006), these reports

have raised growing anxiety about the education of midwifery students and highlighted their education as an important social and political issue (Kenny, 2004).

1.3 Current Provision

Although work-based clinical placements account for 50% of the undergraduate midwifery education programme (NMC, 2004a:2009), adequate clinical experience relies on the accessibility of highly skilled and motivated midwives who have the time to pass on their expertise (Haigh, 2007; Nicol, 1998). Clinical skills are central to midwifery practice, but the intimate nature of maternity care implies the difficulty in obtaining women's consent to undertake sensitive procedures (Coldicott, 2003).

Thus the limitations to gaining competence and confidence are obvious, as learning opportunities leading to skill acquisition are not always available in the workplace. Confounding factors such as workplace culture and the practical demands of the clinical area may also negatively impact on students' learning (Darra, 2006). Indeed within the clinical area the woman and baby take precedence over the student midwife, whereas in the HEI the students' learning is the priority (Haigh, 2007).

Therefore to minimise the negative effects of recent changes to midwifery education and facilitate a smooth transition in the pursuit of fitness to practice (NMC, 2009; UKCC, 1999), innovative approaches to students' education have become essential (Johannsson *et al*, 2005). Consequently, a shift from the current teaching situation has been identified, so as to place an emphasis on the facilitation of technical and decision-making competence (Kenny, 2004; NMC, 2004a:2009). This requires changing to an educational approach that discourages the use of more teacher centred methods that concentrate on content, and instead promotes student and educator participation (Pulsford, 1993) - thus a change in the role of the lecturer and the relationship between them and the student midwife (Hollingsworth, 1990).

One technique that is based on active participation or 'learning by doing' (Quinn, 2001, p.62), is simulation-based learning. Simulation-based learning enhances psychomotor and cognitive development by providing a safe and controlled, student focussed learning environment in a setting that is comparable to reality (Alinier *et al*

2004, p.201). However clinical simulation is relatively new to midwifery education and although existing evidence supports its use in facilitating the development of clinical and decision-making skills (Cioffi, *et al* 2005; Crofts, *et al* 2007a) and thus potentially transforming learning, its full advantages and disadvantages have yet to be explored. This is particularly relevant in light of a recent NMC (2007) recommendation to replace designated practice hours with simulation-based learning in pre-registration nursing programmes (Moule *et al*, 2008; NMC, 2007). As yet, this recommendation has not been made for midwifery education (NMC, 2009).

Conclusion

As midwifery education continues to make the transition from an apprenticeship type model of education to an academic approach, the need for new developments in the midwifery curriculum have been deemed necessary so as to address alleged deficiencies in the students' learning (NMC, 2004a:2009; NMC, 2004b; UKCC, 2001). As the previous apprenticeship type model of training ensured maximum exposure to the clinical environment, it is proposed that clinical simulation might provide an effective substitute in the preparation of student midwives for future purpose and practice. Thus an important professional aspect of clinical simulation is its application to the clinical setting (NMC, 2007).

Chapter 2: Literature Review

Introduction

This chapter examines the relevant literature to this study, in the order of:

- Section 1: Concept of Simulation
- Section 2: Simulation and Preparation for Practice
- Section 3: Application of Simulation-Based Learning

Hart (1998), states that the purpose of the literature review is to show an authority of the subject area and justify the research topic. Therefore this literature review evaluated contemporary literature pertaining to the concept of clinical simulation by analysing what was known about the phenomenon, and, identifying what was not known.

The literature search was conducted using the following key words: 'simulation'; 'simulation and experiential learning'; 'learning theory'; 'midwifery and simulation'; 'simulation in healthcare'; 'nursing and simulation'; 'work based learning'; 'theory-practice gap'; 'context-dependent memory'; and 'situated learning'. To refine the search, publication date was defined as 2000-2009 and where fewer titles were found, the search was taken back to the 1990s. Evidence was obtained mainly from the databases, Ingenta, PubMed, ERIC (Education Resources Information Center) Google Scholar and the NHS e-library through which access to on-line educational and healthcare journals was available. This yielded a plethora of citations pertaining to the topic of simulation in healthcare. However a paucity of research within the field of midwifery was identified, therefore all available literature was accessed with no limitation.

As it is only in recent years that clinical simulation has been utilised to facilitate midwifery students' learning, the reason for a lack of research about simulation in midwifery education is therefore a plausible one. Historically, until the 1990s, pre-registration midwifery training was a programme of short duration and was largely hospital-based resulting in a secondary qualification to nursing (Fleming *et al*, 2001).

Once the move into higher education had taken place, there was growing concern about the practical skills of newly qualified midwives (NMC, 2004b; UKCC, 1999; UKCC, 2001), which prompted educationalists to examine alternative ways to help students achieve their clinical learning outcomes (NMC, 2007). Thus much of the early research on simulation can be found within the nursing and medical disciplines. Although arguably midwifery is a separate profession, as is medicine and nursing, there are commonalities as some midwifery skills and conditions fall within the range of nursing and medical knowledge (Cioffi, 2001). Thus there is a shared goal in many aspects of the aims of clinical simulation in healthcare, and subsequently cross comparison to the nursing and medical literature has been incorporated.

However an initial broad review of the literature not only identified the main themes related to clinical simulation in healthcare and undergraduate midwifery education, but also a gap in the existing body of knowledge, mainly relating to the application of clinical simulation to the practice setting. Therefore several themes pertaining to the topic of clinical simulation and its application to clinical practice were identified: the concept of simulation; the use of clinical simulation in theoretical learning settings; situated learning theory; the relationship between theory and practice; transfer of knowledge and skills and context-dependent memory; the context of professional practice; and work based learning. These key themes will be examined in the sections that follow.

2. Section 1: Concept of Simulation

2.1 Simulation Defined

In the teaching and learning context, Rezac (1999, p.11) states that simulation is an educational technique that recreates an aspect of reality in a safe environment. However Gredler (1992) argues that the term ‘simulation’ is often used inaccurately because simple replication of the main characteristics of an activity or exercise does not make it a simulation. Rather, the participants have to function in an authentic role and address any problems in a professional manner as expected from the role that they have assumed (Gredler, 1992). Thus, simulation is a deliberate approach to

education whereby the participants experience the subject matter in a simulated setting that approximates with reality.

Indeed this approach has been used in education for more than 30 years (Ingram and Jackson, 2004) although the airline industry and the military have utilised simulation in the training of flight crews since the 1940s (Murray and Schneider, 1997). In an early publication at the time simulation was first introduced to education, Tansey (1971) attempted to contextualise the concept by referring to man's first landing on the moon and the first flight of Concorde. Both of these landmark breakthroughs in aeronautical and space travel happened without failure, and given the serious nature of both exercises, these skills could not be learned 'on the job'. Instead they had to be learned in advance using simulators (Tansey, 1971), thus highlighting the importance of knowledge and skills prior to real life practice.

However the concept of simulation in education has evolved over the past three decades and now takes various forms. These include simple role play using actors, part-task trainers for specific skills, manikins, and, interactive computer-based simulations which reflect technological and manufacturing advances, particularly in information technology computer software (Johannsson *et al,* 2005).

2.1.1 Types of Simulations

In education, simulation is best illustrated by the typology provided by Gredler (1992; 2004). Originally Gredler (1992) identified two main types of simulations as tactical and social-process simulations. In the former, the focus of the simulation requires the student to utilise several skills from interpretation of information in order to identify the problem, to developing and implementing a solution.

By contrast, social-process simulations focus on human interactions and how certain behaviours elicit different responses in the pursuit of a common goal (Gredler, 1992). In the realisation that groups do not always function as expected, Gredler (1992) states that students may experience a range of emotions such as frustration, pride and conflict.

More recently, Gredler (2004) described these simulations collectively as experiential simulations but added another dimension to the concept. Advances in computer technology led Gredler (2004) to identify the 'symbolic simulation'. Here the student is an external participant interacting with a computer programme or 'micro-world' and therefore is not a functional aspect of the system (Gredler, 2004). Arguably, it is not to say that in a symbolic simulation the student does not experience a range of emotions similar to that of an experiential simulation.

Indeed Gredler's (1992: 2004) classification emphasises how simulation is a multi-faceted educational approach, and therefore the term does not simply imply the imitation of a scenario. However, even if fundamentally different in the nature of the participants' roles, there are similar outcomes experienced by the participants of a simulated exercise, in that they are able to observe the consequences of their actions in a safe environment.

In adult education, simulation is an approach that is commonly used in practice based programmes (Johnson *et al*, 1999). Thus an understanding of how adults learn may provide some insight into how it promotes learning.

2.2 Adult Learning

2.2.1 Experiential Learning Theory

In the 1970s, Malcolm Knowles (1980) took forward the concept of andragogy as opposed to pedagogy in an attempt to develop a theory of adult learning based on the characteristics of adult learners. Although theorists suggest that Knowles (1980) andragogical model is not really a theory of adult learning but more of an assumption (Jarvis and Griffin 2003, p.71), Knowles (1980) places much emphasis on the notion that adults are largely self-directed learners who expect to take responsibility for their own decisions and actions (Kaufman, 2003). Boud (cited in Boud and Griffin 1987, p.224) supports this stance highlighting how traditional teaching methods that provide more teacher control can be limiting, as the need for a degree of student control is an adult trait. In the same way, the role played by the learner's experience is inherent within Knowles andragogical model (Jarvis and Griffin 2003, p.56).

However experience alone does not always lead to learning (Fry *et al*, 2003; Melamed in Boud and Griffin, 1987, p.19).

Much of the work on how adults learn and develop lends itself to experiential learning (Kolb *et al*, 2000). Kolb (1984) in his descriptive model of adult learning proposed that adults learn through a variety of approaches. Melamed (cited in Boud and Griffin 1987, p.13) relates this to the concept of playful learning in children, suggesting experiential learning provides a comparable learning experience in adults.

However the concept of experiential learning is fundamentally based on the view that learning is a continuous process influenced by experience or, more accurately, experience as learning, with an emphasis on reflection (Cheetham and Chivers, 2001; Fry *et al*, 2003). Kolb's (1984) cycle of experiential learning suggests that the learner moves from one stage to the next until they have completed the cycle. In other words they move from the 'abstract' to the 'concrete' through a process of reflective observation (Moon 2004, p.24). In this way, experiential learning is distinguished from experience as an approach to education where the individual's whole self does the participating (Jarvis and Griffin, 2003). That is to say, the student's knowledge, skills, attitudes and senses experience the learning opportunity.

2.2.2 Learning Styles

Kolb (1984, p.88) further purported that individuals choose professions which are in keeping with their preferred learning style, and, as suggested by Maclean in Boud and Griffin (1987, p.130), adult learning is better when learners have identified how they prefer to learn. Certainly a review of learning styles and approaches to learning undertaken by Entwistle (1998), suggests that students exhibit different personality traits within the range of different subject disciplines. Conversely, Fry *et al* (2003, p.21) state that a particular style of learning is not fixed and therefore should not be regarded as static.

Still, there have been several theories put forward relating to the concept of preferred learning styles and the implications for teaching and learning. In a systematic review of the plethora of literature surrounding this area, Coffield *et al* (2004) evaluated

thirteen of the main and, better known models. Common to health care is the model provided by Kolb. Kolb, as cited in Coffield *et al* (2004, p.61), observed that some students had preferences for particular teaching and learning approaches, which lead to the Learning Styles Inventory (LSI). Honey and Mumford (1982) had previously developed a Learning Styles Questionnaire (LSQ) which identified learners as predominantly activists, reflectors, theorists, or pragmatists; whereas Kolb's (in Coffield *et al* 2004, p.61) terms identified learners as one of four types: the converging style (practical); the diverging style (observant); the assimilating style (reflective); and the accommodating style (active).

Although Coffield *et al* (2004, p.70) evaluated Kolb's model as lacking in validity and reliability, those aspects identified in relation to learners and types, may be considered relevant in adult education as certain learning environments may facilitate or hamper preferred individual learning styles. Thus those who prefer learning by reflecting may favour more didactic approaches such as lectures, whereas those whose preferred learning style is by experience may like strategies such as simulation and role play (Coffield *et al* 2004, p.61). Therefore strategies such as clinical simulation may be more appropriately used in healthcare education where practice is the focus. Although the concept of learning styles remains a debatable issue (Fry *et al*, 2003, p.21), Coffield *et al* (2004, p.70) identified that a strength of Kolb's model was that it was based explicitly on theory.

2.3 Section 2: Simulation and Preparation for Practice

2.3.1 Simulation as an Educational Strategy

Theories of adult learning and experiential learning are important elements in educational programmes where the focus of the course is on the application of practical knowledge and decision-making skills (Fry *et al*, 2003.). Simulation promotes experiential learning in the academic setting by providing practical learning opportunities in a controlled environment where the student applies their knowledge and skills to solve difficult problems in simulated surroundings (Johnson *et al*, 1999). Therefore the implementation of simulation into practice-based courses not only meets the educational needs of different subject areas such as air travel, engineering, business and healthcare but also enables the students' strengths and weaknesses to be addressed prior to the application of knowledge and skills in the workplace (Gredler, 2004).

In healthcare, this is particularly important. Concern about the clinical skills exhibited by newly qualified doctors, nurses and midwives has been a topical issue for several years now (GMC, 2006; UKCC, 2001). The reasons are two-fold. First, the introduction to the European Working Time Directive has reduced the hours of doctors in training, which has resulted in a decrease in their exposure to the clinical area (Johannsson *et al*, 2005). Secondly, and similar to the undergraduate midwifery programme (as discussed in Section 1.1), changes in nursing education have been experienced thus contributing to concern about the integration of theory and practice within the clinical setting (Finlay *et al*, 2006).

2.3.2 Simulation in Improving Care

To minimise the negative effects of changes in education and new working patterns in hospitals, innovative approaches to teaching and learning have become essential (Johannsson *et al*, 2005). Indeed Johannsson *et al* (2005) highlighted the Government's demand to improve substandard care and the risk to patients as trainee healthcare clinicians 'practice' for the first time on real people. Halamek (2008) echoes this concern and recommends alternative settings and conditions for

practitioners to practice skills safely and without causing harm. Thus the use of simulation in undergraduate healthcare education has been increasing, not only to ensure the student is of a high level of competence before reaching the clinical area but also to facilitate the educational needs of the student prior to employment as a qualified practitioner (Finlay *et al*, 2006).

Several authors within the field of simulation speculate that safe practice is one of the main advantages to a simulated educational approach (Haigh, 2007; Morgan, 2006; Moule *et al*, 2008; Stark, 2007). Even at a basic level, Morgan (2006) suggested as much in a small scale phenomenological study of first year Irish nursing students. Morgan (2006) found that simulation-based learning prior to the first clinical placement, facilitated the safe application of basic nursing skills which in turn may have reduced risk to patients. Stark (2007, p.5) suggests that the reason for reduction in errors to patients is because the clinical skills laboratory is 'protected' and allows time and a holistic approach which is not available in the clinical setting.

More recently in a mixed methods study by Moule *et al* (2008), the authors again highlighted the potential in simulation improving patient safety. And, in an evaluation and action research study of simulation in midwifery education, Haigh (2007) also alluded to its value as it allowed student midwives to participate in simulated emergency procedures as exposure to these in practice is not guaranteed. Thus the safety aspect of simulation remains a key benefit, although to date there is no empirical evidence to suggest that simulation leads to improved patient outcomes.

Therefore in view of expert opinion, in that it can improve patient care, it seems illogical that simulation experienced only a short life span when it was first introduced to healthcare education more than 25 years ago. However in the 1980s a lack of empirical evidence supporting its use meant that the inclusion of simulation in healthcare education was limited (Roberts *et al*, 1992). Still, the past few years has seen an upsurge in research activity within this area and there is now a wealth of literature demonstrating the positive effects of simulation within healthcare education (Alinier *et al*, 2006; Cioffi *et al*, 2005 ; Deering *et al*, 2006; Robertson, 2006). So although simulation-based learning was once viewed with scepticism, opinion has

varied over time. This may have been influenced by the improvement of clinical simulation equipment so as to reflect clinical reality (Maran and Glavin, 2003).

2.3.3 Approximating Clinical Reality

Indeed the development of simulation in midwifery education at the start of the 21st century has become increasingly popular in more recent years (Davis *et al*, 2009; Dow, 2008). The concept of clinical simulation carries as much relevance to midwifery education as to other healthcare professions, by providing students with an approximation of clinical reality without 'endangering' (Gredler, 2004) the mother or baby. In midwifery simulations, the scenarios are typically obstetric or neonatal, utilising the childbirth and neonatal simulator manikins. Advances in technology have provided highly sophisticated, full-body, computer driven, interactive childbirth and neonatal simulators that provide medium to high fidelity simulation (Fountain and Spunt, 2006).

2.3.4 Fidelity

Engineering or physical fidelity as described by Maran and Glavin (2003), is how realistic the simulator and environment compare to the real situation. Maran and Glavin (2003) provide a useful classification of clinical simulation in healthcare education ranging from simple, partly interactive training manikins to highly sophisticated, computer driven, fully interactive simulators, often referred to as low, medium and high fidelity simulation. In midwifery education, the childbirth simulator provides high fidelity simulation as it is partly or wholly interactive (in the latter, some manikins have an automated voice) and the operator pre-programmes scenarios, and, the neonatal simulator provides high fidelity simulation where the manikin is fully interactive and responds to treatments given (Alinier *et al*, 2004). Both intermediate and high fidelity simulation provide intrapartum and neonatal scenarios that can be repeated and rare obstetric emergencies replicated.

However evidence from the midwifery literature pertaining to the fidelity of simulation is limited. One publication by Davis *et al* (2009) adopted a mixed methods approach in a pilot study to elicit the views of student midwives (n=37) and educators (n=8) on the use of the childbirth simulator. Overall findings were

generally positive in relation to students' learning, although the high fidelity manikin was perceived as being technologically complex to work and consequently viewed as unrealistic. The educators also felt it was physiologically inaccurate, which contributed to a negative view of its engineering fidelity. However the response rate to the questionnaires used in this small scale study was only 40% therefore findings should perhaps be viewed with caution. Thus to understand the impact of fidelity on student experience requires exploration of the medical and nursing literature to provide further insight into the concept.

Indeed the notion of fidelity is an important element in contributing to the students' experience as has been demonstrated in a recent qualitative case study by Reilly and Spratt (2007). It was found through focus groups with student nurses that their engagement with simulation was an important feature of their learning. Also in her doctoral research phenomenological study, McCallum (2006:2007) identified through in-depth interviews with student nurses, that the level of realism experienced by them affected their ability to become immersed in the clinical simulation scenario.

This phenomenon is referred to as psychological fidelity and derives from an early review of simulation in healthcare education. Maran and Glavin (2003) proposed that psychological fidelity was more important than engineering fidelity as it determined just how much the reality of the situation had been experienced within the simulated scenario. However Maran and Glavin (2003) did not suggest that this element of realism related entirely to the sophistication of the manikin, but also to the complexity of the simulated exercise and the level of the learner's knowledge and skill. In other words, psychological fidelity could be hindered where the student was exposed to a simulated exercise that was at a lower or higher level than his or her ability or, it was irrelevant. If the correct balance was achieved, inclusive of the engineering fidelity, then the student was more likely to be able to overcome the feeling of disbelief.

However in two relatively small randomised controlled trials by Alinier *et al* (2006) (n=99) and Crofts *et al* (2007b) (n=140), both authors concluded that the level of physical or engineering fidelity of the manikin, in how realistic and sophisticated it

was, contributed to higher levels of interactivity and competence from students. This was confirmed in a recent systematic review of twelve quantitative studies on clinical simulation in healthcare education by Cant and Cooper (2010). One outcome of the review was that high fidelity simulators provided higher learner satisfaction and confidence compared to lower fidelity manikins. Thus from these experimental approaches, it is debatable whether the effectiveness of simulation relates entirely to engineering fidelity or whether the level of the simulated exercise versus the students' ability and capacity to 'believe' are contributing factors. Indeed the experimental nature of these studies did not provide the learners' viewpoint from their own experiences.

Therefore, it is perhaps the case that some learners find the active aspect of simulation uncomfortable and consequently cannot suspend the feeling of disbelief irrespective of engineering or psychological fidelity (Pulsford, 1993). However in spite of this, simulation has been cited as the favoured approach to facilitate students' learning (Morgan *et al*, 2002).

2.4 Perspectives on Simulation-Based Learning

2.4.1 Student Perspective

Consistent with other healthcare professions, it has been shown that simulation-based learning in midwifery education also provides students with a more engaging and enjoyable approach to learning (Arundell and Cioffi, 2005; Cioffi, 2001). Despite an initial reserved attitude from midwifery lecturers with regards to its use (Arundell and Cioffi, 2005; Davis *et al*, 2009), Haigh (2007) has provided evidence that students and lecturers would prefer to have more simulated learning in the university setting.

From the participants' viewpoint, McBrien (2006) alludes to the notion that students feel learning takes place best when theory and practice are integrated. This concept has been supported in various studies from the nursing, medical and midwifery literature (Arundell and Cioffi, 2005; Bailey and Curzio, 2009; Davis *et al* 2009; Haigh, 2007; McCallum, 2006; Morgan *et al* 2002). For example, experimental findings from a study undertaken by Morgan *et al* (2002), demonstrated medical

students' preference using simulation. Adopting a randomised controlled trial (RCT) involving final year medical students (n=144) in Canada to compare simulation and video-based educational approaches, results showed a statistically significant ($p < 0.001$) preference for the simulator sessions rather than the video-based approach (Morgan *et al*, 2002). Thus student opinion indicated that the experiential simulator sessions were more enjoyable and valuable although the quantitative nature of this study failed to explain why this may have been the case.

On the other hand, within midwifery the qualitative study conducted by Haigh (2007) found that the student midwives cited various reasons for enjoying simulation-based learning. First, they felt that the opportunity to practice clinical skills safely and without causing harm in preparation for practice was an advantage of simulation, which is similar to findings from nursing (McCallum, 2006:2007). However over and above this, Haigh (2007) identified that the integration of practice with peer discussion, also helped their understanding of the topic. Arundell and Cioffi (2005) further suggested that simulation helped students understand the theoretical component of midwifery as they could see how the theory would be applied in practice. This they concluded, facilitated learning because the more didactic and traditional approaches, which mainly involved lectures, did not always help student midwives conceptualise midwifery theory. Davis *et al* (2009) also alluded to this aspect of learning where the visual element of simulation complimented the lecture approach.

Interestingly and again from the student perspective, Bailey and Curzio (2009), Davis *et al* (2009) and Reilly and Spratt (2007) have shown that simulated practice was helpful in building confidence in preparation of practice. Among the reasons for this was the opportunity to practice before the real situation occurred (Bailey and Curzio, 2009; Davis *et al*, 2009), and also to refine skills before re-applying in practice, as mistakes in clinical placement made students feel vulnerable to criticism. Thus simulation improved self-efficacy in the clinical area (Reilly and Spratt, 2007). However Robertson (2006) found that in addition to its preparatory value in increasing confidence, simulation-based learning in the university was a source of stress to maternity nurses. This was cited as a dislike of simulation as they found the

experience worrying. The reason alluded to by the maternity nurses was mainly related to the fact that they did not know what to expect in simulation-based learning. However given the timing of this study (Robertson, 2006), it is likely that simulation was in the early stages of development within the said curriculum and would have been very different to what the students were used to.

2.4.2 Educator Perspective

Mixed feelings about simulation still exist among midwifery educationalists involved in delivering midwifery and nursing programmes (Arundell and Cioffi, 2005; Davis *et al*, 2009; Haigh, 2007). While it is recognised that traditional methods such as lectures fail to adequately address the practical aspects of healthcare education, equally the skills laboratory is considered a poor substitute for clinical experience (Finlay *et al*, 2006).

In spite of this, it is often cost, time constraints and limited knowledge of simulation technology that have been cited as reasons for excluding simulation-based learning from healthcare programmes (Haigh, 2007). Davis *et al* (2009) also found that the logistics of using the manikin involved time-tabling and accommodation issues as well as the training required for lecturers. In addition, the infrequent use of the simulator was questionable in relation to justifying the overall cost. Davis *et al* (2009) identified that the lecturers believed its use was minimal because it only maximised teaching in abnormal aspects of midwifery care rather than basic skills.

However, given that the clinical credibility of midwifery and nursing lecturers has been challenged since they relinquished their clinical role in 1996 following the move to HEIs (Finlay *et al*, 2006), it is also probable that simulation-based learning evokes a degree of anxiety among facilitators. Indeed Mackenzie (2009) has questioned if educationalists are the most appropriate personnel to teach practical skills and Moule *et al* (2008) recently suggested that simulation should be taught by clinical mentors to ensure that what was taught was up to date.

On the contrary Arundell and Cioffi (2005) suggested that clinical simulation in midwifery ensures that lecturers maintain their knowledge and skills. Although not a

midwifery study, this notion by Arundell and Cioffi (2005) has been supported in an evaluative project at Huddersfield University addressing the importance of preparing senior nursing students for their qualified role. Bland (2006) recruited a small group of third year BSc nursing students (n=10) towards the end of a nursing degree programme, to participate in a realistic ward simulation exercise that mirrored authentic clinical practice in the simulated laboratory. An unexpected outcome was demonstrated in relation to the educationalists' experience. The educationalists involved in the simulation day commented on how they had learned a great deal and that it had been a worthwhile experience for them also. Not only had it given them the opportunity to apply their knowledge and skills in a practical setting, but offered the chance to engage with students using a more interactive approach. Therefore this small project by Bland (2006) highlighted how learning was a two-way process and the teacher-student relationship was a contributing factor (Quinn, 2001).

However the disquiet regarding who is best placed to teach the practical aspect of healthcare programmes and how educators feel about simulation remains inconclusive. Thus understanding how simulation is utilised may provide insight into why the acquisition of practical skills is not the only intended outcome of this approach.

2.5 Learning through Simulation

In the skills laboratory, the emphasis is on a holistic approach which includes practical, affective and cognitive elements of learning. Bloom's taxonomy or hierarchy of learning depicts the sequence of levels of knowledge within the cognitive, affective and psychomotor domains (Atherton, 2009a; Kneebone 2003; Rogers, 1996; Yaegar *et al*, 2004). At a basic level, learning covers knowledge and understanding in the cognitive domain, rather than the higher levels of cognition such analysis and synthesis. Likewise the imitation of practical skills in the psychomotor domain and awareness in the affective domain would be the expected standard of learning objectives at a basic level for students starting to engage with simulation-based learning (Atherton, 2009a; Rogers, 1996).

As previously stated in Section 2.1.1, Gredler (1992: 2004) refers to simulation as a multifaceted approach to learning. Previous studies (Cioffi, 2001; Cioffi *et al*, 2005; McCallum, 2006) suggest this may relate to the work of Kolb (1984), which proposes that adults learn through a variety of approaches and that learning is a continuous process. As such it is suggested that knowledge, skills, attitudes and senses are encompassed within the learning opportunity so that learning is essentially an 'internal process' (Jarvis and Griffin 2003, p.60). Cioffi (2001) also purports that simulation provides opportunity for learning and meaning of skills and understanding. Indeed empirical evidence suggesting integrated learning derived from simulation has been reported in studies from nursing, as McCallum (2006) and Moule *et al* (2008) found that simulation-based learning facilitated learning in the cognitive and psychomotor domains simultaneously.

Understanding how learning develops in the course of simulation provides some insight into how it may prepare the student for the reality of practice. However there is a paucity of research within midwifery surrounding learning developed from simulation. Therefore to evaluate its effectiveness within the theoretical setting, examination of the literature from other healthcare disciplines has been explored under the individual domains of learning, as provided by Bloom's taxonomy.

2.5.1 Knowledge and Understanding

A plethora of quantitative studies using experimental approaches (Alinier *et al*, 2006; Birch *et al*, 2007; Cioffi *et al*, 2005; Crofts *et al*, 2007a; Crofts *et al* 2007b; Morgan *et al*, 2002) exist, mainly within the nursing and medical obstetric literature. The results obtained from measuring the effectiveness of clinical simulation through establishing a cause and effect relationship or quantifying the relationship among variables, provide quantitative evidence to demonstrate effective knowledge and understanding following simulation-based learning.

Similarly, qualitative and descriptive studies from nursing and midwifery (Davis *et al*, 2009; Reilly and Spratt, 2007; Robertson, 2006) demonstrate that clinical simulation helps students understand the theoretical rationale for their subject area. The aim of these studies was not to measure or assess the effectiveness of simulation

on knowledge and understanding but elicit the students' view of how, and if, it helped. Thus it may be possible to determine whether simulation encourages deep learning or surface learning. These established concepts, described by Entwistle (2009, p.33), relate to students' approaches to, and processes of learning.

Entwistle (2009, p.33) distinguishes deep from surface learning as a deliberate approach to learning where the student seeks meaning and understanding from new concepts that can be applied to existing knowledge. On the other hand, surface learning is described as an approach that denies any major role for cognitive processes as the student tends to engage in memorising facts rather than understanding (Entwistle 2009, p.33; Fry *et al*, 2003, p.18). Ramsden (1992, p. 40) suggests that either a deep or surface approach to learning is not a trait inherent within the student's personality. Instead, the approach adopted by the student is influenced by the educational strategy, which can provide inspiration for the student to adopt a deep learning approach (Entwistle 2009, p.88; Ramsden, 1992, p.61).

From the midwifery and obstetric literature, two quantitative studies examined learning from simulation (Birch *et al*, 2007; Robertson, 2006). The notion that an appropriately selected teaching method can stimulate the cognitive processes involved in deeper learning (Ramsden, 1992) may have been illustrated in the evaluative project in the United States of America by Robertson (2006), previously referred to in Section 2.4.1. Robertson (2006) observed a group of undergraduate maternity nurses (n=20) who received simulation training as well as their regular lectures. Robertson (2006) divided the students into groups and videotaped them whilst they co-ordinated the 'care' of a childbirth simulator in a series of simulated maternity complications. Afterwards they completed a Likert scale questionnaire to evaluate their perceptions of the exercise. Findings not only demonstrated the positive feelings of the students in relation to simulation training and its preparation for practice, but also that the experience had encouraged their reading for that particular topic. Robertson (2006) concluded that an added value of clinical simulation was the motivation of students to engage in deep learning.

Brown (1994) makes the point that deep learning, unlike surface learning, leads to improved recall of new knowledge, which can be explored and evaluated when applied in other settings. So methodologically, it could be argued that the questionnaire survey by Robertson (2006) was not the most appropriate means of exploring the students' learning. First, questionnaires provide limited qualitative data (Robson, 2002) and secondly, in reference to Brown's (1994) point, learning was evaluated in the academic setting where it had first been initiated. Therefore further research in another environment such as the clinical area might lend itself better to describing the phenomenon observed by Robertson (2006).

Conversely, Birch *et al* (2007) proposed that simulation was not the optimal educational strategy in knowledge acquisition or in motivating students to engage in a deeper approach to learning. But although this assertion was upheld in phase one of their (Birch *et al*, 2007) study which evaluated various teaching methods used in obstetric skills training, arguably it was refuted in the second phase. Using an experimental pre-test / post-test approach to evaluate various teaching methods used in obstetric skills training, that is, lecture-based teaching, simulation-based teaching or a combination of both, initial results of the post-test demonstrated an improvement in all teams (n=36) regardless of teaching method. However the team who had received a combination of lectures and simulation-based teaching scored highest, whereas the simulation only teaching group scored the lowest.

Interestingly, when this assessment was repeated three months later, the team who had simulation-based teaching only, demonstrated sustained long-term knowledge retention while the other groups showed a decrease in performance, knowledge and confidence. Also in phase two, one year after training, qualitative findings from semi-structured interviews in the study by Birch *et al* (2007), reported increased confidence in clinical practice among the simulation-based only group. A contributing factor may have been their development and proficiency in clinical skills.

Although Birch *et al* (2007) concluded that simulation was an appropriate proactive approach in obstetric training, the evidence is perhaps inconclusive. The small

sample size (n=36) used in this randomised controlled trial failed to provide statistical significance (p=0.086) thus threatening generalisability of the results (Robson, 2002). Also, given the initial lowest score of the simulation teaching only group, this may have been a factor for the turnaround in results at the three month re-assessment by providing the inspiration to improve. A larger study sample that included a range of obstetric subjects as opposed to one scenario might have provided more substantial evidence.

2.5.2 Psychomotor Skills

Clinical skills are fundamental to midwifery practice and there is currently great emphasis on their development in undergraduate programmes (NMC, 2009). However gaining competence in certain skills can be hindered due to both the intimate nature of midwifery practice, and, also the lack of opportunity to manage rare obstetric conditions.

Davis *et al* (2009) highlighted how the childbirth manikin was useful to teach in the management of the less common childbirth cases, and provide opportunity to practice and gain proficiency in skill development. For example, breech presentation is increasingly managed by planned caesarean section, therefore few doctors and midwives now possess the skill of delivering vaginal breeches. However improved technical performance was demonstrated by Deering *et al* (2006) who undertook a small study (n=20) that evaluated the effect of simulation training on the management of simulated vaginal breech delivery. Using a convenience sample, a pre-test / post-test design was adopted to assess their (n=20) performance in managing a breech delivery. Without prior warning, the participants were provided with a scenario of a 'woman' in advanced labour with a fetus in the breech position using the childbirth simulator. Afterwards the participants were provided with simulated training on the management of vaginal breech delivery. A senior Obstetrician who was blinded as to whether it was a pre or post training exercise assessed the post-test. Scores were statistically increased as the participants performed manoeuvres more safely and skilfully than before. The authors concluded that simulation training significantly enhances skill development.

Also a similar result was demonstrated in a relatively small (n=99) randomised controlled trial (RCT) reported by Alinier *et al* (2006). Again a pre-test / post-test two-group approach was employed. Results confirmed the hypothesis that the experimental group (n=49) would perform better in an Observed Structured Clinical Examination (OSCE) after simulation training, compared to the control group (n=50) who did not receive simulation training.

However a common problem with such experimental approaches to prove effectiveness of learning technologies is that they cannot identify those factors that influence learning. Perhaps the reactive effects of the pre-test heightened response to the intervention (Robson, 2002), thus the simulation training was not entirely responsible for an improved score. Certainly there is a plethora of other quantitative studies to demonstrate improved skill acquisition following simulation-based learning within a simulated environment (Birch *et al*, 2007; Crofts *et al*, 2007b; Morgan *et al*, 2002; Robertson, 2006). As before, the difficulty is to understand why this may be the case as there is a limited number of qualitative studies which provide the students' view in what makes the development of clinical skills effective in using simulation.

Recently in midwifery, the simulator was identified as having limitations in enabling practice development. Davis *et al* (2009) highlighted how the childbirth simulator did not provide the range of technical skills to facilitate normal labour and therefore its usefulness was confined to complex scenarios. Conversely student midwives found it useful in teaching basic skills and topics such as childbirth, and, in reducing anxiety. Thus from the student perspective, the range of skills offered by simulation could extend beyond the practical aspects.

2.5.3 Affective Behaviour

Often in healthcare, emphasis is placed on the development of practical skills, and subsequently non-technical skills such as communication, decision-making and teamwork are neglected (Halamek, 2008; Kitson-Reynolds, 2009). Arundell and Cioffi (2005) highlighted that among the challenges facing educators, one is to

ensure the preparation of safe effective decision-makers at the end of their midwifery education. Thus other skills are as vital as practical skills in providing optimal care.

From the midwifery based literature, there is evidence to suggest that simulation can facilitate in the development of skills within the affective domain of learning (Arundell and Cioffi, 2005; Cioffi, 2001; Cioffi *et al* 2005). Cioffi *et al* (2005) examined the effect of simulation on the clinical decision making of thirty six midwifery students who were randomly allocated to either the experimental or control group. Those students who received the intervention were provided with simulation instead of the scheduled lectures for normal labour and physiological jaundice, whereas the control group received lectures only. Both groups then participated in a post-test, which consisted of two randomly selected simulation based scenarios where the students had to verbalise their clinical reasoning, and also self-report perceived confidence levels. Responses were audio taped, transcribed and analysed. The findings demonstrated that the student midwives from the experimental group arrived at clinical decisions more quickly and felt more confident, suggesting that simulation may have a role in fostering decision-making skills in undergraduate student midwives.

On a similar theme, Halamek (2008, p.452) recently gave emphasis to how behavioural skills could be developed in the simulated setting using manikins, but stressed how it was vital that visual and auditory cues were provided to create high psychological fidelity. However Kitson-Reynolds (2009) argues that such skills are resource intensive to develop in preparation of practice and therefore innovative approaches should be developed involving 'real' people. Also, Kitson-Reynolds (2009) suggests that the innovation should not involve individuals that are known to students, such as their educators.

Interestingly, in an earlier qualitative study by Rystedt and Lindstrom (2001) involving focus groups with fifteen nurses, the effect of simulation in developing communication skills was deemed difficult or impossible. Therefore the authors concluded that some aspects of healthcare such as interacting with patients, was not a realistic outcome of simulation. Indeed this assertion has been upheld by Crofts *et al*

(2008) who adopted a randomised controlled trial with 140 participants to examine whether a patient-actor or manikin influenced communication skills in dealing with obstetric emergencies. From the results, Crofts *et al* (2008) suggested that the patient-actor was more effective even when the manikin had an automated 'voice'.

However the most recent Confidentiality Enquiry into Maternal and Child Health (CEMACH, 2007) cited poor communication skills as one of the contributors to sub-optimal maternity care. Thus there is no doubt that the development of communication skills remains a challenge for midwifery educators as conflicting evidence surrounding communication skills and simulation, suggests this aspect of behavioural learning is perhaps lacking. Conversely evidence to suggest the development of other elements of behaviour is encouraging and should not be overlooked at the expense of practical knowledge and skill, particularly during student feedback discussion, which may centre on competency in technical ability.

2.5.4 Peer Review

Ramsden (1992, p.193) highlights the importance of feedback to students on their progression and development so they can then identify their learning needs. Falchikov, in Boud and Falchikov (2007, p.135) states that peer involvement in student learning and feedback not only enables students to make a judgement of how well they have achieved expected outcomes, but how it is also a useful tool to develop the skills necessary for life-long learning.

In simulation-based learning, where students work together in small groups, formative feedback is generally provided by peer review. Alinier *et al* (2006, p.364) provided a useful account of the ways in which peer review could be facilitated in simulation sessions. Generally, following participation in a simulated scenario, each student's performance is discussed among peers and the educator, in the student's presence. Prior to this, peers will have observed the student's performance real time in an adjoining area to the skills laboratory, which is achieved using an audio / video link. Alinier *et al* (2006, p.364) suggested that although this can cause discomfort, the student quickly forgets that the camera is filming during the scenario. During feedback, the students can see their performance in the replay.

Several authors have cited the benefits of peer review in simulation (Alinier *et al*, 2006; Murray *et al*, 2008*;* Yaegar *et al*, 2004), such as the opportunity to observe performance and correct practice errors prior to practice placement. Murray *et al* (2008) and Yaegar *et al* (2004) also comment that constructive feedback promotes learning as it allows the student to further develop their competence and confidence, whereas Haigh (2007) suggests it offers expansive learning through discussion.

However Reilly and Spratt (2007) found that students cited the opportunity to learn from their mistakes and those of their peers as an additional advantage. Indeed Bova and Kroth (2001) demonstrated that incidental learning rates highly even though it results from making mistakes. Marsick, cited in Jarvis and Griffin (2003), also describe incidental learning as an unintended learning outcome of planned learning activities. As suggested by Moon (2004, p.24), it offers the student the opportunity to move from the 'abstract' to the 'concrete' through a process of reflective observation.

Boud, in Boud and Falchikov (2007, p.14-18), highlights the importance of formative assessment or feedback and its sustainable benefits in relation to long term learning out with the theoretical setting, such as the workplace, where students have to identify what they have to learn and if they have learned it. From a realistic perspective, Johnson *et al* (1999, p.40) emphasized how constructive feedback such as that from peer review, was unlikely to take place in the clinical setting. Thus through peer review in the university, the students are afforded the chance to identify and correct errors in the near real setting of the skills laboratory prior to practice, in preparation for practice and future learning.

2.6 Simulation and Situated Learning

2.6.1 Skills Laboratory

As is typical of simulation-based learning in pre-registration midwifery programmes, learning takes place within the skills laboratory of the university (Davis *et al,* 2009) in small groups of four to six. Clinical simulation lends itself to the concept of small group teaching (Tiberius, 1999) because small groups permit the educator to provide ample supervision so as to ensure accuracy and proficiency in skill acquisition

(Bailie and Curzio, 2009), and, maximise the opportunity to practice (Alinier *et al*, 2006). Also, small groups usually generate discussion around the topic (Haigh, 2007). Thus the combination of teaching the skill and the ensuing social discussion helps develop psychomotor skills and cognition of the topic (Tiberius, 1999).

Similar to the techniques described by Wooley and Jarvis (2007, p.75), the strategy usually involves students observing the lecturer perform the practical skill (modelling) following the theoretical component of the programme, practice the skill (coaching) and then participate in the scenario based session (articulation). Thus laterally, teaching encompasses a holistic approach to learning and students embrace the role of the profession they are specialising in, in this case, midwifery.

However, the skills laboratory should also replicate the clinical environment to create a near real setting (Maran and Glavin, 2003). As previously stated in Section 2.3.2, the clinical skills laboratory is 'protected' and controlled thus allowing time for repetitive practice that would not be offered in the clinical environment (Stark, 2007). It has been suggested that the problem with this though, is the lack of environmental cues (Halamek, 2008). In his argumentum, Halamek (2008) comments that whilst the simulated environment is the ideal learning environment for teaching practical skills, its protected nature sometimes means it lacks a true representation of reality, which is only available in the maternity delivery room of the clinical setting. However in accordance with Maran and Glavin (2003), the simulated equipment can be adjusted accordingly to meet the students' needs in order to maximise psychological fidelity.

Additionally, the experiential component of this educational strategy can be enhanced by adopting the theory of situated learning to guide the simulated exercise, thus providing the environmental cues that may be lacking according to Halamek (2008), via a community of practice (Wenger, 1998).

2.6.2 Community of Practice

Kneebone (2003) suggests that simulation-based learning encompasses a variety of approaches including behaviourism and experiential learning, in addition to the range

of social theories of learning. Kneebone (2003) purports that in simulation these approaches are not mutually exclusive as they all have a common outcome.

The theory of situated learning proposes that the students' knowledge develops in the course of activity and their action is situated in their role as members of a professional team. Therefore teaching in social environments allows participation in 'communities of knowledge and practice' (Lave and Wenger 1991, p.29). Indeed Lave and Wenger (1991) argue that such participation is at the centre of professional learning.

However prior to this study, Haigh (2007) evaluated clinical simulation in midwifery education. Haigh (2007) suggested that situated learning theory was an inappropriate framework to understand student learning, when a simulation-based approach had been used. According to Haigh (2007), the concept of midwifery communities of practice was deemed limiting because it did not lend itself to the unpredictable nature of clinical placement. Therefore Haigh (2007) suggested that human activity theory was a more appropriate framework.

Indeed human activity theory takes account of the whole context in which learning takes place as opposed to what may be construed as the insularity or 'micro world' (Arnseth 2008, p.300) of a community of midwifery practice. However, situated learning provides the basis to develop learning in a way that pays close attention to what the students actually do rather than them trying to make sense of their surroundings in a 'macro world' in keeping with activity theory (Arnseth 2008, p.300).

Further, Wenger (1998, p.48) asserts that communities of practice are not purely instrumental but provide meaning and contextualise learning. Thus in the controlled environment of the university simulation laboratory, the student co-participates (Lave and Wenger 1991, p.29) with the lecturer in hands-on management of clinically based scenarios. The midwifery educator undertakes the role of 'primary socialiser' (Kenny 2004, p.87) from whom the student begins to learn about the attitudes and cultural norms of the clinical setting. Lave and Wenger (1991, p.31) state that 'learning by doing' in a 'community of practice' (Lave and Wenger 1991,

p. 98) engages the student in conversations and behaviour which contextualises knowledge, or in other words, helps it take on relevance.

Smith (2003) explains that initially students participate at the periphery until what Atherton (2009b) describes as a gradual move to more important tasks. Legitimate peripheral participation is a distinguishing feature of situated learning (Lave and Wenger 1991, p. 35), wherein participation is legitimate because the student belongs to a particular community of practice, in this case midwifery.

As discussed in Section 2.6.1, the context of learning should mirror the clinical environment, that is, the maternity delivery suite. Lave (2009) explains that knowledge is better understood in settings where knowledge would normally be applied. Therefore it is considered that learning through simulation in a community of midwifery practice, prepares student midwives for practice. However to master knowledge and skill, the student is then required to move to full-participation (Lave and Wenger 1991, p.37) in the management of clinical scenarios with the clinical mentor in the reality of the workplace.

2.7 Summary: Sections 1 and 2

For several years, simulation-based learning has been applied in academic settings in the acquisition of professional knowledge and skills (Cioffi *et al*, 2005). Simulation promotes learning by providing an opportunity for students to experience a realistic learning experience in a simulated, safe environment within the theoretical setting. Also, students and facilitators have been shown to enjoy simulation as a multi-faceted approach which may encourage deeper approaches to learning and possible long-term improvement in knowledge and performance. Simulation-based learning also lends itself to the theory of situated learning, as described by Lave and Wenger (1991), by allowing students to participate in their clinical role prior to attending the workplace. However it is not known how simulation prepares the student for the reality of clinical practice.

In the section that follows, simulation is explored in relation to its application to professional settings.

2.8 Section 3: Application of Simulation-Based Learning

From the literature reviewed in Section 2, many studies deduced that simulation was helpful in preparing nursing and midwifery students for practice (Davis *et al* 2009; McCallum, 2007; Reilly and Spratt, 2007; Robertson, 2006). Further, it has been predicted by several authors that learning developed from simulation in the university is transferred and applied in practice (Aliner 2003; Alinier *et al*, 2004; Cioffi *et al*, 2005; Crofts *et al* 2007b; Crofts *et al*, 2008; Kneebone 2003, p.277; Reilly and Spratt, 2007). However many of these studies were of a quantitative nature and to replicate them in the clinical environment, would pose some practical and ethical issues. Thus to date there is limited research on this aspect of simulation in healthcare education (Murray *et al* 2008, p.7). Moreover there is none from the field of midwifery. Indeed Davis *et al* (2009) recently highlighted the need for rich empirical evidence to demonstrate whether the knowledge and / or skills gained through simulation-based learning in the university were transferred into clinical practice.

Perkins (2009, p.110) refers to the transfer and application of learning from one setting to another as, 'playing out of town'. Perkins (2009, p.123) suggests that the degree of successful transfer can be enhanced through 'learning by doing' in the original learning environment so that it connects to where and how it will be applied at a later date. Thus in simulation-based learning, where active participation is utilised (Quinn 2001, p.62), it would be expected that at the least, near transfer (Perkins 2009, p.111) would occur as it would involve the direct connection with cues and situations from the university, to the clinical environment. Therefore whenever students meet their clinical outcomes, one may expect that simulation-based learning prior to practice had been a contributing factor.

However in his framework for clinical assessment, Miller (1990, p.S63) provides guidance on the stages of skill development as: Knows; Knows How; Shows How; and Does. At a basic level, the learner *knows* what is required to carry out a task. Next the student should *know how* to use the knowledge gained. Then when they *know* and *know how*, they can *show how*. Thereafter, the learner *does* the skill in the

clinical environment. In relation to the latter, Alinier (2003) and McCallum (2006) concur with Miller (1990, S63) who states that assessment of this is difficult. NMC (2008, p.32) profess that, 'Most assessment of competence should be undertaken through direct observation in practice'. Therefore student midwives are summatively assessed at the end of placement by their mentor midwife in practice, to ensure proficiency in meeting the NMC (2009) standards of midwifery education. Some argue that this lacks rigour due to the subjective nature of observation and personal opinion in judging student performance (McCallum, 2007). However as lecturers attend assessments in clinical placement a degree of moderation should take place.

So in assuming that 'learning by doing' (Perkins 2009, p.123) through the simulation approach is transferred and applied in practice, it begs the question: how? In the following sections, evidence from the field of simulation is explored under the headings of the domains of learning.

2.8.1 Knowledge and Understanding

As discussed in Section 2.5.1, clinical simulation helps students understand the theoretical rationale for their subject area. However in relation to application to practice, only one study from nursing has provided encouraging evidence.

In the case study conducted by Reilly and Spratt (2007) in Tasmania, among other findings the authors also reported effective transfer of learning by simulation to the practice setting. Findings from focus groups involving both undergraduate nursing students (n=20) and academics involved in their teaching, suggested that students linked their knowledge and understanding in the clinical area, to simulation given in the university prior to practice. Thus the study suggested that cognition was utilised in the professional setting. However a typical feature of case study is the application of more than one method of data collection to provide an in-depth analysis of the 'case' (Gilham, 2000). Therefore despite Reilly and Spratt (2007) providing encouraging findings into the transfer of simulation-based learning to the practice setting, the use of only one method of data collection perhaps threatens the validity of the authors' claim.

Indeed this element of learning is difficult to assess, whereas technical skills are perhaps more easily identified.

2.8.2 Psychomotor Skills

From Section 2.5.2, the practical skills developed from simulation training were positively evaluated in the simulated setting. However with regard to the evidence (Alinier *et al,* 2006; Deering *et al,* 2006), it is not known if and how technical ability had been applied in practice as the participants of these studies 'showed how' (Miller 1990, p.S63) within the university only.

Perhaps one must reconsider the nature of simulation-based learning to predict how learning may be demonstrated in another setting. As previously discussed in Section 2.6.1, the strategy begins by modelling followed by coaching, prior to articulation (Wooley and Jarvis 2007, p.75). Therefore during the coaching stage there are elements of a behaviourist approach to teaching and learning adopted (Kneebone 2003, p.269; Rogers, 1996). Indeed the behaviourist theory suggests the student undergoes a process of reflex learning (Rogers, 1996), that is, the teacher offers selected stimuli (specific skill), which causes a response known as classical conditioning (clinical drill), which is then reinforced by the teacher (operant conditioning).

Eraut (1994, p.48) states that where a skill has been rehearsed, then its application in a similar setting is merely 'replicative'. Therefore Jarvis and Griffin (2003), question if this is education or simply training. However Rogers (1996) suggests behaviourism does in fact form the basis of cognitive learning and is not only confined to basic learning. Indeed Eraut (1994, p.48) explains that where the replication occurs in a similar setting, but in different circumstances to the one it was learned such as during professional communication, then it becomes much more than merely replicating a task because an element of interpretation is required.

Thus it is not known if practical skills may be applied in a conditioned manner or if it includes a cognitive process. Importantly though, coaching is only one aspect of simulation-based learning, as thereafter the student participates in scenario-based

exercises (articulation) within a community of practice (Wenger, 1998). Therefore learning takes on a holistic approach.

2.8.3 Affective Behaviour

Section 2.5.3 highlighted how simulation could facilitate the development of skills within the affective domain of learning. However as before, there is no evidence to demonstrate if skills such as leadership, clinical decision-making, communication or team working are subsequently transferred to the clinical environment.

From Section 2.6.2, the students' co-participation is described and how the midwifery educator socialises them about the attitudes and cultural norms of the clinical setting (Kenny 2004, p.87). This is achieved by engaging the student in conversations and behaviour in keeping with the community of practice (Wenger, 1994). It is plausible therefore to speculate that students may exhibit what may be described as cultural behaviour or, as identified by Eraut (1994, p.30), specialised language and awareness of the authority structure, that would only be recognised from others of the same or similar professions.

Indeed Arnseeth (2008, p.301) and Clancey (1995, p.50) criticise that situated learning theory may socialise students in such a way that they behave as knowing their 'place' within professional practice settings. Arnseeth (2008, p.301) explains that as situated learning offers a more internal perspective, it may result in the student identifying where they rank in the overall structure (Eraut 1994, p.30). Mooney and Nolan (2006, p.241) also discuss the repressive attitudes in healthcare education that lead to students behaving in a submissive manner. Conversely they also suggest that as nursing has moved from the influence of the biomedical model of healthcare to one that endorses the social attributes of holism, these norms should be a thing of the past (Mooney and Nolan 2006, p.241).

The same may be said of midwifery too, although Haigh (2007) recognised that opposing priorities, in relation to the needs of students versus the needs of mothers and babies, had created a source of tension between the university and the clinical area. Findings suggested that students were perhaps in a low hierarchical position

within the workplace establishment although it is not certain if they exhibited the submissive behaviour as that described in nursing (Mooney and Nolan 2006, p.241).

Therefore from the literature, it is not possible to predict whether meaningful skills such as decision-making and teamwork are applied in practice or certain aspects of cultural behaviour are transferred.

In the next section the contribution of memory is considered in facilitating the application of simulation to practice.

2.9 Context-Dependent Memory

Wilford and Doyle (2006) argue that the use of realistic simulation in the HEI provides opportunity for students to apply their learning more easily when they return to the workplace. The basis of their argument derives from a seminal piece of experimental research that involved underwater sea divers in the 1970s. To test the theory of context-dependent memory, Godden and Baddeley (1975) recruited divers (n=18) to learn word lists both on land and underwater (the underwater environment presents a more realistic environment compared to land) and then recall either on land or underwater. Godden and Baddeley (1975) found that the environment or context of recall was dependent upon the environment of learning. In other words recall was better in the environment of original learning.

When applied to clinical simulation, the results of Godden and Baddeley's (1975) small scale experiment perhaps explains the phenomenon observed by Reilly and Spratt (2007), in that learning was applied in the clinical setting because it had been initiated in an environment closely resembling that setting. Indeed Godden and Baddeley's (1975) experimental research was representative of much of the other earlier studies relating to the theory of context-dependent memory (Smith and Vela, 2001). The underpinning rationale was based on the presumption that when presented with a new environment, subjects mentally reinstate the context of original learning. If environmental cues are similar to the original learning environment, then recall is thought to be smoother there. Looking at it another way, more recent experimental evidence from Opitz (2010, p.117) purports how recollection in

different contexts can become decontextualised compared to 'within' contexts, therefore parallel environments are important.

Eraut (1994, p.48) states that memory is recognised as a cognitive process although Atherton (2009c) asserts that whilst it is central to learning, memorising is among the lowest levels of rote learning. Certainly the complex nature surrounding memory and the various stages and processes relating to the components of long term memory - episodic, semantic and procedural (Atherton, 2009c) - suggests it is an area worthy of a separate enquiry. However in relation to the application of simulation-based learning undertaken in an environment that imitated the clinical area, the concept of context-dependent memory may help explain if the environment contributed to retention and subsequently recall in the practice placement or not.

2.9.1 Tacit Knowledge

Eraut (2000, p.116) defines formal or explicit knowledge as 'an organised learning event'. For example, this would be an accurate description of a planned simulation-based learning activity within the university setting. Conversely, in informal or implicit learning, the opposite is true as learning occurs unconsciously through observation and the course of everyday activities. In relation to the latter, Eraut (2000, p.116) explains that tacit knowledge is the outcome of informal learning, that is, knowledge which one has difficulty communicating because they do not know how they know what they know (Atherton, 2009d; Sternberg *et al* 2000, p.104). Certainly Sternberg *et al* (2000, p.xi) associate tacit knowledge with practical intelligence; otherwise crudely referred to as, common sense.

However Eraut (2000, p.116), further claims that explicit learning can lead to tacit knowledge. In other words, learning from a planned activity can be remembered although important aspects of the said learning are unclear and difficult for the student to express. Also Sternberg *et al* (2000, p.110) suggest that tacit knowledge may have a role in experiential learning because the acquisition of tacit knowledge is more likely to be related to learning by doing. Further, Eraut (2000, p.124) conjectures that explicit knowledge can remain in episodic memory and subsequently be used tacitly in practice.

Therefore it may be possible to deduce that an interval between simulation-based learning in one context, that is the university, and its application in another, that is practice, could lead to tacit knowledge even though this knowledge was not originally acquired in an informal way.

Summary

It has been suggested that at the centre of effective recall of simulation-based learning in the clinical setting, is the contribution of context-dependent memory; therefore ideally the original learning environment should mimic the environment of application. Also within the theoretical setting, empirical findings show how learning is developed within the cognitive, psychomotor and affective domains of learning. However in spite of many researchers within the field of healthcare education speculating that simulation-based learning is later applied in practice, there is inconclusive evidence to demonstrate if it is and if so, how. Therefore, this unanswered question demonstrates a gap in knowledge worthy of further enquiry.

The next sections explore: the potential role of clinical simulation in facilitating the integration of theory and practice; the clinical context of midwifery; and work based learning.

2.10 Simulation as a University-Hospital Interface

As previously highlighted in Section 1.2, the NMC (2007) made a recommendation to promote the use of simulation as part of practice hours in pre-registration nursing programmes (Moule *et al* 2008, p.796; NMC, 2007). Commissioned to explore the possibility, Moule *et al* (2006: 2008) adopted a multi method design utilising qualitative and quantitative methodologies in two phases to evaluate the integration of simulation into nursing and the potential of some clinical hours being replaced by simulation-based learning. Phase one results demonstrated that simulation could support students in achieving clinical competency and evaluation was overall positive. However phase two demonstrated mixed views about replacing practice hours as some nurse mentors believed simulation should be part of the theoretical component and others viewed simulation as part of practice. Indeed the study was small in numbers and further research would be required.

As yet, this recommendation has not been made for midwifery education (NMC, 2009). NMC (2009, p.16) state that, 'the practice to theory ratio of each programme is required to be no less than 50 per cent practice and no less than 40 per cent theory. The clinical practice experience must be sufficient to enable students to achieve the standards required by the NMC'. Thus practice is deemed a hugely important element of the pre-registration midwifery programme. However Darra (2006) highlighted the difficulties faced by mentors in providing support to students because it was not always feasible to offer formal teaching immediately prior to the students' exposure to a particular episode of care, and, consequently promote the linking of theory to practice.

Although work based clinical placements account for 50% of the undergraduate midwifery programme, it is not to suggest that clinical simulation should or could replace elements of this component. However, on the basis of the findings by Moule *et al* (2006: 2008) and the divided opinion of where simulation sits in nursing education, an alternative viewpoint could be that it simply provides a link between both environments.

An interface is defined as, 'the connection between two systems or two parts of the same system' (Chambers 2005, p.771). As established in previous sections (2.5; 2.6.2), simulation offers a holistic approach to learning by integrating the theory and practice of midwifery in one environment suggesting that it should help marry the two together. However examining the relationship between theory and practice may offer further understanding as to whether simulation can offer a 'connection' between both contexts.

2.10.1 Integrating Theory into Practice Placement

Confidence in clinical practice, or a lack of it, is often attributed to the perceived theory-practice gap that is said to exist in nursing and midwifery education (Corlett *et al*, 2000; Darra, 2006; Davis *et al*, 2009; Mackenzie, 2009; Ousey and Gallagher, 2007; Stark *et al*, 2000). As students struggle with the difference between theory and practice (Corlett *et al* 2000, p.502; Corlett *et al* 2003, p.183) it has been suggested that the problem originates not from a deficiency of knowledge but difficulty in applying it to the clinical situation. The reason for this is unclear. However, as pre-registration programmes moved in to higher education in the 1990s (Finlay *et al*, 2006), it is probable that the practical component of the curricula might have steadily declined. Also, it has been suggested that because lecturers teach a range of skills rather than a particular area of expertise, there is disparity between what is taught in the HEI and in clinical practice (Corlett *et al*, 2000; Corlett *et al*, 2003). As previously discussed in Section 2.4.2, Mackenzie (2009) and Moule *et al* (2008) have questioned the appropriateness of educationalists in promoting practical skills.

Indeed some argue that the term 'theory-practice gap' may be over used (Corlett *et al* 2003, p.183) and others propose that any discord is merely physical (Larsen *et al*, 2002; Ousey and Gallagher, 2007). Larsen *et al* (2002, p.211) assert that theory and practice exist as two separate entities and a 'gap' is a historical perception. Thus the notion of any dissonance between theory and practice may be largely due to the geographical shift in education from Schools of Midwifery (which were once affiliated to maternity hospitals) to HEI settings during the last decade.

From the nursing literature, Corlett *et al* (2000) demonstrated the difficulty students have integrating theory and practice in a qualitatively driven study involving semi-structured interviews with lecturers, clinical staff and nursing students. All participants (n=69) identified a void between theory and practice. However it was mainly because they found it difficult to transfer classroom teaching to the clinical environment. A later experimental study (n=19) by Corlett *et al* (2003) demonstrated that clinical staff were more effective in promoting knowledge and skill from their area of expertise, perhaps because educationalists took a more generic approach. Therefore in an attempt to facilitate the understanding of theory and how it may be applied in practice, Corlett *et al* (2000, p.504) suggested that lecturers must ensure that what is taught in the theoretical setting accurately reflects clinical practice.

However the continuing debate about the theory practice relationship is not the issue here but rather how student midwives might better meet their educational and clinical outcomes effectively and if the role of simulation could contribute. Therefore, rather than theory and practice being taught as separate entities in separate locations, Ousey and Gallagher (2007) had suggested that a more holistic approach may be helpful by teaching the theory and practice together in the university, to facilitate competence later on in practice.

2.10.2 Context of Midwifery Practice

It would appear that practice placement is not without its difficulties. An early publication by Cavanagh and Snape (1997) identified placement as being a source of stress in student midwives. The survey involving a large number of midwifery students (n=199), identified the emotional upset experienced by student midwives when they were involved in adverse clinical outcomes. Further was the lack of opportunity to debrief when in clinical placement, particularly after a traumatic clinical event. More recently, McTavish (2010, p.46) provided a personal account of the 'highs and lows' of being a student midwife, citing placement as being the environment most likely to experience fluctuations in emotions. Mainly, this was due to settling into a new environment and having to prove oneself. In nursing McBrien (2006) also argues how student nurses experience high levels of anxiety as they adapt

and fit into their clinical placement, mainly because of the unfamiliarity of the new working environment compounded with the expectation of being able to 'do'.

In relation to the working environment, among other findings, Haigh (2007) recognised how the clinical area was not always conducive to the students' learning. Using a mixed methods approach that combined evaluation and action research, Haigh (2007) sought the views of a small number of midwifery students (n=6) on how their recently completed three-year programme could have been improved. Findings demonstrated that more simulated practice within the university setting would have been beneficial, mainly because the university was considered the preferred setting to develop clinical skills compared with a busy and stressful clinical environment. These findings were also supported by the midwifery lecturers (n=3). Although the small number of participants in this study suggests that the findings should be viewed with caution, sequences from the original data included in the paper suggested that the study had generated rich qualitative information.

Similarly as discussed in Section 2.10, Darra (2006) highlighted the difficulties faced by mentors in providing support to student midwives. Apart from uncertainty in what needs to be taught to student midwives in practice, sometimes the nature of clinical practice was also an area of concern. Indeed Darra (2006, p.458) put forward the case for considering a practice-theory gap as opposed to a theory-practice one. More recently, a mixed methods case study (n=70) to explore student midwives concerns about the quality of their mentorship in achieving their clinical outcomes (Kroll *et al*, 2009), identified a few negative issues. Kroll *et al* (2009) recruited members of the midwifery team across the hospital wards to take part in a questionnaire survey and interviews. Findings suggested there was unease about the quality of the students' learning, identifying the heavy workload and negative attitudes of midwives who tended to recognise a student as 'a pair of hands' rather than a learner. Whether this was unique to this particular setting is unclear, however the findings are concerning.

Therefore in view of some of the negative factors influencing the students' learning in practice, it suggests that inadequate preparation could be counterproductive. If then simulation does contribute to a smoother transition to the workplace, as

suggested by Wilford and Doyle (2006), then potentially it may have an impact on learning in the workplace, particularly as the working environment may not always be conducive to the students' learning.

2.11 Work Based Learning

2.11.1 Terminology

A variety of terms relating to learning in the workplace are available and often used interchangeably. These include workplace learning, work based learning, practice learning and practice-based learning. Locally, the preferred term of 'work based learning' operated. This was defined by the university as: *when a student applies learning in a work situation for which learning outcomes are identified, in the fulfilment of which the student is supported by appropriate teaching and guidance in a supernumerary capacity and credit is awarded.*

2.11.2 Learning through Work

Eraut (2000, p.133) suggests that the application of learning from the theoretical to the professional setting is not instantaneous. Instead it usually involves significant further learning. Örtenblad (2004) proposes that learning achieved through work activities is more likely in optimal working conditions. Thus as learning in the workplace is often a planned event and encompasses activities such as observation, practice, coaching and mentorship (Cheetam and Chivers, 2001; Jarvis and Griffin, 2003), Billett (2001) found that where these support networks were in place, learning was reportedly higher.

But as Haigh (2007) suggests in Section 2.10.2, the clinical area is not always the best environment to develop clinical skills because of its unpredictable nature, which may impede on how student midwives learn. Confounding factors such as workplace culture (Kroll *et al*, 2009) and the practical demands of the clinical area negatively impact on learning (Darra, 2006). However in contrast, Munro (2003, p.7) states that 'learning on the job' and 'learning by doing the job' to be the most valuable learning experiences. Cheetam and Chivers (2001) also support these approaches as highly effective in practice based learning, but they further assert that structured and

supported learning remains a key factor in providing an effective learning environment. So where these factors are absent, as Haigh (2007) found, it is perhaps less likely that the student will experience optimal learning through work activities.

However where formal planned learning is not readily accessible, learning may still occur albeit informally as suggested by Munro (2003). Jarvis and Griffin (2003) propose that informal work based learning is more likely to occur in those workers described as innovative and practical. Indeed this concept has been illustrated in the work of Gerber (2000) in his study of experienced adult workers. Gerber's (2000) analysis informs that common sense knowledge and personal traits such as those described by Jarvis and Griffin (2003), may actually facilitate work based learning. In contrast, Cheetam and Chivers (2001) question if personal attributes have a causal link to enhancing work based learning. The authors suggest that the process of informal learning takes place involuntarily and without awareness of what has been learned at work (Cheetam and Chivers, 2001).

Therefore work based learning is formal and informal, and in both ways, an environment that is conducive to learning is beneficial, as is perhaps the learner's personality. However formal learning activities at work can be compromised when the learning environment becomes too busy, as suggested by Darra (2006) and Haigh (2007). For this reason, it is considered that simulation-based learning in the university is the ideal place to develop skills. Thus where students have received simulation and already possess some competence and confidence in technical and non-technical skills, one may conclude that this preparedness should not only ensure a smoother transition to the workplace, but also facilitate learning on the job as the student midwives may already have identified their learning needs. In other words, they would have some control of their learning.

2.11.3 Simulation Providing Control

Evidence is limited but Munro (2003) claims that learners have difficulty identifying and defining their own learning needs in the workplace. Also Lofmark and Wikblad (2001) suggested that poor performance in practical tasks and not being self-reliant were factors in obstructing work based learning in nursing students. Indeed among

other findings from the phenomenological study (n=14) by McCallum (2006: 2007), the author concluded that simulation-based learning enabled nursing students to take more control of their learning. Utilising a mixed methods approach, this small qualitatively driven project and supplemental quantitative study, described the lived experiences of student nurses who had had simulation-based learning in the university. Data from semi-structured in-depth interviews and a semantic differential questionnaire showed that students could control their learning, as they were better able to recognise their own competency levels.

However the study by McCallum (2006) was undertaken in the university. Nonetheless if they (n=14) were aware of their learning needs there, it is possible that the nursing students, and indeed midwifery students too, could transfer their recognised competency levels and areas for development elsewhere, that is, to the placement setting.

2.11.4 Simulation and Competency

As discussed in Section 2.6.2, in midwifery, simulation-based learning occurs through participation in a community of practice. Thus learners proceed through several stages of development starting from novice (Eraut 1994, p.124), under the guidance of the midwifery lecturer and among peers within the community of practice.

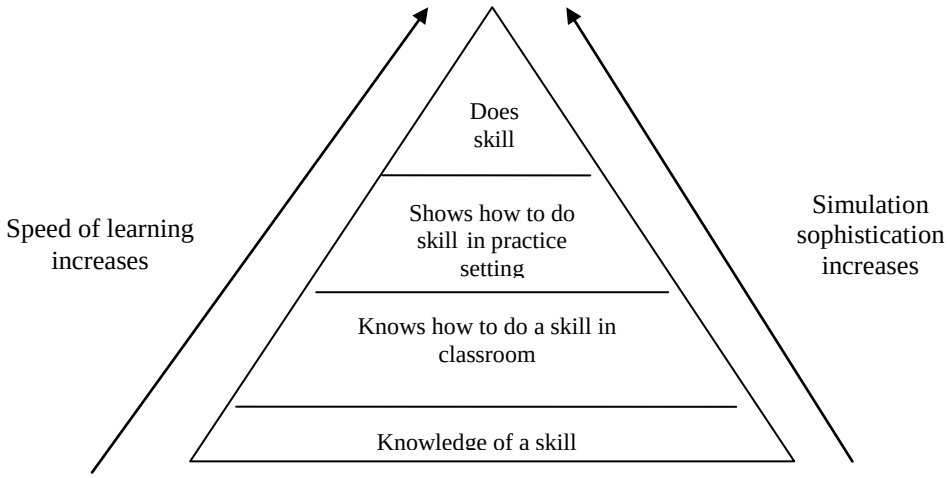
From the midwifery literature, Finnerty and Pope (2005) studied student midwives' learning experiences in clinical placement through discourse analysis. Signifying more deliberative learning when they were not so self-absorbed in a task, Finnerty and Pope (2005) identified student midwives as gradually moving to more autonomous practice when they demonstrated explicit knowledge through the language that they used.

Indeed the level of competence, as originally described by Dreyfuss and later adapted by Benner (cited by Eraut 1994, p.124), offers guidance in the acquisition and development of a skill. It is suggested that a student passes through five levels of proficiency (Benner 1984, cited by Eraut 1994, p.125): novice (guided by rules to

perform); advanced beginner (performance slightly better); competent (sees wider consequence of actions); proficient (perceives situations as wholes rather than separate parts); and expert (intuitively grasps situation). Therefore from this framework of competence, if the student midwife leaves the community of practice beyond the level of novice, then potentially they would feel more confident in the workplace.

Certainly Wilford and Doyle (2006), propose that simulation-based learning increases the speed of learning. From Figure 1, their adaptation of Miller's framework for assessment in the workplace (Miller 1990, S63), demonstrates how skills learned from simulation can be consolidated into practice placement (Wilford and Doyle 2006, p.928).

Figure 1: Linking simulation learning to Miller's pyramid (1990)



(From Wilford and Doyle 2006, p. 928.)

Wilford and Doyle (2006) propose that as sophistication through simulation increases, so too does the speed of learning (see Figure 1**).** Although it is not made explicit in which environment the speed of learning increases, arguably one may assume that if indeed simulation is transferred to clinical placement, then learning could be accelerated there given that students might undertake placement not at the level novice, but beyond.

2.12 Summary of the Literature Review

From the literature, simulation is defined as an educational technique that recreates an aspect of reality in a safe environment. Also, students and facilitators have been shown to enjoy simulation, and, it may encourage deeper approaches to learning. Increased confidence in practice has been reported too, therefore simulation may provide a hospital / university interface to teach clinical skills and help link theory to practice. Indeed it is proposed that simulation leads to a smoother application of knowledge to the workplace, although it is not known why this may be the case.

Still, there is limited research in midwifery that has focussed on this aspect. Indeed it has been suggested that learning should be explored in areas other than where it was first initiated. Thus there remains a gap in our current knowledge of the full extent of clinical simulation as a teaching and learning strategy within midwifery education, particularly in understanding simulation-based learning in the very context and situation that it is applied.

Therefore taking account of the issues of the clinical environment identified by Haigh (2007), the following research questions required to be addressed:

1. How do students, mentors and lecturers perceive simulation to prepare the student midwife for clinical practice?
2. Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?
3. How does clinical simulation affect work based learning?

To address these questions, and, fulfil the overall aim to explore the application of clinical simulation in the practice setting, the theory of situated learning and the concept of context-dependent memory have provided the conceptual lens in which to understand student learning (see Section 3.1).

In the next chapter the chosen methodology and methods are discussed.

Chapter 3: Methodology

Introduction

This chapter explores how I selected the methodological approach and methods of data collection to address the research purpose and research questions. It provides justification for the qualitative case study approach adopted and the data collection methods employed.

The study developed from the literature which had identified two theories (Godden and Baddeley, 1975; Lave and Wenger, 1991) offering some insight into how student midwives may apply learning more easily from the university to the workplace, when a simulation-based learning approach had been used. However as this study did not seek to explain any underlying cause for good or poor performance in practice, nor evaluate any particular teaching approach, the research purpose was not one of theory verification.

Essentially the research purpose was of an exploratory nature, on the basis that it would provide new insight into clinical simulation in the context of clinical practice, where there is opportunity to apply simulation-based learning. Robson (2002, p.59) suggests that exploratory studies 'seek new insights', 'find out what is happening' or 'assess a new phenomenon in a new light' and tend to generate questions of a 'what' and 'how' nature. However from exploration, explanations can begin to emerge. Still, Robson (2002, p.58) states that one research purpose usually predominates a study.

Therefore the overall aim of the study was to explore the concept of simulation in a particular context, that is, the workplace. The underpinning theory, which will be discussed more fully in the next section, gave direction to the development of the research questions and aid in the understanding of the findings (Robson, 2002).

3.1 Conceptual Framework

From the literature two concepts had emerged providing insight into how clinical simulation might help students apply their learning from the university to the clinical

area. First, Lave and Wenger's (1991) situated learning theory informed that learning is grounded in the concrete situation that it occurs (Clancey, 1995); thus facilitating the learning of knowledge and skills within that environment. Secondly, early work by Godden and Baddeley (1975) suggested that learning is context dependent, in that the environment or context of recall is dependent upon the environment of learning. Thus in clinical simulation, learning would perhaps be recalled more easily in the clinical setting because it was initiated in an environment closely resembling that setting.

This is exemplified in the conceptual framework illustrated in Figure 2, p.54.

Figure 2: Conceptual Framework

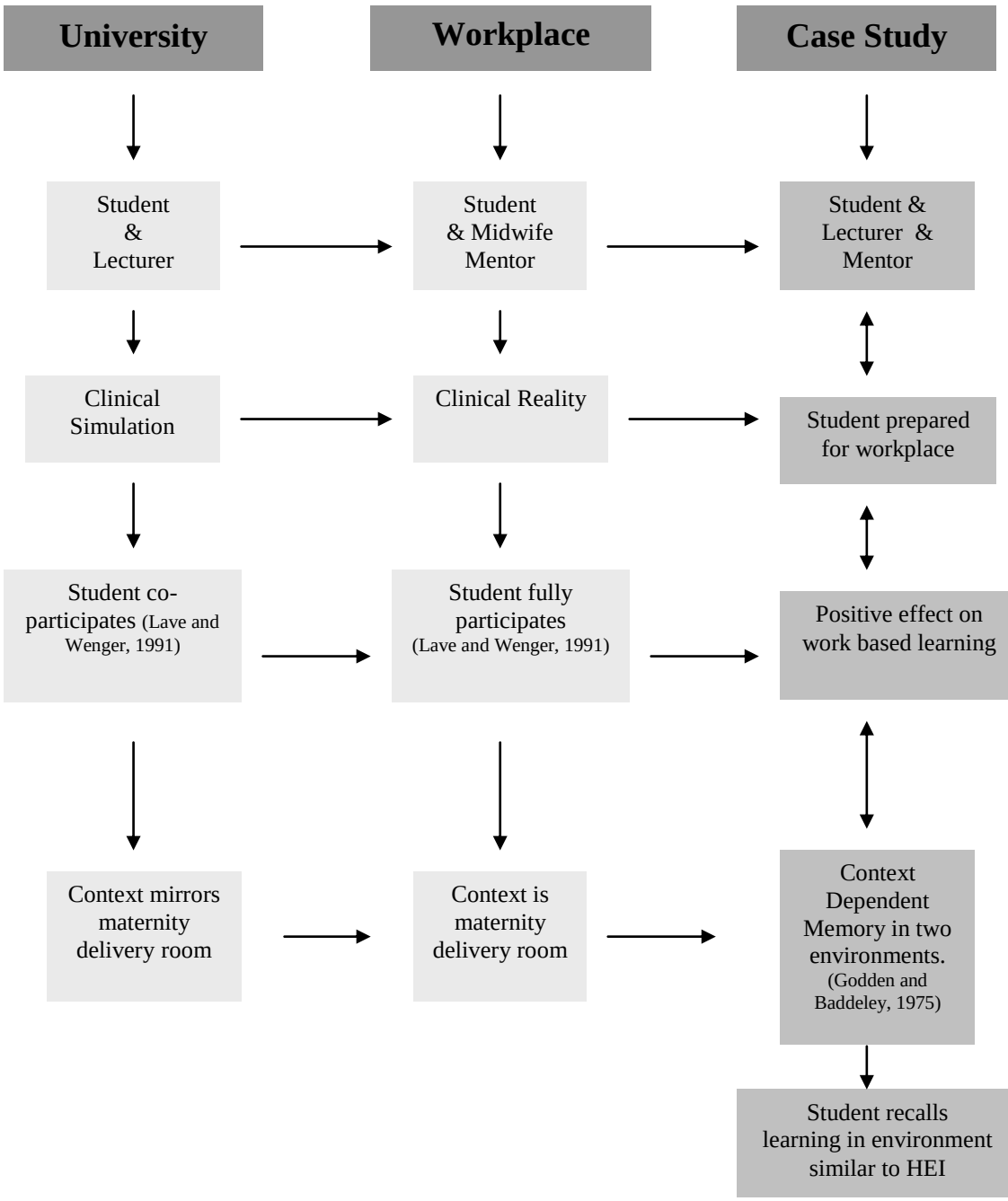


Figure 2 illustrates the roles of those who were studied and within each role the context and its impact on the student's behaviour. In the university simulation laboratory, the student co-participates (Lave and Wenger 1991, p.29) with the lecturer in a community of midwifery practice. The context where learning takes place is an imitation of the maternity delivery suite. Initially the student midwife participates at the periphery and gradually moves to more important tasks. However to master knowledge and skill, the student is then required to move to full-participation (Lave and Wenger 1991, p.37) in the management of clinical scenarios with the clinical mentor, in the reality of the workplace.

Guided by the literature, the outcome of simulation-based learning would be considered in the context it was applied in relation to preparation for the workplace, affect on learning in the workplace and recall and application of learning (Godden and Baddeley, 1975). The two-way arrows identify the inter-relationships between the mentor, lecturer and student and how they differ in terms of the student's level of legitimate peripheral participation (Lave and Wenger 1991, p.29).

In developing the research questions, the conceptual or theoretical framework provided a valuable strategy. Miles and Huberman (1994, p.18) suggest that the conceptual framework forces researchers to be selective in deciding which variables are to be studied, which relationships are significant and thus the information to be collected and analysed. This can be illustrated either graphically (as in Figure 2) or in narrative form (Miles and Huberman 1994, p.18). Either way, it can help keep the study focussed.

3.2 Philosophical Assumptions and Propositions

Robson (2002, p.82) proposes that the research purpose and research questions influence the choice of method to be used. In this context, method refers to how data are collected (Brannen in Seale *et al*, 2007). This is distinct from methodology, which refers to the rationale and philosophical assumptions that underlie a particular study (Jupp 2006, p.175). However Hart (1998, p.9) argues that all research begins with a belief of how the researcher views the world.

3.2.1 Ontology and Epistemology

The philosophical underpinning of research traditions originates from the ontological and epistemological viewpoints held by the researcher. Ontology is concerned with the nature of reality or what is real, whereas epistemology relates to how this reality can be demonstrated (Jupp, 2006). Depending on the enquirer's stance as to what is considered real and how that reality can be established may have a bearing on the methodological position or strategy of enquiry that is adopted in the investigation. Robson (2002, p.46) simplifies by suggesting that these beliefs fall into one of two main philosophical research approaches situated at extreme opposite ends of the methodological continuum, that is, positivism and interpretivism. For example, with the interpretive ontological outlook, Cohen *et al* (2000, p.23) and Robson (2002, p.27) explain that social factors and experience influence reality, from which knowledge is constructed. However a positivist ontological perspective may deem this view illogical because the attitude here is that authentic knowledge is that which is based on actual sense experiences (Robson 2002, p.20). So in other words, there are different views of confirming or establishing what one considers 'real'.

3.2.2 Positionality

Therefore in deciding on the research strategy, consideration had to be given to my position as researcher and how my view of reality was defined. Indeed the research purpose was to explore the concept of simulation within the context of clinical practice, from a variety of perspectives. As the purpose was principally of an exploratory nature, I then found myself challenged by the notion that the strategy of enquiry more familiar to me would be unfit to fulfil the purpose of the study. With a professional background in maternity care wherein the conventional view or positivist paradigm (Cohen *et al*, 2000 p.248; Guba and Lincoln, 1989 p.83) is dominant within the field of obstetrics and medicine, the methodological approach has traditionally been quantitative.

Despite this influence, I believed that there was more than one way to understand the phenomenon of interest. My personal experience of clinical simulation was not without opinion or beliefs, and, my relationship to the participants was not neutral.

As a midwifery lecturer I provided simulation-based learning, together with my midwife lecturer colleagues, to the student midwives in this study. Also as a former clinical midwife at the study site, I had a professional relationship with the mentor midwives.

Therefore as illustrated in Figure 2, I was part of this case study rather than separate from it, and so my personal involvement meant I could not detach from the study (Horsburgh 2003, p.308). Lambert *et al* (2010, p.321) suggest that this is where 'a researcher's own views and personal experiences may be legitimately employed in interpretation of knowledge'. So effectively I - together with participants - would be the co-constructor of knowledge. Thus for me to operate under a perspective which excluded the meaning of relationships and how social factors influence reality and knowledge, would be inconsistent with my epistemiological beliefs and more in keeping with a positivist stance, as explained below.

3.2.3 Positivism and Interpretivism

Brannen in Seale, *et al* (2007) states that quantitative and qualitative approaches derive from two main research paradigms, wherein a system of beliefs, theoretical approaches and methods originate. The former, quantitative, is embedded within a positivist paradigm, which, as Bailey (1997) explains, has its epistemological foundation based chiefly on numerative methods of enquiry and, the ontological perception in terms of descriptive variables (Jupp 2006, p.250). Therefore underpinning the positivist view is objective knowledge and the existence of cause and effect relationships. However these relationships are neutral, or in other words, knowledge is without any emotional or subjective viewpoint (Jupp 2006, p.251).

From the social sciences perspective, Cohen *et al* (2000, p.17-19) state that viewing the social world like the natural world - in that it is external to the individual - rests well with a positivist approach. However Robson (2002, p.27) states that current views of social research identify a hybrid form of positivism known as post-positivism. Indeed the ontological perspective of the post-positivist researcher maintains belief in one reality but there is acceptance of the researcher's influence on reality and that reality cannot be entirely known without flaws (Robson 2002, p.27).

Thus, subscribers to a positivist philosophy believe that true knowledge is objective knowledge generated from strict research methods or fixed designs, and, the approach to investigation is traditionally quantitative (Cohen *et al*, 2000 p.248). A constant relationship between variables is sought, therefore data are collected in numerical form to which statistical tests can then be applied (Jupp, 2006). However, there are strict criteria governing sampling procedures and the numbers needed to produce statistical significance or represent the 'truth'; and so failure to adhere to sampling guidelines can potentially provide statistically insignificant results. Thus quantitative studies generally require large numbers of participants to avoid sampling bias (Jupp, 2006, p.250).

However, where research questions are about people's interpretations of a particular experience or phenomenon, interpretive approaches to empirical reality embrace the philosophical underpinnings of naturalism and constructivism (Robson 2002, p. 27); although contemporary views of social research prefer the latter. Constructivism aims to construct meaning and promote understanding of human behaviour in the very context and social situation that it occurs (Robson, 2002).

Constructivism advocates that objective knowledge is a matter of interpretation with an emphasis on the importance of understanding (Jupp 2006, p.39). Stake (1995, p.101) highlights that the aim here is to construct a clearer and more sophisticated reality that defies the scepticism often associated with qualitative research. So constructive or interpretive approaches take account of the complex interplay of cultural and social factors that influence the meaning and knowledge attached to the phenomenon of interest (Brannen in Seale *et al*, 2007) .

Thus the application of a constructivist viewpoint takes on a subjective epistemology and an ontological outlook that accepts multiple perspectives (Jupp 2006 p.93). Typically it operates in a flexible or qualitative design that does not conform to strict pre-specified methods; nor does it require a set sample size (Bailey 1997, p.18-22). Robson (2002, p.199) suggests that the general rule is to collect data until any further information will add little value to what is already known.

As previously discussed in Section 3.2, Hart (1998, p.9) suggests that research evolves from how the researcher views the world. Yin (2003, p.9) concurs by suggesting that in selecting the most appropriate strategy, in practice the researcher can usually identify a situation in which one discrete strategy of enquiry has advantages. Thus selecting an area of enquiry would seem to be linked with one that rests well with the researcher's positionality or research stance. Alternatively, Robson (2002, p.79-80) advises to explore alternatives to the favoured approach.

Therefore before finalising the research design for this study, consideration was further given to the feasibility of both qualitative and quantitative approaches prior to rejecting one or the other.

3.2.4 Quantitative and Qualitative Approaches

From the literature review it was apparent that the existing evidence pertaining to the concept of clinical simulation was underpinned predominantly by a quantitative research methodology (Alinier, 2003; Alinier *et al*, 2006; Birch *et al*, 2007; Cioffi *et al*, 2005; Crofts *et al*, 2007a; Deering *et al*, 2006; Morgan *et al*, 2002; Robertson, 2006). The key characteristics of the research dataset included a plethora of quantitative material originating from experimental approaches (Alinier *et al*, 2006; Birch *et al*, 2007; Cioffi *et al*, 2005; Crofts *et al*, 2007a; Deering *et al*, 2006; Morgan *et al*, 2002), in addition to supplementary quantitative data from non-experimental sources (Alinier, 2003; Robertson, 2006).

Whilst similar to the phenomenon of interest, the research purpose of these studies (Alinier *et al*, 2006; Birch *et al*, 2007; Crofts *et al*, 2007a; Cioffi *et al*, 2005; Deering *et al*, 2006; Morgan *et al*, 2002) into clinical simulation differed. In the main, their purpose was to measure the effectiveness of clinical simulation as a teaching and learning strategy, establish a cause and effect relationship or quantify the relationship among variables (Alinier, 2003; Robertson, 2006).

Whereas in my study, the research purpose was mainly exploratory in relation to the application of clinical simulation in the practice setting from the lecturer, midwife and student midwife perspective. In particular, the literature informing the research

questions considered how clinical simulation was perceived to prepare the student midwife for clinical practice, how it was utilised in the clinical situation and its affect on work based learning. Thus the information sought would take account of multiple perspectives in relation to the beliefs and social issues associated with midwifery education wherein the context of clinical practice was deemed relevant to the phenomenon of interest.

Based on the research purpose and questions, the strategy of enquiry pointed towards a qualitative approach situated within a constructivist or interpretive paradigm. However from the midwifery and nursing literature there was a dearth of qualitative studies that looked at clinical simulation. Among these were a phenomenological nursing study by McCallum (2006), evaluation and action research (Haigh, 2007), a mixed methods study by Davis *et al* (2009) plus case study (Reilly and Spratt, 2007). Otherwise the remaining literature tended to be fairly descriptive (Arundell and Cioffi, 2005).

Also there were no ethnographic or grounded theory studies identified. Ethnography seeks to understand a system of shared beliefs, values and practices that group members understand within their world (Gerrish and Lacey 2006, p.208). Whereas grounded theory is an approach to research that is designed to generate a theory that is applicable in a variety of contexts (Sheldon, 1998). Indeed grounded theory rests well in new areas of research where theory is either unclear or lacking (Sheldon, 1998), for example clinical simulation in midwifery education. However as the aim of this study was neither to interpret the cultural behaviour of the group of interest nor generate a theory, both ethnography and grounded theory were deemed unfit for the study purpose. Therefore attention turned to phenomenology, evaluation and action research and case study.

Jupp (2006, p.220) and Gerrish and Lacey (2006, p.228) explain that the German philosopher Edmund Husserl is the founding father of phenomenology although others, namely Heidegger, have also influenced phenomenological ideas. Thus there are varying definitions of empirical phenomenology, but broadly speaking phenomenology aims to describe one or more individual's lived experience of a

particular phenomenon (Cohen *et al* 2000, p.24). This is usually executed by individual interviews although Bradbury-Jones *et al* (2009) suggest phenomenology can lend itself to the 'multi-voicedness' of a focus group. However Gerrish and Lacey (2006, p.225) state that phenomenology seeks the inner experience of participants from their perception only and is reluctant to judge the experience from an outsider point of view. Indeed McCallum (2006; 2007) adopted a phenomenological approach to provide an in-depth account of the student nurse's experience of using clinical simulation within the university setting. But, in my study consideration of only one perspective would have been insufficient and a description of the lived experience of those involved in clinical simulation was not the purpose.

Evaluation and action research, and case study, have separate distinguishing design features in relation to the type of data sought. Qualitative or quantitative methods can be adopted to each (Robson 2002, p. 205) although action research lends itself well to a flexible design as the emphasis is on involvement between the participants and researcher (Jupp 2006, p.3); and, an evaluation study that combines different methodological approaches and methods is to be preferred otherwise the findings tend to be weak (Robson 2002, p.215).

The literature identified two evaluation and action research studies by Haigh (2007) and Davis *et al* (2009). Although the phenomenon of interest and population were similar, these studies focussed on the effectiveness of clinical simulation with a view to adopting it as a teaching and learning approach within the university setting. As the goals of action and evaluation research are to action a change and / or evaluate a change, this can be challenging to the inside researcher whenever the outcomes are not supportive of current policy or practice (Simons and Usher 2000, p. 39). Indeed as evaluation is concerned with the effectiveness of a strategy in a particular context, Robson (2002, p.217) makes the claim for studying a case.

However my study did not seek to inform or evaluate policy. At the study site, simulation-based learning was already integrated into the curriculum, and evidence to justify its presence was not sought. Indeed the study had developed from the assumption that simulation-based learning was accepted as the norm by me and the

other midwifery lecturers involved in its delivery within the university. The actual area of enquiry related to its application out with the university, and within a particular context, the latter emerging as an important feature and a relevant factor in considering case study. Indeed Robson (2002, p.179) states that case study focuses on a 'phenomenon in context'.

3.3 Case Study

Gerrish and Lacey (2006, p.302) emphasise how the uniqueness of case study research is rooted in the importance of the context and the influence of the context on the area of enquiry, yet it is not ethnography (Gilham, 2000). As previously highlighted, ethnography is the study of a culture so as to develop an understanding of that culture (May, 2002).

Conversely, in case study a system is studied. Stake (1995, p.2) describes the 'system' as 'integrated' and 'bounded' because it is held together by a set of interchangeable and interacting relationships forming an integrated whole. Essentially Stake (1995, p.2) defines this bounded system as the case. Several authors (Bassey, 1999; Gilham, 2000; Robson, 2002; Yin 2003) recognise that defining the case can be complex. Jupp (2006, p.20) explains that the case in case study research may range from a single person to a group or organisation but not to non-specific entities such as policies or processes. These cannot be cases because central to the case is its functioning system (Stake in Denzin and Lincoln, 1994).

Acknowledging the difficulty in defining the case, Stake (1995) suggests three types of case study research. First, there is an intrinsic case study. Here, the case is the primary interest because the focus is inward and contained within that particular case. It is not generalisable or indeed representative of other cases, it is unique to itself (Edwards and Talbot, 1999).

Next, Stake (1995, p.3) discusses instrumental case study as a means of gaining insight into something external to the case. In this way, the researcher utilises the case to explore a particular issue and so the case becomes less important as it is

instrumental or facilitative in understanding a particular phenomenon, which is the primary focus of the enquiry.

Thirdly, and based on the same principal as instrumental case study, is collective case study. Where the researcher is interested in a phenomenon but is seeking representation, then instrumental case study is extended to several cases as opposed to studying just one case (Stake in Denzin and Lincoln, 1994). Here a quantitative approach is the strategy of enquiry, and Yin (2003, p.46) stresses how a multiple or collective case study can provide a more powerful and compelling analytic conclusion as opposed to a single case study.

Yet Stake (1995) suggests that it is the single case where assertions can be best generated. Stake (1995, p.100) argues that a constructivist view, where meaning is constructed by human experience, offers the readers the opportunity to develop their own generalisations. Therefore Stake (1995, p.37) discourages cross case comparisons deeming them limited in actually providing generalisation and more likely to compromise the opportunity to learn from the particular case.

Quantitative researchers may find this epistemological stance challenging, and question how learning can be derived from one case. Moreover Bassey (1999, p.34) outlines several limitations of case study which relate to the issue of generalisabilty, such as a lack of rigour and the risk of over-stating claims from small participant numbers (these are further explored in Sections 3.10 and 3.10.2). However, Stake (1995, p.37) distinguishes the role of qualitative research from quantitative research as understanding rather than explaining, personal as opposed to impersonal, and socially constructing knowledge instead of discovering knowledge. Therefore based on the type of knowledge sought, this was a qualitative study wherein representation was not required and so collective case study was rejected.

3.3.1 Defining the Case

Yin (2003, p.13) explains that case study research lends itself to the researcher who, ‘investigates a contemporary phenomenon within its real life context’, and where the researcher believes that the context carries substantial relevance to the study other

research approaches may not be justified. In this study the contemporary phenomenon was clinical simulation and the real life context was the clinical setting. Thus the case was not the primary focus. Instead it was instrumental (Stake, 1995) in understanding the application of clinical simulation to the clinical setting.

Edwards and Talbot (1999) assert that defining the boundaries of the case is not easy because the context in which the case is situated can offer internal insights into the case. Gillham (2000, p.1) defines the case as merging, 'with its context so that precise boundaries are difficult to draw'. Thus case and context required careful consideration.

Stake (1995, p.43) further highlights that in order to facilitate 'experiential understanding' of the case, qualitative research places more importance on context than quantitative research. In quantitative studies generalisability is sought so that results can be applied across many contexts therefore context is 'nullified' (Stake 1995, p.39). However, Stake (1995, p.64) suggests that in instrumental case study, as opposed to intrinsic case study, some contexts are more important to the study than others. For example, in this study the clinical setting was deemed of greater importance than the university because the research focus was the application of clinical simulation to the practice placement.

Furthermore the case as a bounded system, as described by Stake (1995, p.2), necessitated it to be specific, functioning and embodying the concept of the integrated whole. This perspective was reflected in the overall aim of the study because to explore the influence of the context (clinical setting) on the area of enquiry (clinical simulation) required analysis from sources other than the student midwife's perspective.

Yin (2003, p.22) refers to the integrated components of the case as units of analysis. Stake (1995, p.1) calls them 'actors' who have active roles in the functioning of the case. Stake (1995, p.2) also points out that the case is singular but contains sub sections. Indeed this case did not function with students only. The context of the study was situated in the clinical setting where students and lecturers operated in their usual roles, that is, the student undertaking work based learning in the practice

placement and the lecturer visiting them there (at the beginning, during the interim period and at the end of placement). However for the case to function wholly within this context, the binding inter-relationships extended beyond these two units of analysis to include the midwife mentors. Therefore the case was the midwifery students, the midwifery lecturers and the midwives.

3.3.2 Selection of the case

In intrinsic case study, the case often presents itself before the researcher chooses it (Stake, 1995). For example, in opportunistic research whereby a programme requires evaluation or there is a focus on a particular individual or group, the researcher does not select the case, as the case has been pre-selected. Conversely, in instrumental and collective case study, the researcher chooses the case or cases to fulfil their quest in understanding a particular phenomenon.

Stake (1995, p.134) emphasises the potential learning from the case. He explains that cases can be typical or atypical of other cases. The main point is that learning is in both, in how the case is both like and unlike other cases (Stake in Denzin and Lincoln 1994, p.243). In my study, this case was typical to previous cases that had received simulation-based learning in the university, which at a basic level covered normal labour care and assistance at childbirth, but it was unique in that the students within the case were undertaking a newly validated midwifery programme. The new programme introduced simulation-based learning into the curriculum sooner and consequently students were placed in the maternity delivery suite in the first year of their programme as opposed to previously in the second year, where they could apply their simulation-based learning. However this was not an influencing factor in choosing the case, albeit a distinguishing feature from other cases and one where there was potential learning.

Stake (in Denzin and Lincoln 1994, p.243) offers simple advice in choosing a case. It is suggested that the case should be selected on the basis of what can be learned from it, even if that is simply because more time can be spent with the case. Edwards and Talbot (1999, p.vii) also acknowledge the added pressures placed on lone researchers

undertaking studies in the settings which they are working, in addition to the demands of educational work in general.

Therefore selection of this particular case was two-fold. First, the period of data collection was during the students' first maternity placement following simulation-based learning. Of the three cohorts of students at the university, one undertook this placement during the summer trimester and typically this was a relatively quiet period of the curriculum as teaching in the university was minimal. Secondly, this cohort was in their first year of the programme and more time could be spent with them during this period particularly if any follow-up was necessary to establish trustworthiness and reduce the likelihood of misinterpretation. In short, this case was not pre-specified or chosen to represent; quite simply, it was both convenient and accessible to me, as an inside researcher.

3.4 Ethical Issues

Among the issues associated with insider research, Roberts (2001, p.2) alludes to the notion that the 'insider' is in a favourable position as there is already insight, knowledge and understanding of the context in which the study is taking place. On the other hand, by assuming the role of researcher it is probable that participants may view the investigator as an outsider. Melles (1999, p.2) describes how 'institutional power relationships' and 'professional vulnerability' provide challenges of an ethical and moral nature as participants may feel defenceless in their right to refuse to participate, or, threatened professionally by their contribution to the study.

The study site was a maternity unit within a general hospital in Scotland, where the student midwives attended for practice placement, and we (the midwifery lecturers) fulfilled our role as liaison lecturers to specified areas within the maternity unit. Hence, the implications of insider research presented a potential constraint to this study, from the student midwife, mentor midwife and lecturer perspective. Therefore as the university and maternity unit shared a long history of partnership working and well-established professional relationships, it was necessary to not only make my research role transparent, but address any professional anxieties and conflicts of interest prior to commencing the study. In the first instance, I had to prevent any

perceived coercion in the recruitment of participants by ensuring that all participants were recruited on a voluntary basis by informed, written consent and their right to withdraw at any time was respected. For the same reason, those students to whom I fulfilled the role of personal lecturer were excluded. From the nursing literature, Bradbury-Jones *et al* (2010b) highlight the ethical issues associated with lecturers inviting nursing students from the same university to participate in studies, such as the fear of retribution if they refuse. Therefore as the same risk applied, I considered it appropriate to exclude those students to whom I provided academic and pastoral support.

Likewise, due to the nature of the study there was the risk of participants feeling vulnerable in relation to their professional performance. Therefore careful consideration to my role in the data collection process was necessary. Bradbury-Jones and Alcock (2010a, p.193-194) describe the research relationship with participants and how that relationship differs from the pre-existing relationship, for example, colleague, midwifery lecturer or liaison lecturer. Bradbury-Jones and Alcock (2010a, p.194) go on to suggest that strategies ought to be put in place to minimise the influence of researcher power.

Indeed during the course of data collection, some dilemmas of an ethical nature arose. Guided by Bradbury-Jones and Alcock's (2010a, p.193-194) framework for ethical practice, which could be applied to any research study, these centred on elements of all three aspects, that is, the research contribution, research relationship and research impact. These ethical issues will be explored in the sequence in which they occurred during the research process, particularly later in the chapter within the sections relating to data collection (see Sections 3.7.1 and 3.7.2).

3.4.1 Ethical Approval

Robson (2002, p.65) suggests that if all aspects of the study do not conform to standard ethical principles, then it is not morally safe to implement. Thus ethical committees consider research projects at the planning stage to ensure that they conform to ethical guidelines and protect the dignity, rights and safety of all potential research participants.

Therefore ethical approval was sought on-line from the National Health Service Research Ethics Committee (NHS REC). Although this study did not involve NHS patients, staff acting as participants required the same ethical considerations. This proved to be a rigorous process and following submission of the on-line application, I attended a meeting with members of the local NHS REC at the local Health Board to discuss the study. This was a successful meeting where provisional approval was granted verbally. Following minor revisions to the Consent Form and Participant Information Sheet, written ethical approval was formally provided (see Appendices 1 and 2).

This allowed me to seek management approval from the local NHS Research and Development Department (see Appendix 3). Therefore after fulfilling all NHS REC and NHS Research and Development site-specific requirements, the ethics committees representing both the Doctorate of Education course and my workplace were approached. The Convener of the University Ethics Committee of the Doctorate of Education programme endorsed the NHS ethics approval and in turn, my university workplace accepted this approval for their ethical purposes, which avoided duplication of the process (see Appendices 4 and 5).

Lastly access from the relevant gatekeepers had to be obtained, that is, the Assistant Director of Nursing Services, Director of the Nursing and Midwifery and Allied Health Professionals and the Maternity Services Manager, all of whom were based at the local maternity unit (see Appendix 6).

Thereafter recruitment took place by providing Participant Information Sheets to the entire ‘case’ followed by obtaining informed written consent from those who responded. Participants were reassured that under the terms of the Data Protection Act (1998) all information would be kept confidential and stored securely and that all research data would be coded to guarantee anonymity and that codes would only be accessible to me. They were also assured that confidentiality and anonymity would not be threatened by dissemination of the findings derived from data collected from the sample of participants.

3.5 Population and Sample

As the case in this study had more than one unit of analysis (Yin, 2003), a purposive sample from the case (Jupp, 2006) was selected following ethical approval and recruitment. The case consisted of a population of:

- Three midwifery lecturers (excluding me) in the university who supported the under graduate midwifery programme and provided simulation-based learning sessions to student midwives prior to their first maternity labour ward experience;
- Twenty two student midwives in the first year of the programme who had received simulation-based learning sessions prior to their first maternity labour ward experience;
- Approximately twenty two mentor midwives in the maternity hospital to whom these students were allocated on a one-to-one basis at the clinical placement, although students were also co-mentored

The sample was initially anticipated to consist of a small number of midwifery lecturers, midwifery students and the midwives mentoring those students. However twenty potential participants responded, of which a sample of fifteen was purposively selected based upon their availability to participate in the study at the time I was available to collect data. Due to the larger than expected response rate, and, because several of the mentors were in part-time employment and co-mentoring a student with another midwife, the total number recruited to the study had increased from the original application made to the NHS Ethics committee.

Following a request to the local NHS REC, NHS Research and Development Department and the ethics committee representing the Doctorate of Education course for approval of this amendment (see Appendix 7 - inclusive of information requesting an extension date to the study because of increased participants and professional constraints I experienced throughout the data collection period) a total of fifteen consenting participants were selected. A change in circumstances of one of the lecturers meant that only two midwifery lecturers eventually participated in the data collection process.

3.6 Tools for Data Collection

Miles and Huberman (1994, p.18-22) suggest that the conceptual framework and research questions provide a focus and bounding role throughout the study. Stake (1995, p.20) affirms that the research questions guide the methods of data collection and in qualitative case study research the emphasis is on observation and interpretation. This leads the researcher to ask how they will get the information to enable them to understand the phenomenon and the case (Miles and Huberman 1994, p.34).

3.6.1 Main Method

Metaphorically, the interview is the vehicle, which transports the researcher to gain multiple insights into the phenomenon. Interviews permit the researcher to explore meaning in greater depth and therefore richer data can be obtained over other methods such as questionnaires (Rees 2003, p.128). A recognised disadvantage however, is the influence of the interviewer, which can have an adverse impact on the interviewee's responses, such as participants responding to questions in a way that they think the interviewer wants them to (Robson 2002, p.274). However Rees (2003, p.129) advises that a skilled and experienced interviewer can overcome this by encouraging participants to 'tell it as it is'. Additionally, Stake (1995, p.64) explains that what the researcher observes is also what others observe, but perceptions differ. Therefore Lambert *et al* (2010, p.322) highlight how it is important to reflect continuously on your own values, beliefs and perceptions so as to 'portray the meaning made by participants' and avoid misinterpretation.

Robson (2002) highlights that in semi-structured interviews that have been informed and guided by the literature, the questions are predetermined but the order and wording can be modified if it is appropriate to do so. Also Gerrish and Lacey (2006, p.341) advise that semi-structured interviews, where there are particular questions to be asked, adopt an open-ended nature to them to allow the researcher to encourage participants to express their own views and insights.

Therefore interviews were the primary method of data collection from the sample of participants within the case. The purpose of the interview was to provide insight into the three main research questions:

1. How do students, mentors and lecturers perceive simulation to prepare the student midwife for clinical practice?
2. Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?
3. How does clinical simulation affect work based learning?

However the interviews also helped to develop other aspects of the research. The data would guide me deeper into the study because from the participants' responses, I could modify questions through the progression of interviews with lecturers, students and mentor midwives. This would not only develop a more thorough insight into the phenomenon of interest, but as a novice researcher would build confidence and skill at interviewing. When the series of individual interviews were complete, I could then conduct focus group interviews based on those findings.

3.6.2 Triangulation

Focus groups are often used at the start of a research project so as to inform subsequent phases of the study, however they can also be useful at the end of a study following analysis of preliminary data (Stewart *et al* 2007, p.41-42). Therefore to further understand the findings obtained from interviews, methodological triangulation of data through focus groups was considered as an opportunity to reveal any other perspective or insights (Robson 2002, p.174). Methodological triangulation is the use of multiple sources of data to provide any other possible perspective on a phenomenon (Edwards and Talbot 1999, p.55). Denzin (cited in Miles and Huberman 1994, p.267) distinguishes between within-method and between-method triangulation, the latter involving corresponding research methods such as those stated above. Thus where confirmation is sought, it enhances the overall analysis and the meaning constructed from the case.

Stake (1995, p.134) leans more towards the notion of seeking accuracy of interpretation rather than constructing meaning from the studied and potentially 'disturbed' case. Although triangulation has been criticized by those who prescribe to a 'constructed reality' (Stake 1995, p.114) the potential of triangulation is to add a sense of richness and complexity to an enquiry rather than dismiss the singular instance. Stake in Denzin and Lincoln (1994, p.241), affirms that interpretations cannot always be replicated therefore triangulation provides different ways to view the phenomenon and reduce ambiguity.

Indeed it was a concern that by focussing on the research questions, other insights would be lost or not explored further and assertions missed (Stake, 1995). Therefore as focus groups involve an open-ended discussion with a group of participants of five to twelve, they enable the researcher to capitalise on interaction within the group of interest and elicit rich qualitative data (Gerrish and Lacey, 2006).

Similar to one-to-one interviews, the skill of the facilitator is paramount particularly with a dominant group member who may discourage others to participate (Rees 2003, p.129). Ideally all participants should talk to one another, ask questions and comment on each other's experiences and provide other perspectives and meaning to the phenomenon. Used together with interviews, focus groups can provide an opportunity for the participants to respond to the findings, particularly at the end of a study (Gerrish and Lacey, 2006).

3.6.3 Unobtrusive Measure

In addition to these central methods of data collection, an unobtrusive measure was included to provide information about the clinical setting (Robson 2002, p.346). Informal, simple observation can not only support data obtained from other methods such as interviews (Robson 2002, p.312) but Stake (1995, p.60) stresses that observation aids in understanding the case. The phenomenon of interest was the application of clinical simulation to the workplace and the case was instrumental in supporting this quest.

However a distinguishing feature of qualitative research is the context in which the research takes place (Stake 1995, p.47). Horsburgh (2003, p.311) suggests that a description of the context is required so as to place the data within a wider context, and thus observation of it is implied.

It may then seem at odds with the qualitative nature of this study, to select observation as an explicit method of data collection. However, the reasons centred on the overall research design and the context of the study. This was a case study and Stake (1995, p.60) places emphasis not only on the uniqueness of the case but how 'observations work the researcher towards greater understanding of the case' and so 'we need observations pertinent to our issues'. Stake (1995, p.63) goes on to say that the 'physical situation should be well described' to 'develop vicarious experiences for the reader'.

Therefore explicit observation was deemed necessary because the nature of the setting was considered pertinent to the overall aim and research questions, particularly to research question three which asked *'how does clinical simulation affect work based learning'.* Although Haigh (2007) asserted that the busy nature of the maternity clinical environment was somewhat challenging to the students' learning, my perspective was essential to acknowledge the 'unique complexity' (Stake 1995, p.63) of this particular case study.

Therefore observation of the workplace and the inter-relationships were important; and case activities deemed relevant to the study included the student - mentor relationship, general tasks undertaken by the student and workload / patient - staff ratios. These were considered as issues likely to shed some light on the uniqueness of the case and context (Stake, 1995) and support other data.

Although participant observation provides an accurate picture of what happens normally and is desirable in settings where context is an important aspect of the area of enquiry (Robson 2002, p.311), there are recognised disadvantages to this technique. First the subject's reaction to being observed may induce unnatural behaviour, and secondly, problems of an ethical nature may arise where subjects are unaware that they are being observed (Rees 2003, p.146).

Alternatively Yin (2003, p.92) suggests observation of a less formal nature to provide some insight of the context, but without the intrusion and Hawthorne effect caused by participant observation (Gerrish and Lacey 2006, p.250). Robson (2002, p.312) describes this as unobtrusive observation, a defining feature being that the role of the researcher is non-participatory. Therefore informal unobtrusive observation supplemented the main method of enquiry, which consisted of interviews. It was an unobtrusive and non-reactive measure, in that the clinical setting was not affected by my simple observation of it (Robson 2002, p.349).

3.6.4 Pilot

Acknowledging the value of carrying out a pilot study, I considered it a 'trial run' prior to the main data collection period starting in May 2009. Not only would it provide me with an opportunity to practice my interview technique, the pilot study would also identify any other areas where the main study could be improved upon (Cormack 2000, p.24). Therefore, in an attempt to identify any flaws in the interview schedule or process (see Appendix 8), guidance and participation was sought from three professional colleagues specialising in midwifery and research and who were not part of the study. All were encouraged to highlight any questions that were ambiguous, leading or if the interview was overall too structured. Keats (2000, p.76) suggests qualitative examination of the questions provides early feedback and more than one pilot study may be required before the main data collection takes place.

From this process, the only amendments suggested were to make it explicit from the outset that consent to participate had been sought and remind participants that the interview would be tape recorded. These issues had not been highlighted during the pilot interviews. Otherwise they were satisfied with the interview schedule.

In the sections that follow, the data collection process is described.

3.7 Main Study

3.7.1 Interview

For reasons that will be explained in the next chapter, interviews with lecturers (n=2) took place in November 2009 at the university rather than the clinical setting. As

previously discussed in Section 3.3, Stake (1995, p.64) suggests that in instrumental case study, as opposed to intrinsic case study, some contexts are less important to the study than others. However interviews with students and midwife mentors took place in the clinical setting situated within the ward, in a private room adjacent to the midwife station. A total of ten one-to-one interviews with student midwives (n=5) and their mentor midwives (n=5) were undertaken there during May and June 2009.

As indicated in Section 3.4, I was faced with some ethical dilemmas during the data collection process involving one-to-one interviews. First and in relation to student midwives, one participant suggested that the atmosphere of the clinical environment was sometimes hostile towards students. Such a disclosure may be linked to the idea of the 'research impact', where the student utilised the situation to reveal a sensitive issue which subsequently could have threatened the 'researcher-participant relationship' (Bradbury-Jones and Alcock 2010a, p.194). Indeed this may have resulted in a breach of confidentiality on my part although Bradbury-Jones and Alcock (2010a, p.194) state that in some instances, 'duties of confidentiality are not absolute'. Had it been deemed necessary to share this information because the student was at risk of harm, then it would have been necessary to breach confidentially albeit in the student's interests. However further exploration of the claim, found the instance to not warrant such action.

Another situation relating to the research contribution (Bradbury-Jones and Alcock, 2010a p.193) arose when a different student revealed her concern about being asked difficult questions at interview, which consequently contributed to a delay in the start of the interview. However I concluded that it was because she felt uncomfortable about being interviewed by me, her university lecturer, albeit in my role of researcher. Thus the avoidance of specialised terminology had to be considered and extra time for questions to be asked to ensure that what was required was understood, but without the abuse of power in my researcher role, so as to guarantee the student's participation.

Next, although this study did not seek to explain good or poor performance from any of the participants, some of the individual interviews conducted in the clinical area

with mentors were of a slightly shorter than expected duration, suggesting potential ethical dilemmas in the nature of the research contribution and research-participant relationship (Bradbury-Jones and Alcock 2010a, p.194). Thus it was deemed necessary to engage in the reflective process and reconsider data collection, particularly the possible negative influence of me during interviewing. As previously discussed in Section 3.4, Melles (1999, p.2) and Smyth and Holian (1999) describe how the inside researcher can pose challenges of an ethical nature as participants may feel vulnerable in relation to their professional performance.

Consideration was also given to the study setting (clinical area). Previous research (Haigh, 2007) identified the clinical setting as a busy and stressful environment. During some of the interviews with mentors, it was notable that the interview was brought to a sudden and premature end as the demands of the clinical environment necessitated the midwife to return to her duties. This was usually demonstrated by the interruption of the interview by a more senior member of midwifery staff in the ward. Although discouraging, this was deemed vital in describing the context of where the phenomenon of interest (clinical simulation) was applied, which will be discussed more fully in the next chapter.

Lastly, I reflected on my interviewing skills, such as the ability to 'listen more than to speak' and to 'ask questions in a straightforward manner' (Robson 2002, p.274). Keats (2000, p.137) also identifies some of the common difficulties associated with interviewing such as, the hostile respondent and the anxious respondent.

However in relation to ethical issues, Bradbury-Jones and Alcock (2010a, p.194) suggest that strategies are put in place to avoid any influence of researcher power. Therefore to minimise any possible issues with insider research and simultaneously maximise the interaction with the planned focus group of mentors, revisions were made to the subsequent phase of data collection, which will be described in Section 3.7.2.

Following one-to-one interviews I listened to the interviews and transcribed them; and then re-listened whilst simultaneously reading the transcriptions. Guided by Miles and Huberman (1994, p.9) this allowed me to identify similar phrases, themes

and common sequences that could be taken out to the field at the next data collection phase.

As previously stated in Section 3.6.1, the individual interviews not only served to provide an in-depth discussion with regard to the key research questions, but also develop the interview schedules for the focus groups (see Appendix 8). Thus emerging issues from the data collected at individual interviews, could be explored at the focus groups for student midwives and mentor midwives to determine if these issues were important among the wider groups and subsequently shed more light on the phenomenon of interest.

In the main, individual interviews with mentor midwives identified several topics for further exploration at their focus group. In particular, their views on how clinical simulation influenced the midwife mentor teaching role emerged as an important topic. Other issues centred on clinical simulation in relation to: reducing students' fear of practice placement; providing a familiar environment for students prior to attending practice; influencing factors of the workplace learning environment; improving patient care; and simulation-based learning versus lectures as a teaching and learning approach.

On the other hand, data from individual interviews with student midwives identified fewer issues to be incorporated into their focus group interview schedule. Nonetheless, these were considered important to these participants and consequently could be explored further. For example, interviews with students identified ways to improve the university skills laboratory so that it more closely resembled the labour ward birthing rooms, in addition to how the skills taught in the university compared to the way these were practiced in the reality of the clinical setting.

3.7.2 Focus Group

After completion of this process, two focus groups took place in the clinical area during August 2009, one with student midwives (n=6) and one with midwife mentors (n=7). As participants would have been known to each other, it was possible that group dynamics and individual standing would inhibit some members' responses,

particularly students. Although the final analysis would have captured this, two homogenous focus groups was deemed more appropriate than one heterogeneous group (Robson 2002, p.286). Therefore each focus group with common backgrounds and positions consisted of mentors (n=7) and students (n=6). Robson (2002, p.286) suggests homogenous groups can generate 'group-think' and provide an alternative perspective from individual interviews.

However as previously discussed in Section 3.7.1, the slightly short duration of some of the one-to-one interviews with mentors had been concerning. To minimise any possible issues with insider research and the researcher-participant relationship (Bradbury-Jones and Alcock 2010a, p.193; Smyth and Holian, 1999), a midwifery academic colleague who was unknown to the midwifery participants and had no specialist interest or expertise in clinical simulation, facilitated the focus group interview with mentors. Thus I adopted the role of observer, remaining quietly in the background to avoid influencing the group but closely observing the verbal and non-verbal group behaviour.

Careful planning with the ward manager had ensured that those staff who would be participating, were on duty on the day of the focus group and a time had been agreed when it was anticipated they could all attend at once. As the context of the clinical area was at the centre of this study, the venue remained the same although the room where the interview took place was slightly further situated from the midwife station.

3.7.3 Observation

In addition to data obtained from interviews, unobtrusive observation (Robson 2002, p.310) of the placement setting was undertaken. During the main method of data collection, simple and informal observation was made of the clinical environment before and during the interviews and focus groups took place. As would normally happen at any student visit, the ward was observed for general activity and atmosphere. For example, the ward was observed for: staff-patient ratios (particularly the number of women in labour as increasing numbers can put a strain on the workforce as women require one-to-one care in labour); the activities the students were undertaking at that time; and which midwives the students were working with.

This was done there and then in an abbreviated note form which served as a reminder when more detailed notes were taken later and recorded in the field notes. I had advised participants that informal observation would take place, however as it was undertaken unobtrusively and in the same manner as at any other visit, it seemed they did not notice. Retrospectively, this was confirmed by some of the participants. Thus it was 'non-reactive' (Robson 2002, p.310). As a former clinical midwife of that particular environment, professional awareness and intuition informed this notion and in addition, helped enhance my capacity to observe non-verbal clues and quickly develop a feel for what was going on. The field diary was kept to also record any feelings and ideas that arose during data collection and confirm that my interpretations of the data were reasonable (Barbour, 2001; Lambert *et al*, 2010).

Lastly, as the researcher is in control of interpreting data in whatever way they wish, there is potential for misunderstanding and subsequently misinterpretation; therefore it is important that an explicit account of data collection and analysis is provided to allow readers to make their own judgements (Barbour 2001, p.1115-1117). Thus a full account of data collection and analysis is provided in Chapter 4.

3.8 Strategies to Data Analysis

Stake (1995, p.72) points out that while qualitative data analysis is largely intuitive, recognised formal procedures ought to be adopted to avoid misinterpretation. Even though patterns are often pre-conceived from the research questions or conceptual framework, the collection of raw data in itself cannot answer the research questions (Stake, 1995). The researcher has to engage in some analytical process to make sense of it (Gerrish and Lacey, 2006). Nevertheless, Bryman and Burgess (1994, p.8) comment that qualitative research can sometimes lack systematic detail about the data analysis process, thus creating ambiguity as to how interpretations and conclusions were reached. Huberman and Miles (2002, p.17) also allude to the abyss between data and conclusions.

In case study, both Yin (2003) and Stake (1995) emphasise the need for an analytic strategy, and encourage the case study researcher to develop a strategic approach from the outset. Yin (2003, p.111-114) suggests three general strategies: first, to rely

on the theoretical framework or proposition that led to the study, so as to guide data collection and analysis; or secondly, to give consideration to 'rival' explanations and therefore collect further evidence to support or dissuade from the original hypothesis; and the third analytic approach, to adopt a descriptive framework to organise data analysis.

3.8.1 Categorical Aggregation and Direct Interpretation

From a more interpretive perspective, Stake (1995, p.77) suggests two strategic approaches to help the researcher arrive at new meanings, that is, categorical aggregation and direct interpretation. In the former, the researcher looks for a collection of instances or occurrences by gathering and coding data, and tallying for frequency; whereas direct interpretation calls for the analysis of individual occurrences or isolated actions that demonstrate meaning. Stake (1995, p.74) advises that although case study relies on both of these approaches, it is the nature of the study and research questions that determines which approach to follow more closely. Therefore in instrumental case study, where the case is secondary to the phenomenon of interest, Stake (1995, p.77) confirms a greater need to aggregate categorical data.

Stake (1995, p.78) then goes on to talk about how meaning evolves from the process of identifying 'patterns' from categories or codes that 'correspond' to certain events or circumstances. From the research questions or conceptual framework, the researcher may already have a notion about the patterns that will surface; but once patterns emerge and are confirmed, through deep reflection and triangulation, assertions about the case can be made. Lastly Stake (1995) considers the concept of generalisation, of which case study does not lend itself too well (Bassey 1999, p.34). However rich, descriptive narrative of what actually happened can evoke in readers what Stake (1995, p.85) calls 'naturalistic generalisations' to which they can apply to other cases.

Stake's (1995) analytic approach was deemed more compatible with the instrumental case study design of this study. Stake's (1995) strategic approach suggested aggregation of categorical data from interviews to identify patterns and correspondences and thus illuminate meaning from which assertions could be

generated. However some data, such as observational data, could be interpreted directly.

3.9 Data Analysis Process

3.9.1 Unobtrusive Observation

In this study, observation was not a central method of data collection. However it was considered that by developing an understanding of the physical and cultural context where simulation-based learning was applied, it might have had some value in determining if simulation had any bearing on work based learning. In addition, the description of contexts should provide the reader with a 'feeling of being there' (Stake 1995, p.63).

Simple and informal observation was made in an unobtrusive manner when collecting interview evidence to provide insight into what was 'going on' in the context of the study (Robson, 2002). Because it was informal observation, there was not any pre-specified criterion of what had to be observed. Furthermore from the literature, previous research identified the clinical setting as a busy and stressful environment (Haigh, 2007). So to avoid selective encoding (Robson 2002, p.324) it was important that I kept an open mind and not judge the clinical situation too quickly, particularly if it appeared busy.

Robson (2002, p.320) provides guidance on the main aspects of observation to be included in a descriptive account of the setting such as the physical layout, details of participants, activities of the participants, individual actions, events and time and feelings. Therefore these observations were undertaken to describe the setting, the staff and general activities taking place at that time (Robson, 2002).

However Robson (2002, p.321) advises to then 'go beyond the story' to aid understanding of what is going on. As previously stated in Section 3.8.1, Stake (1995, p.9) suggests that observations can be interpreted directly. Although the researcher's interpretation is then subjective, Stake (1995, p.76) rationalises that the researcher's interpretation of the case could be distracted by more objective techniques of analysis. Therefore the process of interpreting observations involved a

simple description of what I saw; where an inference was made and subsequently an evaluation, it was peer reviewed by two impartial colleagues (one from clinical practice and one from the educational setting) to confirm that evaluation (Simpson and Tuson, 1995).

Through deep reflection, the process of describing, making inferences and evaluations derived from observations, became inextricably linked and consequently was integrated within the reporting of the findings in the next chapter. As Yin (2003, p.93) suggests, information derived from observation provides supplementary information to the topic being studied.

3.9.2 Individual Interview and Focus Group Data

Miles and Huberman (1994) discuss the variations of qualitative research and the variety of approaches to analysis. Common to most practices, Miles and Huberman (1994, p.9) provide a set of analytic moves in sequence. These moves assisted me in gathering data derived from individual interviews and focus groups and implement Stake's (1995, p.77) analytic approach, which involved coding, tallying, and identifying patterns and correspondences.

Therefore, following transcription I undertook the following steps:

- Affixed codes to a set of field notes drawn from interviews
- Noted reflections or other remarks in the margins
- Sorted the materials to identify similar phrases, relationships between variables, patterns, themes and common sequences
- Isolated patterns and processes, commonalities and differences and took them out to the field at the next data collection phase (that is, to the focus group)
- Elaborated a small set of generalisations (assertions) that covered the consistencies discerned in the database
- Confronted those generalisations (assertions) with a formalised body of knowledge in the form of constructs or theories

(Adapted from Miles and Huberman, 1994, p.9).

Miles and Huberman (1994) provide further guidance to assist in data reduction, data display and the drawing and verification of conclusions. A fuller account of the main stages of this analytic technique and how it was utilised in this study is described in the next section.

3.9.3 Data Reduction: Individual Interview and Focus Group Data

Data reduction involved transcription verbatim and then reading and listening again to the data (see Appendix 9 for selected transcripts). Thereafter coding of different sections of the data was undertaken to identify concepts and recurring patterns and themes.

Datum was not pre-coded in this study, but undertaken after collection to allow me to become sensitive to the context and the observations made (Miles and Huberman, 1994, p.58). From a grounded theory perspective this is termed open coding, where the researcher remains open to the data and line by line coding of transcriptions is undertaken (Glaser, 1992). But as theory generation was not the aim of the study, a grounded theory analysis was not implemented thereafter.

In fact this study followed a theoretical framework with predetermined categories, which may be considered a contentious issue in qualitative research and its effect on qualitative analysis. From a practical perspective, Miles and Huberman (1994, p.18) encourage a conceptual framework to avoid data overload whilst Stake (1995, p.86) encourages the researcher to include their personal experience in the interpretation. However Glaser (1992, p.27) highlights that the analysis can be influenced by preconceived descriptions and talks about theoretical sensitivity and the ability to generate concepts purely from data. In contrast Edward and Talbot (1999, p.125) explain that even with the identification of research questions and pre-determined categories, coding should still remain ‘data-driven’ and open thus allowing each participant’s voice to be heard.

In caution, Miles and Huberman (1994, p.57) highlight how words are meaningless unless linked to the context in which they were made, therefore the researcher should be aware that they make the choice in associating meaning from words. Ethically this

may have implications. However in an attempt to avoid attributing what participants said to any preconceived notion, I repeatedly listened to the tapes and visualised the interviewee and their expressions when speaking. My interpretation of each participant's words and their meaning was confirmed by the field notes.

Simultaneously, line by line coding was being undertaken (Miles and Huberman, 1994, p.58) where minimal interpretation was necessary as the code was kept close to or identical to the text. Miles and Huberman (1994, p.65) discourage using numbers as codes. However Edwards and Talbot (1999, p.124) advocate using a numbered code to assist in content analysis or as Stake (1995, p.74) refers to as tallying for frequencies or instances, that is, categorical aggregation. He (Stake 1995, p.77) also stresses that researchers should use the analytical approach that suits them rather than following a prescriptive process.

Therefore guided by Stake (1995, p.77), and to demonstrate my own interpretive style, an adaptation of the approaches to coding as advocated by Miles and Huberman (1994, p.65) and Edwards and Talbot (1999, p.124) was applied, in which both numerical and descriptive labels were created (as illustrated in Appendix 10). This culminated in coded datum, wherein a class of phenomenon relating to clinical simulation, for example, 'perception of being in a hospital' or 'conceptualises midwifery theory' was attributed to a particular text in the transcript. Still, the code retained adequate similarity to the original datum thus enabling immediate recognition to what it concerned.

Moving to a more interpretive part of the process, inferences were then made about emergent themes from the codes. Stake (1995, p.78) suggests this can be achieved through aggregating categorical data and identifying correspondence and patterns. Categorical aggregation is carried out either instinctively and intuitively or by adding up the frequency of instances, the latter veering to a more positivist approach (Stake 1995, p.74). Although a quantitative analysis was neither the intention nor outcome of my study, Stake (1995, p.76) suggests that even as the quantitative researcher 'looks for meaning in the repetition of phenomena' and the qualitative researcher

seeks for the ‘emergence of meaning in the single instance’ a combination of both approaches can make sense of the case.

In this study, categorical aggregation of interview data was demonstrated by tallying the frequencies of coded datum across each data set, facilitated by a content analysis table (see Appendix 10). Therefore where coded datum was found to have been repeated several times by only one participant, this was overridden by the frequency of the code occurring across all participants. This approach was utilised to reduce the data and illustrate recurring issues or themes that had emerged during interview with the ‘actors’ (Stake 1995, p.1) or participants contained within the case. Thus counting repetitions or content analysis provided the basis for developing the thematic analysis.

3.9.4 Data Display and Drawing Conclusions

Miles and Huberman (1994) describe several means of displaying data to assist in analysis. Robson (2002, p.482) identifies a ‘conceptually clustered matrix’ or table that brings themes and items that belong together. However Yin (2003) recommends advanced software such as Nvivo which is derived from NUD·IST - Non-numerical, Unstructured Data Indexing - to code, store and manage data. Although Miles and Huberman (1994, p.312) suggest Nvivo can assist in formulating and testing theories, this requires advanced skills in using this programme. Also, as the words need to be linked to the context in which they were made, Nvivo was considered limited in extracting the true meaning of dialogue.

At a basic level, I used the computer software to listen to and partially display interview data, act as a visual aid to linked data and store categories and themes that I had identified. However as analysis progressed through each of the three data sets and the volume of codes increased, I needed to look to additional manual methods to display the coded data. Organisation charts were created on Microsoft Word documents and exhibited on flip-charts to facilitate easy movement of chunks of coded data so as to develop and modify themes. Therefore stage two of the Miles and Huberman (1994) technique, that is data display, was only partially incorporated into

computer assisted qualitative data analysis software, Nvivo version 9. Otherwise, manual methods were employed.

As recommended by Miles and Huberman (1994, p.246), conclusions were drawn through the emergence of patterns and themes and how these related to each other. This involved various tactics. The findings were verified in relation to: strong versus weaker evidence (Robson, 2002, p.483) such as tallying for frequency (Stake 1995, p.78); making contrasts and comparisons between the data sets (Miles and Huberman 1994, p.245), and, to the existing body of literature; the researcher effects in how my values and beliefs may have impacted on the research process and data analysis (Lambert *et al,* 2010); and observation of the responses when the participants were interviewed alone and in the focus group. In relation to the latter, group dynamics and interactions between participants were given due consideration. Thus various approaches helped me draw conclusions which could be judged as trustworthy.

3.10 Trustworthiness

Case study researchers often concern themselves about establishing the trustworthiness of their findings or assertions (Stake 1995, p.45). It may be because case study is sometimes viewed as methodologically weak in comparison to other approaches (Bassey 1999, p.34; Edwards and Talbot 1999, p.55). Or, as Edwards and Talbot (1999, p.54) further assert, in studying the case the researcher might change it, implying that observation disturbs the case equilibrium. This may be exacerbated by the duration of case study, as Bassey (1999, p.34) highlights how the case study approach can take some time.

Indeed Robson (2002, p.168) suggests that the concept of 'trustworthiness' is the preferred evaluative criteria used in flexible designs as opposed to the techniques adopted in quantitative research. Jupp (2006) defines 'validity' as the extent to which the results or conclusions drawn from a study accurately reflect what actually happened and why, whereas reliability refers to the extent that an instrument used in the collection of data will produce the same results if used again in similar circumstances. Traditionally these issues have been more closely associated with quantitative approaches wherein strict research methods are a feature (Robson,

2002). Whereas in qualitative research, circumstances are unique to given settings and cannot be replicated, thus the terms validity and reliability are inappropriate (Robson, 2002).

Lincoln and Guba (1985) as cited by Robson (2002, p.170) judge a qualitative study as credible whenever the researcher's interpretation of the findings is an accurate representation of the participant's views. Guba and Lincoln (1989, p.228) later state that the 'enquiry process must be publicly acceptable'.

Robson (2002, p.168) goes on to discuss strategies to establish the 'trustworthiness' of the enquiry and show that the researcher's interpretations of the data are reasonable. These approaches are presented below under the headings of: credibility; transferability; dependability and confirmability, which are the criterion of judging qualitative research as defined by Guba and Lincoln (1989, p.236).

3.10.1 Credibility

Guba and Lincoln (1989, p.236) deem a study as trustworthy when internal validity has been established. Respect (2004) identify that researchers cannot be wholly objective about the research problematic and measures should be taken to ensure a balanced view. Various strategies are available. Robson (2002, p.340) and Guba and Lincoln (1989, p.237) describe this as peer-debriefing whereby the same conclusions are drawn when, for example, a tape or transcription is coded or directly interpreted independently by another person other than the researcher and the conclusions discussed at length. In this study, randomly selected data were shared with an impartial colleague and my supervisor, and discussed in relation to the development of codes and how data were reduced and analysed. Conclusions were comparable to those interpretations reached by me, thus ensuring a high level of inter-observer reliability (Gerrish and Lacey, 2006). Additionally observational data, an unobtrusive technique in this study (Robson, 2002, p.350) were peer reviewed by impartial midwifery clinical and educational colleagues to verify inferences and judgements made.

Another method to support credibility is 'member checking' (Robson 2002, p.175). Stake (1995, p.115) suggests providing participants with rough drafts of the interview to enable 'actors' to respond or add to the data. Following interviews, participants were provided with hard copies of the transcriptions. The transcription included the interview verbatim and a summary of my interpretation of what had been said. Opportunity was given for them to contact me with amendments and they were also informed of the findings on completion of the study in order to validate the conclusions drawn. Only one of the participants (a midwife lecturer) highlighted any changes. She identified that one word had been wrongly transcribed in that the word 'take' should have read 'dictate'.

3.10.2 Transferability

This study was small and generalisation of this case to others was not sought. As previously discussed, Stake (1995) considers case study as not to lend itself too well to the concept of generalisation. Bassey (1999, p.34) also highlights that among the limitations of case study research, assertions made from small data sets can be misrepresentative of the truth. But to improve internal generalisation, Robson (2002) warns against being too selective in choosing participants as this is likely to reduce the credibility of the findings. Although purposive sampling was employed in this study, the sample of participants was selected based upon their availability to participate at the time I was available to collect data. This small basic measure ensured that the subjects were not chosen for any reason other than their availability during data collection, thus careful selection was not used.

Furthermore, Guba and Lincoln (1989, p.242) highlight that the qualitative enquirer works with 'different types of confidence limits' and, transferable conclusions only 'work' for a particular context at a particular time. However in providing the reader with a thick description of the context and data collection process (see Chapter 4), it would offer opportunity for readers to make inductive inferences applicable to a wider population (Stake 1995, p.85).

3.10.3 Dependability and Confirmability

Guba and Lincoln (1989, p.242) suggest dependability can be aligned to reliability, the latter being a traditional criterion associated with quantitative research. They further assert that confirmability sits well with the concept of objectivity. However Robson (2002, p.172) suggests that the qualitative researcher cannot be wholly objective nor generate data that fulfils reliability testing. On the other hand, an accurate account of what happened or audit trail, can instil confidence in readers about the research practices employed and the dependability of the research methods (Robson 2002, p.176).

Various authors (Bradbury-Jones, 2007; Lambert *et al*, 2010; Robson 2002, p.171) describe a process known as reflexivity, which is concerned with the researcher's responses to the various stages of the research process. Following a period of reflection on behaviour and beliefs influencing data collection and analysis, the researcher should be able to validate research practice (Lambert *et al*, 2010) and demonstrate that the interpretations of the data are reasonable. Lambert *et al* (2010, p.325) suggest keeping a record of thoughts and feelings as they arise through the research process. Bradbury-Jones (2007) advocates a reflective journal to enhance rigour. Indeed, as there was a potential lack of awareness of my subjectivity which could lead to the participants views being overshadowed by my own, it was important that an explicit account of data collection and analysis was provided (Barbour, 2001) as is demonstrated in Chapters 4 and 5. This would enable readers to judge for themselves (Jupp, 2006, p.258). However to identify how my beliefs, attitudes and values may have negatively influenced the study, I used both my field diary to make notes and add memos of any emotional responses experienced during data collection and analysis and then write more formally in the reflective diary started in September 2006, at the beginning of the doctorate course (see Appendix 11).

3.11 Summary

In this chapter consideration was given to the methodological approaches and ethical issues so as to explore the effects of clinical simulation within the practice setting

from the perspectives of those involved. As knowledge of a more subjective nature was preferred, an instrumental case study situated within a qualitative paradigm was adopted. The development of a conceptual framework was undertaken to keep the study focussed and bound to avoid data overload, but not so tight and structured as to exclude any emergent data (Miles and Huberman 1994, p.17). The process of data collection from qualitatively driven methods, which included interviews as a primary method, was described; and triangulation of data, through focus groups, served as a means of confirming assertions and enhancing the meaning of the findings generated from the analytic strategy provided by Stake (1995). The field diary offered a source of reference to which I could review to remind of informal observations and any significant events during data collection, including any emotional response to the process. Lastly the credibility of my interpretations was addressed in terms of establishing trustworthiness.

Next in Chapter 4, the findings and themes from the interviews with midwife mentors, student midwives and lecturers are presented. In particular, their opinions of how simulation prepared the student midwife for clinical practice; those aspects of clinical simulation utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition; and how clinical simulation was perceived to affect work based learning, are incorporated. Also included in Chapter 4 are the observations made of the setting during data collection.

Chapter 4: Findings and Development of Themes

Introduction

This chapter will report the findings and themes developed from interviews with the three participant groups. These will be presented in the order of midwife mentors, student midwives and midwifery lecturers, and, in relation to the research categories and research questions (see Appendix 8). Included within the descriptive narrative account of the findings, are the observations I made of the setting during data collection.

Stake (1995, p.87) suggests that the researcher should, 'provide adequate raw data prior to interpretation so that readers can consider their own alternative interpretations'. Therefore the themes developed from interview data follow the reporting of findings from each group.

The overall aim of the study was to explore the concept of clinical simulation in a particular context where it was applied, that is, the clinical environment. A qualitative instrumental case study approach was adopted, the case consisting of midwifery lecturers (n=2), first year midwifery students (n=6) and mentor midwives (n=7). Primary methods of data collection included one-to-one interviews and focus groups. Informal unobtrusive observation of the context was taken, and is provided within the sections where the findings are reported.

In total, twelve one-to-one interviews took place, that is, with midwifery lecturers (n=2), student midwives (n=5) and their mentor midwives (n=5), plus two separate focus groups with student midwives (n=6) and midwife mentors (n=7). The period of data collection occurred during and after the students' first maternity placement following simulation-based learning in the university. All one-to-one interviews and focus groups with both mentors and midwifery students were undertaken in the clinical setting during the clinical placement, whereas the midwifery lecturers were interviewed after the clinical placement had ended.

4.1 Mentor Midwives Individual Interviews

Observational Data

An account of the setting in relation to the physical layout, details of participants, activities of the participants, individual actions, events and time and feelings is provided below.

4.1.1 Physical Setting

The physical layout comprised three maternity wards, each consisting of seven rooms equipped to provide an LDRP service. In each ward there were also several additional beds for women requiring long term antenatal and postnatal care, a patient day-room and a pool room utilised for waterbirth.

Prior to arriving for all one-to-one interviews (n=5) I requested a suitably private room within the ward area that could be used for the duration of the interview. This would provide an accurate impression of the setting. In all interviews that took place across the wards, the pool room was selected by the midwives. As uptake of the waterbirth service tended to be low, the pool rooms were generally underused. Other than a birthing pool (approximately twice the size of a standard household bath) the pool rooms were sparsely furnished, each containing only a rocking chair, hard chair, small table and a few pieces of equipment for storage. Lighting was low and there was not a window.

Keats (2000, p.67) states that position and distance between the interviewer and interviewee can be constrained by furniture. Despite the physical layout and limited seating, the participants (n=5) chose a position which was neither too distant nor too close to me and adopted what I judged to be a ‘relaxed’ posture whilst seated.

4.1.2 Participants and Activities

Table 1 on the next page, demonstrates the age range and midwifery experience of the mentor midwives (n=5) - now individually referred to as MW1, MW 2, MW 3, MW 4 and MW 5 - as 23 to 50 years.

Table 1: Mentor Midwives Age and Midwifery Experience

Age (years)	All cases (n=5)	Participant	Midwifery Experience (years)
23-25	**1**	**MW 4**	**3**
26-30	**2**	**MW 1** **MW 3**	**7-8**
31-35	**1**	**MW 5**	**7**
45-50	**1**	**MW 2**	**10**

All midwives (n=5) held Band 6 posts. Band 6 posts are defined as registered midwives with a minimum of two years experience and a higher degree of autonomy and responsibility than newly qualified Band 5 practitioners in the clinical environment (RCM, 2004).

Before the onset of the majority of interviews, the patient staff ratios were deemed satisfactory by the midwife in charge of the ward. As nearly all interviews took place during normal working hours (one interview with MW 3 took place at the start of a night-shift), satisfactory staffing levels should perhaps have provided opportunity to undertake the interviews without compromising ward duties and patient care. However as the midwives had to relieve each other for tea and lunch breaks throughout the shift, exacting a suitable time for interview was sometimes challenging. On one occasion, when one of the wards was busier than normal due to extra daytime elective procedures, an interview with MW 4 was postponed on several occasions over a three hour period. This is explored further in Section 4.1.3.

Sometimes as an interview progressed, the clinical environment changed and a couple of mentors (MW2 and MW3) had to resume their duties as the demands of the clinical area necessitated their presence. For example, this was demonstrated by the interruption of the interview with MW 3 by a more senior member of midwifery staff in the ward. And on another occasion, MW 2 had been given charge of the ward for a few hours and midway through the interview began to nervously pass the medicine cupboard keys between both hands, eventually stating the need to return to the open

area of the ward. Professional awareness had informed me that it was not exceptionally busy. Arguably, midwives walking briskly around the ward between patients' rooms usually indicate that they are occupied with general duties or attending to a matter of urgency, whereas, when they are gathered around the ward station chatting, the ward is judged as being quiet. As neither was the case, then the need to return to the ward area may have been exacerbated by other distractions within the ward. The pool room ran parallel to the main corridor in each of the wards, directly opposite the LDRP rooms and noises from the ward could be heard such as the patient call system, vocal noises from women giving birth and the telephone ringing in the background.

4.1.3 Time and Emotions

The slightly brief nature of a couple of the interviews may have been in part due to my interview skills, insider research issues (as discussed in Section 3.7.1), the competing demands of the clinical area and time required to be interviewed or simply a reluctance to participate. In relation to the latter, of all the individual interviews (n=5), only two participants may have demonstrated what might have been construed as 'evasive' or slightly 'non-co-operative' behaviour (Keats 2000, p.60). This manifested itself by MW 4 delaying the start of the interview because of workload despite another midwife offering to take over, or, by displaying facial expressions indicative of boredom (MW 2), that is, a downturned mouth with eyes and eyebrows in a neutral position (Keats 2000, p.68). On these occasions, I attempted to empower the participants (MW 4 and MW2) and engage them more in the interview however these particular interviews were the shortest in duration.

On the other hand, the majority of midwives (n=3) appeared enthusiastic as they smiled when greeting me and acknowledged that I was there to undertake the interview for my research study and they had therefore not forgotten. Despite the various activities and unpredictable nature of the clinical setting, they reassured me that they were keen to participate. Thus the slightly short duration of two of the interviews may have been a combination of factors and not isolated to any one issue.

4.2 Interview Data

Although the midwives participated in biannual in-service skills training involving part-task trainers, the fidelity level of simulation was low and lacked the sophistication of the university equipment. Therefore at the start of each interview, the mentor midwives (n=5) were shown a short video of the clinical simulation laboratory and the childbirth and neonatal simulators. Within the clinical skills laboratory at the university, an in-built audio-visual system provides recorded video footage of any activities taking place in the laboratory, and can be used for the purpose of peer and self-review. However the purpose-made video footage that they were shown was of me, together with the other lecturers, using the manikins. This lasted approximately ten minutes and demonstrated the mechanical functioning of the manikins as they would operate at a simulation-based learning scenario in the university.

Thereafter interviews proceeded as outlined in Appendix 8. An open-ended approach to the questions was adopted to encourage the mentor midwives (n=5) to express their own views and insights. The findings are presented below.

4.2.1 Views of the Concept of Clinical Simulation

Only one midwife (MW 4) had seen the equipment prior to the interview, during a past visit to the university. The majority of the midwives (n=4) showed they were both impressed and surprised by the working of the childbirth and neonatal simulators. This was demonstrated with smiling and raised eyebrows (Keats 2000, p.68) together with positive statements such as,

> *It's really good, the fact it is mechanical* (MW 5)

One participant appeared less impressed by suddenly laughing out loud and stating that the birth simulator was,

> *...just like a big doll* (MW 2)

When asked what they thought of the concept of clinical simulation, the majority of midwives (n=4) provided similar positive comments about its place in the curriculum. As MW4 explained,

> ...*I think it is good even though it's the kind of model. It's quite realistic ... and it's like the labour room and they're getting their hands on* (MW 4)

However one midwife mentor compared clinical simulation to clinical reality,

> *I would say it's totally different in a real live birth* (MW 1)

Another midwife appeared to be unsure of its preparatory value stating that,

> [Simulation gives the student]...*a false impression that your next one was going to be like that - it wouldn't be* (MW 2)

Only two of the mentors did not remark on the university setting where simulation-based learning took place, although they nodded their heads to indicate their consideration of how it compared to the clinical area. The majority (n=3) volunteered that the university clinical skills room resembled the LDRP rooms within the maternity unit. One midwife reported,

> *Well I suppose it's a manikin but it's very kind of real life looking. You've got a kind of proper setting- it's more realistic and gets them used to it* (MW 1)

4.2.2 Clinical Simulation and Learning Domains

In relation to learning within the university, the majority (n=4) of mentors indicated that clinical simulation potentially facilitated knowledge and understanding of childbirth by helping the student midwife conceptualise midwifery theory. This was illuminated by MW3 and MW4s' explanation,

> *You know for me, as well as to read about it or to talk about it and then do it just compounds it more in your mind and then you can visualise it in your mind rather than reading it off the page* (MW 3)

If you've had the theory it's putting it into practice...it's getting your 'hands on' so it's reinforcing your mind, make you understand it easier (MW 4)

As for communication skills, three mentors volunteered that clinical simulation did not facilitate this skill. They provided similar comments, such as:

I would say more their knowledge and practical skills as opposed to maybe their communication things (MW 5)

4.2.3 Clinical Simulation and Preparation for Practice

When asked if and how clinical simulation prepared the student midwife for clinical practice, all mentor midwives agreed that it would, although the extent of the perceived preparedness varied. In general, mentors indicated that students were often 'thrown in' to a first delivery and that this could be frightening especially with a rapid birth. Fear was a recurring issue. All mentors reflected on their own experience as a student midwife observing a woman giving birth for the first time. MW3 captured the feelings of the mentors' early experiences of watching childbirth,

I remember when I first went into a delivery and told just to watch it and it was horrifying (MW 3)

They (n=2) agreed that if students had undergone simulated practice then the student would have a basic experience and be more aware of what they were required to do, as demonstrated by MW1,

...at least they've got a basic knowledge before they come out (MW1)

Also, all mentors highlighted that clinical simulation might give the student a notion of working in the clinical environment and reduce the anxiety often experienced by students when assisting women to give birth. MW2 and MW3 stated,

....I think it gives you the perception of being in hospital... (MW 3)

I think it would take an element of fear away (MW2)

All midwives agreed that it would increase the students' awareness of what was going on in the birthing environment and what to expect. MW5 explained,

> *I think it gives them a better idea of what it's going to look like* (MW 5)

One mentor alluded to the notion that this might have been facilitated by the student participating with midwifery lecturers in simulation-based learning sessions at the university by stating,

> *They know exactly what they should be doing. If there is going to be a second person* [lecturer] *there as well, in the room, while they're getting all that done then it would let them see what their mentor should be doing and what they will be doing* (MW 5)

4.2.4 Application of Learning Domains to Practice Setting

In relation to the learning domains of knowledge and understanding, skill acquisition and behaviour, the mentors agreed that clinical simulation might facilitate the application of one or more of these aspects of learning. MW 5 explained how knowledge and understanding was perceived to be facilitated and then applied in practice,

> *I think if you're doing it* [clinical simulation] *along with the theory first and then just reinforcing the theory along with the delivery* [in practice] *then they can sort of marry the two up* (MW 5)

This was agreed by another midwife although the majority of mentors (n=4) alluded to the application of skills in practice, as illustrated by MW1,

> *...when we did do our first delivery she did know what I was talking about with the instruments and things like, what we were supposed to do with the swabs...* (MW 1)

One midwife summed up the issue of learning domains, suggesting that the practical skills were more likely to be transferred to practice,

It depends on your background really and the way you've always learned; I don't know if it would help a student that's not from that type of background [healthcare]... *it would help them very much with the practical aspects but not the emotional and all the other distractions that would go on in a delivery situation* (MW 2)

When asked about behaviour, the majority of the mentors (n=3) felt simulation could perhaps make students more aware of the professional aspects of their role. They indicated that because both students and lecturers wore clinical attire and role-played when participating in maternity based scenarios, to some extent professional behaviour could be developed and applied. MW1 and MW 3 explained,

Just basically where they should be kind of situated (MW 1)

It [clinical simulation] *probably does make it less of a jump from getting told how to do and how to be and how to act in a hospital environment instead of getting plonked in it* (MW 3)

In contrast to all comments made about the learning domains and their application to practice, when asked if they had known that their student had had simulation-based learning, only one of the four midwives had known. When probed further, of those mentors (n=4) who had not known about their students' previous learning, the majority (n=3) volunteered mixed views on whether their students had demonstrated skills more smoothly in comparison to previous students who had not had clinical simulation. MW3s response portrayed her viewpoint and that of another midwife,

Being honest no, nope I don't really see much difference really (MW 3)

Alternatively MW5 thought otherwise,

Well the student I've had...I would say her delivery technique and everything was really, really good so that [clinical simulation] *possibly has helped* (MW 5)

4.2.5 Clinical Simulation and Work Based Learning

The mentors were then asked about work based learning. Three mentors suggested that clinical simulation may have a positive impact on learning in the workplace, as exemplified by two comments,

> *... you're probably kind of laid back and say well when I did this with the manikin, I did this. So I suppose having a base knowledge of doing it on a manikin then doing it in real life would give them a wee bit more confidence and to actually be able to be laid back with the practices that they've done and then kind of build on from there* (MW 1)

> *They've not got that* [delivery] *focussed on their mind....they would be more open to learning other things and going in for other things* (MW 5)

In relation to students' confidence in the workplace, three mentors agreed it would increase confidence as demonstrated by the response from MW5,

> *I would imagine that it would make them more confident* (MW 5)

On the other hand, MW2 disagreed,

> *I would say it would take quite a few before they got to that stage of feeling a wee bit better* (MW 2)

4.2.6 Effect of Clinical Simulation on Mentor Teaching Role

Unexpectedly two mentors discussed their teaching role and how they felt clinical simulation might enhance it. Because midwives perceived that they did not have time to teach the students, they suggested that if the student already had background knowledge and skill, it would be beneficial to the mentor. MW1 explained,

> *Instead of us not having the time to say, 'listen this is what we do now', they can watch what we're doing now in real life and see how they can apply* (MW 1)

The other mentors (n=3) did not express a viewpoint on this topic.

4.2.7 Other Issues

When offered the opportunity to raise any other issues relating to clinical simulation and the midwifery students, one mentor felt that clinical simulation did not improve patient care,

> *I suppose it helps with like what they see kind of visually... But actual patient care it doesn't* (MW 3)

This aspect of maternity care was not mentioned by any other mentors although it was deemed worthy of further exploration at the midwives focus group (n=7), which will be discussed later in the chapter, in Section 4.4.

4.2.8 Summary

Observations of the clinical setting illuminated its unpredictable nature and highlighted how there seemed to be limited capacity, inclusive of an appropriate place, for midwives to participate in activities beyond the scope of their everyday ward duties. In spite of generally satisfactory patient staff ratios, there were observed interruptions to interviews and also what may have been construed as restless and at times anxious behaviour which may have been a result of distractions in the clinical area. Data from interviews also indicated how students who had undergone simulation-based learning were perceived to be prepared for clinical practice. In relation to learning domains, mentors felt that clinical simulation facilitated the application of knowledge and understanding and transfer of practical skills but not communication skills. However, in general mentors believed that it made the student more aware of professional aspects of behaviour. In relation to work based learning, it was suggested that clinical simulation could increase students' confidence in the workplace and 'open' them more readily to other learning. Also, clinical simulation could perhaps enhance the mentor teaching role because midwives perceived that they had little time to teach in the clinical area. And lastly, patient care was raised as an additional issue surrounding the students' learning in practice.

The development of themes is described in the next section.

4.3 Development of Themes

The transcripts were read and re-read multiple times for recurrent themes within and between participants. Following coding, the coded datum was counted for frequency across the full data set. From the aggregate, fourteen issues emerged that were considered worthy of further exploration. These were displayed on a word document.

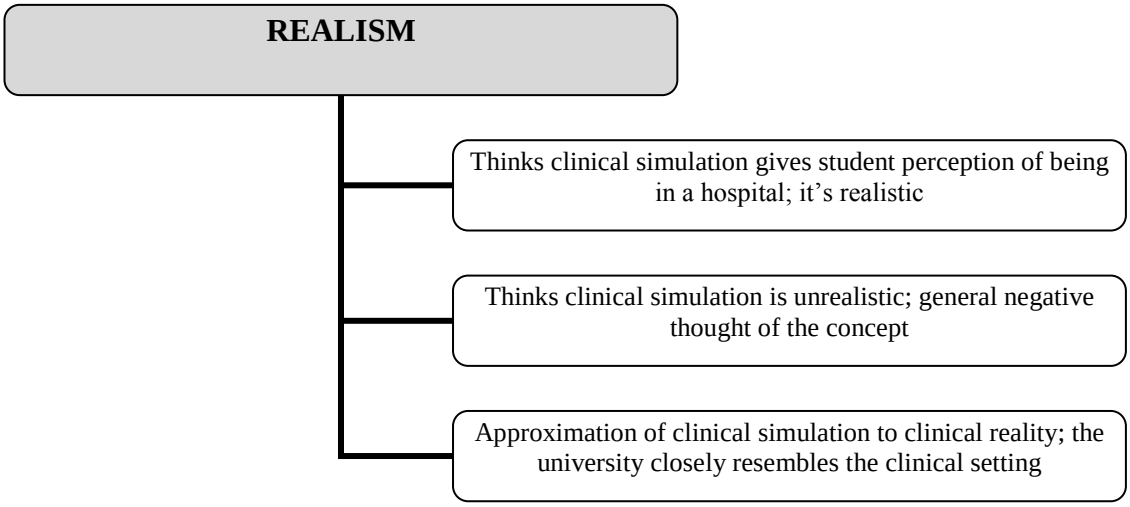
Thereafter, as suggested by Miles and Huberman (1994, p.69), the aggregated codes were grouped or brought together with issues of similar meaning into smaller units so as to identify emergent themes. From thematic content analysis of the transcripts, five themes emerged that were identified as: Realism; Insight; Applied Learning; Teaching in Practice; and Catalyst to Learning. These themes are explained in relation to the research questions, specific to mentors. The themes are distinguishable from the codes by being set within a grey background.

4.3.1 Research Question 1

How do mentors perceive simulation to prepare the student midwife for clinical practice?

Two themes emerged from the midwives interviews pertaining to the issue of preparation for practice, that is, Realism and Insight. The former, Realism (see Figure 3), suggested that the degree of preparation that clinical simulation offered the midwifery student prior to clinical practice, depended on how real it was perceived by the student. The codes were merged as outlined in Figure 3.

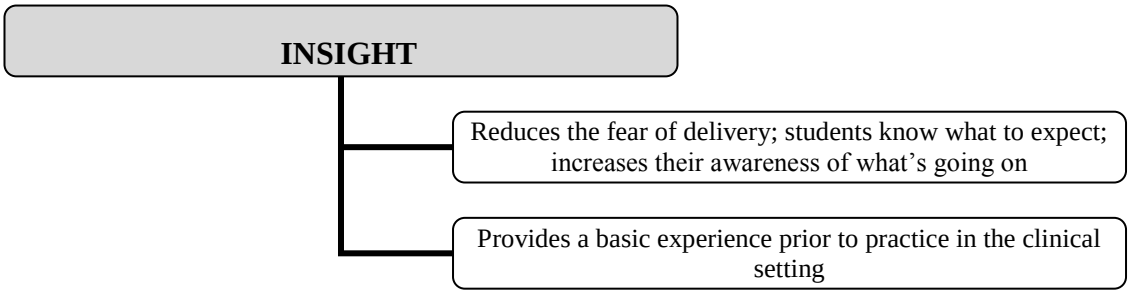
Figure 3: Realism Theme (Mentors)



Realism, defined as its (clinical simulation) approximation to clinical reality in relation to how closely the university resembled the clinical setting inclusive of the manikin's appearance, equipment and the childbirth scenarios utilised within the skills laboratory, had potential to give the student a sense or feeling of being in a hospital maternity unit. Where the perception of the mentor was one of a poor reflection of clinical reality or disbelief (that is, the antitheses of realism) simulation did not offer the student an experience comparable with the clinical setting prior to attending the practice placement. This feeling of 'pseudo-realism' was largely attributed to the manikin's artificial facial appearance and the fact that the process of childbirth did not always occur in a controlled systematic manner.

The second theme to develop from the issue of how clinical simulation prepared the student for clinical practice was Insight, see Figure 4.

Figure 4: Insight Theme (Mentors)



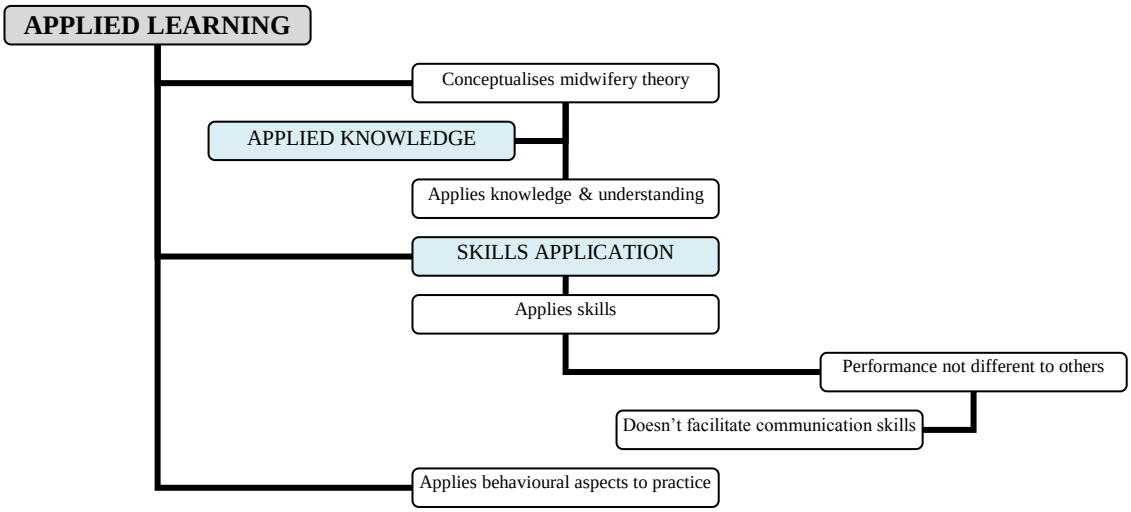
From the collective codes in Figure 4, the theme of insight developed from how the mentors felt clinical simulation reduced the 'fear of the unknown'. By offering a fundamental, albeit basic, experience in assistance at childbirth prior to real life practice and an opportunity to participate in hands-on learning in an environment similar to the clinical setting, this was interpreted as students knowing what to expect, thus increasing their awareness of what was going on in the clinical area.

4.3.2 Research Question 2

Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?

In relation to transferable skills that could be applied in clinical practice, the theme of Applied Learning generated two sub themes, that is, Applied Knowledge and Skills Application (highlighted in blue in Figure 5).

Figure 5: Applied Learning Theme (Mentors)



As illustrated in Figure 5, the mentors perceived simulation-based learning, in comparison to lectures, to help students conceptualise the theoretical aspects of childbirth. On deeper reflection, the mentors indicated that the student midwife could then apply knowledge derived from simulation into clinical practice, and facilitate understanding of the real life childbirth process. Thus clinical simulation helped link theory to practice and apply knowledge and understanding in the clinical context.

The mentors' responses also suggested that students demonstrated smooth manual dexterity when utilising the instruments contained in the childbirth pack, and required minimal guidance. However, overall these students were not considered to perform any better than students who had never received simulation-based learning. This was perceived as such because the mentors evaluated the students' practical performance holistically when in clinical placement rather than how they performed in an isolated skill.

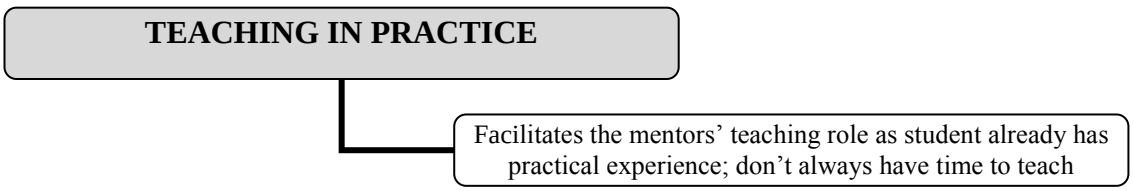
In addition to the application of skills, the mentors' interviews generated the assertion that communication skills were not transferred from clinical simulation, as it was not perceived to play any role in developing communication. Lastly, behavioural aspects of learning - in relation to general professionalism which manifested itself in students knowing how to 'situate' themselves in the clinical environment - were shown to be transferred also, even if to a lesser extent than knowledge and understanding or skills. In this context, 'situate' was interpreted as the student knowing where to stand (without being 'in the way') and generally knowing how to behave when participating in a hospital and childbirth episode.

4.3.3 Research Question 3

How does clinical simulation affect work based learning?

Two themes emerged from the topic of clinical simulation and its affect on work based learning. In the first, see Figure 6, clinical simulation was perceived to support the mentors' teaching role within the clinical area.

Figure 6: Teaching in Practice Theme (Mentors)

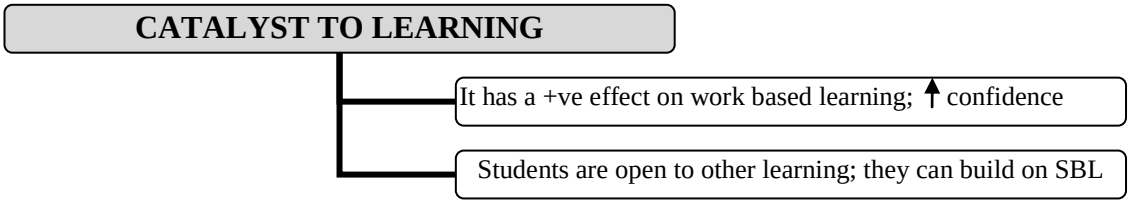


From the aggregated coded data, mentors indicated that they did not always have time to teach students. They seemed to view teaching as a formal activity and when clinical workload compromised this, they felt they were failing to meet the students'

learning needs. However clinical simulation was perceived, to some extent, to support their teaching role because student midwives had a basic experience prior to working in clinical practice. Thus when the clinical environment became too demanding for mentors to engage in formal organised teaching activities, they indicated that they would feel supported in the knowledge that students had already practiced the skills at university.

Also, the mentors viewed clinical simulation as having a potential catalytic effect on work based learning in addition to being supportive of their teaching role (see Figure 7).

Figure 7: Catalyst to Learning Theme (Mentors)



Clinical simulation was considered to increase students' confidence because simulation-based learning in the university offered a sense of familiarity in relation to the clinical environment. Mentors recalled their own initial experience of assisting at childbirth as being frightening, and concluded that clinical simulation would reduce this fear in students new to the clinical environment, and increase their confidence. In addition, mentors felt that increased confidence and a basic experience, meant student midwives could build on prior knowledge and those skills initially developed at the university. Thus clinical simulation was interpreted as a vehicle or catalyst to other learning in the workplace.

In summary, the one-to one interviews with midwife mentors generated five themes which had been developed from the various opinions about clinical simulation, inclusive of the teaching aspect of the mentor role and how simulation may enhance it. In Section 4.4, the findings from the midwives focus group will be presented.

4.4 Mentor Midwives Focus Group

Observational Data

Litosseliti (2003, p.9) highlights how focus groups are difficult to organise, therefore I had sought support from the ward managers. Prior to arriving for the focus group, they confirmed that the midwives were on duty and were also available to participate. Indeed on arrival at the maternity unit, midwives on both wards were gathered around each of the two ward stations chatting, therefore the wards were judged to be quiet. Early evening was deemed an optimal time to maximise attendance because there would be an over-lap of staff between day duty and night duty. The patients' day room was selected for the focus group during patient visiting time as patients were unlikely to use the room then.

An account of the setting is provided below.

4.4.1 Physical Setting

The day-room was situated at the entrance to the main corridor of the ward although noises from the ward, such as the patient call system and the telephone ringing, were still audible. However due to its location the external noise was less than the pool room, which was situated in the middle of the ward and had been the venue for the individual interviews held previously. The day-room was reasonably well furnished containing a television, two two-seater sofas and several hard chairs, two small tables, artificial plants, a pay-phone and two standard lamps. It was a warm summer evening in August 2009, but the room was well ventilated as the windows and curtains were open, therefore lighting was natural. I provided light refreshments as it was towards the end of the midwives shift and at a time when they would have appreciated a cold drink.

All the participants (n=7) chose various chairs to sit on, with the majority (n=5) taking the hard chairs which formed a semi-circle by the time all were seated. The arrangement was comfortable for both me and my colleague, the latter of whom was facilitating the focus group, as discussed in Section 3.7.2. The midwives (n=7) adopted what was judged by both of us, to be relaxed postures whilst seated although

MW 4 and MW 8 joined the group slightly later and sat marginally farther from the group.

4.4.2 Participants and Activities

Table 2 below demonstrates the midwifery experience and age range of the mentor midwives (n=7) as 23 to 50 years.

Table 2: Mentor Midwives Age and Midwifery Experience

Age (years)	All cases (n=5)	Participant	Midwifery Experience (years)
23-25	**1**	**MW 4**	**3**
26-30	**3**	**MW 1**	**7**
		MW 8	**8**
		MW 3	**8**
31-35	**2**	**MW 5**	**7**
		MW 6	**10**
45-50	**1**	**MW 7**	**23**

As before, all midwives (n=7) held Band 6 posts, meaning they each had a minimum of three years experience. Another common characteristic of the focus group was that it consisted of midwives who had mentored or co-mentored a student from the cohort of student midwives having their first labour ward clinical placement.

Within this group, some midwives (n=4) had been interviewed individually and some (n=3) had not. They had all been selected on their availability to participate, however MW 2, although on duty, did not attend the focus group. The focus group participants (n=7) have been referred to individually as MW1, MW 3, MW 4, MW 5, MW 6, MW 7 and MW 8.

4.4.3 Time and Emotions

Before the onset of the focus group interview, which lasted for one hour, the patient staff ratios were deemed satisfactory by the midwives in charge of both wards. An impartial colleague facilitated the focus group. The facilitator (Interviewer) was introduced to the mentor midwives and her role explained. She was unknown to them but nonetheless the midwives welcomed her with what was perceived by both me and facilitator as a warm and friendly attitude. I explained that for the purpose of the focus group, my role was to show video footage of clinical simulation and thereafter observe the development of the discussion.

4.5 Focus Group Interview Data

At the beginning of the interview, mentors were asked what their students considered to be the most important midwifery skill to undertake in their first labour ward experience. All midwife mentors (n=7) agreed that it was assisting a woman to give birth. This was asked at the outset, so that the video footage of the childbirth simulator would not influence their responses.

For the benefit of those mentors (n=3) who had not been interviewed individually, the entire group (n=7) were then shown the short video of the clinical simulation laboratory and the childbirth and neonatal simulators. As before, this lasted approximately ten minutes during which time the group remained silent but demonstrated what may have been construed as interest, for example, leaning forwards towards the computer screen and eyes fixed. Still only one midwife (MW 4) had seen the equipment at the university prior to the data collection process.

Thereafter interviews proceeded as per interview topic schedule (see Appendix 8) and as per transcription (see Appendix 9).

4.5.1 Views of the Concept of Clinical Simulation

First, the midwives were asked for their opinions of the concept of simulation. The majority of midwives (n=4) provided positive views, such as those offered below,

Realistic [MW 7]

I think it's good. I think it's like giving the basic experience...It is good...they've had a chance to take time with the instruments out there and taken time to set it up (MW 6)

MW 1 related her view of clinical simulation to her own learning experience. This provoked a collective agreement among the group demonstrated with nodding of their heads and all speaking at once in response to,

When we were students we just had a doll and pelvis [anatomical models]...*it* [clinical simulation] *does make it a bit more real* (MW 1).

4.5.2 Clinical Simulation and Learning Domains

In relation to learning within the university three mentors commented on how simulation may assist student midwives link theory to practice. They expressed opinions such as,

They probably see the mechanisms of delivery more in that, because it probably happens nice and slowly and you know whereas a normal delivery they don't necessarily see that. So they kind of see the mechanisms first of all before sort of hands on a patient and they understand it (MW3)

...it's linking that theory and practice straight away so that it's fresh in your head. ..So I think if they could get it right in their head at that point before they even come out to the clinical area then it would be better (MW 5)

It was also repeated by the mentors (n=2), how clinical simulation did not facilitate communication skills,

They're not talking to the doll. It's just unnatural to talk to a doll, it's just not natural (MW 5)

4.5.3 Clinical Simulation and Preparation for Practice

The focus group were asked in what way they felt clinical simulation might prepare a student midwife for practice. The majority of the mentors (n=5) suggested that it

would prepare them from a practical perspective, in such a way that they would know what to do at the delivery. MW1 reported,

> *Slightly more prepared the fact that, they've seen things before and they're not getting into a panic. The first time we open a pack, it's not instruments they've never seen before; they've seen things before and they know what they are* (MW 1)

In relation to the university skills laboratory, the focus group were asked what they thought about it. Collectively they (n=7) all indicated by nodding that they agreed it was like the LDRP rooms in the maternity unit of the hospital thus providing some familiarity for students in placement. One midwife summed up,

> *It's a bit more familiar for them, they're not just walking in ...and not knowing what it is...it just really it makes it probably a bit more at ease so they know what's in the room* (MW 1)

As fear had been a recurring theme in the individual interviews, the mentors were asked if and how simulation may reduce student fear of the clinical area. Two midwives attempted to answer this question,

> *Maybe they're not going to be frightened then and worried about coming here* (MW 7)

> *The simulation they're getting, they've seen it in the College and then when they come out they're not scared* (MW 8)

4.5.4 Application of Learning Domains to Practice Setting

The mentors (n=7) were asked which aspects of the domains of learning they considered to be utilised when clinical simulation was applied in practice. After a long pause, only three midwives responded, none of whom indicated that knowledge and understanding or the domain of 'behaviour' were applied. As for the practical aspect of clinical simulation utilised in the clinical area, those who responded (n=3)

commented in relation to the student demonstrating the skill. MW1 and MW5 explained,

> *...because she knew how to set things out it was a wee bit more controlled and she wasn't as panicky trying to get things organised and she was a wee bit more confident in that sense that she could lay out her stuff and do the delivery - obviously with supervision and things - but I thought it was really different* (MW 1)

> *Yes, uh huh, maybe folk become more proficient in them* [midwifery skills] *but it's getting familiar to them the first time and then they can go back and try it again without any risk to the patient or without being all nervous about that patient again* (MW 5)

Previously, the one-to-one interviews with mentors had highlighted skill acquisition via simulation and its perceived ineffectiveness with regard to patient care. However when the focus group were asked if simulation-based learning may be a way of improving patient care, all mentors agreed it would. One midwife (MW 6) took the lead by describing the scope of clinical simulation as recalled from the video footage,

> *Like you've got your delivery, you've got like you said it shows a PPH* [haemorrhage] *and you've got, say if a baby comes out and it's needing resuscitation. And that if you're giving the basic resuscitation to that* [manikin], *well adequate resuscitation to that baby* [manikin] *then obviously it triggers the light that you're doing it confidently and you're doing it properly rather than bag* [resuscitate] *a real life baby and doing all this not realising it's wrong* (MW 6)

MW 5 linked this explanation to patient care,

> *A situation like that, you don't say "hold on a wee minute and I'll show you how to do it properly", because you don't, it's a case of you take over if they're not doing it correctly. I think that it* [clinical simulation] *is a good thing* (MW 5)

This generated a collective agreement that there was potential for clinical simulation to improve patient care by developing practical skills to a safe standard.

4.5.5 Clinical Simulation and Work Based Learning

When the mentors were then asked about the concept of clinical simulation in relation to its affect on work based learning, it generated a varied response. First, the clinical area where the midwives worked was discussed as a teaching and learning environment and how it impacted on their teaching role. This was explained by MW1,

> *If you've got a very, very busy ward and you need to get things done quickly...and you just feel sometimes you just don't have the time to explain what you're doing because obviously first year students are totally dependent on you. You have to work through everything with them and sometimes you just feel you just do not have the time...Obviously if it's quiet you do more teaching then but if it's dead busy they're just watching what you're doing...but it's really hard sometimes. Just really the time* (MW 1)

This provoked opinion about the integrated model of care that the midwives were providing. As previously suggested in p.2, the LDRP model required clinical competency in all aspects of midwifery care from the midwife providing that care. The majority of mentors (n=6) agreed that although the structure and layout of the maternity unit should have been conducive to the students' learning, they felt that this also had negative aspects to it. MW 3 described the environment that the group worked in and how it was thought to impact on the students' learning,

> *You tend to find that because it's split across three wards as well you maybe don't have enough labouring patients for your students...I think sometimes it was better when you had a labour ward setting...which would hopefully carry into whatever they had just learned* [in university] (MW 3)

Arguably the group demonstrated what was construed as a collective agreement as they all nodded their heads. Two midwives suggested that the students' supernumerary status was not always respected, as described by MW3,

We do kind of...kind of use them a wee bit as extra staff at times...when it's mental and busy (MW 3)

However the discussion changed course when two midwives suggested that work based learning was dependent on the mentor and students attitude to learning. MW6 explained,

If you're quite eager, and quite a few of them, half and half, we're the same I suppose, they're eager to learn, they're eager to do things... (MW 6)

Again, collectively the others (n=6) in the group indicated agreement by nodding their heads and saying so. When the mentors were asked about how clinical simulation may have impacted on work based learning, three midwives suggested that it improved the students' confidence. MW8 stated,

I thought my student was confident as well, I thought she was, you know especially for a first time in a completely, well it's not a completely alien environment if they've had that simulation (MW 8)

More specifically, when asked about the student's openness to other learning in the workplace, there was a long pause that culminated in no answer to the question. However the discussion drifted back again to the mentors perceived lack of time to teach student midwives. Three midwives commented on 'time' as explained by MW3,

I think I would like to be a better mentor. I think, just with the wards being busy or whatever etc etc that makes it hard, harder (MW 3)

Another midwife spoke, whilst the remainder of the group (n=5) were quiet but not demonstrating what may have been perceived as disagreement to what she was saying,

Like I think we'd like the time to sit and talk like...[gives examples of obstetric emergencies] *and that's what we would do in here and work through it but you sometimes don't have the time to do that* (MW 1)

4.5.6 Effect of Clinical Simulation on Mentor Teaching Role

As it had previously been introduced by two midwives in one-to-one interviews, the issue of the mentor teaching role was raised. When asked if simulation-based learning delivered to student midwives in the university could impact on their teaching role, the group collectively nodded in agreement indicating that it could. Individual responses from the more vocal members of the group (n=3) illuminated what was perceived to be 'groupthink' (Robson 2002, p.286) as the other midwives (n=4) started talking animatedly amongst themselves agreeing with what was said as demonstrated by MW5,

> *It builds on it. We can then ask them what they've learned to go with that and then you know the areas that they maybe haven't mentioned or they're not so sure about and we can then go over that again. It just it lets you learn exactly what to look for and what they've learned* (MW 5)

Alternatively, one midwife suggested how clinical simulation could further enhance her teaching role and be an adjunct to work based learning,

> *And perhaps the opposite way is that if they do something out in the clinical setting...and maybe we've not had a chance to go over it then they can take that back with them into Uni and say* [to the lecturer]*"well listen this is what happened the other day" and go through it with the simulator exactly what can happen in maybe, probably a slower fashion and therefore go into it a bit more* (MW 3).

4.5.7 Other Issues

Towards the end of the focus group, the mentors were asked if there were any issues they considered particularly important or any other areas they wished to discuss. After what was perceived to be a long pause, some (n=4) members of the group offered various opinions in relation to work based learning, linking theory to practice and reducing fear associated with assisting with childbirth as illustrated below,

I would say the clinical setting - the clinical setting I think is very important [as a learning environment] (MW 8)

Probably, gelling basically all the knowledge they've [students] *had in the Uni and the practice they've had there and trying to correlate it back into here and just build on their confidence really* (MW 1)

It makes them more eager for a delivery now, now they've seen it (MW 6)

The group collectively agreed with these last three statements.

4.5.8 Summary

Observation of the clinical setting identified satisfactory patient staff ratios when the focus group took place. Perhaps because the venue for the group interview with midwives was at a slightly further distance from the main part of the ward and there were no interruptions or obvious distractions, the midwives seemed more relaxed.

The focus group generated various opinions about clinical simulation. In the main the midwives demonstrated similar viewpoints as they had previously although some notable differences centred on learning domains and work based learning. An important suggestion was that clinical simulation could be used to complement work based learning.

Other issues raised by the mentors focussed on how simulation could help students adapt more easily to individual midwives practice. Positive comments were raised in relation to improved patient care due to the development of skills before the reality of practice.

The themes developed from the focus group are explained in the next section.

4.6 Development of Themes

Robson (2002, p.483) suggests that data collected from interviews are stronger when participants are interviewed alone compared to when interviewed in a focus group. However as previously discussed in Section 3.6.2, methodological triangulation of data through focus groups was deemed an opportunity to provide any other possible perspective on the phenomenon and / or confirm the interpretations made from one-to-one interviews.

Within the focus group transcript, some new coded datum was developed although largely the codes were static from the one-to-one interviews because the midwives responded similarly when interviewed together as to being interviewed individually. As before, codes were aggregated and where repetition was evident, these recurrent issues were considered to carry relevance. Then, codes of similar meaning were brought together to create themes.

Through deep reflection and comparison with those themes generated from the one-to-one interviews, the data were further reduced where codes of similar meaning fitted with an established theme. Thus in some instances, new coded datum was pulled together with the original codes that had formed themes derived from the individual interviews.

From this process, the same five themes re-emerged as from the one-to-one interviews although additional codes offered deeper insight into the interpretations. Outlined below are the themes in relation to the research questions specific to mentors.

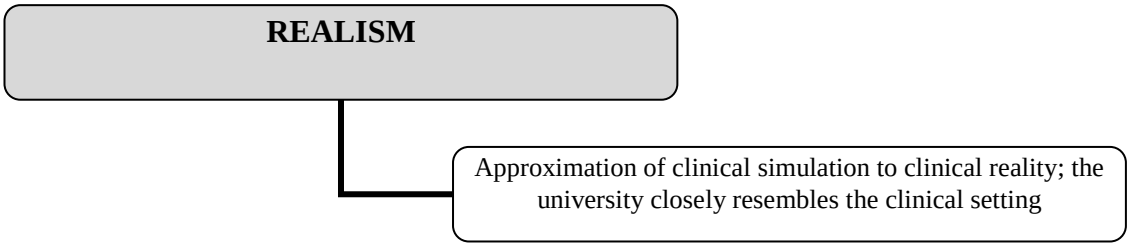
4.6.1 Research Question 1

How do mentors perceive simulation to prepare the student midwife for clinical practice?

Similar to the one-to-one interviews (see Section 4.3.1), the focus group generated the theme of Realism in relation to clinical simulation within the university, highlighting that it offered familiarity to the student relative to the clinical setting (see Figure 8). However from the focus group, the issue of ‘pseudo-realism’ did not

emerge as an opinion representative of the entire group of midwife mentors who participated.

Figure 8: Realism Theme (Mentors)



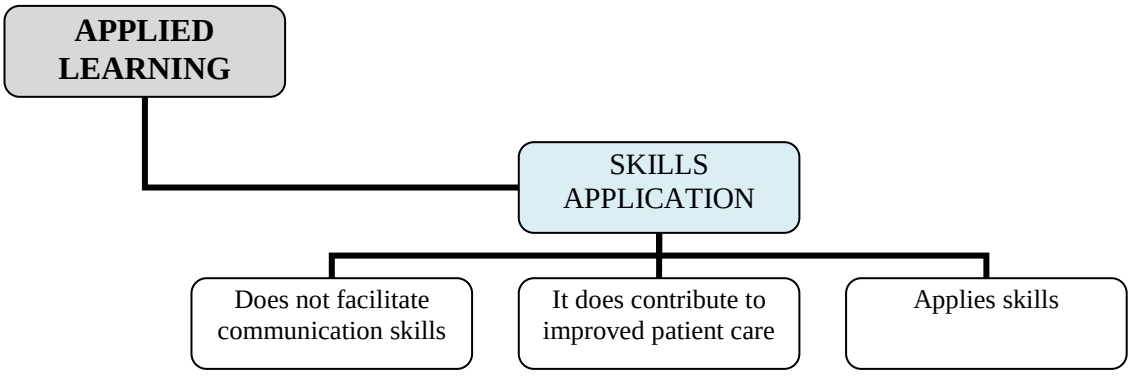
Correspondingly, Insight was a recurring theme where no new opinions were offered (see Section 4.3.1).

4.6.2 Research Question 2

Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?

Although the mentors perceived clinical simulation to conceptualise midwifery theory, the theme of Applied Learning only developed from responses relating to Skills Application with additional codes providing slightly more insight (see Figure 9).

Figure 9: Applied Learning Theme (Mentors)



From the coded data above, the mentors expressed the view that students applied practical skills in practice placement, but not communication skills. Application of skills that had been acquired and refined in the university were deemed to contribute

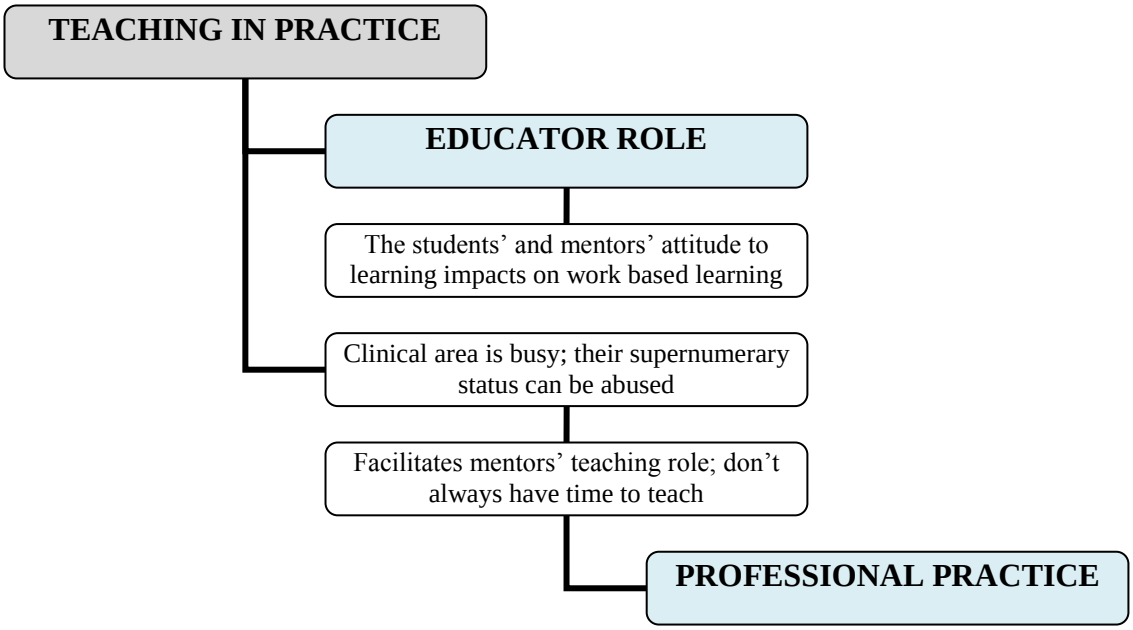
to safer patient care because these had been practiced on a manikin in an artificial environment prior to the reality of clinical practice, therefore scope for error was reduced. The behavioural aspects of learning did not emerge as a pertinent issue.

4.6.3 Research Question 3

How does clinical simulation affect work based learning?

The aggregated codes in Figure 10, demonstrated how the theme of teaching in practice re-emerged but generated significant issues culminating in two sub themes (highlighted in blue).

Figure 10: Teaching in Practice Theme (Mentors)

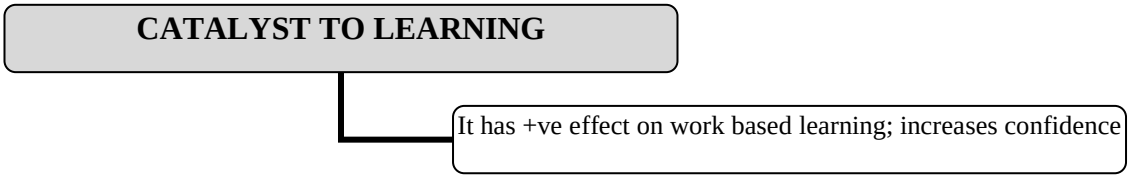


Again, responses indicated that within their teaching role a heavy workload meant that mentors did not always have time to teach students and therefore clinical simulation supported their role. However further exploration demonstrated that the teaching in practice theme had two aspects to it, that is, one of formal education and one of general professional practice devoid of any teaching commitment. In the former, the mentor's and student's attitude to learning was an important contributor to work based learning. Where a student and mentor were enthusiastic about learning, then it had a positive influence on work based learning. In spite of this,

mentors indicated that they experienced frustration when they were mentoring a student because they felt they should have their educator 'hat' on at all times, even during episodes of heavy workload where there was not time to undertake formal clinical teaching. Therefore within their professional practice role (the second sub-theme), they perceived themselves as negligent of students' learning needs and abusive of their supernumerary status.

Similar to the one-to-one interviews (see Section 4.3.3), analysis of the focus group highlighted how an increased confidence and a basic experience prior to clinical practice facilitated work based learning, as in Figure 11 below.

Figure 11: Catalyst to Learning Theme (Mentors)



However the depth of this theme was not supported by the students' openness to other learning and consequently provided only weak evidence that simulation perhaps accelerated work based learning.

In conclusion, the focus group generated five themes developed from the various opinions about clinical simulation, inclusive of the teaching aspect of their mentor role and how simulation may enhance it. In the next section, the reporting of interview data from the student midwives' (n=5) one-to-one interviews are presented.

4.7 Student Midwives Individual Interviews

Observational Data

The one-to-one interviews with student midwives took place on the same days as the individual interviews with the mentors within the clinical area. Therefore as the observations relating to the physical setting were unchanged, these have not been repeated here (see Section 4.1.1). All interviews took place in the pool room of the maternity wards wherein the students were undertaking their clinical placement.

4.7.1 Participants and Activities

Table 3 below demonstrates the age range of the student midwives (n=5) - referred to as ST.MW1, ST.MW 2, ST.MW 3, ST.MW 4 and ST.MW 5 - as 18 to 40 years and their mentor midwife in clinical practice. None of the participants had any healthcare experience but came from a variety of professional backgrounds. The professional backgrounds of the students have been omitted to avoid threatening their anonymity.

Table 3: Age of Students and Mentors of Midwifery Students

Age (years)	All cases (n=5)	Participant	Mentored or co-mentored by:
18-20	2	ST. MW 1 ST. MW 4	MW 1 MW 8
26-30	1	ST. MW 2	MW 2 & MW 3
31-35	1	ST. MW 3	MW 4
36-40	1	ST. MW 5	MW 5

As previously indicated in Section 4.1.2, satisfactory staffing levels, in addition to the supernumerary status of the students, should have provided opportunity to undertake the interviews without compromising ward duties and patient care. However among the interviews that took place with the students, the majority (n=4) were deferred somewhat due to the demands of the clinical environment. Indeed two interviews (ST.MW3 and ST.MW4) were delayed for more than one hour as these

student midwives were undertaking a series of clinical tasks. Also, STMW 1 appeared 'hurried' and anxious to complete all tasks before the interview began.

4.7.2 Time and Emotions

With regard to any delays, it was deemed relevant that ST.MW 4, whom I perceived to be frustrated by the late start as she apologised on several occasions, had appeared slightly annoyed that the tasks were on-going. The midwife in charge of the ward on that day also questioned why the mentor of ST.MW 4 could not have relieved her from her workload or asked someone else to do so. However when the interview finally commenced, ST.MW 4 revealed that she had been concerned about being interviewed (as discussed in Section 3.7.1).

4.8 Interview Data

The one-to-one interviews with students (n=5) commenced by asking them about their experience of clinical simulation in the university, including knowledge and understanding of childbirth and peer review (see Appendix 8).

4.8.1 Experience of Clinical Simulation

The student midwives were invited to comment on their experience of clinical simulation. All midwifery students (n=5) provided responses suggestive of a positive learning experience, as explained by two student midwives,

> *I found it really good. The first time was excellent - the opportunity to practice our skills but not on a real life person. It was really beneficial...Going in the second time, it was quicker and using the knowledge and skills quicker. It's a challenge but that's what it's like in here* [maternity ward] *as well, so it gives you a good feel for what it can be like* (ST. MW 1)

> *...it was good because you knew what to do and you kind of got an order to do things in and actually doing a delivery. Everything you got taught in the lectures - it's hard to visualise what you had to do and visualising where to put your hands and that for the first time* (ST. MW 2)

However the majority (n=4) also stated they had felt anxious when having simulation-based learning. When asked why this had been the case, their responses suggested that it was because they had never had that type of learning experience before. One student's response captured the thoughts of the others (n=3),

> *Well I actually felt quite nervous because I didn't know what to expect and then we went into the room - it felt quite real, you know the trolley was set up. Just wondering what the expectations were ...* (ST. MW 5)

In reference to clinical simulation and its approximation to clinical reality, a variety of responses were generated. Most comments were indicative of the students' (n=4) willingness to suspend the element of disbelief throughout the experience, as explained by one student,

> *It seemed very realistic but I've never obviously had that experience of having my own child, been in that experience yet because this was obviously before my placement so for me I felt it was as realistic as you could possibly get. I'm not sure if there was a CTG* [fetal heart monitor] *machine in there but I could hear, so obviously there was beeping in the background so just hearing that you know, so even getting a wee bit daunted so you know this is real, this is really real* (ST. MW 3)

These comments were in contrast to one student's response, which was not a view shared by other students, as reported by ST.MW2

> *In the simulation, I think it was taking ages* [laughing]. *Because it wasn't a real woman you weren't or I wasn't too… I think if I went back - oh my goodness I need to talk as I was just standing there waiting, it felt like it took ages. It was really quite artificial, how it* [baby manikin] *was delivered and things, it never had restitution and it just came out. It was quite an artificial environment I did find* (ST. MW 2).

4.8.2 Experience of Peer Review via Audio-Visual Unit

As previously stated in Section 4.2, within the clinical skills laboratory, an in-built audio-visual system enables students to participate in self-review and peer review of their performance, giving them an accurate impression of their competency. When asked how they felt about the opportunity for instant feedback via the audio-visual system, the majority of responses (n=4) were positive, as illustrated by two students,

> *It was quite good, other people commenting on what you were doing and that you had a chance to comment on other people* (ST. MW 2)

> *I picked up on a couple of things that I did that weren't right* (ST. MW 5)

Three students suggested that they felt worried about being videoed, making similar comments such as,

> *When I heard I was getting filmed I was taken aback by it but it was absolutely fine and no problem at all* (ST. MW 3)

> *I was a bit nervous about being filmed...it was good looking back and seeing yourself actually doing it* (ST. MW 4)

4.8.3 Clinical Simulation and Learning Domains

Asked if clinical simulation had facilitated their knowledge and understanding of childbirth and / or skill acquisition and / or behaviour, all students (n=5) indicated that it had facilitated in some aspect of the learning domains.

However the majority (n=4) commented that simulation had helped their knowledge and understanding and skill acquisition as demonstrated by two of their responses,

> *...I think it definitely helped* [theory]*, seriously into place a bit more. It's better to actually see even the head coming out of the manikin - you can imagine it more even than just on a PowerPoint. I think it helped.* (ST. MW 4)

You wouldn't get that in a lecture, you'd only get that in a simulation. I think it was really the practical part - knowing what to do, where to put your hands, knowing what's coming next - it marries the theory up there (ST. MW 3)

In relation to behaviour and awareness of the student midwife role, three students (n=3) felt that simulation had facilitated this aspect of the learning domains. ST.MW5 explained,

It makes you feel more official, professional just part of a team I think you know it makes you feel a bit important but aye it was good (ST. MW 5)

4.8.4 Preparation for Practice and the Role of Clinical Simulation

The student midwives were asked to consider if clinical simulation had prepared them for clinical practice and if so, how. The majority of students (n=3) suggested that from an emotional and practical perspective, it had prepared them mainly by increasing their confidence and allaying their fears as exemplified by three students' responses,

Maybe less confident [if not had simulation-based learning] *because I wouldn't be familiar with the setting, what to expect and what the equipment looked like. I had a basic knowledge before I went, how you used the equipment, how to set things up was really beneficial...It's exactly the same skills that are taught and what we practiced* (ST. MW 1)

It made you feel like you maybe knew what to do and you'd actually done it before already like although you hadn't for real (ST. MW 2)

...you're getting a wee chance to get rid of any fears you know kind of going in there (ST. MW 5)

In comparing the university skills room to the LDRP rooms in the hospital, the majority of students (n=4) agreed that both environments were similar, with comments such as,

I didn't know what to expect. I thought it would be similar to what it's like in uni and it was.....the beds, the baby resuscitation units the cabinets everything would be as it looks like a normal labour room (ST. MW 1)

However, they (n=4) also suggested how there could be improvements to make the skills laboratory more real, for example,

It seems a lot emptier - I think the room in the uni. I think maybe like a couch or something because you know how like they've all got couches and plants in them over here [maternity ward] (ST. MW 4)

The space - it could be doing with a wee bit more space (ST. MW 5)

4.8.5 Application of Learning Domains to Practice Setting

The students were asked to consider which aspects, if any, of clinical simulation that they applied in practice placement. All (n=5) students responded by what I perceived to be a moment's reflection of what they had applied in action at the time. Pausing for thought, the majority (n=3) then answered with general responses relating to how they remembered simulation when working in practice, as illustrated by two students' responses,

I remembered all the contents of the delivery pack so it remembered me it was a cue (ST. MW 1)

[It] *all came back to me from the simulation...like I already knew sort of helped me* (ST. MW 4)

Questioning then focussed specifically on the domains of learning, that is, knowledge and understanding, behaviour and skill acquisition. Three students referred to their comprehension of the childbirth process, making similar comments that related to the physiological process of childbirth, as demonstrated by responses from ST.MW4 and ST.MW5,

Well it helped the knowledge and understanding...It definitely helped with all that because you were waiting on the head to turn because you remembered

[from simulation sessions] *that it was necessary* (ST. MW 4)

It did bring familiarity when the head came down. I could remember the internal rotation and I could see the external rotation and then when the head came out I was trying to remember my technique as well but it did come back yeah (ST. MW 5)

All students (n=5) referred directly to the application of the practical aspects of clinical simulation in the clinical area, with approximating opinions, such as,

Opening up the pack, washing your hands and putting the sterile gloves on you know just like what it was in uni you know prepared just as the baby descends down and comes (ST. MW 1)

None of the students volunteered that they had applied the behavioural aspect of learning to practice.

4.8.6 Clinical Simulation and Work Based Learning

When asked if they thought simulation had had any impact on their learning in the workplace, the students (n=5) provided a variety of responses suggesting that it had had a positive effect, as illustrated in the comments made by ST.MW1 and ST.MW2,

... it would have taken me an extra week or so to familiarise myself with that if I hadn't had it [simulated childbirth] *like before in the uni so it does help. It did build up my confidence and I was more…used my initiative, more forward thinking and knew what was expected of me more* (ST. MW 1)

[Thought] *I know this, so it was one less thing to worry about yeah* (ST. MW 2).

However one student indicated how she felt that the clinical area was not always conducive to learning, and at times, perceived what she believed to be a hostile atmosphere between permanent staff and students (as discussed in Section 3.7.1). Although this issue was only raised by one student and considered unethical to identify which student she was, it was considered important and worthy of further

exploration at the student focus group.

4.8.7 Other Issues

At the end of each one-to-one interview, the student midwives were asked if they had any other issues that they wished to discuss. The majority (n=4) of students indicated that they had enjoyed clinical simulation and looked forward to having further simulation later in their programme. Otherwise they were satisfied they had answered all questions and had no further comments to make.

4.8.8 Summary

Observation of the clinical settings during the data collection period with student midwives, suggested that the interviews were perhaps intrusive of the ward routine. Despite their supernumerary status and generally satisfactory staffing levels the start of the majority (n=4) of interviews was delayed whilst the students undertook a series of tasks. In some instances, another member of clinical staff could have taken over the student midwives' workload, whereas in others, deferring the interview may have been avoidance behaviour (as discussed in Section 3.7.1).

In general, the one-to-one interviews with students demonstrated that clinical simulation had prepared them for practice, mainly by increasing their confidence. They also indicated similarities between the LDRP room and the university skills room which had helped them feel more familiar with their surroundings in clinical practice.

Lastly, the students suggested that they settled into the clinical environment more quickly than they would have if they had not had clinical simulation, thus facilitating work based learning. However one student suggested that the clinical environment was not always conducive to learning and at times perceived a hostile atmosphere.

4.9 Development of Themes

Categorical aggregation of students' one-to-one interviews identified twenty two issues. These repetitive issues were considered carefully before bringing together coded datum of similar meaning so as to identify emergent themes. As certain issues recurred, so did some themes previously established from the mentors' data set.

In total, seven themes emerged, three of which had not previously been recognised within the mentors' data. The themes were: Experience of Simulation, Realism; Theoretical Learning; Insight; Applied Learning; Memory; and Catalyst to Learning. These themes are explained in relation to the research questions particular to students below.

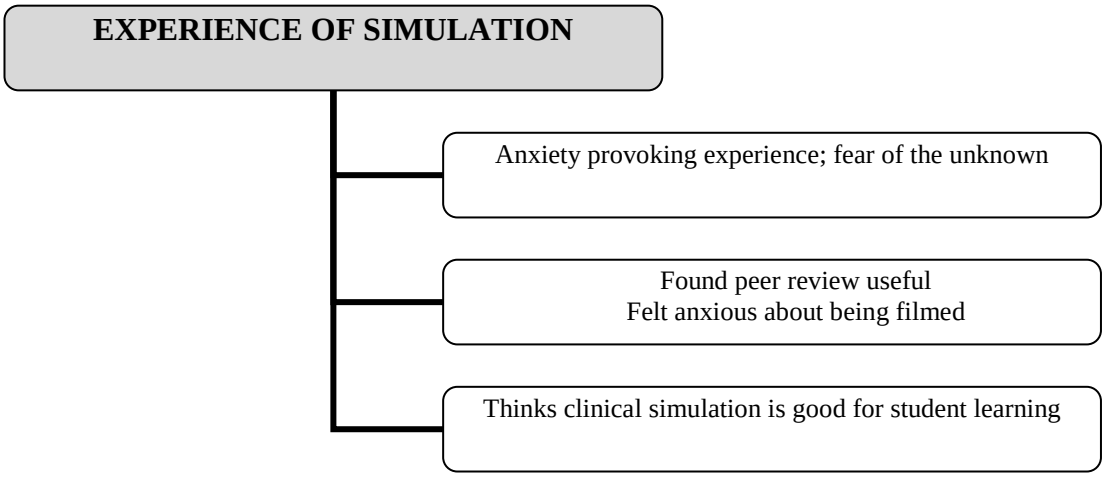
4.9.1 Research Question 1

How do students perceive simulation to prepare the student midwife for clinical practice?

Four themes emerged from the category of preparation for practice, beginning with the students' Experience of Simulation followed by the Realism of it. Next, the type of learning (Theoretical Learning) clinical simulation facilitated - in relation to the domains of learning - surfaced, and lastly, the Insight clinical simulation provided into the clinical environment re-emerged.

The first theme centred on how the student experienced clinical simulation within the university setting. Although the coded data (see Figure 12) showed repetition, in that the students felt simulation had been beneficial to their learning, data also demonstrated that they had found it an anxiety provoking experience.

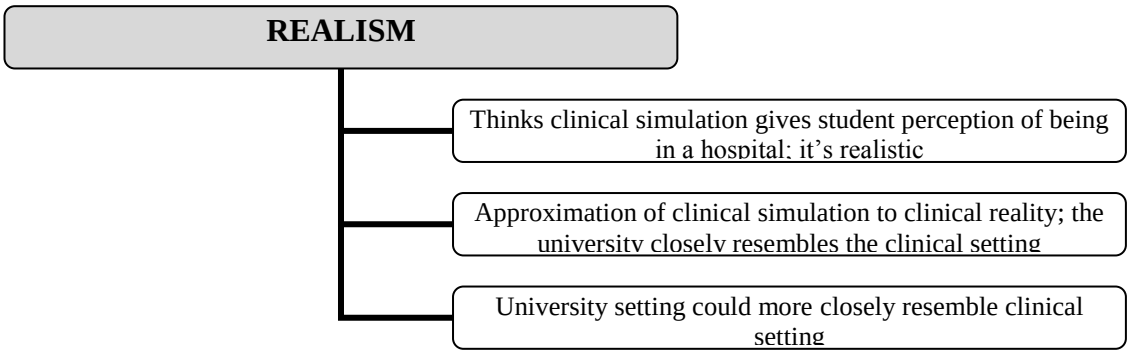
Figure 12: Experience of Simulation Theme (Students)



The extent of the students' nervousness about clinical simulation depended on what had prompted the uneasy feeling in the first place. In general, it was perceived as a fear of the unknown and others expectations of them. This was further recognised as the fear they had perhaps yet to experience in clinical practice. The prospect of assisting at real childbirth was imminent and the realisation that simulation was the rehearsal or dummy run beforehand brought it to the forefront of the students' minds. However self-consciousness was also a contributing factor to their anxiety, due to the audio-visual unit that filmed the students' performance thus enabling immediate feedback. In fact this was considered positively. Therefore the feeling of self-consciousness had the effect of inducing anxiety, as did the fear of the unknown.

Secondly, the theme of Realism re-emerged. Similar to the mentors one-to-one interviews (see Section 4.3.1) the coded datum contributing to this theme, identified features that were alike (see Figure 13).

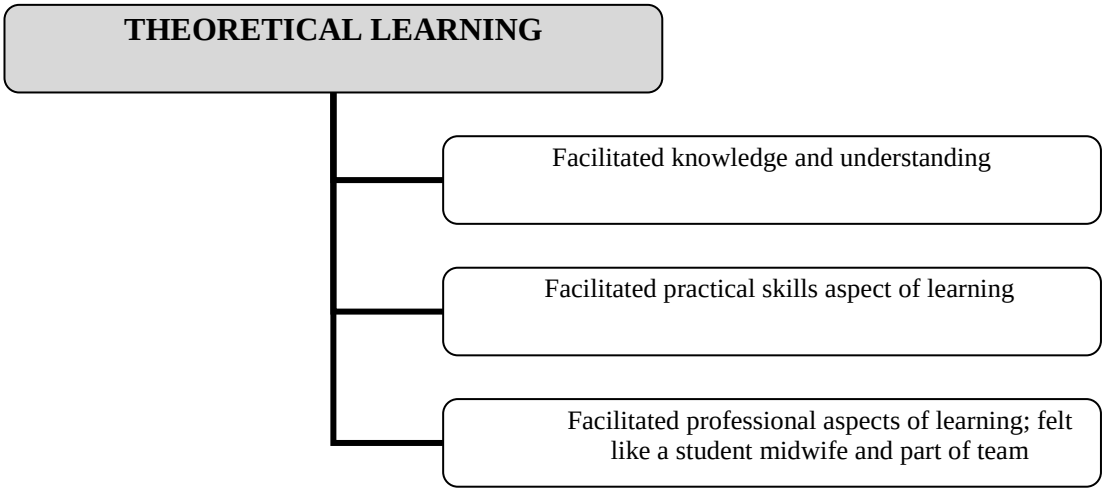
Figure 13: Realism Theme (Students)



Where students suspended the element of disbelief, either intentionally or unintentionally, clinical simulation provided them with a sense of being in a hospital setting. This was largely attributed to the fact that the skills laboratory closely resembled the hospital delivery room, although there were some inconsistent suggestions made as to how the clinical skills room could appear more real. As data were collected during the students' clinical placement where they had worked in the clinical setting, it was possible that they were comparing both areas with more scrutiny than they would have been equipped to do prior to placement.

In relation to the next theme, the students frequently referred to the type of learning that clinical simulation facilitated in the university (identified as Theoretical Learning), in terms of the three learning domains comprising knowledge and understanding, skill acquisition and affective or behavioural aspects of learning. From the theme outlined in Figure 14, clinical simulation was identified as facilitating all three domains of learning.

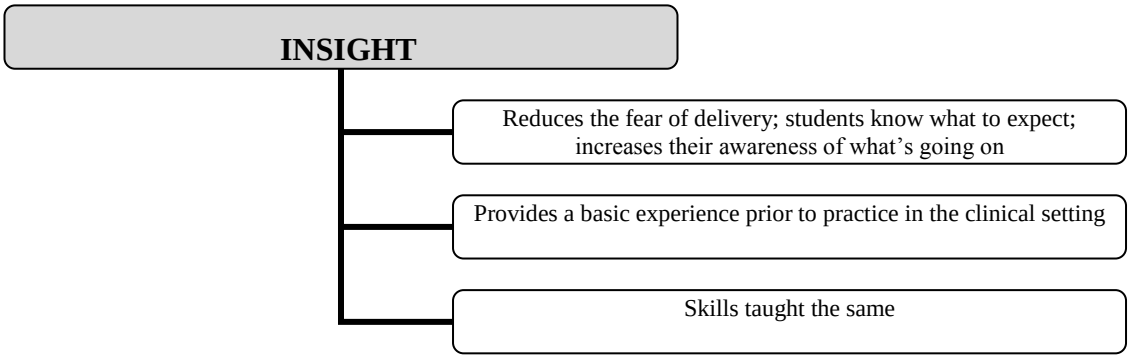
Figure 14: Theoretical Learning Theme (Students)



Interpretation of the data suggested that clinical simulation had helped the student understand the underpinning theory related to the process of childbirth, compared to lectures even though graphic images had been displayed on power point presentations incorporated into lectures. However from the transcripts, it was difficult to separate knowledge and understanding from the skill aspect of the learning domains because when clinical simulation facilitated knowledge, it seemed to perhaps simultaneously facilitate the development of skills. Thus these two aspects of learning seemed to be inextricably linked and co-exist together. In addition participation in simulation-based learning had, to some extent, helped professional awareness of the student midwife role. It seemed that by wearing their NHS uniform during simulation-based learning, which involved their participation in childbirth scenarios within the skills laboratory, had made the students feel part of a team.

Lastly, Insight (see Figure 15) was again identified as having some bearing on the way in which clinical simulation could prepare the student midwife for practice.

Figure 15: Insight Theme (Students)



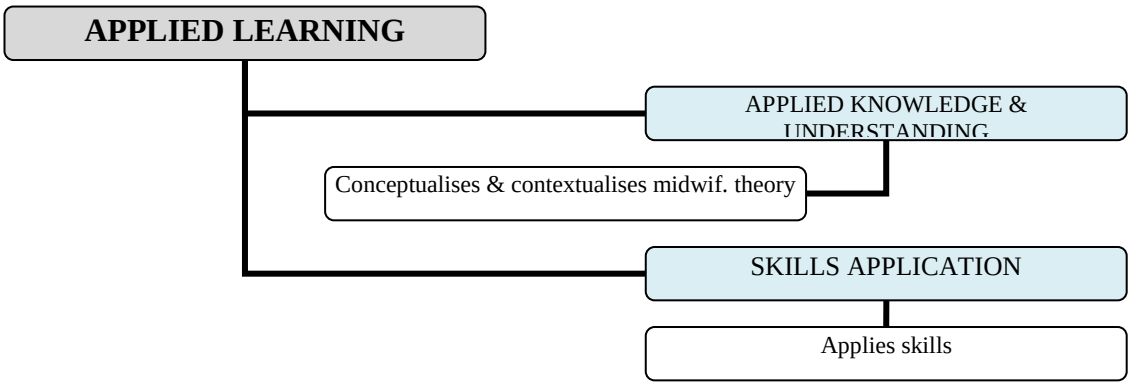
The coded data, above, suggested that simulated practice provided a basic experience in assistance at childbirth comparable to real life practice and eliminated some of the fear of the unknown associated with the clinical setting. This was not only because it resembled that setting, but because the skills were considered to be taught the same as the way in which the mentor midwives practiced. Thus clinical simulation increased the students' awareness of what to expect in the clinical area.

4.9.2 Research Question 2

Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?

The theme of Applied Learning re-emerged, plus two sub-themes (see Figure 16).

Figure 16: Applied Learning Theme (Students)

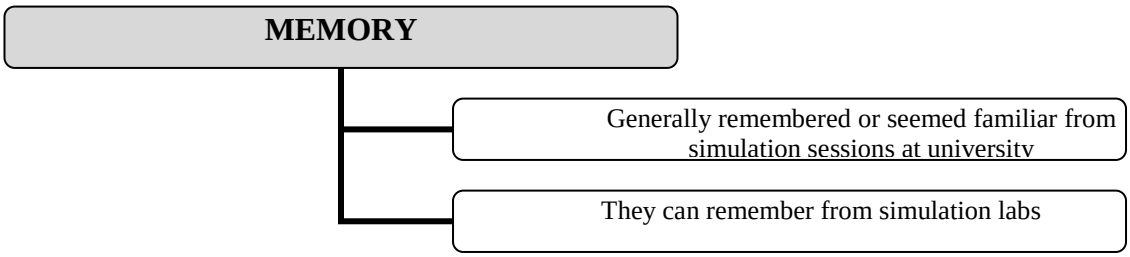


In one aspect, knowledge and understanding was applied in practice, in that students understood from simulation the process of childbirth and could thus recognise the physiological changes occurring during the birthing episode. However the students'

responses also illustrated how skills were largely applied in practice because they had developed the skills required for the task. Application of behavioural aspects of learning was not an opinion representative of the group.

In addition, the second theme to emerge relating to how simulation was applied in practice was termed as Memory. This theme, see Figure 17, had derived from the students making frequent reference to how they recalled aspects of simulation undertaken in the skills laboratory, whenever they were in clinical practice.

Figure 17: Memory Theme (Students)



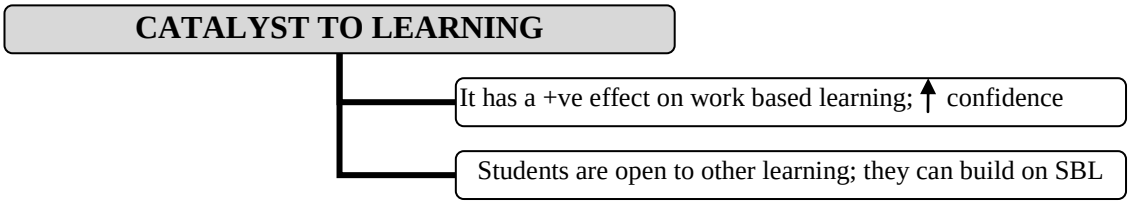
Overall, the students remembered or recalled simulation which helped them apply their learning because the clinical environment was familiar to them.

4.9.3 Research Question 3

How does clinical simulation affect work based learning?

From the issue of work based learning, one theme developed, that is, the theme of Catalyst to Learning (see Figure 18).

Figure 18: Catalyst to Learning Theme (Students)



Previously, from the mentors' individual interviews (Section 4.3.3) an assertion had been made that clinical simulation acted as a vehicle or catalyst to other learning in the workplace. Through deep reflection combined with the repetition evidenced by

categorical aggregation, the students' data supported the claim that simulation facilitated work based learning. The students perceived assistance at childbirth to be the most challenging skill they had to develop competence in, and as they had already simulated this process, they were more confident and welcoming of other learning in the workplace.

In summary, the one-to one interviews with student midwives generated seven themes relating to the research questions and including, their experience of simulation at the university.

In the section that follows, findings from the student focus group will be reported.

4.10 Student Midwives Focus Groups

Observational Data

As previously discussed in Section 4.4, focus groups are difficult to organise. However as the student midwives had supernumerary status, this was not perceived to be a problem and a day and time was chosen when there were several students on duty that had consented to participate in the study. Mid afternoon was deemed an optimal time to maximise attendance among the students (n=6), as this was during patient visiting time.

The patients' day room was selected for the focus group because it was larger and seldom used during afternoon visiting. On arrival, the wards were reasonably busy but it was confirmed by the midwives in charge that the students were free to participate.

4.10.1 Physical Setting

As described in Section 4.4.1, the patients' day room was situated at the entrance to the main corridor of the ward and due to its location, the noise was less audible than from the pool room which had been the venue for the individual interviews held previously. It was an afternoon in August 2009, and both the temperature and light in the room were comfortable. All of the participants (n=6) chose positions that resulted in the formation of a semi-circle, and I sat in the centre. The majority of student

midwives (n=5) adopted what I judged, to be upright postures whilst seated which may have been due to a keenness to participate or perhaps they were anxious. ST.MW 1 assumed a more slouching position with arms folded and legs crossed.

4.10.2 Participants and Activities

Table 4 below demonstrates the age range of the student midwives (n=6) - referred to as ST.MW1, ST.MW 3, ST.MW 4, ST.MW 5, ST.MW 6 and ST.MW 7 - as 18 to 40 years and their mentor midwife in clinical practice.

Table 4: Age of Students and Mentors of Midwifery Students

Age (years)	All cases (n=5)	Participant	Mentored or co-mentored by:
18-20	**2**	**ST. MW 1** **ST. MW 4**	**MW 1** **MW 8**
26-30	**1**	**ST. MW 6**	**N/A**
31-35	**2**	**ST. MW 3** **ST.MW 7**	**MW 4** **N/A**
36-40	**1**	**ST. MW 5**	**MW 5**

Following the one-to-one interviews with student midwives (n=5), the majority (n=4) then participated in the focus group. One student (ST.MW 2) declined, citing a change of off-duty as the reason. In two cases, the mentors of ST.MW 6 and ST.MW 7 had neither participated in the mentors' one-to-one interviews nor focus group, due to a lack of availability during the data collection period. The focus group interview (n=6) was conducted in relation to their first labour ward clinical placement.

4.10.3 Time and Emotions

The focus group lasted one hour. A minority of the students (n=2, ST.MW 3 and ST.MW 6) asked from the outset, the expected duration of the interview and indicated that they needed to return to the ward within a certain length of time. As their return was unnecessary it may have been construed as slightly 'non-co-

operative' behaviour although it materialised that these students felt uncomfortable about leaving a busy clinical area to be interviewed.

4.11 Focus Group Interview Data

The questions related to how clinical simulation had prepared the students for clinical practice inclusive of their experience of clinical simulation in the university. Also, application of their knowledge and understanding, skill acquisition and behaviour was addressed in addition to work based learning (see Appendices 8 and 9).

4.11.1 Experience of Clinical Simulation

First, when asked about their experience of clinical simulation in the university all students (n=6) indicated that they had found it beneficial to their learning experience providing similar responses such as,

> *It was useful in seeing the equipment they* [midwives] *use and everything and how it all happens* (ST.MW 4)

> *And it helped to break you in gently...I think it gave you a chance to try different techniques, manoeuvres as well, to practice on* (ST.MW 5)

The students were then asked how they felt about participating in clinical simulation within the university and they (n=6) collectively agreed that they had initially found it frightening. When asked why they thought they had been anxious or afraid, the students responded similarly to what they had said in the one-to-one interviews as demonstrated by STMW4,

> *Not knowing what to expect* (ST.MW4)

However when probed further, they all agreed that they were anxious about their performance. One student explained,

> *...do it properly and remember everything. But it wasn't like that - it wasn't like that* (ST.MW7)

The student midwives were then asked about 'realism' in relation to clinical simulation. They all (n=6) responded positively, either by nodding their heads in agreement with those who spoke or offered an opinion such as,

About as realistic as it probably could get (ST.MW 3)

The equipment in the room, it was the same and things (ST.MW 5)

4.11.2 Experience of Peer Review via Audio-Visual Unit

Enquiry was made about peer review in relation to the audio-visual feature that the university used in conjunction with simulation-based learning. Although collectively they indicated agreement, only half of the group (n=3) supported their non-verbal behaviour by making a statement, for example,

Watching, like you done it and then you watched and then you kept watching and then the repetition showing you the steps and the stages and stuff, I think that helped. Even although it wasn't always yourself you were watching, you were still getting to see the procedure again and again so that was good (ST.MW 6)

Some students (n=2) initially provided a negative viewpoint but then finished on a more positive note as exemplified by STMW4s comment,

That was bad [being filmed] *but it wasn't as bad as I expected it to be when we were watching it back because it was people watching your work as well... Yeah, learning by your mistakes and you would know not to do that when you were meant to do it kind of thing* (ST.MW 4)

The students then talked about their preference to work in either small or large groups during simulation-based learning. Two students (ST.MW 4 and STMW7) suggested they would have preferred to work in larger groups and two students (ST.MW 5 and STMW 6) indicated that they preferred working in smaller groups. The differing opinions were illustrated by two responses,

In the wee groups you didn't feel rushed or anything and also you knew you

were getting videoed but it wasn't too bad because it was only a handful of people and it wasn't the whole class (ST.MW 6)

See I like the big group because I feel, like when you said at the beginning [indicates towards ST.MW 4]*, when you said you learn from people's mistakes, not mistakes but just things...things you can remember* (ST.MW 7).

4.11.3 Clinical Simulation and Learning Domains

Next, they were asked to consider if clinical simulation had aided in either their knowledge and understanding of childbirth theory, skill acquisition and their role as a student midwife. Their responses related to each of the learning domains.

Two students offered an opinion about knowledge and understanding of the theoretical aspects of coursework, with comments similar to the following,

Just, I think it [theory] *all kind of fell into place once you see like the actual working of it* (ST.MW 4)

In relation to skill acquisition, the students were asked to consider how clinical simulation may have facilitated this aspect of learning. The more vocal members (n=3) of the group immediately offered their opinion,

The organisation of equipment and stuff (ST.MW 3)

Clamps...clamps and the scissors...opening and closing them (ST.MW 5 and 6 collectively)

When the quieter members of the group were asked, one student offered a different perspective,

In the University we're just taught the official way of how to practise but when you go out into hospital without having had that practice you might catch on obviously to a way in which a midwife works, which could be a bad technique (ST.MW 1)

Asked if clinical simulation had enhanced their awareness of their role and or their behaviour, the students did not respond directly to this question. Instead they talked about communication skills. One student summed up,

> *It depends on the person that's doing it. If you want to communicate with the doll and brush up on your communication skills, you can do it, but personally I never because I was too busy thinking about what I was doing with my hands and trying to learn* (ST.MW 3)

4.11.4 Preparation for Practice and the Role of Clinical Simulation

This then led to the notion of how clinical simulation prepared the student for practice. The majority (n=5) of students agreed that it had offered some preparation, for example,

> *I think having the simulation made me a lot more prepared. Obviously nothing's going to compare to actually going in and having a delivery but I think just for preparing you for it, it was quite important having like hands on...Like even knowing how to hold the equipment and how to use the equipment stuff made a big difference... You had an idea what was in a labour pack and how to set out your equipment* (ST.MW 6)

> *Plus you didn't feel when you went to your first delivery you were just starting like you know from scratch there and now and you weren't getting into the way of other people like you knew, you were prepped before hand and you knew about it* (ST.MW 3)

Additionally, some (n=3) students suggested that they felt confident as they had practiced on the manikin before, as demonstrated by comments from ST.MW5 and ST.MW7,

> *I didn't need as much assistance as I would have thought at that first delivery* (ST.MW 5)

> *I knew I had done it before and I knew she* [mentor] *was there you know to*

guide me but I don't know. It was scary (ST.MW 7)

4.11.5 Application of Learning Domains to Practice Setting

When asked what they considered to be the most important skill on this particular placement, all students (n=6) agreed that it was to assist women giving birth,

Deliver a baby! (Collective)

In relation to application of prior learning, when asked which aspects of clinical simulation that they had used in the practice area, three students considered how they generally remembered from the simulation sessions with comments such as,

I felt as if I'd done it before, I just knew what I had to do - maybe you know there's obviously the difference of a real live person but I kind of had an idea of what to do.....I wasn't completely lost in the situation obviously because you're familiar to it, but you just need a wee bit of reassurance (ST.MW 3)

They're [LDRP rooms] *all pretty much the same as the room there* [university] *and the trolley and everything and the packs are the same, when you open the packs so it kind of brought you back to everything you thought was going to be there was there, so it was quite reassuring* (ST.MW 6)

After a pause and further probing the students talked about which skills they applied in practice, in relation to the learning domains. To ascertain if they had specifically transferred knowledge and understanding of the theoretical aspects of childbirth, only one student offered a response which did not appear to be representative of the group,

I think personally it was probably more from simulation that I kind of applied knowledge...but I think first of all it probably would have been where the delivery is concerned, it would have been the simulation [skill] (ST.MW 3)

As this aspect of the discussion evolved, the majority of students (n=4) agreed that it was the skills aspect of learning that they had applied in practice. They repeatedly commented on the equipment and how they had used it, for example,

Clamping the cord (ST.MW 5)

Well I just I do it the exact same way I was shown on that first day and I think that will always stick with me. I mean even just the basic things like the way to put your sheet down and everything I think when you're in placement and a bit frightened, you're kind of rushed but because we had an idea in our heads what we had to do it was a lot easier (ST.MW 6)

In relation to the behavioural aspects of learning, the students did not indicate if this was an applied skill. However, they had not passed a direct opinion on this when asked if clinical simulation had facilitated role awareness within the university. Similar to learning at university, when asked if and how they had applied communication skills in practice, they (n=6) reminded that they had not developed this skill from clinical simulation,

No because that person [manikin] *didn't exist* (ST.MW 6)

Yea maybe if she'd [woman] *asked you something about the whole process of it like something you'd done in clinical simulation, knowing the normal kind of process, you could maybe explain some of the process of it - do you know what I mean? But I don't think it helps like interacting with her* (ST.MW 4)

4.11.6 Clinical Simulation and Work Based Learning

As previously stated in Section 4.2.3, the mentors expressed concern that students were often 'thrown in' to childbirth situations. When asked if they (student midwives, n=6) felt this had been the case, the majority (n=5) shook their heads in disagreement suggesting that they had not felt daunted by their experience as new student midwives. One student appeared to speak for the group,

I think that whole mentality maybe comes from the fact that obviously we are first years and doing quite a lot of things quite early on but obviously with the simulation, I don't think we would have been any better prepared (ST.MW 3)

However all (n=6) students agreed that they were frightened at the start of clinical

placement and assisting women to give birth. Their responses (n=6) were similar to how they had felt when undertaking simulation-based learning in the university (Section 4.8.1). This was reflected in the response from STMW5,

> ...*frightened of making mistakes* (ST.MW 5)

All students (n=6) indicated that they felt more confident than if they had not had clinical simulation with comments such as,

> *It lets you organise yourself with everything and you're taking all the small practical steps up into the reality of delivering a baby* (ST.MW 1)

> *You felt more confident when you first went out because you'd actually had that practical session* (ST.MW 6)

When asked if they felt clinical simulation had facilitated work based learning, only three students offered an opinion suggestive that it had a positive effect with comments such as,

> *Well I felt that* [it helped with work based learning] - *I have been doing other things, it helped me with that* (ST.MW 3)

> *It isn't just deliveries, I'm caring for them* [women] *and been to theatre too* (ST.MW 5)

However, another respondent disagreed,

> *...I don't think I've been looking to learn other things apart from getting deliveries and getting used to it...I was never given the opportunity so I felt it was just like, even my mentor, she was kind of focusing on me getting deliveries so I don't even think I've learned that much* (ST.MW 6)

As previously discussed in Section 4.8.6, one student had indicated that she perceived the workplace environment to be, at times, hostile. Also, the mentors' focus group had raised concern about their teaching role during periods of heavy workload and abusing students' supernumerary status. Therefore the group were

asked what they felt of the workplace as a learning environment. The majority of the group (n=5) agreed that it was conducive to learning although one student disagreed. As this student had not been interviewed individually, she had not raised this issue previously,

> *I think it's* [workplace] *the best place to learn but then again my experience was maybe, some other midwives were feeling they didn't need us and we weren't getting the experience we should be because they felt they didn't want to be asking them* [women] *'can the student do it'? I don't think there's as much learning as I would like* (ST.MW 6)

This last comment generated discussion within the group in relation to learning in clinical placement, with all students apart from ST.MW 6 agreeing that they felt the clinical setting met their learning needs. The participant who had originally raised this issue did not agree or disagree.

4.11.7 Other Issues

Lastly one student suggested that mentors should be made more aware of the simulation-based learning that the students received, and another student supported her in this. Their responses echoed the anxiety they experienced during simulation and also their level of perceived preparedness for practice. ST.MW3 explained,

> *Another thing I think I would have liked too is for the mentors, to actually see the simulation - if they haven't seen it already - to see what we actually go through before we come, so they know what we have done, rather than when we come instead of asking have you done this, have you done that, they know what we've done. They know what to expect from us as well* (ST.MW 3)

4.11.8 Summary

The clinical area had been deemed busy on the day of the focus group with student midwives, yet it went ahead without delay or interruption. In the main, the students seemed enthusiastic about participating, and provided some insight into how they felt as a group. In some instances, this supported opinions previously expressed when

interviewed individually and at other times, did not. In relation to preparation for practice, the focus group provided positive indications that clinical simulation had prepared them, particularly by increasing their confidence because they felt a sense of familiarity in the clinical area. The students expressed consistent views on the application of clinical simulation to practice, indicating that it had been mainly the practical aspect that they applied in the clinical setting. A discussion around the workplace and its capacity as a learning environment indicated that the majority of students felt the clinical area had met their learning needs.

Other issues raised by the group, centred on their preference for working in small or large groups during simulation-based learning sessions in the university and how mentors should be made aware of clinical simulation and the skills they had developed.

4.12 Development of Themes

Methodological triangulation of data through the student focus group confirmed the interpretations made from the one-to-one interviews. Although only seventeen issues were identified from the frequency of repeated data in comparison to twenty two issues derived from individual interviews, seven themes re-emerged, that is: Experience of Simulation; Realism; Theoretical Learning; Insight; Applied Learning; Memory; and Catalyst to Learning. Thus limited new light about the phenomenon of the application of clinical simulation to the clinical setting was shed.

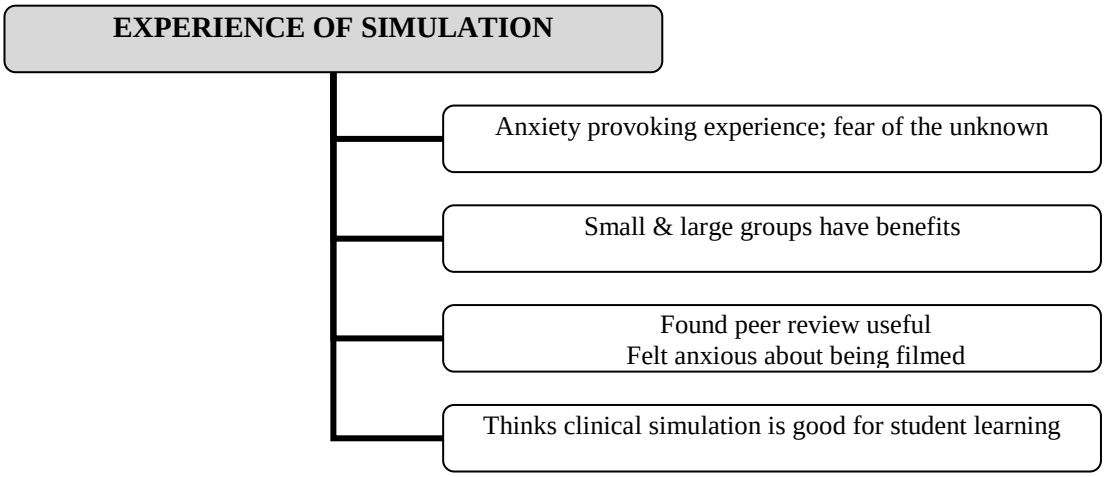
The themes will be outlined in relation to what was said in the focus group that had not been previously said in individual interviews, as their interpretation remains largely the same. These are explained in relation to the research questions specific to the students.

4.12.1 Research Question 1

How do students perceive simulation to prepare the student midwife for clinical practice?

With regard to the theme of Experience of Simulation, the same codes were repeated in the focus group in comparison with the interviews. The only additional information that came from the analysis was about the size of groups that were used during simulation-based learning in the university (see Figure 19). Simulation sessions involve small groups to not only endorse the principles of small group teaching but to replicate clinical practice where typical staffing levels comprising a midwifery team would not normally exceed six.

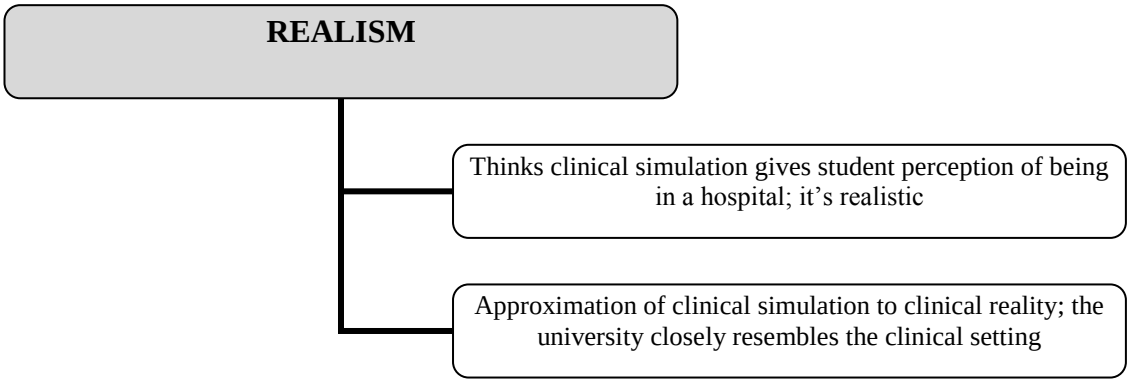
Figure 19: Experience of Simulation Theme (Students)



From the data, the smaller group of four to six was perceived by some students as a limitation to learning as opposed to a larger group. Although considered an unintended learning outcome of the planned simulation activity, incidental learning through the process of making mistakes and the students' reflection and learning from the experience, was seen as an advantage. Thus the capacity to learn from the wider team was considered a more enriching experience for the student. Alternatively, some of the quieter students preferred the anonymity offered by a smaller group.

In relation to the theme of Realism (see Figure 20), the students were consistent in the viewpoint they gave at individual interview.

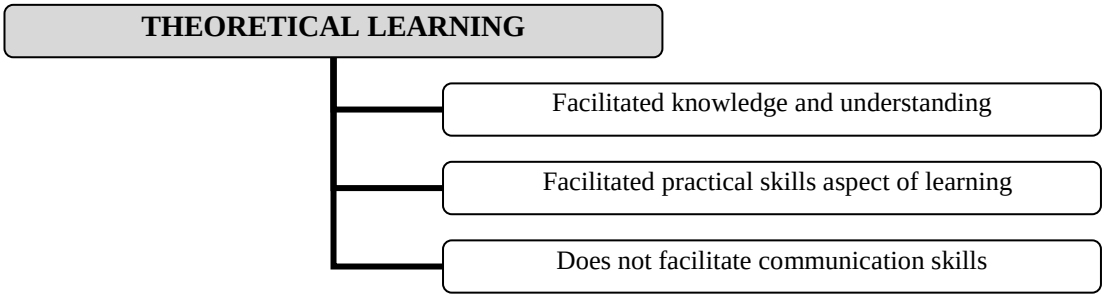
Figure 20: Realism Theme (Students)



As before, whenever the students' experience of the skills laboratory and simulation-based learning contained an element of realism, clinical simulation provided them with a sense of being in a hospital setting. The issue of any artificiality associated with clinical simulation was not representative of the focus group.

Pertaining to the type of learning that simulation facilitated within the university, again knowledge and understanding and the skill aspect of the learning domains, were linked, facilitating both types of learning simultaneously (see Figure 21).

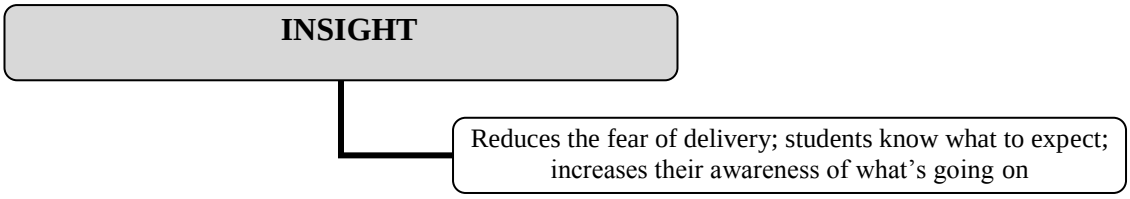
Figure 21: Theoretical Learning Theme (Students)



However, the focus group data did not demonstrate that clinical simulation contributed to the development of professional awareness, inclusive of team working. Also, the group explicitly expressed that communication skills were not facilitated either.

The theme of Insight, see Figure 22, recurred in relation to how simulated practice provided a basic experience in assistance at childbirth comparable to real life practice and eliminated some of the fear of the unknown associated with the clinical setting.

Figure 22: Insight Theme (Students)



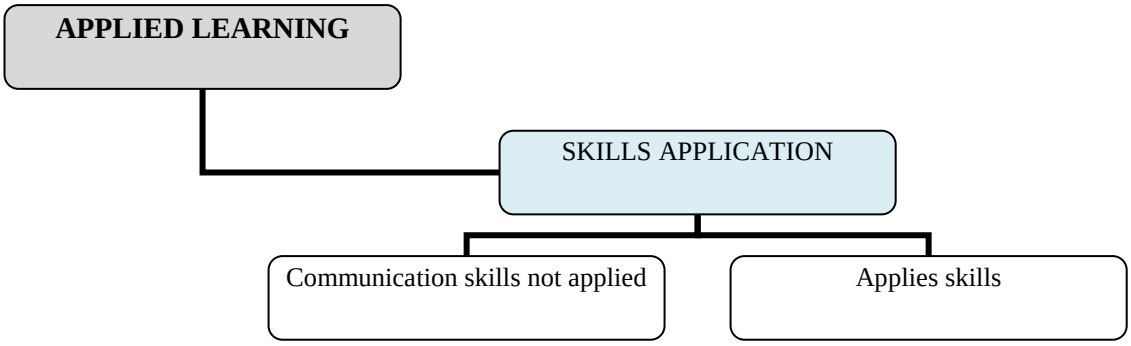
The depth of analysis was shallower than the interviews as the content analysis did not demonstrate any other factors that supported this assertion; just that it had provided awareness of what to expect in the clinical area.

4.12.2 Research Question 2

Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?

The themes of Memory and Applied Learning re-emerged as well as the sub-theme of Skills Application (see Figure 23). As in the individual interviews with students (Section 4.9.2), the focus group supported these themes except in one aspect. The view that knowledge and understanding, derived from simulation-based learning, was applied in practice was not representative of the group. More so, that it was the practical skill that was applied.

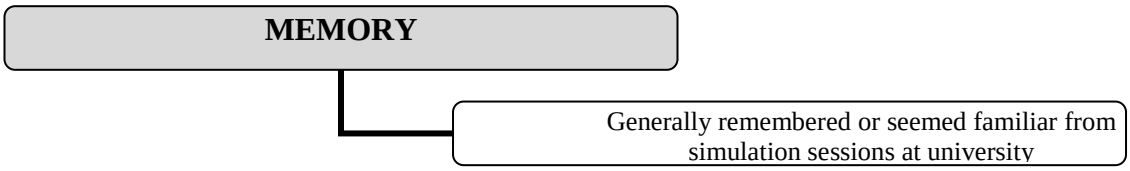
Figure 23: Applied Learning Theme (Students)



In addition to the sub-theme of Skills Application, the student focus group confirmed the notion that communication skills were not transferred from clinical simulation. It was strenuously expressed that clinical simulation did not facilitate communication in the practice setting.

In addition, the second theme of Memory as illustrated in Figure 24, demonstrated how the students remembered simulation from the university skills laboratory whenever they were in clinical practice. Their comments were non-specific in relation to the learning domains.

Figure 24: Memory Theme (Students)



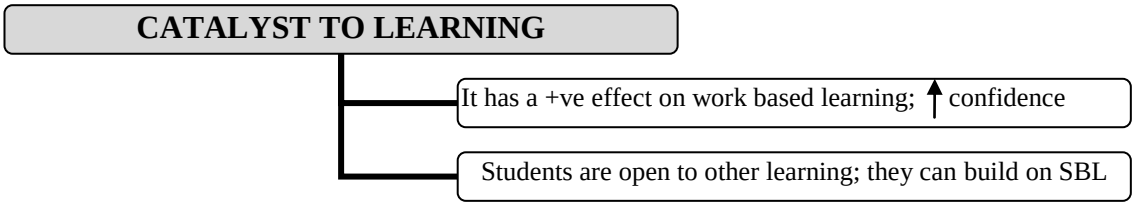
No further insight relating to this theme was offered by the focus group.

4.12.3 Research Question 3

How does clinical simulation affect work based learning?

In relation to work based learning, the focus group data generated the theme of Catalyst to Learning. The same codes were aggregated in the focus group in comparison with the interviews therefore no new insight emerged to extend understanding of how simulation facilitated work based learning (see Figure 25).

Figure 25: Catalyst to Learning Theme (Students)



Lastly, categorical aggregation brought to light a small or subtle distinction from what students had said in individual interviews. Although the coded datum - 'mentors should know about clinical simulation' - was repeated across the data set, it did not pull together with other themes but sat in isolation. However it was not deemed an outlier, but more of a nuance. The students felt mentors should be made aware of the skills they (students) had developed prior to clinical practice. Through deep reflection of the transcriptions and the manner in which it was said suggested a feeling of frustration that their (students) perceived rigorous experience of simulation-based learning, was either not appreciated by the mentors, or at times they felt undervalued in the clinical area. This was substantiated by the students' experience of clinical simulation, frequently described as anxiety-provoking and

perhaps challenging, in addition to the feeling of been undervalued, as cited separately by two students. Thus they felt strongly that mentors should know what they ‘go through’ before they attended the clinical placement.

In the sections that follow, findings and themes from one-to-one interviews with the midwife lecturers (n=2) will be reported.

4.13 Midwifery Lecturers Individual Interviews

Observational Data

Interviews with midwifery lecturers (n=2) took place at the university in November 2009. Due to an unforeseen increase in the lecturers' workload (including mine in my substantive post), availability to participate in the study during the students' clinical placement was compromised.

Although the university carried relevance to the case, it was not of particular interest to the study therefore its impact on the data collected from lecturers was considered minor. Stake (1995, p.64) suggests that in instrumental case study, some contexts are less important to the study than others. In this case study, the university was deemed less important than the context in which clinical simulation was applied, that is, the clinical area. Therefore observational data relating to the physical setting of the university have not been provided. The interviews with lecturers were conducted in relation to the cohort of student midwives contained within the case and their recent clinical placement, for which the participating lecturers (n=2) had provided simulation-based learning and visited them in the practice placement (see Appendix 9).

4.13.1 Participants and Activities

Table 5 below demonstrates the age range and number of years of lecturing experience of the midwifery lecturers (n=2) - referred to as LECT 1 and LECT 2 - as 45 to 55 years. In addition, it displays those students that lecturers (n=2) visited in practice.

Table 5: Age and Midwifery Lecturer Experience

Age (years)	All cases (n=2)	Participant	Midwifery Lecturing Experience (yrs)	Students visited in clinical placement
45-50	**1**	**LECT 1**	**4**	**ST.MWs 3, 5 & 6**
50-55	**1**	**LECT 2**	**9**	**ST.MWs 1, 2, 4 & 7**

4.13.2 Time and Emotions

Each interview with lecturers lasted approximately thirty minutes and took place on the same day, following an in-service training morning which they had both attended. Both participating lecturers had enjoyed the training day and appeared relaxed when they arrived for interview in an office of the university that neither I nor they used for our day to day work. At each interview, the lecturers sat side by side with me and maintained good eye contact throughout.

4.14 Interview Data

At the outset of both one-to-one interviews, lecturers (n=2) were asked what they thought a student midwife considered to be the most important skill that they would undertake when about to embark on their first labour ward experience. Both alluded to various skills inclusive of assistance at a birth, as explained by LECT 2,

> *Aseptic technique, how to put on gloves, how to open packs and access with, or assistance with the normal delivery of a baby* (LECT 2)

LECT 1 described the basic format of how the simulation session took place within the university skills laboratory,

> *They get shown how to deliver babies through the simulator, we do a mock delivery and where to stand and then they get the chance to participate in a scenario with us helping them. The main thing is that the students worry about where to stand, where to put their hands, how to open the cord clamps, how to use the equipment, how to swab the woman down even. All that can be taught very nicely in clinical simulation especially for students who, let's face it are going into a very hands on profession* (LECT 1)

Thereafter, the interview followed the topics outlined in Appendix 8. Their responses are provided below.

4.14.1 Concept of Clinical Simulation

Both lecturers were asked to express their views about the concept of clinical simulation. They offered positive comments relating to the learning aspects of clinical simulation as reported by LECT 2,

> *I think it's a great idea. I think it's a wonderful experience for student midwives. It gets them into a real experience and gives them confidence, builds their confidence. It allows them to deliver in skills prior to going into the clinical environment. It also gives them an opportunity to show any fears that they have and also if they do anything wrong it can be corrected in the clinical simulation lab prior to going into practice... as for enhancing the skills of the student, which we're all about and making it very much more a good learning environment I think it can only add...It brings a lot of multidisciplinary working together. It's great for the student for role play and you can see the student in you know decision making skills, enhancing their leadership qualities* (LECT 2)

However, this question regarding the concept of clinical simulation, captured a shared view of the high levels of manpower required to provide simulation-based learning, as demonstrated by the following response,

> *It is labour intensive plus, plus, plus. You couldn't, for a class of 20 or 25 students - which we have to get through - it takes a lot of time to go through - maybe say a week you...to get the students through all the skills that we need for intrapartum care...and that's the main problem they've not just got to learn how to deliver babies they've got to learn a whole load of other stuff* (LECT 1)

LECT 2 explained why simulation sessions were more time consuming in her statement,

> *It is only effective in small groups* (LECT 2)

Asked how both contexts compared, that is, the university skills laboratory and the hospital maternity wards, both agreed that the university skills room and the clinical

environment were comparable. LECT 1 described the physical aspect of both environments,

> *...they're quite impressed even from going from the clinical setting how similar it is even down to the same kind of material the curtains are used and the same lockers, same beds that are used in the practical area* (LECT 1)

The perceived advantage of having parallel environments was captured in the response by LECT 2,

> *I think it helps if it's very, very similar. It's knowledge about the hospitals that you're sending students to and if it imitates the hospital environment then the student has got that initial fear that it makes an easier transition into the hospital environment, reduces their fear factor. It's a familiar set up, she knows where everything is* (LECT 2)

4.14.2 Clinical Simulation and Learning Domains

The lecturers were then asked to consider how clinical simulation may assist in the development of knowledge and understanding, skills and behaviour within the theoretical aspect of the students' programme. Both agreed that clinical simulation would enhance the lecture approach to teaching and also develop skills. This general feeling was described by LECT 2,

> *The clinical skills emulate or build on the theory...I think lectures are fine but we all know that lectures, within 20 minutes a student has dropped off haven't they? I think your lecturer, the lecture itself sets the tablet of stone but the practical skills and I think we are remembering that it's fifty per cent theory, fifty per cent, practical skills, most of the students love the practical experience and it reinforces the teaching and the lecture that they've had. It lets them see that it does work, the theory link with the practice. I think it extends their knowledge base...it allows their knowledge base to somewhat gel you know* (LECT 2)

LECT 1 offered a similar viewpoint,

...you enjoy doing clinical simulation because you can see it clicking in a student's you know face, you know all of a sudden...you've been explaining about deliveries and how you know internal and external rotation and all the rest of it and then suddenly you can see it clicks with a student within the clinical simulation lab (LECT 1)

Only one lecturer commented on the possible impact of clinical simulation on professional behaviour. Her response also supported the practical and knowledge aspects of learning offered by simulation,

Well the students have the knowledge...Then they actually start to go up to the skills you know observing and they take part in the skills and they learn you know the sort of manual, dexterity skills, learning about professional attitudes and also they learn about, of, different skills they can put into context in here as well as actually just the process of mechanically delivering a baby and hopefully their behaviour from that will be more confident (LECT 1)

4.14.3 Preparation for Practice and the Role of Clinical Simulation

The issue of clinical simulation and its role in preparing students for practice was probed. Both lecturers gave varied responses, but in the main they suggested that confidence and the opportunity to practice a variety of skills were contributing factors to preparing students for clinical practice. LECT 1 reported,

Hopefully it will give the student some confidence. I think that's a big key and reinforce what they've learned...if they're using the same equipment as they do in the clinical simulation, I mean things like how to move the beds around and you know how to put legs up in stirrups and things are very valuable tools, if it makes them feel a bit less useless when they go into, the clinical area you know because it's a similar environment. Now they know that we encourage women to walk about and be more mobile in labour...we can show them different techniques you know to do that later on but actually they learn that with their mentor but it is a good starting block for them definitely... It prepares them ... it's a visual aid for students to learn (LECT 1)

4.14.4 Application of Learning Domains to Practice Setting

Both lecturers were asked how they thought a student may apply or transfer clinical simulation to the workplace. One lecturer (LECT 1) suggested that the application of practical skills to the workplace was more likely to be applied whereas the other (LECT 2) indicated that both skills and knowledge were utilised in the clinical setting. Their opinions are expressed below,

> *It's where to stand, it's how the other midwife or their midwife mentor can assist them, when the adrenalin kicks in and they're doing this for real with a mum and baby - the skills that they have learned in the clinical simulation lab will kick in, how to use the instruments, how to move the cord clamp, cut the cord, how to deliver the placenta you know that kind of thing* (LECT 1)

> *Well I think the knowledge they gain in the University and the practical skills to a certain aspect, and that's transferring that into the working environment* (LECT 2)

Both lecturers volunteered that clinical simulation played a significant role to patient care and safety. LECT 2 explained,

> *From the safety aspect it enables you to see the student in the 'as near' clinical environment as you possibly can and if there is any alteration to their practice I think it's ideal to eradicate or improve these practice skills* (LECT 2)

4.14.5 Clinical Simulation and Work Based Learning

Initially the lecturers (n=2) were asked what they thought of the clinical environment as a teaching and learning environment for a new student midwife. Neither answered the question posed to them. However this was not perceived as avoidance, but rather that they were still focussed on the university as a clinical learning environment. LECT 2 explained,

> *The clinical environment, you can never remove the clinical environment but we can make the simulation lab as near the clinical environment as possible. But we can never take away that human aspect of it, whereas you know you're*

simulation is not a human but it's given, it's still going on the skills so that when they do come in contact with the human person that it's much more easier, the transition of it (LECT 2)

When explored further, one lecturer (LECT 1) compared the clinical learning environment to the skills laboratory at university, which perhaps illustrated her thoughts of the workplace and how it lent itself to the students' learning,

...we're not getting interrupted to go and look after somebody else in labour or go and do you know or go and see Mrs so and so or whatever, it's very much a controlled environment [skills lab]*...we can control the environment...so it is a good stepping stone but obviously there's no way that that would ever replace the clinical setting* (LECT 1)

In relation to clinical simulation and its affect, if any, on the students' openness to other learning in the workplace, the lecturers indicated that it was a means to other learning there,

...the mentors and real women and babies will teach, they'll move that on, it's just a very much stepping stone for that (LECT 1)

Well it's another route for the student. It's another way of developing the students' knowledge base. Sometimes when you use the simulation it builds on their motor skills and their practical skills and so far I've found that it encourages the student then to go on to use other skills like IT skills and also you know learning packages to assist them (LECT 2)

4.14.6 Effect of Clinical Simulation on Teaching Role

The lecturers were then invited to comment on how they perceived clinical simulation to impact on their teaching role in facilitating the acquisition of knowledge and skills. Both provided varied responses,

...clinical simulation is our, stepping stone across the clinical setting...mentors are the most skilled people but we have to give the students that transition, that

stepping stone to get to the clinical area...but we have got to say that there is limitations, it is a stepping stone, it's not instead of clinical practice (LECT 1)

They suggested that it was an adjunct to their teaching role as illustrated more explicitly by LECT 2,

I think via the simulation as well, I think it only enhances my teaching and learning...hopefully my theoretical does, I mean that's enhancing the skills as well, I mean I think it works as a marriage, it's working very much hand in hand with your theory and building on your clinical skills. I don't think it will ever take away my theoretical role - it can only enhance my theoretical aspects of the role (LECT 2)

4.14.7 Other Issues

Lastly, the lecturers were asked to consider any other issues relevant to clinical simulation. Both had nothing further to add. However when asked what they considered to be the most important aspects that had been discussed at the interview, they offered similar viewpoints, in relation to manpower requirements and staff development in relation to clinical simulation,

The main issues are yes, the students say it prepares them for practice. The main issues from a lecturers point of view is actually the time factor and also the limitations of the clinical simulator, it's only a stepping stone, it's not to replace reality (LECT 1)

4.14.8 Summary

The interviews with lecturers provided their perspective on clinical simulation. Both lecturers demonstrated enthusiasm for simulation-based learning in the university setting, believing it prepared the students for practice. In relation to learning domains, they agreed that clinical simulation facilitated knowledge and understanding of the theoretical aspects of childbirth in addition to skill acquisition. However, similar to interviews with students and mentors, the effect of clinical simulation on professional behaviour was not made explicit at interview.

When the topic of work based learning was introduced, the clinical setting was alluded to as an environment where students and mentors were often interrupted as other tasks got in the way of learning opportunities. However simulation was considered to facilitate work based learning and was a means to other learning, inclusive of deeper learning strategies such as accessing further knowledge and using information technology. The contribution of clinical simulation to patient safety was seen as an important feature and also both lecturers concluded that it enhanced their teaching role. It was agreed that simulation-based learning involved excessive demands on their time.

In the next section, the analysis of interview data from the midwife lecturers is presented.

4.15 Development of Themes

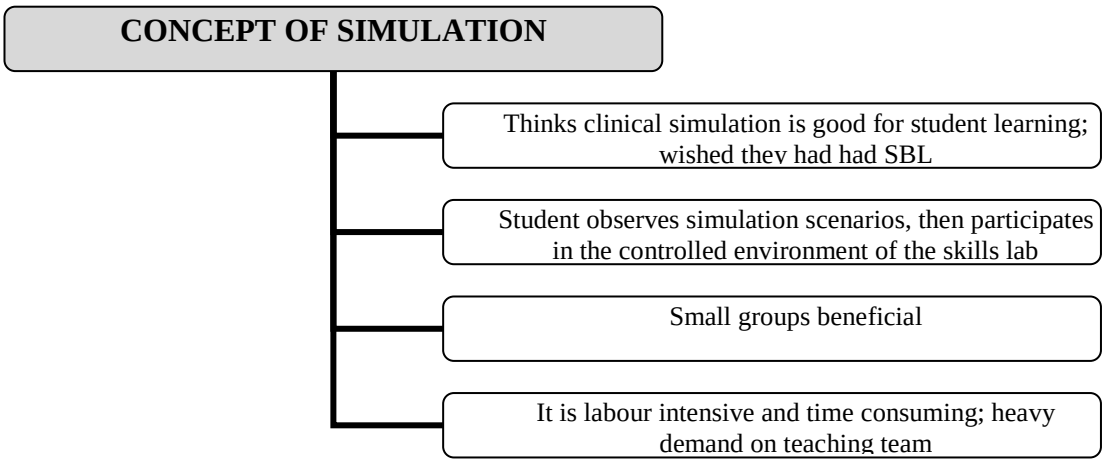
Seven new codes, that had not been previously used, were created to code the transcripts from the lecturers' interviews. From the aggregate of codes, eighteen issues emerged. Certain themes that had previously been established from the other data sets, such as Realism, Theoretical Learning, Insight and Applied Learning, recurred. In total, six themes emerged, two of which had not previously been recognised within either the mentors' or students' data. The new themes were identified as the Concept of Simulation and Interfacing. However, as the lecturers' interviews also added new insight into some of the existing themes, all themes are explained in relation to the research questions (specific to lecturers) below.

4.15.1 Research Question 1

How do lecturers perceive simulation to prepare the student midwife for clinical practice?

The first theme to emerge was the lecturers' perception of the Concept of Simulation and how they felt it contributed to the students' preparation for practice. From the codes in Figure 26, this theme evolved from the notion that the midwifery lecturers considered simulation to be beneficial to the students' learning. The lecturers expressed an opinion that conceptually and contextually, clinical simulation offered a richer and more engaging learning experience to students as well as lecturers.

Figure 26: Concept of Simulation Theme (Lecturers)

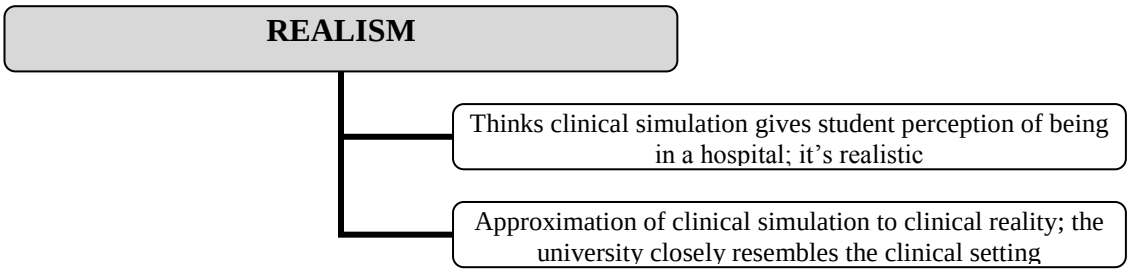


Interpretation of the data further demonstrated that the controlled environment of the university, inclusive of small group teaching, played a vital role in preparing the student because it was free of interruptions and distractions were also kept to a minimal. Although the reality of clinical practice was acknowledged for having multiple distractions such as ringing telephones and patient call buzzers, it was deemed important that the student was able to focus without interruption during the pre-practice placement phase. These variables could be added to the skills laboratory as the students' confidence to cope developed within the controlled context of the university setting.

In addition, the small groups were considered to be an adjunct to the concept of the controlled environment, both practically and psychologically. In relation to the latter, psychologically the small groups allowed all students to participate whereas in a larger group, dominant members could take over. Conversely, small group teaching and simulation-based learning were seen as labour intensive and time-consuming. Although simulation was perceived to provide a positive experience to both students and lecturers alike, lecturers acknowledged that there were other important subjects that were part of the curriculum. Despite the overall optimistic opinion of the concept of clinical simulation, the lecturers' interviews suggested it utilised more time and effort than other teaching and learning strategies within the undergraduate midwifery programme.

Secondly, the theme of Realism re-emerged. Similar to the mentors' and students' interviews, the theme was pulled together by the same issues or codes (see Figure 27) but with a difference.

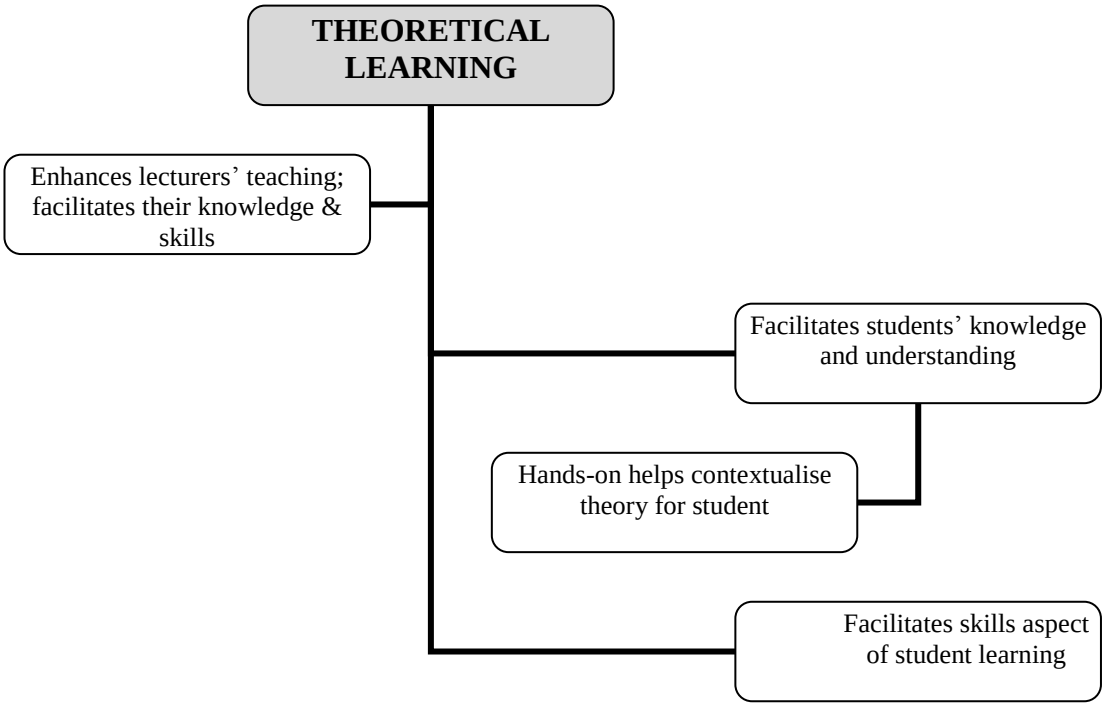
Figure 27: Realism Theme (Lecturers)



Analysis suggested that clinical simulation provided the students with the perception of being in a hospital environment due to the similarities between the skills room and the labour delivery suite, in addition to the hands-on experience that simulation offered. Overall the realism that clinical simulation offered was considered positively, and the issue of inaccuracy or unnaturalness did not surface as it had in interviews with students and mentors. As clinical simulation was described (by the lecturers) as 'like for like' when compared to the reality of clinical practice, consideration to the students' perception of realism and simulation did not come to light.

With regard to the type of learning that clinical simulation facilitated in preparation for clinical practice, the assertion was made that clinical simulation facilitated knowledge and understanding and skill acquisition in the university. However this did not apply exclusively to the students' learning. It was also applicable to the lecturers' own learning, by enhancing both their knowledge and skill performance and overall teaching (see Figure 28).

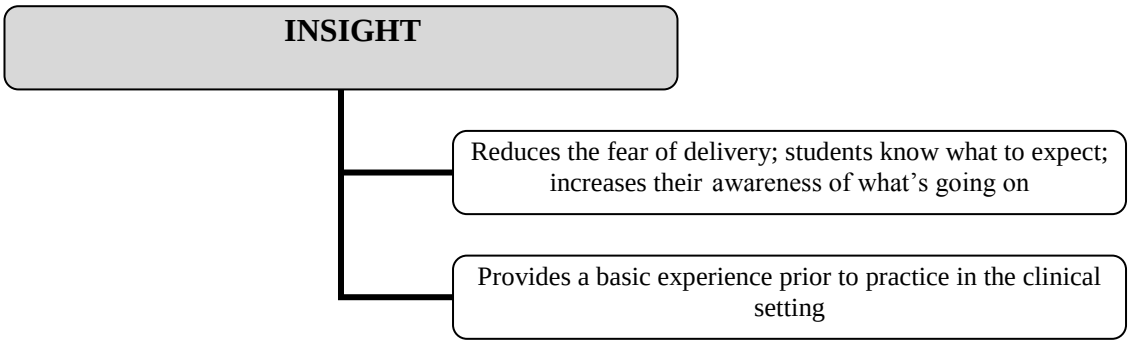
Figure 28: Theoretical Learning Theme (Lecturers)



There was recurrent reference made to how clinical simulation assisted in the students' understanding of the theory and practice related to the process of childbirth, in comparison to conventional methods of teaching such as lectures. After further deliberation, it transpired that lecturers felt the lecture provided the initial basic concept but until the student had simulation-based learning, possibly only then did they understand the theoretical principles of the lecture. Clinical simulation was considered to bring theory and practice together, by providing a sudden grasp and comprehension of the subject matter.

Lastly, Insight (see Figure 29) re-emerged in relation to how clinical simulation prepared the student midwife for practice.

Figure 29: Insight Theme (Lecturers)



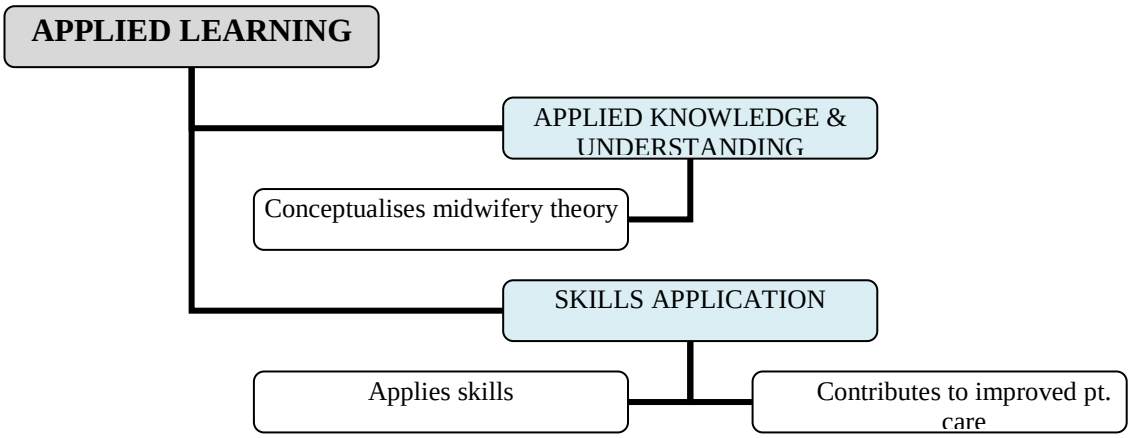
The coded data above recurred in relation to how clinical simulation provided knowledge and familiarity of the clinical area prior to placement. However after listening intensely to the interviews given by the lecturers, my interpretation of the meaning of 'basic' was more in the sense that the experience was rudimentary rather than fundamental or essential.

4.15.2 Research Question 2

Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?

The theme of Applied Learning re-emerged (see Figure 30), giving rise to two sub-themes, that is, knowledge and understanding and skills.

Figure 30: Applied Learning Theme (Lecturers)



As illustrated above, the lecturers perceived students applied knowledge and skills derived from simulation-based learning, to clinical practice. Also, and as had previously transpired in interviews with mentors, those skills that had been acquired in the university contributed to safer patient care. This was considered as such because poorly developed skills were readily identified and corrected through repeated practice on the manikin prior to attending clinical practice.

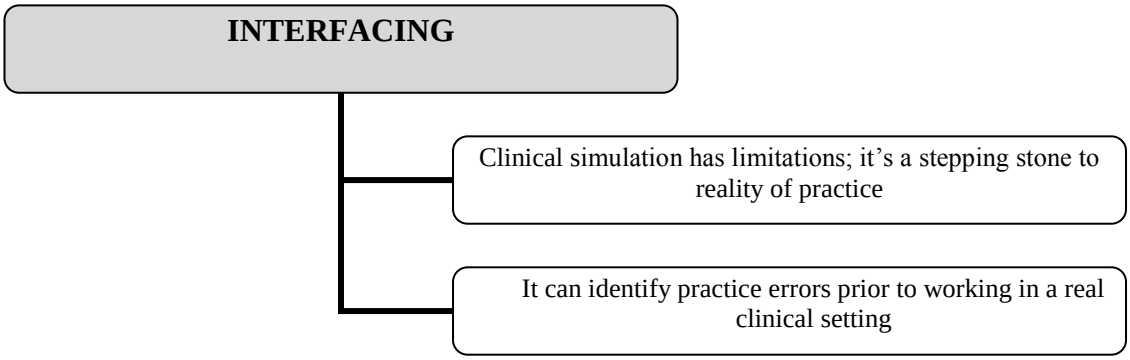
The behavioural aspects of learning, although alluded to by one lecturer, did not emerge as a relevant issue.

4.15.3 Research Question 3

How does clinical simulation affect work based learning?

From the category of work based learning, only one theme emerged which was described as ‘Interfacing’ (see Figure 31). Metaphorically it captured the notion that clinical simulation was ‘sewn’ between the two layers representing the university and clinical practice.

Figure 31: Interfacing Theme (Lecturers)



Previously, from the mentors' and students' interviews I had made the assertion that clinical simulation acted as a catalyst to other learning in the workplace. However there were no supporting data to uphold the claim that simulation facilitated work based learning in that sense. Except through deep reflection of the lecturers' responses, in addition to the repetition of coded datum, did it emerge that simulation made a contribution to work based learning, even if indirectly.

Clinical simulation was conceived by the lecturers as having an influence on closing what they alluded to as a theory practice gap between the university and the workplace or professional practice. Supporting this claim, was the repeated opinion of lecturers that clinical simulation was a 'stepping-stone', which was interpreted as a hypothetical bridge between theory and practice that offered students' experience of a particular aspect of professional practice. However it was seen largely as only that, that is, a simple experience of which the students would easily move on from once in the workplace. It was acknowledged how clinical simulation was limited in that it only helped to develop certain skills but did not lend itself to the range of skills necessary to provide intra-partum care that supported normal physiological labour.

However the issue of skill acquisition and rectification of errors prior to their application to clinical practice was perceived to relate to the theme of Catalyst to Learning. Apart from improving patient care, the development of skills to a standard that could be applied in clinical practice would enable a smoother transition to the workplace and allow the student to build on existing knowledge and skills. Thus

whilst not viewed as a catalyst to professional learning by the lecturers, clinical simulation was seen as an interface that enabled the student to seek other learning.

Conclusion

In this chapter I have reported the findings and development of themes obtained from data collected at one-to-one interviews and focus groups in addition to the description of contexts and observations. In relation to the main research questions, the integrated data from mentor midwives, student midwives and midwifery lecturers are presented in the next chapter.

Chapter 5: Integrated Data

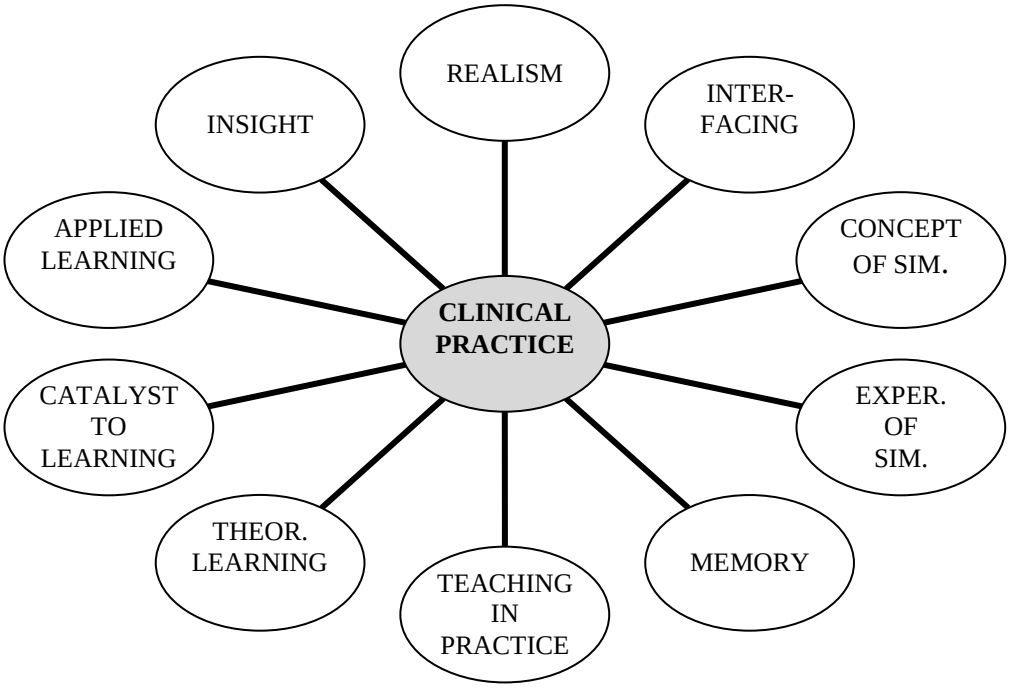
Introduction

In this chapter, data from all participant groups has been compared and contrasted to identify correspondences and patterns (Stake 1995, p. 78). The integrated data from mentor midwives (n=7), student midwives (n=6) and midwifery lecturers (n=2) are presented in the order of total themes, the distribution of themes and how these related to the study's research questions.

5.1 Total Themes

From the individual interviews with mentor midwives, students and lecturers, in addition to focus groups with mentor midwives and students, a total of ten themes emerged that centred on the application of clinical simulation to clinical practice (see Figure 32 below).

Figure 32: Total Themes



As previously stated in Section 4.6, Robson (2002, p.483) suggests that data collected from interviews are stronger when participants are interviewed alone compared to when interviewed in a group. In this study, no new themes emerged from focus group data that had not previously emerged from individual interviews. However the focus groups were not considered weak. Instead they provided deeper understanding of the issues and verified findings through triangulation of the data.

5.1.1 Distribution of Themes

From Table 6 below, some themes such as Realism, Insight and Applied Learning persisted across all three data sets suggesting these issues were important to all groups.

Table 6: Distribution of Themes

Theme	Individual interviews with students	Focus gp with students	Individual interviews with mentors	Focus gp with mentors	Individual interviews with lecturers
Realism	√	√	√	√	√
Insight	√	√	√	√	√
Concept of Simulation					√
Experience of Simulation	√	√			
Theoretical Learning	√	√			√
Applied Learning	√	√	√	√	√
Memory	√	√			
Catalyst to Learning	√	√	√	√	
Teaching in Practice			√	√	
Interfacing					√

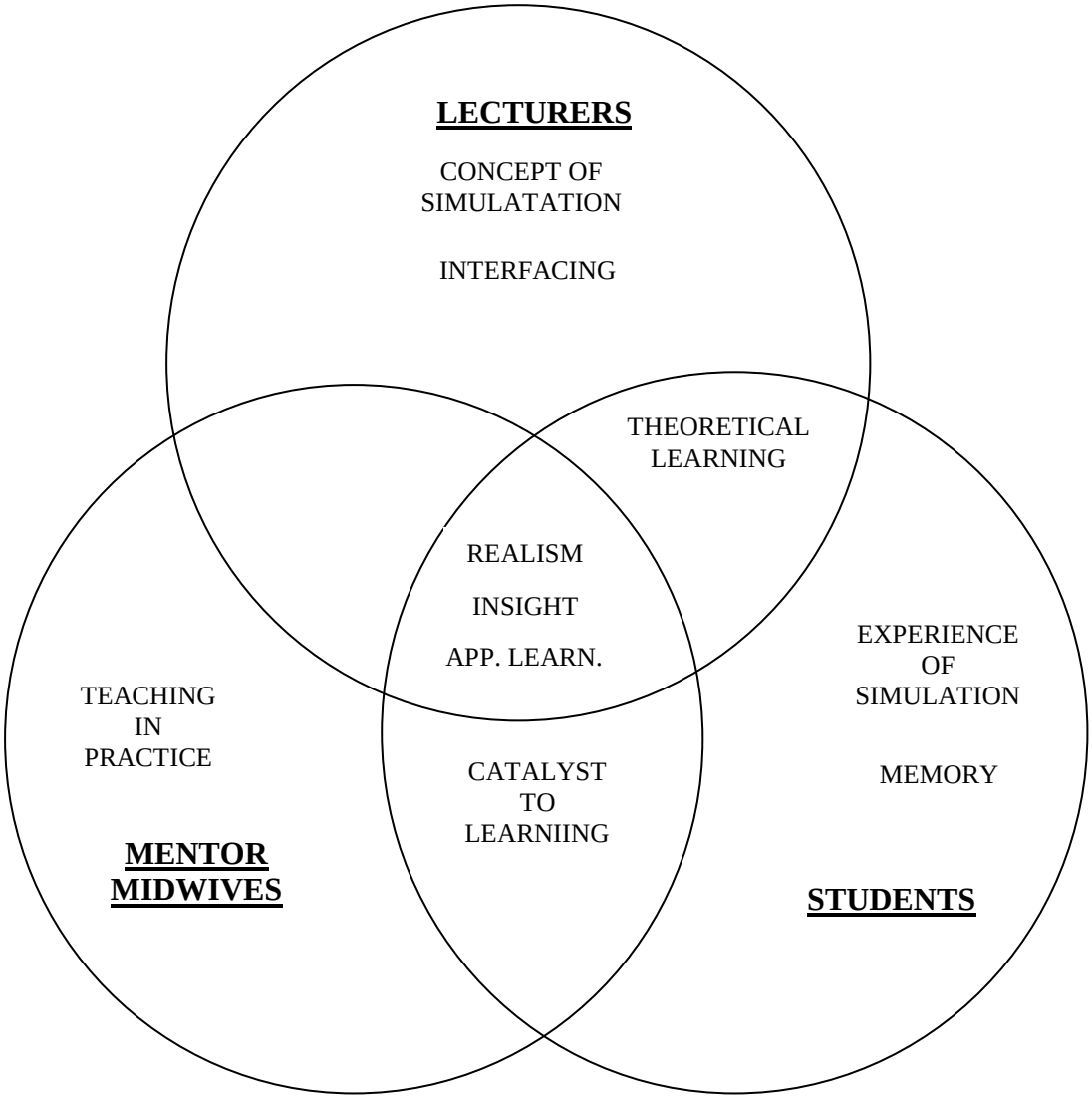
As demonstrated in Table 6, Catalyst to Learning and Theoretical Learning recurred across two data sets and within both individual interviews and focus groups; whereas some themes were unique to one data set such as Teaching in Practice, Memory and

Experience of Simulation and Concept of Simulation and Interfacing. This is also illustrated in Figure 33.

5.2 Relationship between Themes and Data Sets

The ten themes identified in Figure 33, indicate issues that were shared by all three groups of participants in this case study and also those issues that were not. In general, the three groups shared the Realism associated with clinical simulation, the Insight it offered students before starting clinical placement and its Applied Learning in clinical practice.

Figure 33: Themes and Data Sets



Other issues were either shared by two of the groups or unique to only one data set. For example, Figure 33 demonstrates how Teaching in Practice was unique to the mentors, as was Experience of Simulation and Memory to students. The Concept of Simulation and Interfacing were exclusive to lecturers. Some themes were shared between two groups, such as Theoretical Learning (students and lecturers) and Catalyst to Learning (mentor midwives and students).

5.3 Research Questions and Themes

The relationship between the research questions and the ten themes is illustrated in Table 7 below.

Table 7: Research Questions and Themes

1.PREPARATION FOR PRACTICE	2.APPLICATION OF LEARNING	3. WORK BASED LEARNING
Realism	Applied Learning	Teaching in Practice
Insight	Memory	Catalyst to Learning
Theoretical Learning		Interfacing
Concept of Simulation		
Experience of Simulation		

The research question pertaining to preparation for practice generated the most themes, that is, five in comparison to the remaining questions which related to the application of learning in practice and work based learning. From these questions, two and three themes were developed respectively.

In the sections that follow, the integrated data are reported in relation to the research questions (see Appendix 8).

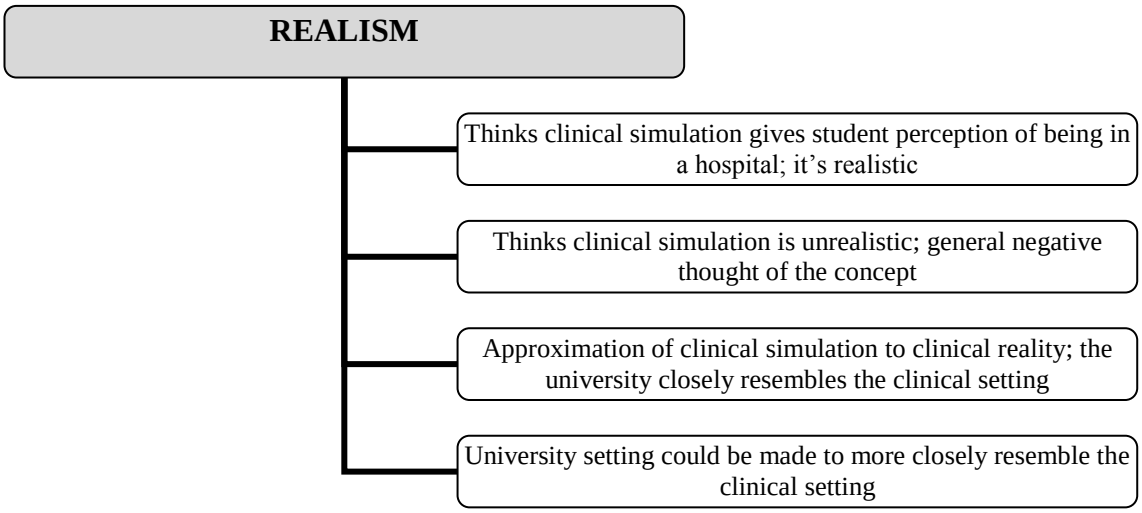
5.3.1 Research Question 1

How do students, mentors and lecturers perceive simulation to prepare the student midwife for clinical practice?

The research question relating to preparation for practice generated the highest number of themes, in which two of these recurred in all participant groups. Thus the five themes of: Realism; Insight; Theoretical Learning; Concept of Simulation; and Experience of Simulation demonstrated how preparation for practice was an important aspect of the educational role offered by clinical simulation.

First, the theme of Realism (as illustrated by the integration of all coded data in Figure 34) emerged in all individual and focus group interviews with midwives, student midwives and lecturers.

Figure 34: Realism Theme (All Participants)



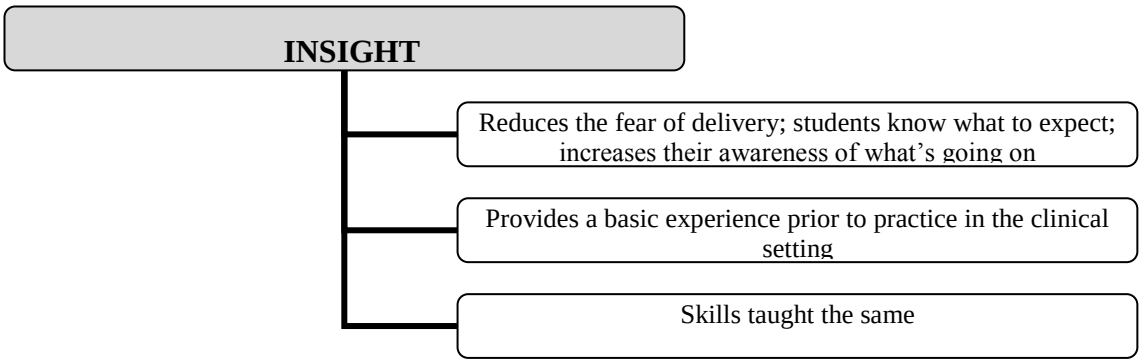
As previously stated in Section 4.3.1, Realism was defined as the approximation of clinical simulation to clinical reality. This included how closely the university resembled the clinical setting, the manikin's appearance, equipment and the childbirth scenarios utilised within the skills laboratory. In both the students' and midwives' individual interviews, the theme of Realism did not only capture the notion that clinical simulation provided a sense of being in a hospital setting, but also how the artificiality of it could nullify any realistic experience that equated with working in the clinical environment. However the negative aspect of simulation-

based learning, that is ‘unrealism’, was not raised as an issue in both of the focus groups conducted with the students or midwives. Therefore in individual interviews, where the students and midwives voluntarily offered their views about the unrealistic aspects associated with simulation, this may be the stronger assertion suggesting that clinical simulation is as realistic as the student is willing to perceive it to be. However other possible reasons for the differences observed at individual and focus group interview will be examined more closely in the next chapter.

Notably the lecturers, who were interviewed individually, did not allude to the notion of artificiality in relation to simulation. As the lecturers did not participate in the reality of clinical practice on a day-to-day basis, comparison of clinical simulation to the clinical environment, and consequently the notion of unrealism, perhaps did not seem as important or an issue worthy of discussion.

Secondly, the integrated data identified the theme of Insight (see Figure 35) as a commonly recurring factor to support how clinical simulation prepared the student midwife for practice.

Figure 35: Insight Theme (All Participants)

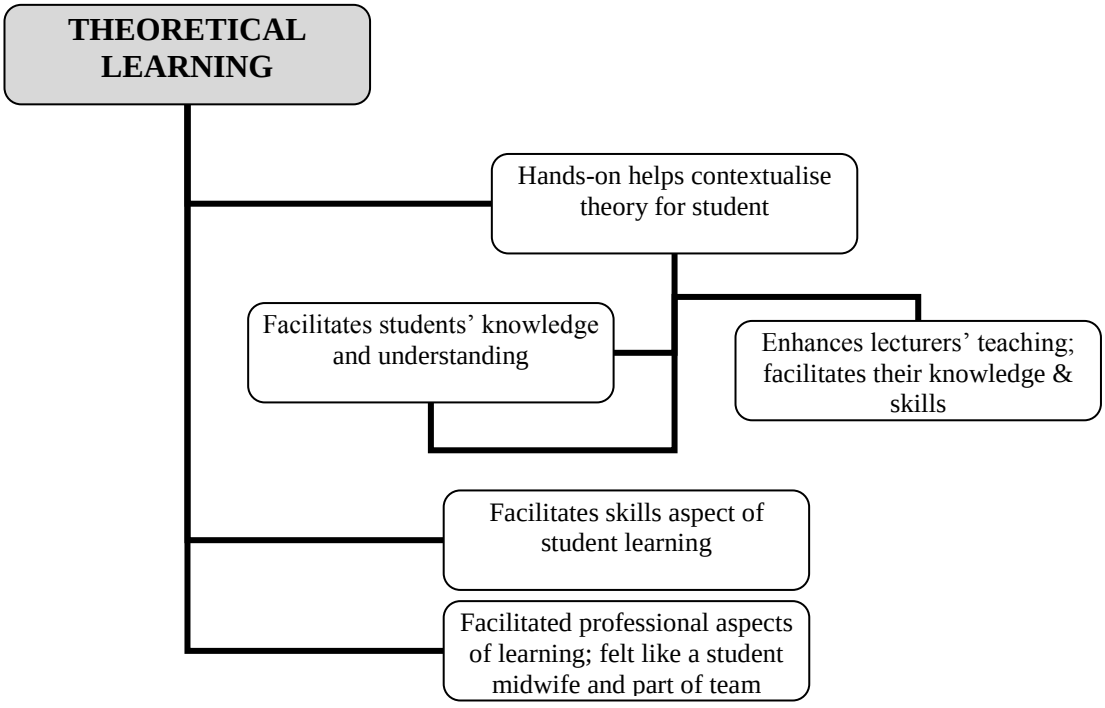


Insight, defined as the student knowing what to expect and thus having increased awareness of what was going on in the clinical area, emerged from all data sets although some interpretations of how simulation prepared students for practice differed. The mentors, students and lecturers felt clinical simulation reduced the anxiety associated with working in clinical practice and increased awareness of the clinical area. This notion prevailed throughout the individual and group interviews.

However, whilst the mentors and students considered the experience as basic or essential, the lecturers hinted that the experience was more an elementary one as opposed to necessary. Either way this particular aspect of Insight was not supported in group interviews with students**.** However the students repeatedly commented on how skills were taught the same in the university compared to how they were practiced in the clinical area. As they were in a strong position to make this judgement, their evaluation seemed reasonable.

Thirdly in both the lecturer and the student interviews, the theme of Theoretical Learning (or type of learning that simulation facilitated within the university) emerged, leading to the assertion that clinical simulation assisted both the students' and lecturers' knowledge and understanding and skill acquisition within the university setting. Whenever the practical aspect of learning was being undertaken, it seemed that simulation facilitated knowledge and understanding too (see Figure 36).

Figure 36: Theoretical Learning Theme (All Participants)

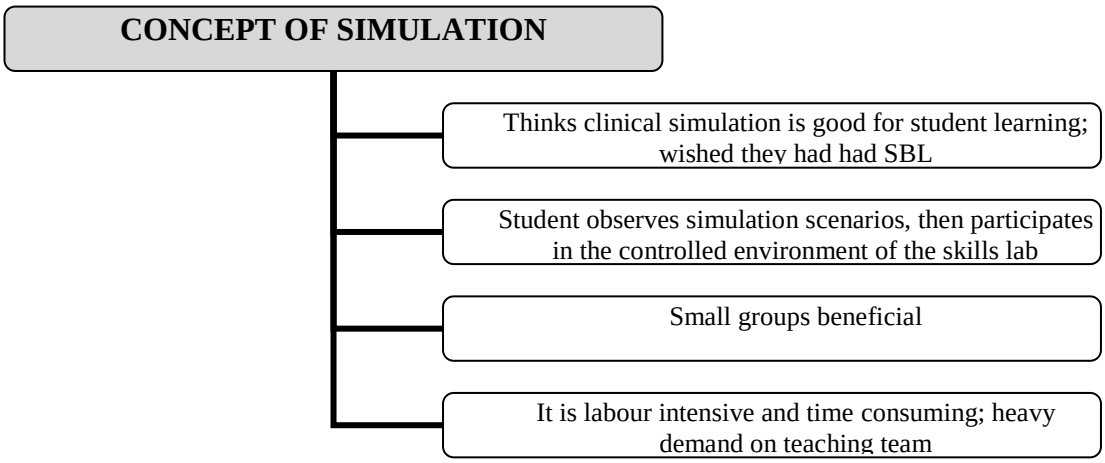


Although analysis of the individual student interviews demonstrated that clinical simulation contributed to developing professional awareness of the student midwife role inclusive of team working, neither the interviews with lecturers nor the student

focus group categorically supported this idea. Professional learning was alluded to by one of the lecturers, but perhaps as they tend to be more immersed in the theoretical aspects of learning, this point was not emphasised.

Lastly, two themes were found to be unique to only lecturers and students respectively, that is, the Concept of Simulation and Experience of Simulation. In the former, Figure 37, the general opinion of lecturers about the concept of clinical simulation was a positive one.

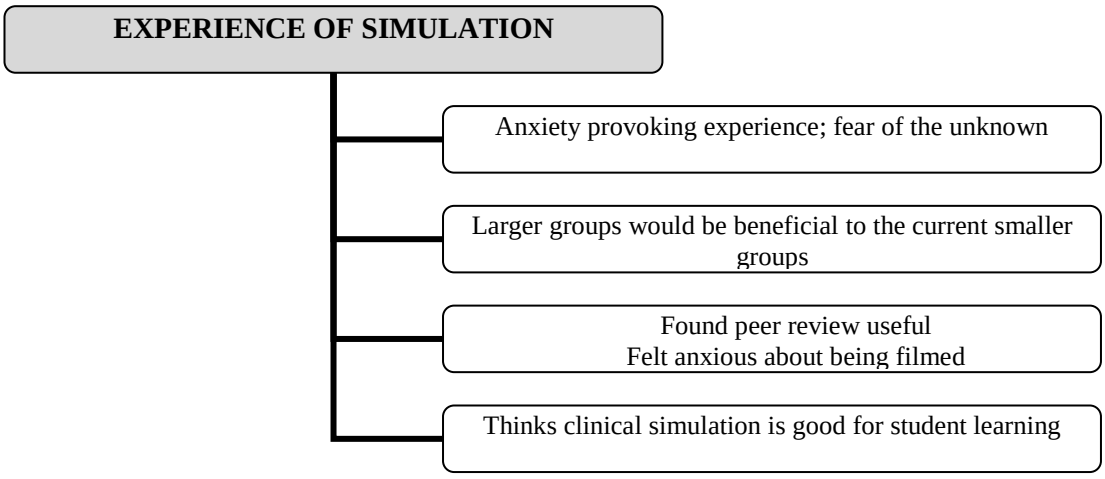
Figure 37: Concept of Simulation Theme (All Participants)



The lecturers supported the controlled environment of the university skills room acknowledging that distractions were minimal, unlike the clinical setting. However, despite endorsing the principles of small group teaching, they felt that simulation-based learning was resource intensive, and placed an excessive workload demand on them.

Whilst lecturers did not portray any insight of students' anxiety associated with the Experience of Simulation and peer review, the students voiced their misgivings about simulation particularly that they felt somewhat daunted by it, as outlined in Figure 38.

Figure 38: Experience of Simulation Theme (All Participants)



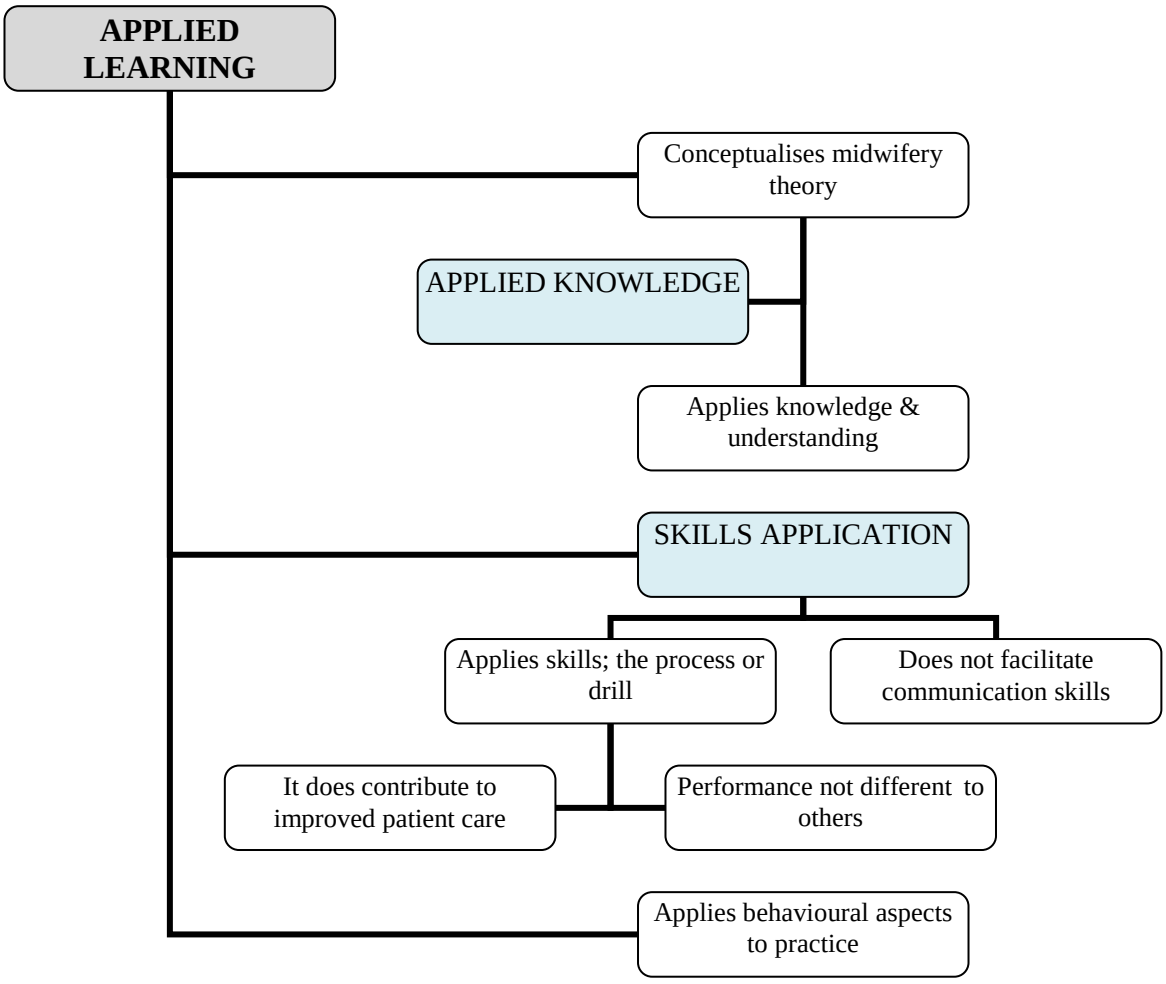
Also, disparity existed in opinion about the size of groups utilised in simulation-based learning. Whilst some students supported the concept of small group teaching, others expressed an opinion veering towards a preference for larger groups. However, as for the recurrence of this issue, the students' opinion about the size of groups emerged from the focus group only, and although it generated discussion around this issue, the discussion culminated in a divided viewpoint, thus consensus was not reached.

5.3.2 Research Question 2

Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?

Two themes emerged from the category of application of learning, that is, Memory and Applied Learning. Across all groups, the latter appeared to be important to all respondents. Two main sub themes, namely Knowledge and Understanding and Skills Application, with more emphasis on skills, were the most recurring issues of the theme pertaining to the application of clinical simulation to clinical practice. Figure 39 demonstrates the integrated data.

Figure 39: Applied Learning Theme (All Participants)

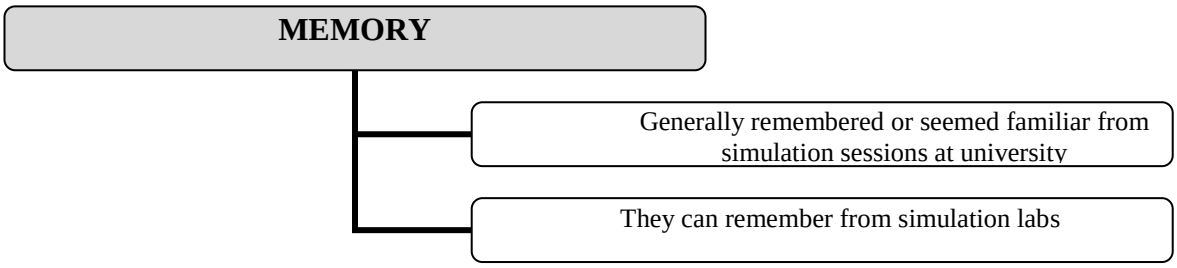


In the claim that simulation did not facilitate the transfer and application of communication skills, this was found to be largely the opinion of students and mentors, as the lecturers did not discuss this subject. Also, lecturers and mentors felt that simulation contributed to better patient care.

Lastly, and the least recurring evidence relating to the theme of Applied Learning, derived from the mentors' data set. They indicated that whilst simulation could influence the behavioural aspects of professional practice, overall it did not distinguish these students from others who had not received that type of learning. As the other groups were not offered the opportunity to express a view on this, the mentors were perhaps in the strongest position to make this assessment anyway as they could compare with previous students they had mentored.

The second theme of Memory (Figure 40) and its role in the application of simulation to practice was unique to the students but emerged in both their individual and group interviews.

Figure 40: Memory Theme (All Participants)



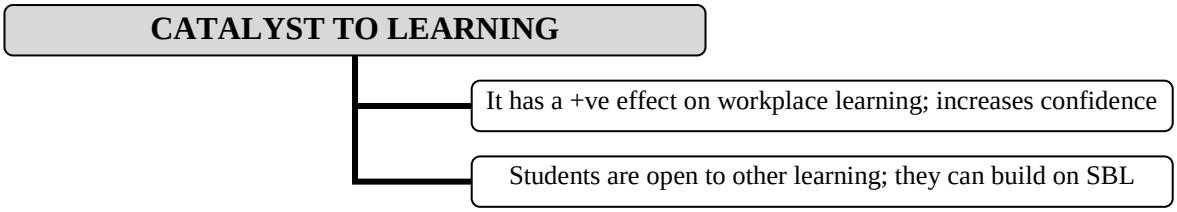
Although this theme did not emerge from either of the mentor or lecturer interviews, it did not sit in isolation. Apart from supporting the impression that the students applied their cognitive knowledge to practice, the theme of memory also suggested that the clinical area was familiar because it resembled the university.

5.3.3 Research Question 3

How does clinical simulation affect workplace learning?

Three themes emerged from the research question pertaining to workplace learning, that is Catalyst to Learning, Interfacing and Teaching in Practice. The most commonly recurring of the three, Catalyst to Learning, persisted throughout both the student and mentor individual and focus group interviews (see Figure 41).

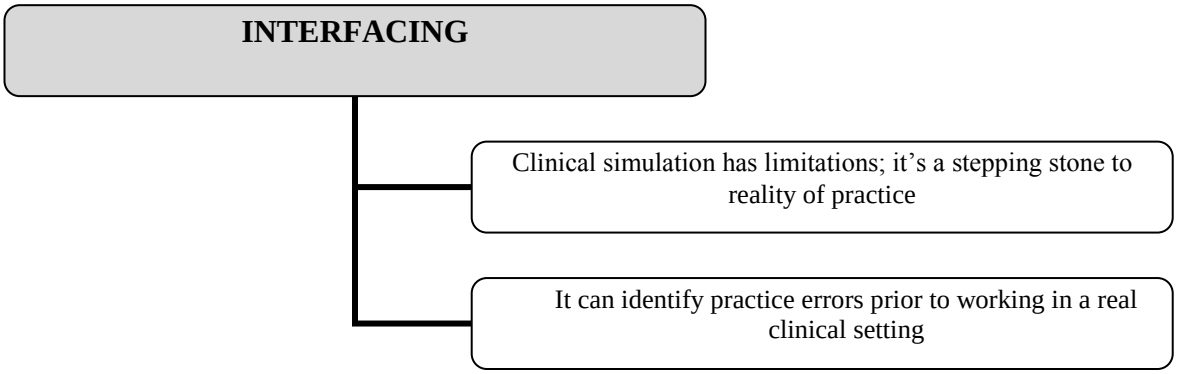
Figure 41: Catalyst to Learning Theme (All Participants)



Students and mentors felt that clinical simulation had a positive influence on workplace learning because students had already acquired some experience, albeit in a simulated environment, that they previously would have had first exposure to in

clinical placement. Although this theme was not raised as an issue with the lecturer interviews, the theme of Interfacing offered some information about the role of simulation and workplace learning (see Figure 42).

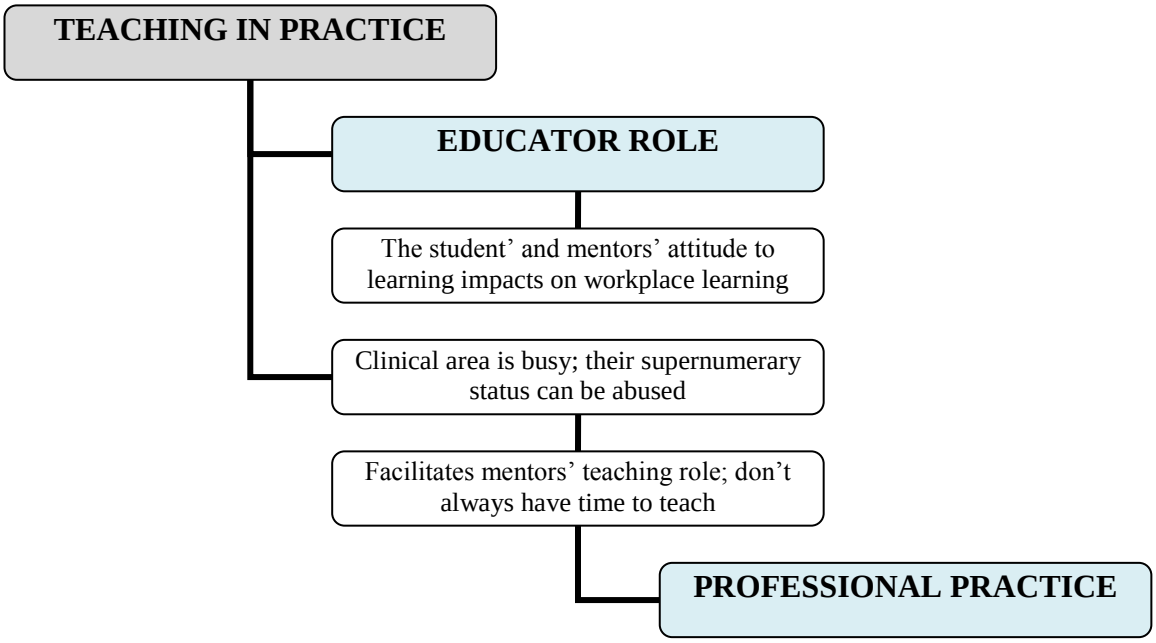
Figure 42: Interfacing Theme (All Participants)



Interfacing was distinct to the lecturers' data set only. They perceived that a theory practice gap existed between the university and professional practice, which could be reduced by clinical simulation. However they did acknowledge its limitations, in that the manikin was restricted in adopting a range of body movements but it had potential to improve patient safety and care.

Lastly, the theme of Teaching in Practice was developed from the mentors' data set. As previously stated in Section 4.6.3, this theme generated two sub-themes alluding to the notion that mentors experienced role conflict and frustration when they perceived that their teaching role was taken over by the demands of the clinical area (see Figure 43).

Figure 43: Teaching in Practice Theme (All Participants)



Both the individual interviews and focus group with mentors illuminated the contribution clinical simulation made to their teaching role, whilst the focus group offered deeper insight into other aspects of their professional practice. Although the one-to-one interviews may have provided mentors with the opportunity to discuss thoughts and feelings around their teaching commitment to students, it seemed the focus group provided stimuli on this issue and consequently generated consensus that they believed they were not always fulfilling their responsibilities.

Conclusion

This chapter has reported the integrated data from the mentor midwives, student midwives and midwifery lecturers, following categorical aggregation. However conclusions were not only drawn from tallying for frequency (Stake 1995, p.78), or the recurrence of emergent themes (Robson, 2002, p.483). The researcher effects, relative to how my values and beliefs may have impacted on the research process and data analysis, were also considered. Therefore emphasis was not only put on repetition. Those nuances and outliers that did not show consistency or correspondence were also taken into account. As Stake (1995, p. 74) states, 'some

important features in instrumental case study appear only once in a single episode'. These issues and how the data linked to the literature will be explored in Chapter 6.

Chapter 6: Discussion

Introduction

As previously discussed in Chapter 3, p.52, the research purpose of the study was mainly exploratory. A conceptual framework informed the research questions in relation to how clinical simulation was perceived to prepare the student midwife for clinical practice, how it was utilised in the clinical situation and its affect on work based learning. Subsequently I adopted an instrumental case study, whereby the case - consisting of midwifery lecturers, midwife mentors and student midwives - was deemed instrumental in understanding clinical simulation within the context of its application. A purposive sample was selected and data were collected by qualitatively driven methods, which included interviews and focus groups. An unobtrusive measure, that is, simple and informal observation, provided insight into the context. Finally categorical aggregation of interview and focus group data provided the basis for developing the thematic analysis and the integrated data were compared and contrasted to identify relationships among the groups.

In Chapters 4 and 5, the observations and themes have been reported. In this chapter I will discuss the findings of the study in the following order: the research questions; research methodology; and the researcher effects on data collection. First, the observations made of the clinical area will be summarised.

6.1 Observations

In this study, informal unobtrusive observation of the clinical setting was undertaken to aid in understanding the context (Stake, 1995, p.60) and augment data obtained from interviews (Robson 2002, p. 346). Guided by Stake (1995, p.9), observations were interpreted directly rather than by more objective techniques of analysis. Therefore the process of interpreting observations involved a description, and where an inference was made and subsequently an evaluation it was peered reviewed by an impartial colleague to confirm that evaluation (Simpson and Tuson, 1995), as provided in Chapter 4.

Apart from interviews with lecturers, data collection took place within the clinical environment, which was instrumental to the study. There, the pool room and patients' day room were selected by the midwives. The pool room ran parallel to the main corridor in each of the wards, directly opposite to the LDRP rooms and noises from the ward could be heard such as the patient call system, vocal noises from women giving birth and the telephone ringing in the background. The patients' day room was situated at the entrance to the main corridor of the ward and due to its location it was slightly less noisy than the pool room. However there was no suitably private place observed to support non-ward related duties, such as teaching, debriefing or student assessments.

In spite of generally satisfactory levels of ward activity from the outset (observed as such by either the presence or absence of midwives congregated around the ward station), sometimes there were sudden changes to the clinical environment which was manifested by increased activity and interruptions to interviews, culminating in what may have been construed as restless and anxious behaviour from the participants. This may have been largely due to the venue of the interviews as participants displayed signs of increasing anxiety to return to ward duties. Keats (2000, p.67) suggests that sudden movements and leaving the interview hastily can indicate an emotional response in addition to some of the common difficulties associated with interviewing such as the hostile respondent and the anxious respondent (Keats 2000, p.137). Although neither was judged to be the cause in this study, my professional knowledge (Eraut, 1994 p.102) suggested that the staff were experiencing a feeling of frustration compounded by the noise and other distractions, as previously described in Chapter 4. Given that the physical setting where interviews were conducted was at the centre of ward activity, distractions were unavoidable.

Although frustrating, the location of data collection was deemed vital in describing the context of where the phenomenon of interest (clinical simulation) was applied. The observations of the practice placement, reflect what Haigh (2007) deduced in her study of clinical simulation within the midwifery curriculum, in that the clinical setting was a busy and stressful environment. Haigh (2007) further purported that

sudden changes in workload were not always helpful to the students' learning. Indeed despite their supernumerary status, many of the interviews that took place with the midwifery students in this study were deferred somewhat due to the demands of the clinical environment. This also concurs with Kroll *et al* (2009). However in relation to other aspects of Kroll's (2009) study, there was no observed negativity from the midwives although this had been verbalised by two students at interview. Section 6.3.1 discusses mentors' responses relating to this aspect.

Examples of observations made of the context in which clinical simulation was applied, illuminated the unpredictable nature of the clinical setting and how there seemed to be limited capacity or appropriate space for the midwifery students and midwife mentors to participate in activities beyond the scope of their everyday clinical duties. Even when the clinical area was observed to be calm, the general atmosphere was one of activity and a state of flux. The nature of the clinical environment and its effect on learning is discussed in Section 6.4.3.

6.2 Research Question 1

How do students, mentors and lecturers perceive simulation to prepare the student midwife for clinical practice?

The research question relating to preparation for practice generated the highest number of themes, in which two of these, Realism and Insight, recurred in all participant groups. All five themes will be discussed from the more commonly occurring themes to those that were less so.

6.2.1 Realism

The main aspects of responses to this topic related to the approximation of clinical simulation to clinical reality and the perception of being in hospital, and, the unrealistic nature of clinical simulation. As previously stated in Section 4.3.1, realism encompassed the similarity of clinical simulation to clinical reality, or, engineering fidelity (Maran and Glavin, 2003). In all of the individual interviews, and subsequently focus groups, many of the participants' responses captured the notion that the clinical skills laboratory where clinical simulation took place, was like the clinical setting and provided a sense of being in a hospital because of its likeness

to the clinical environment. This included the manikin's appearance, equipment, the physical layout of the skills laboratory and the general atmosphere created from audible beeps of the monitors and visual display units. Indeed the skills laboratory where the students received simulation-based learning had been designed like the clinical rooms (LDRP) where the student midwives undertook their work based learning. The hospital bed, vital sign monitors, pharmaceutical gases, fabrics such as the duvet cover and curtains and all other equipment were the same as those in the hospital. Those students who suggested ways in which the university skills laboratory could be made to more closely resemble the clinical setting, talked about adding a plant to create a smaller space or making the room larger, rather than referring directly to the simulation equipment. As for the manikin, some of the students described how it performed the movements of childbirth which, when compared to what they had observed in real life, looked the same. This was also apparent in the lecturers' and mentors' responses, the latter of whom demonstrated keen interest when observed watching the video footage of the manikin. Thus they were referring to engineering fidelity.

The level of realism associated with engineering fidelity was an important aspect of this study, and contributed to the participants' positivity towards simulation (as will be discussed in Section 6.2.4). This is reflected in the findings from studies by Alinier *et al* (2006) and Reilly and Spratt (2007) where the level of physical or engineering fidelity (Maran and Glavin, 2003) versus realism contributed to more involvement from students. Further a recent systematic review of clinical simulation in healthcare education by Cant and Cooper (2010) discussed varying levels of fidelity. Together with a study from the obstetric and midwifery literature by Crofts *et al* (2007b), the review concluded that higher fidelity simulation related to greater reported satisfaction among students (Cant and Cooper, 2010). Therefore the use of high fidelity simulation in this study suggested that it had encouraged the feeling of realism for many of the participants and subsequently increased student engagement and motivation because the students felt that it was real.

However not all responses from students and mentors were of the same opinion. A small number, that is, one student midwife and two mentor midwives suggested in

individual interviews that the artificialness of clinical simulation could suppress the perception of working in the clinical environment. This negative aspect of simulation-based learning, that it was artificial, was not raised as an issue in both of the focus groups conducted with the students or midwives. Thus this view was not representative of the homogenous group that they belonged to. In relation to this finding, both the student and midwives talked about the simulator and how it was not a real woman or did not look like a real woman. Another mentor referred to how childbirth in the simulated environment was not like that in real life. Although the student also commented negatively on the engineering fidelity of the manikin and skills room, in essence both the student and mentors were referring to psychological fidelity.

This concept derives from earlier work by Maran and Glavin (2003) which depicts psychological fidelity as the level of interactivity offered by the simulated exercise to encourage student response and help overcome the feeling of disbelief. Evidence from the midwifery literature remains scanty but since this study, recent publications from nursing by McCaughey and Traynor (2010) and Pike and O'Donnell (2010) also report the difficulty of some students having an authentic simulated experience even with high fidelity simulation. In relation to the present study, the simulator was not perceived as sufficiently sophisticated by the two mentors in order to provide what they felt was a realistic experience (Alinier *et al*, 2006). Perhaps this was because they could not detach from their experience of working daily in the reality of clinical practice and the multiple distractions and demands placed on midwives through the course of their work. Conversely in the absence of practical experience comparable to that of the mentors, the view of 'pseudo-realism' from the student in this study may have been explained by the level of fidelity offered by the childbirth simulator. In other words, the fidelity of the simulator was perhaps too high.

Notably the lecturers, who were interviewed individually, did not allude to the notion of realism in relation to simulation. Both lecturers had substantial clinical experience prior to relinquishing their clinical midwifery role to become midwife educators. Therefore, the fidelity of the simulator was not too high as suggested by Maran and Glavin (2003). However they did not participate in the reality of clinical practice and

so comparison of clinical simulation to the clinical environment, and consequently the notion of any artificiality associated with engineering and psychological fidelity (Maran and Glavin, 2003), perhaps did not seem as important to them or an issue worthy of discussion. This does not concur with the findings of a study from the midwifery literature by Davis *et al* (2009), wherein some of the challenges of simulation that were highlighted by the educators related to physiological inaccuracies performed by the childbirth manikin, which they claimed looked unrealistic. However several childbirth simulator models exist and in the absence of knowing if the simulator in the study by Davis *et al* (2009) was an earlier version or if both models were the same, it is not possible to draw conclusions. Further, a limitation of the present study was the small number of midwifery lecturers (n=2) who participated within the case, thus their view of realism may not have been shared by other lecturers.

In relation to the recurrence of this finding, in all individual interviews with lecturers, student midwives and mentors, the participants volunteered their views about both the realistic and unrealistic elements associated with simulation, whereas the focus groups did not raise the unrealistic aspect as an issue. It could have been that the influence of me as researcher in the large groups evoked 'respondent bias' (Robson 2002, p. 172) in that the participants wanted to provide the responses that they perceived I wanted to hear. Or perhaps an unwillingness of the quieter participants to share their views in a group (Robson, 2002 p.285) may have contributed to this finding, even though they felt more comfortable to do so in a one-to-one situation. Conversely in individual interviews, the students and midwives voluntarily offered their views about the lack of realism associated with simulation, which may be more representative of the views of the participants.

Thus this study suggests that clinical simulation was found to be realistic for most of the participants. In some ways this was unexpected because the simulated environment is controlled and does not reflect all the other interactions that occur in daily ward activity. Therefore for the minority where it was not realistic, it may have been because these multiple distractions were absent, or due to the engineering fidelity of the simulator, or, as suggested by Pulsford (1993), some people simply

find experiential approaches to learning embarrassing because they have been forced to drop their defences. Therefore in conclusion, the present study shows that clinical simulation is as realistic as participants are willing or able to perceive it to be. As there is no evidence of students managing the phenomenon of disbelief associated with simulation, findings from the study contend it as an area worthy of development so as to improve the student experience.

6.2.2 Insight

When interviewed individually and in focus groups, the recurrent theme of Insight emerged across and between the data sets of lecturers, midwife mentors and students. The insight provided by simulation was defined as the student knowing what to expect in the clinical area and thus having increased awareness of what was going on. Contributing factors to this were: reduced fear; experience prior to practice; and consistency in what was taught at university and in the clinical area.

Many of the participants revealed the fear associated with their first work based placement in the labour ward of the maternity unit, and particularly in assisting at normal childbirth. When interviewed individually, all mentors and one of the lecturers related this notion to their own experiences as student midwives, recalling the intimate nature of normal birth and feeling shocked and unprepared for the first birth that they witnessed. This feeling was compounded by the distressed state of the mother, the observed physiological changes of the female genitalia as the baby descended through the birth canal and the baby being born. However in this study, the student midwives did not relate fear to these aspects of practice placement situations. When asked how they felt about the first birth they witnessed or assisted at, none of the students commented that it had been a negative experience or 'horrifying'. Instead they talked about feeling scared about doing things correctly in the realisation that they would be assisting thereafter, but, less anxious because they felt they had done it before. This view was supported by their focus group.

A paucity of evidence exists in the midwifery literature to support this finding from the present study, although Cavanagh and Snape (1997) and recently McTavish (2010) identified placement as being a source of stress in student midwives. This also

relates to findings from the nursing literature, such as that by McBrien (2006). In relation to clinical simulation, previous authors (Davis *et al* 2009; McCallum, 2007; Reilly and Spratt, 2007; Robertson, 2006) concluded that simulation was helpful in preparing nursing and midwifery students for practice. However it is not explicit as to why this was the case. Although the students in this study still described a fear of 'doing' in accordance with McBrien (2006), they did not express the same type of fears as their predecessors. Thus it extends the midwifery knowledge base in that the findings suggest simulation played a role in allaying some of the fears associated with the more emotional aspects of maternity care, and not just the application of manual skills.

Further, the mentors, students and lecturers also felt simulation contributed to the students having an increased awareness of what was happening in the clinical area. The rationale provided by the mentors related to scenario based teaching combined with the similarity of both the university skills room and LDRP rooms in the clinical setting, the latter of which provided a sense of familiarity to the students as it was not 'alien' to them. Whereas the lecturers commented on the practical elements of simulated tasks and their value to the workplace, such as the students being able to use hospital equipment and consequently feeling that they were a valuable part of the team. This was supported by the students who expressed how through simulation-based learning, they felt they had experienced aspects of their workplace duties beforehand.

These findings, encompassing a sense of familiarity, participating as part of a team and having 'done' before, can be related to the concept of situated learning (Lave and Wenger, 1991). In this study, the students' learning was designed to be 'situated' in the (simulated) clinical setting, therefore teaching scenario based simulation in the skills laboratory offered participation in 'communities of knowledge and practice' (Lave and Wenger 1991, p.29; Kneebone 2003, p.10). However the findings do not concur with Haigh (2007) who disagrees that the concept of midwifery communities of practice can lend itself to the unpredictable nature of clinical placement. Unlike Haigh (2007) though, my study was not confined to the students' and lecturers' views within the university setting, but focussed on the students' co-participation

with midwifery lecturers to full participation with midwife mentors in the clinical area. Thus ‘multi voicedness’ was identified in all those involved in the full context of the student learning.

Interestingly a recent study about simulation in nursing (Pike and O’Donnell, 2010), proposes that educational approaches that support Lave and Wenger’s (1991) theory could be enhanced by adding actors to the simulated environment to broaden the scope of professionals within the nursing community of practice. Given the breadth of nursing, this seems a plausible recommendation, but arguably unnecessary for the specialism of midwifery. As such, situated learning offers information as to why simulation in a midwifery community of practice provided the students in this study with insight into that community of practice.

Other features of the theme included the conception that simulation provided a basic practical experience. Although not expressed by all participants, on balance this view was consistent among participants within each data set, which prevailed throughout the individual and group interviews. However, whilst the mentors and students agreed the experience was basic in terms of using equipment and assisting at normal births, the lecturers placed more emphasis on how it was a more simplistic experience. Understandably, as they taught in all aspects of childbirth inclusive of normal, abnormal and other complex issues, they perhaps rated the experience delivered to these students in terms of the scope of subjects within the lecturers’ range of teaching. This is in keeping with Davis *et al* (2009) who found that midwifery educators felt the manikin was more suitable to teach in the management of complex childbirth cases, whereas students found it useful for basic topics such as childbirth. Thus evidence from my study, which also included the views of mentor midwives, suggests that the value of clinical simulation in teaching basic skills should not be underestimated.

Lastly, one of the lecturers and three of the students commented on how skills were taught the same in the university compared to how they were practiced in the clinical area. The midwives did not discuss this individually although at their focus group one midwife suggested there were differences in practice. However, as the students

were in a stronger position to make this judgement their evaluation seemed more reasonable. In relation to previous studies (Corlett *et al*, 2000; Corlett *et al*, 2003; Moule *et al*, 2008), it has been suggested that because lecturers teach a range of skills rather than a particular area of expertise, there is disparity between what is taught in the HEI and in clinical practice. However, as the midwifery lecturers in this study also taught on national courses relating to childbirth and collaborated with practice staff in midwife-focussed training within the local maternity hospital, findings suggest that regular use of simulation equipment and collaboration with clinicians helped maintain their knowledge and skills as suggested by Arundell & Cioffi (2005) and Bland (2006). Consequently skills were taught the same across both environments, and gave the students an accurate picture of what to expect prior to clinical placement.

6.2.3 Theoretical Learning

Many of the midwife mentors postulated that clinical simulation could help student midwives conceptualise the theoretical underpinnings of childbirth. In considering their own preferred learning styles (Coffield *et al* 2004, p.61), they related to how seeing the manikin simulate childbirth would help integrate the theory and practice of labour and delivery. Understandably the views of students who experienced simulation-based learning and the lecturers involved in its provision, provided further scope to explore how simulation facilitated learning in the theoretical setting. Indeed in both the lecturer and the student interviews, the theme of Theoretical Learning emerged, suggesting that clinical simulation helped in their knowledge and understanding, skill acquisition and role awareness.

Guided by Bloom's taxonomy (Kneebone 2003; Rogers, 1996; Yaegar *et al*, 2004; Atherton, 2009a), findings suggested that some of the students were divided about which domain of learning was facilitated by simulation in relation to knowledge and understanding, practical skills and professional awareness. Some talked about how it helped link theory to practice and consequently, they felt that they better understood the physiology of childbirth. Although they received lectures on the subject matter and graphic images from power point presentations provided a visual aid, they indicated that the visual and didactic elements alone did not assist in their

comprehension, reflecting similar findings by Arundell and Cioffi (2005). Simulation helped them understand in this study because they could see and do together.

Other studies from nursing and midwifery (Davis *et al*, 2009; Reilly and Spratt, 2007; Robertson, 2006) demonstrate a similar image, that is, clinical simulation contextualised learning and helped to understand the theoretical rationale of certain tasks; and also that the childbirth manikin provided a good teaching tool for childbirth that was described as enhancing learning in the theoretical setting. However none of the students in the present study suggested that the experience had encouraged their reading for a particular topic, as Robertson (2006) had found. Thus this finding concurs with the study by Birch *et al* (2007) who proposed that simulation was not the optimal educational strategy in motivating students to engage in deep approaches to learning (Entwistle 2009, p.33). Indeed my study reflects the current knowledge base of simulation and its relationship to cognition in that it compliments other teaching and learning approaches utilised in the university and contributes to knowledge and understanding, but simulation does not appear to influence or encourage deeper learning approaches.

These findings concur with evidence from previous quantitative studies using experimental approaches (Birch *et al*, 2007; Cioffi *et al*, 2005; Crofts *et al*, 2007a; Crofts *et al* 2007b; Morgan *et al*, 2002) within the midwifery and medical obstetric literature. However the students in this study also reported that technical ability was enhanced through simulation; supporting results from quantitative studies within the nursing and maternity literature (Alinier *et al*, 2006; Deering *et al*, 2006) that demonstrated improved (simulated) practical performance. Reflecting on their university experience, the midwifery students described how they developed manual dexterity in basic midwifery skills and usage of the clinical instruments needed at birth. Nevertheless as assessment of technical ability was not the aim of this study, it is not possible to conclude if the students' practical skills were improved after simulation.

However individual interviews with students also indicated that the 'hands on' participation in the skills laboratory helped comprehension, at the time the skills

were being practiced. In other words, the theory suddenly made sense during simulation. This was supported by one of the lecturers who suggested she intuitively recognised in students, when the discovery or breakthrough occurred because they displayed signs of understanding during simulation sessions. McCallum (2006) and Moule *et al* (2008) recognised this phenomenon too, in that students suggested that learning in the cognitive and psychomotor domains occurred simultaneously during simulation. Gredler (1992: 2004) and Moule *et al* (2008) refer to this as multifaceted learning; which is a feature of the students' learning experience in this study, in that simulation facilitated the continuous process of learning from the classroom to the skills laboratory.

Further, three students expressed the opinion that clinical simulation contributed to developing professional awareness of their student midwife role inclusive of team working. Although this idea was neither supported in the interviews with lecturers or the student focus group, it links with the notion of the contribution of the midwifery educator from whom the student begins to learn about the attitudes and cultural norms of the clinical setting (Kenny 2004, p.87). Therefore by social engagement of the student in conversations and behaviour in keeping with the community of midwifery practice, behavioural or situated awareness helped their role take on meaning (Kneebone, 2003; Wenger 1998). However the value of clinical simulation in developing non-technical skills or behavioural skills is difficult to assess due to the subjective nature of what constitutes competence. Halamek (2008) argues that certain skills such as teamwork tend to be neglected in healthcare, and particularly in the maternity delivery suite. Indeed in the present study, professional learning was alluded to by one of the lecturers but perhaps as they tend to be more immersed in the theoretical aspects of learning, this point was not emphasised or discussed at great length. Therefore what this study demonstrates is that there is potential to develop these skills through simulation-based learning, and to encourage educators not to overlook their value over practical performance.

Lastly, as healthcare lecturers are viewed as being far removed from the practice area, debate continues about who is best placed to teach skills via simulation (Mackenzie, 2009; Moule *et al*, 2008). As already discussed in Section 6.2.3, the

midwife lecturers felt that clinical simulation enhanced application of their knowledge and skills, and as stated by Arundell and Cioffi (2005), simulation forces educators to ensure their practice is current. Therefore as the midwifery lecturers did not actively practice in the clinical setting but participated in national obstetric teaching courses, what this research perhaps shows more is that collaboration with clinicians helped lecturers maintain their knowledge and skills as recommended by Moule *et al* (2008), and clinical simulation provided a platform for them to practice as suggested by Bland (2006). Further, this local finding perhaps challenges the idea that lecturers are not ideally placed to teach clinical skills.

6.2.4 Experience of Simulation

Response to this topic was unique to the student midwives, wherein some topical issues emerged in all individual interviews with them which were subsequently upheld in their focus group. Apart from working in groups, these centred on both the positive and negative aspects of the simulated learning experience and peer review.

All students said that simulation had been good for their learning. Their rationale varied but in the main they commented on being able to practice skills repeatedly and in doing so, develop their performance and confidence. Also they compared it to real practice and the speed at which the manikin simulated childbirth (as discussed in Section 6.2.1), but mainly how they felt safe in the knowledge that it was not a real woman. Haigh (2007) and McCallum (2006) also identified this aspect of simulation where despite the students being immersed in the scenario, they remembered that the manikin was unreal and could not be harmed. This also concurs with more recent evidence from the nursing literature (Bailey and Curzio, 2009) where nursing students felt repetitive simulated practice was helpful in building confidence. Therefore in keeping with the existing body of knowledge, the study affirmed that repetitive practice was perceived as an advantage.

However many students voiced their misgivings, expressing how they felt anxious in not knowing what to expect, which is consistent with the findings reported by Robertson (2006), in that fear of the unknown was an aspect of clinical simulation most disliked by student obstetric nurses. Conversely, in this study the student

midwives had already been exposed to the clinical skills room and were aware of how it looked and so their anxiety was not related to entering an unfamiliar environment. Instead they indicated that it was more in keeping with how they performed during the simulation sessions which was substantiated by some of their responses alluding to the fear of making mistakes. In contrast Reilly and Spratt (2007) demonstrated that student nurses liked simulation because they felt it offered them the opportunity to polish their performance before going to practice. Whereas the midwifery students indicated they felt vulnerable when attending simulation in the university. Indeed Gredler (1992; 2004) and Rezac (1999) define simulation as an educational technique that recreates an aspect of reality in a safe environment. Therefore, despite the environment being deemed safe in terms of causing the patient no harm, it did not eliminate the students' vulnerability though it is inconclusive as to why. However two possible reasons may provide an explanation.

First, since undertaking the study, McCaughey and Traynor (2010, p.5) have reported that simulation-based learning in the university increased anxiety among nurses about to return to clinical placement, which they suggested was 'emotional disturbance' and a 'prerequisite to effective learning'. As already suggested in Section 4.9.1, the realisation that simulation was the rehearsal to assisting at real childbirth may have been a contributing factor to the midwifery students perceived vulnerability, thus leading to the emotional disturbance suggested by McCaughey and Traynor (2010); but whether this was a precursor to learning cannot be established here. Secondly, the student midwives provided mixed views about the audio visual unit that filmed their session and was then played back to them together with their group, to enable peer review. Many students found that this method of peer review worried them because they were exposed to the critical eye of their peers. In the main though, they concluded that it had been beneficial to their learning because the visual element, in addition to peer review, enabled repeated observation of the skills followed by reflection (Alinier *et al*, 2006; Murray *et al*, 2008; Yaegar *et al*, 2004) and subsequently learning from their own and other students' mistakes. Findings from other studies (Haigh, 2007; McCaughey and Traynor, 2010; Reilly and Spratt, 2007) which explored the effect of immediate feedback and peer review in simulation-based learning, demonstrated positive views also. Therefore the

thought of being filmed and appearing foolish among peers may have been a factor for feeling anxious, even although they agreed it was beneficial.

Lastly, working in groups during simulation sessions was not raised as an issue in the individual interviews. However in the focus group, disparity existed in opinion about the size of groups utilised in simulation-based learning. Simulation sessions involve small groups to not only endorse the principles of small group teaching (Alinier *et al,* 2006; Tiberius, 1999), but to replicate clinical practice where typical staffing levels comprising a midwifery team would not normally exceed six; thus linking to the concept of communities of practice (discussed in Section 6.2.2). Whilst some students supported the concept of small group teaching, others expressed an opinion veering towards a preference for larger groups. As suggested in Section 4.12.1, the smaller group was perceived by some students as a limitation to learning. The reason for this was that they felt they learned more by watching the performance of their peers, particularly in the mistakes made during practice at the simulation sessions. Although considered an unintended learning outcome of the planned simulation activity, learning through the process of making mistakes and the students' reflection and learning from the experience, was seen as an advantage by them.

Thus the capacity to learn from their own mistakes and that of the wider team was considered a more enriching experience for some of the midwifery students, affirming that of other authors (Haigh, 2007; Jarvis and Griffin, 2003; Munro, 2003; Örtenblad, 2004). Alternatively, some of the quieter students possibly preferred the anonymity offered by a smaller group. However as the issue emerged from the focus group only and culminated in a divided viewpoint, the value of small versus larger groups from the student perspective, remained inconclusive.

6.2.5 Concept of Simulation

This topic generated responses which were mainly concentrated in the midwifery lecturers' data. Justifiably as educationalists, they had knowledge of the theoretical underpinnings of the various approaches to teaching and learning and spoke more from a conceptual perspective. Their general opinion of clinical simulation was positive which they related to the process of co-participation in small groups within

the controlled environment of the skills laboratory. However the lecturers also discussed the increased workload associated with clinical simulation as a negative issue.

In their individual interviews, both lecturers covered a range of topics relating to the concept of simulation, many of which are already cited in the existing body of literature. Foremost, they highlighted how simulation provided a 'real' experience for students, comparable to the setting where they would engage in work based learning. For reasons already established in Section 6.2.1, the engineering fidelity (Maran and Glavin, 2003) in this study was deemed realistic by the lecturers and the notion of surrealism was not discussed, unlike the midwifery study by Davis *et al* (2009). However in agreement with other authors from midwifery and healthcare professions (Haigh, 2007; Johannsson *et al*, 2005; Morgan, 2006; Moule *et al*, 2008; Stark, 2007), the midwifery lecturers also expressed how the opportunity to develop practical skills and subsequently correct practice errors prior to real life application was not only a benefit to the student midwives but also patient care. Notably many of the mentors agreed with this concept too although one stated that it did not. However as the overall view was that simulation would lead to improved patient care, this finding concurs with Halamek (2008), who argues that the clinical environment places patients to a degree of risk due to the inexperience of practitioners when undertaking skills, and therefore recommends the simulated environment as the ideal learning environment. Both the issues of skill acquisition and patient safety have been further supported by McCaughey and Traynor (2010), since the current study took place. Therefore it affirms the potential of clinical simulation in reducing the risk to patients due to poorly developed clinical skills.

Other aspects of clinical simulation considered to be beneficial to the students' learning included increased confidence and a reduction of fears (as discussed in Sections 6.2.2 and 6.2.4). Further, one of the lecturers referred to the development of team working and decision-making skills offered by clinical simulation thus reflecting the findings from other midwifery based studies (Arundell and Cioffi, 2005; Cioffi 2000; Cioffi *et al* 2005; Kitson-Reynolds, 2009) that cited the acquisition of non-technical skills as a benefit of simulation. However as these

aspects of simulation were not assessed within the context of this study, it is only the subjective viewpoint of the lecturer that relates to the current empirical knowledge base.

Both lecturers recounted how the cognitive and psychomotor aspects of learning were integrated within the simulation-based sessions, based on the techniques described by Wooley and Jarvis (2007, p.75) in relation to modelling, coaching and articulation. They further supported the controlled environment of the university skills room acknowledging that distractions were minimal unlike the clinical setting. This was opposed to Halamek (2008), who criticises traditional learning environments because they lack the distractions that occur in the reality of clinical practice; whereas in this study the lecturers were critical of the distractions taking place in practice and the potential effect on student learning. However in agreement with Halamek (2008), this study highlights how the simulated environment is unique in that it can be adjusted accordingly to reflect the clinical setting and the students' stage of learning.

Although the lecturers talked about the students' learning, they did not relate simulation to any particular theory of learning. However they did explain how they felt simulation was only effective in small groups. This is in agreement with Bailie and Curzio (2009) as small groups permitted adequate supervision to oversee the students' performance; and also it supports the holistic integrated approach to learning in relation to Wenger's (1998) community of practice. However, the lecturers felt that simulation-based learning was resource intensive, and placed an excessive workload demand on them. Due to the nature of delivering the sessions in groups of four to six, it had time-tabling issues because one week was required to provide the entire cohort with the same type of learning. Similar to other studies, these mixed feelings about simulation are reflected among educationalists involved in delivering midwifery programmes (Arundell and Cioffi, 2005; Davis *et al,* 2009; Haigh, 2007). This study shows that these negative aspects centre not on the concept of simulation but in the resource-intensive aspect of the strategy and the technical knowledge required.

Thus the lecturers confirmed many aspects of the existing literature about the concept of simulation. However due to a change in circumstances of the third member of the university midwifery team, this study only captured the views of two educationalists. Although generalisability was not sought, this was perceived as a limitation because the opinion from another participant within this group may have shed more light on the topic.

6.3. Research Question 2

Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?

Two themes emerged from the category relating to the application of simulation-based learning to practice, that is, Memory and Applied Learning. The latter of these was demonstrated in all participant groups and across and between the individual interviews and focus groups, whereas Memory was unique to the student midwives only. These will now be discussed in the sections that follow, and in proportion to the multiple factors contributing to the themes within this category of the study.

6.3.1 Applied Learning

Three sub themes that related to the cognitive, affective and psychomotor domains of learning (Rogers, 1996) derived from the question pertaining to the application of clinical simulation to clinical practice. Of these, knowledge and understanding (cognitive) and skills (psychomotor) application were the most commonly recurring of all evidence; in particular skills. The affective or behavioural domain of learning emerged as the less common transferrable aspect of learning.

From the midwives who were interviewed individually and in the focus group, many related the question about transferrable skills to their students' clinical performance. Through mentoring the student midwives in this case study, they evaluated that the psychomotor aspect of learning, developed from simulation, was applied in practice more so than the cognitive or affective aspects. Although a few mentors did state that cognitive and affective learning were applied also, this was not supported in their focus group, whereas the application of psychomotor skills was. All five students who were interviewed individually and in their focus group expressed the opinion

that they applied the practical skills developed from simulation in the university setting, to practice. However only three students said that they utilised their cognitive knowledge from simulation in practice and none claimed that the behavioural aspects were applied. From the midwifery lecturers' perspective, they commented that the psychomotor and cognitive skills were transferred to the clinical placement but only one of the two lecturers mentioned the application of behavioural learning.

These main issues, that is, psychomotor, cognitive and behavioural skills in addition to overall performance, will now be discussed in more detail.

Psychomotor, Cognitive and Behavioural Skills

As previously stated in Section 6.2.3, simulation is a multifaceted approach to learning (Gredler, 1992: 2004; Moule *et al*, 2008) yet in this study the skills aspect of learning was considered to be applied more so in practice. It is probable that as the technical element of clinical performance was visible and could be assessed by observation, consequently students, mentors and lecturers identified measurable activities more easily in the clinical setting rather than knowledge and behaviour. Above all the midwife mentors, students and lecturers commented on the students' smooth use of clinical instruments and knowing how and when to use them, in addition to demonstrating ability in assisting at childbirth.

Further responses from many participants suggested that the students performed the skill like a drill, resembling the application of 'reflex learning' or a behaviourist approach (Kneebone 2003, p.269; Rogers, 1996). Of note was repeated reference to using instruments correctly and organising the trolley and delivery pack in preparation for assisting at birth; perhaps indicating that integrated learning had been somewhat decontextualised within the practice setting, to a fragmented skill. This concurs with Eraut (1994, p.48) who states that where a task has been rehearsed, then its application in a similar setting is merely 'replicative'. Indeed the simulated environment was replicated in the clinical area but as assistance at childbirth would have differed each time then arguably interpretation and cognition, as suggested by some of the participants in this study, may have been applied to meet the different birthing situations.

Therefore the notion that a skill devoid of any cognitive process was applied in practice was not an opinion exclusive to all of the participants. Lecturers, three students and two mentors expressed as much at individual interviews, although this was not supported by either of the focus groups. Reilly and Spratt (2007) also found that students claimed to recall events from practice placement in which they connected their knowledge and understanding in the clinical area to simulation in the university. In my study, one student described how *'...it helped the knowledge and understanding...It definitely helped with all that because you were waiting on the head to turn* (in practice)*...'* alluding to how they may have applied integrated learning.

Although there appears to be a lack of research based literature within healthcare and midwifery education relating to transferability, results from earlier studies (Alinier, 2003; Alinier *et al*, 2006; Cioffi *et al*, 2005; Crofts *et al* 2007b; Crofts *et al*, 2008; Reilly and Spratt, 2007) conducted in simulated settings, predicted that knowledge and skills would be applied in practice. It is debatable whether a different methodological approach used in the present study would have provided unequivocal evidence that knowledge and understanding, in addition to psychomotor skills, were applied. Indeed from the thick description of their experiences, the students' view should be recognised, as replication of previous experimental studies (Alinier, 2003; Alinier *et al*, 2006; Birch *et al*, 2007; Cioffi *et al*, 2005; Crofts *et al*, 2007a; Deering *et al*, 2006; Morgan *et al*, 2002; Robertson, 2006) in the clinical setting would not have taken account of other factors influencing the meaning of clinical simulation in the context where it was applied. As the information obtained in this case study encompassed other perspectives in relation to the beliefs and social issues associated with midwifery education these may have been overlooked using more objective methods of enquiry.

Regarding non-technical skills, findings additionally suggest that simulation did not facilitate communication. This was largely the opinion of students and mentors, whereas the lecturers did not discuss it. The reason cited for its ineffectiveness in developing communication skills, was the discomfort associated with talking to the manikin during university learning, which fails to support Halamek (2008) who

argues that the development of communication skills can be accomplished in the simulated setting. However the finding reflects earlier work by Rystedt and Lindstrom (2001) who concluded how the 'human aspect' of nursing work such as interacting with patients was a farfetched goal in simulation. More recently poor facilitation of communication skills via simulation within healthcare education has been upheld in a comparative study by Crofts *et al* (2008) and a recent phenomenological study by Pike and O'Donnell (2010). Therefore the present study affirms the existing evidence which suggests students have difficulty developing communication skills during simulation-based learning. Consequently communication was not transferred to another context such as the maternity delivery suite, from the university. As this is an important area for development in preparing student midwives for practice, findings from this case study suggests the use of a manikin in simulation-based learning is not the most effective medium to facilitate communication skills. Thus in relation to CEMACH (2007) which cited poor communication skills as one of the contributors to sub-optimal maternity care, consideration to the use of real professional patients instead, is a possible solution.

Further and as already discussed in Section 6.2.5, lecturers and several mentors speculated that as simulation offered the opportunity to correct practice errors prior to real life practice, it would help reduce sub-standard care (Finlay *et al*, 2006). This recommendation is not new as other authors argue in favour of using simulation-based learning to lessen the risk to patients (Haigh, 2007; Halmakek, 2008; Johannsson *et al*, 2005; McCallum, 2007; Morgan, 2006; Moule *et al*, 2008; Stark, 2007). Although no critical incidents occurred to the women cared for by the midwifery students in this study, it is not possible to say with certainty that this was due to simulation-based learning prior to practice. Whilst the findings are encouraging, to establish any relationship between simulation and safe practice would require a longitudinal study to identify a cause and effect relationship.

Lastly, the least recurring issue related to the affective domain of applied learning. Responses to this topic were concentrated in the mentors' group whereby three mentors indicated that simulation influenced the behavioural aspects of professional practice by making the student more aware of general professionalism in the practice

setting. One lecturer alluded to this concept also, but none of the students discussed it. Unexpectedly the responses about behaviour did not emulate those aspects of general professionalism such as role awareness, values, and team-working previously acquired from university learning (as discussed in Section 6.2.3) but related to the student knowing how to 'situate' themselves in the clinical environment. Within the context of data collection, 'situate' was interpreted as the student knowing where to stand without being obtrusive and generally knowing how to behave or conduct themselves when participating in a hospital and childbirth care episode, as exemplified by one mentor's response, '*it is less of a jump from getting told how to do and how to be and how to act in a hospital environment'*.

This finding links to the socialisation process (Arnseeth 2008, p.301; Clancey 1995, p.50; Eraut 1994, p.30) in that the students had become socialised into professional practice in such a way that they knew their 'place' in this setting. Whilst the present study takes cognisance of the positive elements associated with appropriate professional behaviour, responses from mentors show signs of the repressive attitudes in healthcare education that lead to students behaving in a submissive manner (Mooney and Nolan, 2006). Haigh (2007) commented that students were in a low hierarchical position within the workplace establishment, and, in a more recent study in midwifery (Kroll *et al* 2009, p.694) it was highlighted how the attitude of midwives towards students was perceived negatively. Indeed it is reasonable to conclude that the midwifery students in my study knew where to 'stand' and how to situate themselves because this aspect of learning had developed from simulation-based learning in the university during scenario-based role playing, in keeping with situated learning theory and communities of practice (Lave and Wenger, 1991). However other aspects of learning within the behavioural domain, which are difficult to identify due to their subjective nature may also have been applied although 'knowing where to stand' was the only behaviour readily identified by the mentors; perhaps suggesting a cultural attitude where students have a subordinate role.

As no previous research from the midwifery literature has enquired about this aspect of learning through simulation from the perspective of anyone other than students, this finding complements current knowledge. It suggests there is scope for the

midwifery lecturer to nurture more assertive behaviour and attitudes through simulation-based learning so as to offset some of the hierarchical and cultural norms of the workplace.

Overall Clinical Performance

The mentors stated that clinical simulation did not distinguish the students in the study from others who had not received simulation-based learning. As it was not the aim to assess student performance, this was an unexpected finding which arose when the mentors were asked if they knew the student they had mentored had received simulation-based learning. However as the other groups were then not offered the opportunity to express a view on clinical performance, this may be considered limiting; but the mentors were in the strongest position to make this evaluation as they could compare with previous students whom they had mentored. Whilst there would appear to be conflict in some of the responses provided by them, the indistinguishable nature of these students from former students may be explained by how they were assessed in clinical practice. Indeed the mentors evaluated the students holistically when in clinical placement rather than how they performed in an isolated skill, thus they concluded that overall performance was not superior to others who had not received that type of learning.

To date there is no evidence to compare these findings as previous studies (Birch *et al* 2007; Reilly and Spratt, 2007) considered the impact of simulation on overall performance in practice, from the students' perspective only. The main issues related to the participants claiming they had felt more confident. Indeed McCallum (2007) highlighted how assessment in practice can be subjective. However the mentors' evidence in the present study should still be considered in light of their clinical role in assessing students. Proficiency in all aspects of clinical midwifery practice is a requirement for students to meet NMC (2009) standards of midwifery education, and the mentor is responsible for making this assessment. Therefore whilst their evaluation may be considered subjective, at this particular study site they mentored or co-mentored students and subsequently their assessment encompassed the views of other clinicians, thus reducing mentor bias. Also the midwifery lecturer moderated

the final summative report. Hence this is a significant finding relating to clinical simulation in midwifery education. It suggests that the impact of clinical simulation on overall performance in practice was of no consequence.

In summary, there is limited empirical evidence (Davis *et al*, 2009; Murray *et al* 2008, p.7) to demonstrate whether learning gained through simulation-based learning in the university was transferred (Perkins 2009, p.111) into clinical practice. Thus this case study would appear to be the first to address the question of the application of simulated skills to clinical practice in midwifery education, and particularly from a three-point perspective within the clinical environment. Indeed the qualitative findings suggest that learning developed from simulation, as depicted within the three domains of learning, is seemingly applied in practice, although from categorical aggregation the data confirms that skills were mainly transferred. Further, as responses suggested that the holistic aspect of learning from simulation had perhaps been reduced to sequencing of a skill for some students, then only to a certain extent do these findings support previous research which predicted that multi-faceted learning was applied in practice. In relation to this point and as discussed in the next section, the evidence further suggests that the clinical environment evoked memories derived from simulation in the university which were utilised in practice.

6.3.2 Memory

Following on from the previous topic, is the issue of Memory. Responses in this area were unique to the student group, and emerged in both their individual and group interviews. However with regard to the mentors and lecturers, when asked how simulation may facilitate clinical practice, this topic was not raised. In spite of remarking on the similarity of the skills laboratory to the maternity delivery suite, the mentors did not suggest that memories developed in the skills laboratory might have a bearing on clinical practice. This may simply have been because they had not experienced simulation-based learning and therefore it did not occur to them. On the other hand, the midwifery lecturers who experienced simulation in their role as facilitator did not raise it either. Although the lecturers expressed ways in which simulation might benefit the students in practice, such as the familiar nature of both environments, the contribution of memory was not discussed. Again, it may never

have occurred to them or it was not as important to this group of participants because they were not the recipients of simulation-based learning.

However across the one-to-one interviews and their focus group, five midwifery students described how they recalled simulation from university, when in the clinical area. Although the majority of students were able to articulate how they applied clinical simulation in practice (as discussed in Section 6.3.1), some regularly interspersed their responses with references to 'remembering'. A few students speculated that simulation had provided a cue or prompt in practice to which they recalled certain elements of their university learning. Indeed some responses related to how the environment was not only familiar to the student midwives (discussed in Section 6.2.1) but that they *'just knew what to do'* when the situation arose because *'it* [current situation] *brought it* [clinical simulation] *all back'*.

Exactly what triggered them to remember their university acquired knowledge is not certain but this study provides a theoretical proposition which, to begin with, draws on the work of Eraut (1994: 2000) and the concept of tacit knowledge. First, the students demonstrated signs of tacit knowledge (Eraut 2000, p.123; Sternberg *et al* 2000, p.104) because they did not know how they *'just knew what to do'*. In other words, they did not need to think about what they were doing. This could have been because they had done it several times before, however, at the time of data collection all student midwives had assisted at no more than three births. Therefore it is unlikely that they had been applying these skills routinely or intuitively. Instead it is possible that they were remembering explicit or formal knowledge derived from simulation-based learning in the university, that had remained in their long-term memory (Atherton, 2009c) and which they then used tacitly in practice. Eraut's (2000, p.116) concept of informal learning provides support to this rationale. Thus their current experience in the clinical area most likely provided the stimulus for the past episode from the university to be reactivated in their memory, resulting in them performing the skill.

From the students' responses, it would appear that recall in the new environment, that is the workplace, had not been difficult. As discussed in Section 6.2.1 the

similarity of both environments may have been a contributing factor because the clinical setting provided familiarity to the university as evidenced by many participants' responses indicating how both places were more or less the same. Theoretically this concurs with Wilford and Doyle (2006) who explained that the effectiveness of simulation was based on the concept of context-dependent memory (Godden and Baddeley, 1975; Opitz 2010). In relation to this case study, qualitative evidence supporting how context-dependent memory may have underpinned the effectiveness of simulation, relied not only on the students' conception of how they remembered aspects of simulation in the clinical area - for example, *'Opening up the pack, washing your hands and putting the sterile gloves on you know just like what it was in uni...'* - but also in how they perceived both places to be similar. Effectively they were saying that they remembered because the university and clinical placement were alike, therefore context-dependent memory had played a role in effective recall.

From Section 6.3.1, discussion of the findings identified how the skills gained through simulation-based learning in the university were transferred into clinical practice more so than knowledge or behavioural learning. Further evidence also suggested how some students performed simulation-based skills in a drill-like manner without any deliberative thought (Eraut 2000, p.124). Thus cumulative evidence leads to the proposition that the student midwives in this study were merely replicating procedures rehearsed in university, within the clinical environment. However the evidence base regarding how simulation-based learning is utilised in practice is not only speculative but limited too, therefore findings cannot be compared to the present study in order to evaluate the role of memory. Equally the complex nature surrounding memory (Atherton, 2009c) informs that it is beyond the scope of this thesis to make accurate claims on the part it played in the application of simulation to practice. This would require a separate study which focussed solely on the role of memory. What the findings do suggest though is the need for further research into how simulation is applied in practice, particularly whether skills are applied without reasonable judgement or if there is deliberative thought processes taking place.

6.4 Research Question 3
How does clinical simulation affect work based learning?

The research question relating to work based learning generated three themes, in which two of these, categorised as Interfacing and Teaching in Practice, were unique to only the midwifery lecturers and the mentors respectively. The more commonly recurring themes emerging from this research question arose from the mentor and student midwives and related to the perceived catalytic effect offered by simulation, in that it was considered a medium to other learning within the workplace or practice setting.

In the sections that follow these issues will be discussed from the themes common to most groups to those that were unique to individual groups.

6.4.1 Catalyst to Learning

Responses to this topic were concentrated among the students and mentors and across and between their individual interviews and focus groups. Although the midwifery lecturers were offered the opportunity to express a view on this area of learning, they did not elaborate to any great extent therefore their contribution towards this category was negligible. Perhaps they failed to interpret the question as an area worthy of discussion, however as there were only two participants within this group and despite their views being taken into account, discussion with more lecturers through a focus group may have provided more significant insight. Consequently the opinions expressed in relation to the catalytic effect of simulation in the workplace, arose from the remaining participant groups. The main factors that contributed to this finding were how simulation had increased student confidence in the workplace and also how the students were more open to other learning as a result of simulation.

More specifically, all of the students and several of the mentors alleged that clinical simulation had a positive impact on work based learning because they (the students) had already acquired some clinical experience, albeit in a simulated environment. Thus some overlapping elements with Section 6.2.2 were found, whereby the students expressed that through simulation-based learning, they felt they had

experienced aspects of their practice placement beforehand. Some midwives also commented on how the students would feel more relaxed about learning, perhaps because they were already working towards some of their clinical outcomes when they commenced placement.

Indeed literature pertaining to the childbirth simulator within midwifery education is limited, however recent evidence from nursing (Moule *et al,* 2008) proposed that simulation could support students in achieving clinical competency. Although Moule *et al* (2008) failed to demonstrate why this may be the case, two midwifery students in the present study further speculated that if they had not had the university experience of simulation, then it would have taken a longer period of time to settle into the workplace. Hence they would still have to gain practice in the skills necessary for assisting at childbirth; an experience which they deemed as the most important among their clinical outcomes. Thus simulation afforded them more time. The findings further suggest that the students were open to other learning because they felt they had developed some skills already, therefore simulation also provided opportunity to integrate their prior learning with new learning opportunities. In other words it was potentially a catalyst to other learning.

First, this concurs with the framework of competence depicted by Miller (1990), demonstrating how the students in this study felt that they could already perform the skill in practice. Also and in accordance with Wilford and Doyle (2006), who suggest that acquiring a degree of competence prior to practice potentially increases the students' speed of learning. Indeed this was demonstrated in some of their responses which indicated how the students were open to other learning opportunities as they no longer felt the burden associated with developing certain skills.

Second, this finding begs the question regarding the level of competency the students felt they were performing at when they were working in the clinical area. It would appear that while essentially they were at the level of novice in certain skills from simulation (Eraut 1994, p.124), they perhaps considered themselves beyond this level in assisting at childbirth because they had some prior experience. Thus they were on the pathway which moved away from performing the skill as a very deliberative

process. This assumption is further explained in the discourse analysis by Finnerty and Pope (2005). Although the present study did not assess the student midwives knowledge through language or otherwise, effectively they were saying that the experience of clinical simulation in the university provided a degree of competence and independence prior to practice that enabled them to quickly seek new work based learning opportunities. This was exemplified by one student's response, stating that *'...I have being doing other things, it helped me with that.'*

Next, another contributing factor to the catalyst effect offered by simulation may have been the increased confidence the students experienced, reflecting previous research by Birch *et al* (2007). This finding relating to confidence also supports a recent study from nursing by Pike and O'Donnell (2010) who reported enhanced learner self-efficacy following simulation-based learning, and likewise Reilly and Spratt (2007) who made a similar observation. To explain why the current participants felt more confident in practice, consideration is given to those factors which affect confidence in general as identified by Lofmark and Wikblad (2001). More recently McCallum (2006: 2007) found that simulation-based learning enabled nursing students to take more control of their learning, thus the midwifery students in my study perhaps felt more confident because they were able to perform the practical task in practice which had been initially developed in university. Consequently they were able to exert some control over learning in the workplace.

Therefore this research proposes that clinical simulation provided an element of psychological support to students in the clinical area and confidence in their abilities so as to seek out other learning opportunities more readily than they may have done without simulation. However, arguably the meaning of this finding perhaps conflicts with evidence in Section 6.3.1 suggesting that the impact of clinical simulation on overall performance in practice was of no consequence. As previously stated, assessment of clinical performance was not an objective of the study therefore both findings are not comparable and should be viewed in light of their own logic.

6.4.2 Interfacing

The main issues arising from this topic centred on the opinion that clinical simulation was a ‘step’ towards the reality of clinical practice, and, that it could identify and correct practice errors prior to working in the clinical setting. In relation to the latter, this aspect of clinical simulation has been discussed in Sections 6.2.5 and 6.3.1, which highlighted how its impact on improving patient safety and care was largely speculative and would require a separate study to establish any relationship between simulation and improved clinical outcomes. However, that simulation metaphorically provided a ‘stepping stone’ between clinical reality and the university was an issue which originated from the midwifery lecturers only. They alluded to the existence of a theory practice gap between the university and professional practice thus giving rise to the claim that clinical simulation had an interfacing role in providing a link to both environments.

With regard to the importance attached to this finding by all participants, it is notable that one-to-one interviews and focus group discussion with mentors and students did not bring about any significant response on the relationship between theory and practice and the potential of simulation in bridging the gap. As the existence of a theory practice divide was not an outcome of the research, the participants were not offered the opportunity to express their view anyway. Nevertheless, it was not unexpected to find the issue arising from discussion with lecturers as the debate surrounding the perceived void between theory and practice is well documented within the nursing and midwifery literature (Corlett *et al,* 2000; Darra, 2006; Davis *et al,* 2009; Larsen *et al,* 2002; Mackenzie, 2009; Ousey and Gallagher, 2007; Stark *et al,* 2000). However the lecturers in this study discussed how clinical simulation was merely a ‘stepping-stone’ - as opposed to a hypothetical ‘bridge’ - between theory and practice which offered midwifery students experience of a particular aspect of professional practice. Indeed it was mainly seen as providing a realistic learning experience comparable to practice and the opportunity to develop skills to a safe standard, which could then be applied in the clinical setting. However, the midwifery student still had to build on existing knowledge and skills through direct care provision.

Importantly, the lecturers who participated in this research were not suggesting that clinical simulation could or should replace practice hours, as has been recommended for pre-registration nursing programmes (NMC, 2007) but not yet for midwifery education (NMC, 2009). Although the study did not aim to explore the views of participants in relation to simulation replacing practice, cumulative findings would infer that this would not be welcomed. Indeed the negative response to substituting practice hours with simulation was voiced by both midwifery lecturers and reflects recent evidence from nursing (Moule *et al* 2006:2008). Therefore the 'interfacing' role offered by simulation did not extend to this capacity.

In keeping with Davis *et al* (2009) the midwifery lecturers highlighted the limitations of the childbirth simulator in teaching the range of skills required to provide evidence-based practice to women during childbirth. But as it had helped integrate the theory and practice of midwifery within the university (discussed in Section 6.2.3) and removed some of the initial fear associated with clinical practice as highlighted in Section 6.2.2, it was perceived as an adjunct to theoretical learning which allowed the students to participate at the edge or periphery of clinical practice out with the real environment (Lave and Wenger, 1991; Wenger, 1998).

Within the context of this study, the extent of the gap between the university and practice seemed confined to the limitations posed by frequent use of the more didactic teaching and learning approaches, such as lectures. For reasons previously discussed in Sections 6.2.2 and 6.2.3, the midwifery lecturers ensured their clinical knowledge and skills were current and therefore teaching was consistent with practice. In relation to the existing literature (Davis *et al,* 2009; Kitson-Reynolds, 2009; McCallum, 2007; McCaughey and Traynor, 2010; Morgan, 2006; Moule *et al*, 2006; Murray, 2008; Pike and O'Donnell, 2010) which depicts clinical simulation as bridging the gap between theory and practice, the nature of the said gap is not made explicit. Taking cognisance of the on-going debate which challenges lecturers' teaching of clinical skills (as discussed in Section 6.2.3) this may be a contributing factor to the perceived theory-practice gap in previous research. Consequently it is difficult to make comparisons to other evidence with regard to the role offered by clinical simulation. Findings within the context of this local study show how

simulation offered an interface only to contextualise theoretical learning and provide insight into clinical practice which, together with the catalytic effect discussed in Section 6.4.1, had a positive effect on work based learning.

6.4.3 Teaching in Practice

Lastly, this topic developed from the mentors' data set. Enquiry into their teaching role in practice had not been an outcome of the study thus the participants had not been questioned about it. However both the individual interviews and focus group with mentors generated spontaneous discussion surrounding simulation and its relationship to their role in teaching the student midwives within this study. Therefore it was an unexpected finding of the research which, in spite of the small number of mentors involved, the richness of their dialogue provided a clear representation of the context where simulation was applied and their role within that context.

In individual interviews with mentors, few talked about the positive contribution clinical simulation made to their teaching role whereas the focus group offered deeper insight into other aspects of their professional practice, which subsequently impacted on the students' learning. Therefore it seemed the focus group provided stimuli on the Teaching in Practice issue and consequently generated consensus that the mentors believed they were not always fulfilling their teaching responsibilities. Accordingly two main issues developed from this category in relation to how the mentors viewed their role and responsibilities towards students. First they identified their formal educator role as an area of concern due to the nature of the clinical environment, as has also been highlighted by Darra (2006). Secondly, and conversely, they did not recognise the other forms of learning that also took place within professional practice, as described by Lave and Wenger (1991).

These factors signified how the mentors experienced frustration when teaching was consumed by the demands of the clinical area. Indeed, although this was not the focus of the discussion, it shed light on how simulation facilitated teaching student midwives within the clinical area. These issues will be discussed next.

Educator Role

From the focus group, two midwife mentors discussed how the attitude of the student and mentor had an impact on work based learning. They felt that if the student was enthusiastic then this would positively influence their workplace experience and help them seek further learning. This concurs with Gerber (2000) and Jarvis and Griffin (2003) who proposed that common sense knowledge and positive personal traits facilitated work based learning. For this reason, the mentors were implying that such personal traits, as opposed to simulation-based learning were more likely to impact on learning in the workplace. They also signified how, in accordance with Örtenblad (2004), that work based learning was enhanced in optimal working conditions such as adequate coaching and mentorship. Thus they indicated that they saw how their midwife educator role impacted positively on the student midwives.

Professional Practice

Conversely, they also indicated how simulation facilitated the mentors' teaching role because they believed they did not always have time to teach student midwives. They anticipated that because the student midwives would come to practice with a background and certain level of knowledge and skill acquisition following simulation-based learning, then whenever there was a lack of time for formal teaching (that is, their conceptualisation of 'teaching'), the mentors would be reassured that they would not need to teach the student without basic preparation. Two mentors discussed this at individual interview and a further two at their focus group. However the learning derived from being a mentor and role model, or the development of the students' knowledge in the course of activity and conversation within their role as a member of a professional team (Lave and Wenger, 1991), was not recognised.

Within nursing, Moule *et al* (2008) also found that clinical simulation could support practice staff in preparing students for fitness for practice during their programme. The mentors in the present study explained that the heavy workload of the clinical area was responsible for their lack of time to support the students' learning in

practice. However this was not a new phenomenon as other studies have highlighted the workload demands placed on midwifery staff and how it was considered to negatively impact on students' learning (Darra, 2006; Finnerty and Pope, 2005; Haigh, 2007; Kroll *et al*, 2009). To further illustrate the context in which simulation was applied, many of the midwives discussed the profile of the clinical environment. Lamenting the previous compartmentalised model as opposed to the current integrated one, they suggested that it was not conducive to the students' learning. Indeed the integrated model of care (as previously described within p. 2) relied on enough labouring women to ensure all students had opportunity to achieve their clinical outcomes.

However as well as a lack of time or opportunity, another compromising aspect of the environment observed in this study, was the lack of appropriate space to discuss, debrief or engage in more formal teaching within the clinical area. As discussed in Section 6.1, the pool room was selected by the midwives and student midwives as a private area to conduct interviews for this research. It was also used by mentors and the visiting lecturer to conduct tripartite assessment with students, thus it was utilised for general student and mentor purposes as well as water birth. However noises from the ward could be heard from the pool room and frequent interruptions by staff occurred because of its central location within the ward. Consequently these factors resulted in an atmosphere that was distracting.

Further, simple observation of the clinical area highlighted how it moved between being calm and hectic within a short space of time, reflecting findings from Haigh (2007) who stated that the clinical setting offered little time to reflect in and on action due to the busy nature of midwifery practice. Additionally the context of the present study also lacked privacy to do so. This finding further concurs with Cavanagh and Snipe (1997) who identified a lack of debriefing opportunities as a source of stress in midwifery students. Also two midwives admitted to abusing the supernumerary status of the students whenever the ward became busy; which has also been highlighted in a more recent study in midwifery (Kroll 2009 *et al*, p.694). Notwithstanding the value of other forms of professional learning in the workplace (Eraut, 2000; Finnerty and Pope, 2009; Wenger, 1994), which the midwifery students

were undoubtedly exposed to given the expertise of the mentors and the unpredictable nature of professional practice, overall the clinical environment was observed to be busy and lacking a suitably quiet area for formal teaching, reflecting or debriefing. This was confirmed by the mentors who also described the setting as inconsistent in its conduciveness to the students' learning.

Thus for these reasons, the mentors volunteered that clinical simulation had the advantage of providing basic practice in addition to what the ward, or they could offer. In other words, they believed that if the workplace environment was organised differently and there was more time to engage in formal teaching, then the students would have an optimal work based learning experience. However without devaluing the learning derived from the community of midwifery practice, as it was, findings from this study also suggest that simulation could complement the existing set-up with its recognised inadequacies and fill what may be the antithesis of a theory-practice gap. That is, a 'practice-theory' one (Darra, 2006). Indeed one mentor in the present study suggested that clinical simulation could help students understand episodes in practice where there was limited time to debrief following the event. Thus a remedial period within the university to consolidate practice or work based learning using the childbirth simulator would follow practice placement. Although this is an area worthy of further consideration, the resource demands of providing individual simulation-based learning sessions to a cohort of approximately 25 student midwives would require careful consideration and planning.

6.5 Summary

The preceding sections have evaluated the integrated data of three data sets, relating to clinical simulation in midwifery education. Due to the limited amount of research on simulation in midwifery education per se, evidence from other healthcare disciplines was included to compare findings. Thus through discussion it has been demonstrated where the knowledge generated from this study sits with the existing body of evidence. Still, just how effectively my research provided insight into the contribution of simulation-based learning within the context of clinical midwifery practice requires further reflection. Indeed the research methodology, methods used and my effect, as researcher on data collection and analysis ought to be considered in

relation to how these influenced the process and in the overall achievement of the study objectives.

6.6 Research Methodology and Research Questions

In relation to answering the research questions effectively and efficiently, aspects of the research process require further deliberation. First, as the nature of the questions asked about midwifery staffs' interpretation of a particular experience and phenomenon, a qualitative approach was appropriate. Had knowledge without any subjective viewpoint been sought, the collection of more objective knowledge would have been called for, and, required the research questions to be adapted accordingly (Robson 2002, p.82). Indeed the inclusion of a theoretical framework provided guidance on the issues to be studied. Although debatable in qualitative research (due to the possible discouragement of emerging data from using pre-defined categories), on reflection it was effective in keeping the study focussed. Otherwise the volume of data generated may have been overwhelming during the data reduction element of analysis.

As for the research design, other strategies to enquiry had been explored in Section 3.2.4. A case study approach was selected on the basis that the context in this study influenced the application of clinical simulation. As such, a bounded system consisting of three participant groups ensured that the research questions were answered by all those involved in clinical simulation. However a long term qualitative approach that extended throughout the three year midwifery programme, may have offered a deeper insight into the application of simulation to practice, particularly as the students' learning evolved to more complex midwifery care.

Secondly and with regard to the effectiveness of the main methods of data collection in answering the research questions, the level of success derived from individual and focus group interviews was encouraging but not absolute. Indeed from the number of issues generated in response to research question one, the tools for data collection would seem fit for purpose. However as the study relied on participants, particularly student midwives, to recall information in a retrospective manner, an additional method may have facilitated participants to better articulate or exact responses to

questions two and three. Perhaps an unstructured diary, such as a reflective journal (Robson, 2002, p.260), would have provided an accurate account and reflection of the students' experience in the clinical setting which would have helped them recall information more easily and potentially have demonstrated how they used simulation in the clinical setting. Undoubtedly though, this method would have relied heavily on the willingness of the participants to self-report.

Lastly, in relation to the informal observations made of the clinical area, whilst some observations augmented the findings to research question three in relation to the unpredictable nature of clinical practice and the lack of quiet space, the simple nature of this method determined that the part it played was minor. Thus its application in achieving the study objectives is perhaps inconclusive. In essence, the inclusion of unobtrusive observation did not alter my view of the conditions of the context because the clinical setting was what it was, that is unpredictable. Although this may be perceived as an assumption stemming from my previous midwifery clinical experience, observation demonstrated how the clinical setting was not unfairly portrayed. Also, this additional unobtrusive measure helped describe the setting where simulation was applied and so the purpose was to give the reader a 'feeling of being there' (Stake, 1995, p.63), a feature of the case study approach. Therefore in relation to the latter, it was advantageous but that said the overall contribution of observation to this study was perhaps small.

Therefore in short, the exploratory purpose of the study informed that the qualitative approach adopted was appropriate. The research questions directed me to using interviews and observation to fulfil the study objectives. However a long term study and the use of reflective journals by the students may have provided further meaning to the answers to questions.

6.7 Researcher Effects on Data Collection

I commenced this study with professional knowledge and technical skill in using clinical simulation within midwifery education. Also, my views were positive in relation to the contribution it could make to the education of student midwives. Guba and Lincoln (1989, p.238) state that no researcher undertakes a study 'with a

blank mind', and in fact it is the opposite state of mind which leads to an enquiry. Indeed as one of the first institutions in Scotland to have introduced the childbirth simulator into the midwifery curriculum, I had been involved in using it as an educational approach and for consultancy purposes since 2004. Early extracts from my reflective diary prior to the commencement of this study, demonstrated my on-going commitment to the implementation of the strategy within the university (see Appendix 11, entries 12/9/06 and 20/10/06).

Thus my positive views, in relation to any assumptions and preconceived notions I had about clinical simulation, had potential to impact on data collection and analysis (Robson 2002, p.172). As data collection commenced and self-awareness developed with regard to the influence of my viewpoint on the process, some entries from the field notes were copied into the reflective diary (see Appendix 11, entries 27/5/09 and 29/5/09). Guba and Lincoln (1989, p.238) talk about progressive subjectivity to monitor the development of researchers' interpretations and understanding of the knowledge they are constructing. Further, Bradbury-Jones (2007, p.292) shared the notion of 'subjective I's' from her reflective diary, which were considered to influence the research process throughout her study. Therefore taking cognisance of my subjectivity and the potential influence in the current study, I had to frequently refer to the field diary, and, where subjectivity was suspected by my responses in the field notes, these were entered into the reflective diary.

This was useful in the analysis section by forcing me to reflect over the issues that emerged. Equally it was of use in relation to the participants in the study who 'carried baggage' too, thus there was the potential for them responding to questions in a way that they thought they should, as discussed in Section 6.2.1 (Robson 2002, p.172). Indeed in my previous clinical role, I had a shared history with the participating mentor midwives. In addition, I worked closely with the midwifery lecturers and shared knowledge and skill in using simulation; and lastly there was my 'lecturer-student' relationship (discussed in Section 3.7.1). These factors posed issues relating to insider research (Smyth and Holian, 1999) as well as 'respondent bias' (Robson 2002, p. 172). An awareness of how these issues may have influenced the findings is recognised, however the detailed reporting of the raw data (see

Chapter 4) in conjunction with a transparent account of coding and analysis (see Appendix 10) demonstrates a deliberative effort to assist readers in making their own interpretations.

Conclusion

This chapter presented a discussion of the findings in relation to the research questions and has highlighted the knowledge generated from this study. The research methodology, methods used and the researcher effects on data collection and analysis have been considered in relation to how these may have influenced the process and in the overall achievement of the study objectives. In the chapter that follows, conclusions will be drawn from the information presented.

Chapter 7: Conclusions

Introduction

This research project focussed on clinical simulation in midwifery education. The overall aim was to explore the application of clinical simulation in the practice setting. For that purpose, a small scale case study was developed. Midwifery lecturers, student midwives and midwifery mentors who were directly involved in the students' learning, participated. Qualitative data were collected using one-to-one interviews with all participants, focus groups with mentors and students, and unobtrusive observation of the clinical area. The study addressed three main aspects of simulation-based learning in midwifery education: its contribution to preparation for practice; the application of simulation to practice; and its affect on work based learning.

A discussion of the findings was undertaken in Chapter 6. Now in this chapter I will present the conclusions to the study. These will be reported in the order of: the key findings; implications for professional practice; limitations to the study and recommendations for future research.

7.1 Key Findings

The key findings are outlined in relation to the three main categories within the research questions.

7.1.1 Preparation for Practice

In response to research question one, a number of issues arose regarding the contribution that clinical simulation provided in preparing student midwives for practice. First of all, clinical simulation provided a realistic experience for many of the student midwives, which was confirmed through triangulation of data with focus groups. Where it did not appear realistic, it was because the engineering, and / or psychological fidelity was not sophisticated enough to overcome the artificiality of the situation.

Secondly, simulation offered a degree of preparedness for practice in providing the student midwife with insight into the clinical setting and what to expect there. Not only did it allay the fear associated with observing a real birth for the first time, but the practical experience prior to practice was also a positive contributing factor.

Thirdly, simulation contextualised the theoretical underpinnings of midwifery knowledge and facilitated the continuous process of learning in the university. As well as helping in the acquisition of practical skills, mentors and lecturers indicated that it developed professional awareness of the student midwife role and team working. This could be explained by the theory of situated learning as simulation-based learning was delivered in a midwifery community of practice, thus helping the student midwife role take on meaning.

Fourthly, it was confirmed in interviews across the mentor and lecturer interviews that the opportunity for repetitive practice was considered to reduce harmful risk to women due to poorly developed clinical skills. This was also facilitated by peer review which enabled debriefing and repeated observation of the skill. However simulation-based learning was anxiety provoking because of fear of the unexpected and peer review, although the latter provided the opportunity to learn from mistakes. Lastly the resource-intensive aspect of the strategy was a concern of lecturers only.

7.1.2 Application of Simulation in Practice

Question two related to the transfer and application of simulated skills to the workplace. In the first instance, focus groups replicated the finding that the practical skills developed from simulation were mainly transferred and applied in the clinical setting, where these were performed in a drill like manner. Context-dependent memory seemed to have played a role in effective recall of the sequencing of practical skills in an environment similar to the university, as demonstrated in focus group and individual interviews with students.

Secondly, it appeared that integrated learning from university had been lost to some extent within the practice setting. Therefore learning within the behavioural domain, and also knowledge and understanding, were transferred less so although students

alluded to the possibility that simulation had facilitated in the development of tacit knowledge.

Next, all data sets highlighted how simulation-based learning did not contribute to effective communication in the reality of clinical practice as communication skills were not developed from this educational approach. Lastly the impact of clinical simulation on overall performance in practice was of no consequence although it helped the students' confidence.

7.1.3 Work Based Learning

Question three enquired about the influence of simulation on learning in the workplace, which generated a few issues relating to work based learning. First, simulation-based learning provided a degree of competence prior to practice that enabled student midwives to seek new work based learning opportunities. They sought other learning opportunities more readily than they may have done without simulation because they could integrate prior learning with new learning.

Secondly, simulation offered an interface to contextualise theoretical learning and provide insight into clinical practice. Subsequently it had a positive impact on work based learning but did not extend to filling any perceived void between theory and practice.

Lastly and unexpectedly, simulation facilitated the mentors' teaching role because the students had received a basic preparation prior to practice. This was considered beneficial by mentors because of the organisation and workload demands placed on clinical staff, which they thought compromised, their capacity to teach. Moreover the clinical environment was observed to be changeable in terms of workload and there was not a quiet place for the formal teaching that mentors recognised as part of their role, despite the other forms of learning taking place during the course of professional practice.

7.2 Implications for Professional Practice

From the key findings a number of conclusions were drawn that were specific to the research questions and overall aim. These are outlined together with implications for future practice.

Clinical simulation should be as near real to the maternity environment as practicable

In preparing student midwives for practice, educationalists should seek alternative ways to improve the clinical skills laboratory to ensure an authentic and near real experience which enriches the perception of being in the maternity ward. Even where the engineering fidelity is high and closely resembles the clinical environment, the inclusion of 'real' clinical midwives should be considered to partake in simulation-based learning involving scenarios. This could enhance the psychological fidelity and assist students in overcoming any barriers in participating as if it were real.

Situated learning theory explains learning derived from simulation in the theoretical setting and the insight it provides into the midwifery practice environment; thus simulation provides an interfacing role

The non-technical skills developed through simulation should not be overlooked but nurtured through co-participation in the community of midwifery practice. In view of the lack of time for midwives to formally teach in clinical practice, educators should take cognisance of the potential of the interfacing role provided by simulation.

Repetitive practice and peer review facilitate learning and potentially safe practice but not communication skills

Midwifery lecturers should reflect on ways to develop communication skills through simulation-based learning, particularly in light of the recent CEMACH (2007) report and patient safety issues. As communication with the manikin causes discomfort for students, consideration should be given to the inclusion of a professional patient during at least one session, with immediate feedback.

Practical skills developed from simulation are mainly applied in the clinical setting

When planning time-tables, midwifery lecturing staff should consider where simulation sits in modules and, where it is early offer a consolidation period immediately prior to practice to ensure adequate knowledge and understanding of key concepts, as well as refining practical skills.

Context-dependent memory plays a role in effective recall of the sequencing of practical midwifery skills in the clinical setting.

Educators should ensure the environment where simulation takes place imitates the environment where it will be applied as environmental cues may trigger near transfer of skills.

Simulation helps integrate prior learning with new learning opportunities and facilitates work based learning. Private space in the clinical area could help midwife mentors build on the basic skills developed through simulation

Clinical staff should be informed of the type of learning that is utilised within the university prior to practice to ensure they know the stage of learning of the student. To build on knowledge and skills a suitably quiet area in the clinical setting could be used to discuss prior learning and help students identify their learning needs taking cognisance of learning developed from simulation.

7.3 Limitations to the Study

A recognised strength of this study was that it was based largely in the clinical context and included multiple perspectives on the research problematic. Until this project commenced in spring 2009, there was no other study conducted in neither the midwifery workplace, nor empirical findings available which related to how clinical simulation was utilised in the midwifery workplace. Also a three point perspective which included the clinical midwives, student midwives and midwifery lecturers had never been sought.

However in relation to this last point, it is important to recognise that the midwives' understanding of clinical simulation was limited as their experience of it involved part-task trainers, which lack the sophistication of the university equipment. Consequently their evidence should be largely regarded as conjecture. Although triangulation of the data through focus groups and drawing on accounts from other participants may have lessened the effects of this, it would not have eliminated them. Thus the evidence base generated from the midwives should be viewed with this aspect in mind.

Consequently, and as discussed in Section 6.6, the extent to which the aim and research questions were answered was not conclusive, as longer term involvement and an additional method may have provided further data, particularly in answering research question two. Arguably this question was more important than the others in achieving the overall aim of the study which, was to explore the application of clinical simulation in the practice setting. However the small scale nature of the project meant that data were not as extensive as could have been under different circumstances. Therefore reflection on the project holistically and consideration to the limitations of the study are necessary to judge if the project aims were met, given the circumstances that follow.

First, using the maternity unit as the study site was not without challenges. Gaining NHS ethical approval was a lengthy process and delayed the start of the project by several months. As is what normally happens, NHS ethical approval is subject to a strict end date, thus an extension had to be applied for and further approval to complete data collection. Secondly, the busy nature of the clinical environment did not lend itself to conducting a research study around both my workload and that of the clinical staffs. Thus there were limitations to this approach. If the study was to be undertaken again, I would require being more responsive and flexible to the changing needs of the clinical setting. Subsequently I would need ring-fenced time for data collection in practice to ensure data could be collected whenever it was suitable to practice staff, even if this required me visiting the ward more regularly on night duty when it was sometimes quieter. As Robson (2002 p.167) states, 'a flexible design requires a flexible researcher'.

Thirdly, limited resources provided a further constraint. As a full time employee undertaking a doctoral research project, I had to conduct the study over a short period of time to complete the higher degree course. Subsequently involvement with the study as a whole was restricted. And fourthly, as a novice researcher, I lacked experience and knowledge of qualitative research therefore many aspects of the process were learnt 'on the job'. With experience, some pitfalls could have been avoided and data analysis expedited. Next, and in relation to the limited size of the study, this was further compromised by the non-participation of the third midwifery lecturer, who for genuine reasons was unable to contribute. This compromised the range of views that otherwise might have been obtained by another lecturer's input.

Finally the small scale nature of this project and purposive sampling suggest that the findings cannot be generalised to midwifery education from this study alone. Case study research explicitly seeks to understand the participants within a particular context (Stake, 1995). Thus the data generated from the three groups were specific to a local midwifery education and practice culture. Miles and Huberman (1994, p.261) profess that qualitative research involves connecting remote facts with other remote facts to construct meaning, which in turn allow inferences to be made. Looking to the literature to check for supporting and conflicting findings is one way of building an argument. However one may unwittingly resort to 'fallacy', and attach more meaning to events than justified (Miles and Huberman 1994, p.263). This is the subjective nature of qualitative research thus readers should consider their own interpretations.

7.4 Recommendations for Future Research

Based on the data provided from the small numbers of midwifery lecturers, midwives and students who participated in this study, I feel it is worthy of further research. Areas of further exploration would include the role of environmental cues in facilitating context-dependent memory, and also eliciting the views of mentor midwives following exposure to simulation as a teaching and learning approach.

Concluding Remark

Simulation-based learning is a relatively new teaching approach in midwifery education and research into its effectiveness is still in its infancy. Although the findings from my study are not extensive, they provide information about how the effects of simulation may be extended to the clinical area. If anything, the findings regarding its application to, and impact on practice are encouraging, as summed up by one student who described simulation as,

> ...*a challenge, but that's what it's like in here* [maternity ward] *as well, so it gives you a good feel for what it can be like* (ST. MW 1).

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Appendix 1: Patient Information Sheet & Consent Form

Participant Information

Purpose of the study

The primary purpose of the study titled *Simulation-based learning in the context and situation that it is applied: a case study* is that it is a required piece of assessed work in part fulfilment of the award of Doctorate of Education from the University of Strathclyde, Glasgow.

Background

Clinical simulation can be utilised in the university to provide an educational environment similar to that of the clinical area. Therefore clinical simulation may help prepare student midwives for their clinical placement. However, there is a lack of research about the effectiveness of clinical simulation in preparing students for the reality of clinical practice and the application of simulated skills to the workplace.

Why have I been invited?

This study involves student midwives, lecturers, and, midwives who fulfill the role of mentor to those student midwives. Selection will be based upon interest in participating in the study and availability. The case comprising student midwives, lecturers, and, midwives, will be recruited.

Do I have to take part?

It is up to you to decide. I will describe the study and go through this information sheet, which I will then give to you. I will then ask you to sign a consent form to show you have agreed to take part. You are free to withdraw at any time, without giving a reason. This would not affect any aspect of your studies or professional status.

What will happen to me if I take part?

All participants will be asked to participate in one semi-structured interview and one focus group throughout the duration of the study from 1st May 2009 until 31st August 2009. For most participants the semi-structured interviews will not last any longer than 45 minutes. The focus group may involve approximately one hour of discussion. Audio recording devises will be used for interviews and focus group activity. This data will then be transcribed

verbatim. During interviews there will be observation of the clinical environment made.

What are the possible benefits of taking part?

None to participating students, midwifery mentors and midwifery lecturers. Although in the pursuit of fitness to practice, an important professional aspect of clinical simulation is its application to the clinical setting. As public safety is at the core of this teaching and learning strategy, the proposed case study has potential to influence educational and professional practice to ensure student midwives are fit for practice and purpose at the point of registration.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. If you remain unhappy and wish to complain formally, you can do this through the NHS Complaints Procedure. Details can be obtained by contacting Shona Welton, Strathclyde Hospital, at 01698 245000.

Will my taking part in the study be kept confidential?

Yes. I will follow ethical and legal practice and all information about you will be handled in confidence. If you join the study, some parts of the data collected for the study will be looked at by an authorised person from the University of Strathclyde. They may also be looked at, by representatives of regulatory authorities and by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and I will do my best to meet this duty.

What will happen to the findings of the research study?

It is my intention to disseminate the findings through the production of a thesis and by publishing the results in an educational journal - you will not be identified in any report and / or publication.

Who has reviewed the study?

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee to protect your safety, rights, wellbeing and dignity. This study has been reviewed and given favourable opinion by NHS Lanarkshire Research Ethics Committee and the University of Strathclyde ethics committee.

For further information please contact: Angela Dow, (Study Researcher) Midwifery Lecturer, University of the West of Scotland, Hamilton Campus, Tel. 01698 283100

Centre Number:

Study Number:

CONSENT FORM

Title of project: Simulation-based learning in the context and situation that it is applied: a case study

Researcher: Angela Dow

Please initial box

I confirm that I have read and understand the Participant Information Sheet dated……..for the above study. I have had the opportunity to consider the information, ask questions and have these answered satisfactorily. ☐

I understand that my participation is voluntary and that I may withdraw at any time without giving a reason and without any of my rights being affected ☐

In agreeing to participate in this study:

- I am aware of what my participation involves, and of any potential risks. ☐
- I am aware that an audio-recording device will be used to record any interviews ☐
- I can ask to have my data withdrawn from the study. ☐
- I am under no obligation to respond to all aspects of the study and may refrain from answering any question(s) about which I feel uncomfortable. ☐

- I understand that all information I give will be treated with the utmost confidentiality and my anonymity will be respected at all times ☐

- I am aware that I have given permission for the investigator to maintain records of the study for five years should a follow-up to the investigation be conducted in the future, or a further investigation be undertaken. ☐

- I agree to take part in the above study ☐

Name……Date……Signature……

Name……Date……Signature……
of Person taking consent

Appendix 2: NHS Research Ethics Committee Approval

West of Scotland REC 5
Lanarkshire NHS Board
14 Beckford St
Hamilton
ML3 OTA

Telephone: 01698 281313
Facsimile: 01698 423134

20 April 2009

Mrs. Angela Dow
Midwifery Lecturer
University of the West of Scotland
School of Health, Nursing & Midwifery
Almada Street
HAMILTON
ML3 0JB

Dear Mrs. Dow

Full title of study: **Simulation-based learning in the context and situation that it is applied: a case study**
REC reference number: **09/S1001/27**

Thank you for your letter responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to the research sites listed on the attached form.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission at NHS sites ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Supervisors CV	1	28 January 2009
Participant Consent Form: PCF	2	30 January 2009
Participant Information Sheet: PIS	2	30 March 2009
Letter of invitation to participant	1	28 January 2009
Interview Schedules/Topic Guides	1	28 January 2009
Letter from Sponsor	1	11 February 2009
Covering Letter	1	23 February 2009
Protocol	1	28 February 2009
Investigator CV	1	28 January 2009
Application	5.6	23 February 2009

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "After ethical review –guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments

- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

09/S1001/27	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project

Yours sincerely

MRS. P. CONWAY
SECRETARY TO THE GROUP

Enclosures: "After ethical review – guidance for researchers" *[SL-AR1 for CTIMPs, SL- AR2 for other studies]*
Site approval form

Appendix 3: Management Approval Research and Development

NHS Lanarkshire

Mrs Angela Dow
Midwifery Lecturer
University of the West of Scotland
School of Health, Nursing & Midwifery
Almada Street
Hamilton
ML3 0TA

R&D Department
Forrestburn Court
Monklands Hospital
Monkscourt Avenue
AIRDRIE
ML6 0JS

Date 22nd April 2009

Enquiries to Margaret Stewart, R&D Facilitator
Direct Line 01236 712445
Email Margaret.Stewart@lanarkshire.scot.nhs.uk

Dear Angela,

Simulation-based learning in the context and situation that it is applied: a case study – PROJECT ID: L090115A

I am pleased to inform you that you have management approval to undertake the above study within NHS Lanarkshire. For the study to be carried out you are subject to the following conditions:

Conditions

- You have been granted a favourable ethical opinion for the project from an appropriate NHS ethics committee and supplied the R&D office with a copy of this document, or provided confirmation that ethics opinion is not required
- You are required to comply with Good Clinical Practice, Ethics Guidelines, Health & Safety Act 1999 and the Data Protection Act 1998
- The research is carried out in accordance with the Scottish Executive's Research Governance Framework for Health and Community Care (copy available via the Chief Scientist Office website: http://www.show.scot.nhs.uk/cso/ or the Research & Development Intranet site: http://firstport/sites/randd/default.aspx
- You must ensure that all confidential information is maintained in secure storage. You are further obligated under this agreement to report to the NHS Lanarkshire Data Protection Office and the Research & Development Office infringements, either by accident or otherwise, which constitutes a breach of confidentiality.
- Clinical trial agreements (if applicable), or any other agreements in relation to the study, have been signed off by all relevant signatories
- You notify the R&D Department of any future amendments to the protocol
- You notify the R&D Department if any additional researchers becomes involved in the project within NHS Lanarkshire
- You notify the R&D Department when you have completed your research, or if you decide to terminate it prematurely
- You must send brief annual reports followed by a final report and summary to the R&D office in hard copy and electronic formats as well as any publications
- You should be aware that for investigators not employed by NHS Lanarkshire there may be a requirement for an SCRO check and occupational health assessment. You should therefore contact the R&D Department to make arrangements for this to be undertaken and an honorary contract issued.

PLEASE RETURN THE ATTACHED UPDATE FORMS IN THE ENCLOSED PRE-ADDRESSED ENVELOPES TO NOTIFY THE R&D DEPARTMENT OF THE START AND END DATES OF YOUR STUDY.

I trust these conditions are acceptable to you.

Yours sincerely,

Raymond Hamill
Head of Research & Development

Appendix 4: Approval from University of Strathclyde Ethics Committee

endorsement by UEC

Anne Muir [anne.m.muir@strath.ac.uk]

Sent: 30 April 2009 08:58

To: angela dow

Importance: High

Dear Angela,

UEC 0809/50: *Simulation-based learning in the context and situation that it is applied: a case study*.

I can confirm that the Convener of the University Ethics Committee has endorsed the NHS ethics approval, on behalf of the Committee, of the above study. Appropriate insurance cover has also been confirmed.

I would remind you that the Committee must be informed of any changes that are made to the protocol, so that they have the opportunity to consider them. The Committee would also expect you to report back on the progress and outcome of your project, with an account of anything which may prompt ethical questions for any similar future project and with anything else that you feel the Committee should know.

On behalf of the Committee, I wish you success with this project.

Kind Regards

Anne

Anne Muir
Business Development Manager (Science Faculty)
Research & Innovation
University of Strathclyde
50 George Street
Glasgow
G1 1QE

Tel. +44 (0)141 548 5822
http://www.commercialisation.strath.ac.uk

Appendix 5: Approval from Workplace

From: Heather Lambie
Sent: 18 November 2008 13:08
To: Angela Dow
Subject: Re: ethical approval

Dear Angela

You would not require ethical approval from UWS since your study takes place as part of your studies for another university. I think you should let Professor John Atkinson know, as Associate Dean for Research, that you plan to survey students from the Health, Nursing Midwifery School, but that should be sufficient (assuming, of course, that Strathclyde grants ethical approval).

Kind regards,

Heather Lambie
Research Administration Officer
Innovation and Research Office
University of the West of Scotland (Paisley Campus)
High Street
Paisley PA1 2BE

Tel. 0141 848 3576
Fax. 0141 848 3734

Re: FW: ethical approval

Heather Lambie

Sent: 30 April 2009 14:41

To: angela dow

Dear Angela

No further documentation or approval is required so, yes, all fine to go ahead.

Kind regards,

Heather Lambie
Research Administration Officer
Innovation and Research Office
University of the West of Scotland (Paisley Campus)
High Street
Paisley PA1 2BE

Tel. 0141 848 3576
Fax. 0141 848 3734

Appendix 6: Gatekeepers Access

RE: service management approval

From: Angela Dow [mailto:angela.dow@uws.ac.uk]
Sent: 12 December 2008 12:34
To: Frame, Evelyn (WG) Women's Services Manager
Subject: management approval

Hi Evelyn

Hope all is well.
As you may know, I'm in my 3rd year of the Doctor of Education course at Jordanhill Campus, University of Strathclyde and hope to start data collection in May - Sept 2009. I'm doing a case study about the application of clinical simulation to clinical practice and the case includes student midwives, their placement mentors and midwifery link lecturer. I wish to interview all participants within the Women & Children's Directorate at WGH. At present I'm in the process of applying to the University of Strathclyde for ethical approval and thereafter will be applying to the NHS Research Ethics Committee, as the study involves NHS staff and will take place in NHS premises. In addition I will formally write to you seeking access to interview some mentors within the Maternity Unit. At this stage I was wondering if you forsee any problems with access to a small number of your midwifery staff and use of premises for 1-2 hours during the time-frame stated?

Kind regards

Angela

Midwifery Lecturer
School of Health, Nursing & Midwifery
University of the West of Scotland
Hamilton Campus
Tel. 01698 283100 Ext.8653

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Following the successful merger between the University of Paisley and Bell College, the University has been renamed as University of the West of Scotland.

Please note that as part of the next stage in the University's development, we have changed name to University of the West of Scotland.

As a result, our web and email addresses have changed and I would be obliged if you would update your records accordingly.

New University Web address:

http://www.uws.ac.uk

New University e-mail address format:

firstname.surname@uws.ac.uk
The University of the West of Scotland is a registered Scottish charity. Charity number SC002520.

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****

Legal disclaimer

The information transmitted is the property of the University of the West of Scotland and is intended only for the person or entity
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From: Frame, Evelyn (WG) Women's Services Manager [mailto:Evelyn.Frame@lanarkshire.scot.nhs.uk]
Sent: Fri 12/12/2008 14:53
To: Angela Dow
Subject: RE: management approval

Hi Angela

This will not be a problem, good luck you have a lot of work ahead of you.

Evelyn

From: Angela Dow [mailto:angela.dow@uws.ac.uk]
Sent: 24 April 2009 13:56
To: Frame, Evelyn (WG) Women's Services Manager
Cc: Cerinus, Marie; Stewart, Susan - Associate Director of Nursing & Midwifery
Subject: RE: management approval

Hi Evelyn
Hope all is well.
I have attached the final NHS REC Approval and R&D Management Approval letters for my study as outlined in a previous email to you (below). I can also send hard copies with signatures if required.
I will very shortly send a Participant Information Sheet and Consent form to students and their mentors and hopefully recruit the small number of participants required, from the 1st May. I will keep you posted of any developments.
Best wishes and thank-you for your help.
Angela

Midwifery Lecturer
School of Health, Nursing & Midwifery
University of the West of Scotland
Hamilton Campus
Tel. 01698 283100 Ext.8653

Frame, Evelyn (WG) Women's Services Manager [Evelyn.Frame@lanarkshire.scot.nhs.uk]

Sent: 24 April 2009 16:55

To: angela dow

Thanks and good luck

Evelyn

Evelyn Frame
Service Manager
Women's Services Directorate
Wishaw General Hospital

Tel: 01698 366363

Appendix 7: NHS RECS Amendment Form

-----Original Message-----
From: Angela Dow [mailto:angela.dow@uws.ac.uk]
Sent: 12 November 2009 09:10
To: Jenner, Sharon
Subject: amendment

Dear Sharon
Following our recent telephone conversation, I attach a Notice of Substantial Amendment Form and Covering letter regarding a qualitative study I'm undertaking in part fulfillment of the Doctorate of Education at the University of Strathclyde. I have sent hard copies via royal Mail but in view of the recent disruption to the post, I have sent electronic versions also.
Many thanks in advance

Angela Dow
Midwifery Lecturer
School of Health, Nursing & Midwifery
University of the West of Scotland
Hamilton Campus
Tel. 01698 283100 Ext.8653

angela.dow@uws.ac.uk

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intended recipient is prohibited. If you received this in error, please contact the sender immediately and delete the material from any computer.

From: Jenner, Sharon [Sharon.Jenner@ggc.scot.nhs.uk]
Sent: 12 November 2009 09:29
To: Angela Dow
Subject: RE: amendment

Hi Angela

Thanks for the attached substantial amendment - I will put the amendment on the agenda for 16th December meeting

kind regards

Sharon

From: Angela Dow
Sent: 30 November 2009 21:02
To: Stewart, Margaret (MK) - R&D Support Officer Clinical Audit Department [Margaret.Stewart@lanarkshire.scot.nhs.uk]
Subject: FW: amendment

Margaret
I would like to advise you of my recent request to WoSRES regarding a Notice of Substantial Amendment Form for my qualitative study, which is being undertaken in part fulfillment of the Doctorate of Education at the University of Strathclyde (NREC ref: L09015A). As outlined

below, approval will be considered at the next meeting on 16/12/09 with regard to increasing the number of participants and extending the date of the study - please see attached.

Angela Dow
Midwifery Lecturer
School of Health, Nursing & Midwifery
University of the West of Scotland
Hamilton Campus
Tel. 01698 283100 Ext.8653

RE: amendment

Angela Dow

Sent: 05 January 2010 14:15

To: Stewart, Margaret (MK) - R&D Support Officer Clinical Audit Department [Margaret.Stewart@lanarkshire.scot.nhs.uk]

Margaret
I received a favourable opinion from WoRES regarding below. I only have a hard copy of the letter but will send it to you.
Best wishes

Angela Dow
Midwifery Lecturer
School of Health, Nursing & Midwifery
University of the West of Scotland
Hamilton Campus
Tel. 01698 283100 Ext.8653

Appendix 8: Research Questions, Categories and Interview Schedules

Research Questions

1. How do students, mentors and lecturers perceive simulation to prepare the student midwife for clinical practice?
2. Which aspects of simulation are utilised in the clinical situation in relation to knowledge and understanding, behaviour and skill acquisition?
3. How does clinical simulation affect work based learning?

Research Categories

Midwife Mentors	**Student Midwives**	**Lecturers**
Concept of clinical simulation Clinical simulation and learning domains Preparation for practice and the role of clinical simulation	Experience of clinical simulation Experience of peer review via audio-visual unit	Concept of clinical simulation Clinical simulation and learning domains Preparation for practice and the role of clinical simulation
Application of learning domains to practice setting	Clinical simulation and learning domains	Application of learning domains to practice setting
Clinical simulation - affect on work based learning	Preparation for practice and the role of clinical simulation	Clinical simulation - affect on work based learning
Does clinical simulation have an effect on teaching role	Application of learning domains to practice setting	Effect of clinical simulation on teaching role
Clinical simulation and patient care	Clinical simulation - affect on work based learning	

Interview Schedule: Focus Group - Mentor Midwives

1. Preamble:

Welcome and thank-you for attending.

Introduction to Moderator and Observer.

Purpose:

This focus group is a follow-up to the individual interviews you may / may not have participated in during May and June of this year. These were in relation to ADs research study about clinical simulation. As discussed then, and as outlined in the Participant Information Sheet, clinical simulation is a teaching and learning approach delivered in the University prior to the midwifery students going to placement.

The purpose of this meeting is to further discuss, in a group, your ideas, and opinions on the topic of clinical simulation. What you discuss here today will be very helpful for ADs research project in this area and after today's session you are welcome to ask questions about the research and our discussion.

You have been invited because you are mentoring student midwives who have had simulation-based learning and because you are likely to have a variety of important views and experiences to share. The idea of the group discussion is to allow you to share your views in a relaxed and informal setting. There are no right or wrong answers, but rather different points of view. All points of view, and both positive and negative comments, are important.

Of course, what to say, how to say it and how much to say is up to you. You should not worry about what you are expected to say, whether you are on the right track or whether you should reach consensus. But please make sure that you allow others to speak, you do not all talk at the same time and do not interrupt others.

So that none of your comments are missed, we'd like to tape record our discussion. AD previously asked for your permission to do this and it will make the research work much easier. I should point out that your contributions will be anonymous and confidential and that any published research will not contain names. Our discussion will probably last about an hour. During that time I'd like to explore a number of issues around the topic of clinical simulation and hear everyone's responses.

Please feel free to ask questions relating to the topic throughout the discussion.

I would like to start by asking you to introduce yourselves.

2. Opening questions
    a. What is your name and where do you work?
    b. How long have you worked there?
    c. How long have you been a mentor?
3. Introductory questions
    a. As a student MW about to undertake the first labour ward experience, what do you think the student would consider being the most important midwifery skill to undertake in that first placement?

The first year students you are mentoring, have all had simulation-based learning in conjunction with SMOTS in the university prior to their first labour ward experience. This entailed maternity based scenarios and role playing in the University. As they are the cohort of interest, it's important to highlight that the simulation-based learning they had, mainly related to assisting women having a normal delivery.

At this point there will be a short presentation on the lap-top demonstrating clinical simulation in action (~10 mins duration) - this should serve as a stimulus for the discussion to progress with a general question as stated below

b. What do you think about the concept of clinical simulation?

4. Key questions

a. Relates to the topic of *preparation for practice* and the concept of context dependent memory

i. How do you feel about the role of clinical simulation in preparing a student for their first labour ward practice placement?

ii. In what way(s) might clinical simulation prepare a student in assisting in delivering their first baby?

iii. What affect might clinical simulation have on the 'fear' often experienced by junior student midwives when assisting in their first few deliveries?

iv. What do you think of the skills room at the University and the LDRP (Labour / Delivery / Recovery / Postnatal) environment? – general set up, bed, the manikin, resusitaire etc

v. This is the environment where simulation is carried out. How might this set up at the university help the students when they work in the LDRP room here?

b. Relates to the topic of *Learning Domains*

i. What do you think about clinical simulation and the development of midwifery clinical skills in the clinical setting?

ii. How do you feel about lectures to facilitate the students' development of knowledge and understanding of labour and delivery? How do you feel about clinical simulation and development of knowledge and understanding of labour and delivery?

iii. To some extent clinical simulation allows students to participate in their student midwife role prior to attending the workplace. In what way(s) might clinical simulation affect a student's behaviour during labour and delivery?

d. Relates to the topic of *work based learning*

i. In recognition of opposing priorities such as the needs of students versus the needs of mothers and babies, what do you think of the environment you work in as a teaching and learning environment for a new student?

1. What do you like best / least about the environment you work in as a learning environment for a new student?

ii. How do you think a student applies or transfers clinical simulation to the workplace?

iii. What do you think of its affect, if any, on the student's (a) openness to other learning in the workplace and (b) confidence?

e. Relates to the topic of *patient care*

i. What do you think of clinical simulation as a way to improve client care?

f. Relates to the topic of the *mentor's teaching role*

i. How do you feel about your teaching role?

ii. In what ways might clinical simulation impact on your clinical teaching role?

5. <u>Ending questions</u>

a. Of all the issues we've discussed today, which is the most important to you?

b. Have we missed anything?

c. Would you like to add anything?

6. <u>Closing:</u>

Thank participants. Advise again how comments will be used and repeat once more that anonymity and confidentiality will be maintained. Inform that AD will provide a summary of the findings at a later stage. Highlight that the purpose of the research is to provide insight into clinical simulation in the context of clinical practice.

Interview Schedule: Focus Group - Students

1. Preamble:

Welcome and thank-you for attending.

Purpose:

This focus group is a follow-up to the individual interviews you may / may not have participated in during May and June of this year. These were in relation to my research study about clinical simulation. As discussed then, and as outlined in the Participant Information Sheet, clinical simulation is a teaching and learning approach delivered in the University prior to the midwifery students going to placement.

The purpose of this meeting is to further discuss, in a group, your ideas, and opinions on the topic of clinical simulation. What you discuss here today will be very helpful for my research project in this area and after today's session you are welcome to ask questions about the research and our discussion.

You have been invited because you are student midwives who have had simulation-based learning and because you are likely to have a variety of important views and experiences to share. The idea of the group discussion is to allow you to share your views in a relaxed and informal setting. There are no right or wrong answers, but rather different points of view. All points of view, and both positive and negative comments, are important.

Of course, what to say, how to say it and how much to say is up to you. You should not worry about what you are expected to say, whether you are on the right track or whether you should reach consensus. But please make sure that you allow others to speak, you do not all talk at the same time and do not interrupt others.

So that none of your comments are missed, I'd like to tape record our discussion. I previously asked for your permission to do this and it will make

the research work much easier. I should point out that your contributions will be anonymous and confidential and that any published research will not contain names. Our discussion will possibly last about an hour. During that time I'd like to explore a number of issues around the topic of clinical simulation and hear everyone's responses.

Please feel free to ask questions relating to the topic throughout the discussion.

I would like to start by asking you to introduce yourselves.

2. Opening questions
    a. What is your name?
    b. When you were about to undertake your first labour ward (LW) experience, what did you consider being the most important midwifery skill to be undertake in that first placement?
3. Key questions
    a. Experience of Clinical Simulation (CS): Earlier this year you had simulation-based learning in the university in conjunction with peer review using SMOTS prior to the first LW experience. This entailed maternity based scenarios and role playing in the University. As this was prior to the first LW experience, the simulation-based learning related to assisting women having a normal delivery.
        i. Experience of CS: how did you find the experience of using CS in the university
            1. Enjoyable
            2. Anxious – why?
            3. SMOTS: being videoed / peer review / benefits
        ii. Realism
            1. How does the setting compare in both places: Real vs. artificial; equipment

    b. Learning Domains (skill acquisition, knowledge, behaviour / role)
        i. Knowledge

1. What do you think about clinical simulation to facilitate development of knowledge and understanding of labour and delivery?

ii. Skill acquisition

1. What do you think about clinical simulation and the development of midwifery clinical skills used in the clinical setting?

iii. Behaviour / Role:

1. How might clinical simulation allow you to participate in your student midwife role prior to attending the workplace? In what way(s) might clinical simulation affect your behaviour during placement?

c. Context dependent memory -

i. What do you remember about CS when you went into the practice area?

1. Skills, environment
2. Equipment: delivery pack, clamps etc, etc
3. Process – familiarity: swabs / aseptic technique / head descent / where situated

ii. How might the set up at the university help you when you work in the LDRP room at placement?

iii. In what way(s) might clinical simulation prepare you in assisting in delivering your first baby?

g. Transfer of skills to the practice placement

i. How do you feel about the role of clinical simulation in preparing you for the first LW practice placement?

i. Communication

ii. Skills – what in particular

iii. Knowledge

h. Confidence

ii. Fear of the unknown - what affect might clinical simulation have on the 'fear' often experienced when assisting in the first few deliveries?

i. If you hadn't had SBL how confident might you have felt?

f. Work based Learning and clinical simulation:

i. What do you think of its affect, if any, on your openness to other learning in the workplace?

ii. What do you think of its affect, on your confidence in general within the workplace?

iii. In recognition of opposing priorities such as the needs of you (students) versus the needs of mothers and babies, what do you think of the practice placement setting as a teaching and learning environment for a new student?

iv. How do you think a student applies or transfers clinical simulation to the workplace?

7. Ending questions
   a. Of all the issues we've discussed today, which is the most important to you?
   b. Have we missed anything?
   c. Would you like to add anything?
8. Closing:

Thank participants. Advise again how comments will be used and repeat once more that anonymity and confidentiality will be maintained. Inform that AD will provide a summary of the findings at a later stage. Highlight that the purpose of the research is to provide insight into clinical simulation in the context of clinical practice.

Interview Schedule - Lecturers

1. Preamble:

Welcome and thank-you for attending.

Purpose:

This interview is in relation to my research study about clinical simulation. As outlined in the Participant Information Sheet, clinical simulation is a teaching and learning approach delivered in the University prior to the midwifery students going to placement.

The purpose of this meeting is to discuss your ideas and opinions on the topic of clinical simulation. What you discuss here today will be very helpful for my research project in this area and after today's session you are welcome to ask questions about the research and our discussion.

You have been invited because you have utilised simulation-based learning in the theoretical setting and because you are likely to have a variety of important views and experiences to share. There are no right or wrong answers, but rather different points of view. All points of view, and both positive and negative comments, are important.

Of course, what to say, how to say it and how much to say is up to you. You should not worry about what you are expected to say or whether you are on the right track.

So that none of your comments are missed, I'd like to tape record our discussion. I previously asked for your permission to do this and it will make my research work much easier. I should point out that your contributions will be anonymous and confidential and that any published research will not contain names. During our discussion, I'd like to explore a number of issues around the topic of clinical simulation and hear your responses.

Please feel free to ask questions relating to the topic throughout the interview. I would like to start by asking you to introduce yourself.

2. Opening questions

   a. What is your name and where do you work?
   b. How long have you worked there?

3. Introductory questions

Earlier this year, the September 08 cohort of first year midwifery students received simulation-based learning. These first year students had simulation in conjunction with peer review using SMOTS in the university prior to their first labour ward experience. This entailed maternity based scenarios and role playing in the University. As they are the cohort of interest and recently had their first labour ward experience, it's important to highlight that the simulation-based learning they had, mainly related to assisting women having a vaginal delivery

   a. Did you provide simulation-based learning to any of these students?
   b. What do you think a student midwife would consider the most important midwifery skill undertaken in the first labour ward placement?
   c. Junior student midwives often experience 'fear' when contemplating their first intrapartum care episode – how do you feel about this?
   d. What do you think of the concept of clinical simulation?

4. Key questions

Relates to how lecturers perceive clinical simulation in preparing the student midwife for clinical practice?

   a. How do you feel about the role of clinical simulation in preparing a student for the first labour ward practice placement?
   b. In what way(s) might clinical simulation prepare a student?
   c. What do you think of the skills room at the University and the LDRP (Labour /Delivery / Recovery / Postnatal) environment? – general set up, bed, the manikin, resusitaire etc.

d. In the environment where simulation is carried out, how might it help the students when they work in the 'real' LDRP room?

e. Relates to the topic of *Learning Domains*: **knowledge, skills and behaviour**

iv. What do you think about clinical simulation and the development of midwifery clinical skills in the university and thereafter in the clinical setting?

v. How do you feel about 'lectures' to facilitate the students' knowledge and understanding of labour and delivery compared with clinical simulation?

vi. To what extent or not do you think clinical simulation allows students to participate in their student midwife role prior to attending the workplace?

f. Relates to the topic of *work based learning*

i. What do you think of the clinical environment as a teaching and learning environment for a new student midwife?

ii. How do you think a student may apply or transfer clinical simulation to the workplace – in relation to knowledge, skills and behaviour?

iii. What do you think of its affect, if any, on the student's (a) openness to other learning in the workplace and (b) confidence?

g. Relates to the topic of *patient care*

a. What do you think of clinical simulation in relation to client care / safety?

h. Relates to the topic of the *lecturers teaching role*

a. How do you feel about your teaching role (lectures, skills labs etc) in facilitating the acquisition of knowledge and skills directly related to the care of women?

b. In what ways might clinical simulation impact on your clinical teaching role?

9. Ending questions
   a. Of all the issues we've discussed today, which is the most important to you?
   b. Have we missed anything?
   c. Would you like to add anything?
10. Closing:

Thank participant. Advise again how comments will be used and repeat once more that anonymity and confidentiality will be maintained. Inform that I will provide a summary of the findings at a later stage. Highlight that the purpose of the research is to provide insight into clinical simulation in the context of clinical practice.

Appendix 9: Interview Data

Midwives Focus Group

Interviewer: Preamble (see Appendix 8)
What do you think, do you consider to be the most important midwifery skill that the student midwives will undertake in their first placement. Right who's going to kick off first here?

MW 1: What do they think?

Collective: To deliver a baby

Interviewer: *Any other take from that, is that the most important thing?*

Collective: Yes, delivering a baby

*Interviewer***:** *Ok now what we're doing with student midwives at the University, some of you may have been involved in this when you were students, that there is now clinical simulation and the most important one is using Noelle which is like giving a simulated birth of a baby and we use that as a learning and teaching strategy within the University curriculum now for student midwives and for nurses but it's student midwives we are focusing on today. Now I'm going to pass over to A now who is going to show you very quickly in case you haven't seen Noelle [childbirth simulator manikin], it's only very brief for you, anybody seen Noelle, the clinical simulator, right over to you*

Observer: [Sets up video footage and commences the film, providing explanation and clarification].

MW 3: How do students prepare to like the doll and actually deliver her?

MW 5: Well I think that's maybe what we're going to be talking about

Interviewer: *Well you're thinking, you're thinking*

Observer: [Resumes Observer role when video completed approx. 10 minutes later]

*Interviewer***:** *Ok well what do you think about the idea of clinical simulation?*

MW 7: Realistic

MW 6: I think it's good. It is good even if you can get the way of how to get your instruments out and maybe positioning your hands for the baby, I think it's like teaching the basic. Obviously it's different when it is a

mum in labour but at least they've had a chance to take time with the instruments out there and taken time to set it up

MW 8: Like an introduction to it

MW 6: Uh huh, just teaching the very basic

Interviewer: *Anybody else got any other view folks?*

MW 7: Maybe the first time they're not going to be frightened then and it's like...that's my instruments and putting things out

MW 4: They're familiarising themselves

MW 5: It's different watching it back than seeing it in the books because you can't really visualise it I think until you've actually seen a delivery and seeing one that's straight forward because the first delivery might not be straight forward so if that's the first delivery they've ever seen it would be terrifying if it wasn't a straight forward delivery so to see that there - that's what should happen

MW 1: When we were students we just got the doll and pelvis, no legs no nothing, nothing at all and when you do go into a delivery for the first time you're like 'my God', oh it's never coming out of there, it does make it a bit more real

Interviewer: *Ok alright thank you ladies. Now I'm moving on to the next section which relates to the topic of preparation for practice. Now you may feel that you may be repeating some things but it doesn't really matter, do not worry because this will be turned out under this particular heading. How do you feel about the role of clinical simulation and preparing a student for a first labour ward placement? Sounds as though you all agree to it when you tell me whether, all quite happy with that*

Collective: Yes

Interviewer: *You don't see anything other than a positive effect. Ok now just going back to the wee video, in what way might clinical simulation prepare a student in assisting delivery of their first baby? Just think it through in your head*

MW 1: Slightly more prepared, the fact that the first time we open a pack it's not instruments they've never seen before, they've seen things before and they know what they are and they're not getting a panic at that the first time

MW 3: They probably see the mechanisms of delivery more in that because it probably happens nice and slowly and nice and you know whereas a normal, they don't necessarily see that so they kind of see the mechanisms first of all before sort of hands on a patient

MW 6: They don't understand, I think putting hands on, where do you do it, you're not worrying the mum being there for the first time. You're kind of oh that feels alright or maybe I should put my hands here or do it this way. You can talk things through, it's not the situation that the mum or the baby, there's a risk involved, the baby may come shooting out or something, they've got a chance to adapt to their hands getting a comfortable position that saves them for them to adapt to

*Interviewer***:** *Right ok thank you very much*

MW 5: Especially if they're like left handed and they deliver from the other side of the bed

MW 5: Most midwives are right handed so if you've never did it that way and you don't know or you do know and you would just get on with it but it's not natural whereas we could then do it with the simulation so they would then know different ways to sort of stand and with their hands

*Interviewer***:** *Ok I'm moving onto the fear that student midwives usually have with their first few deliveries and what effect the clinical simulation may have on this?*

MW 3: It gives them a bit of confidence, a confidence boost like ok I've seen it, maybe done it a wee bit or you know it makes them feel a bit more confident in actually dealing with patients and being for delivery I suppose

*Interviewer***:** *Ok*

MW 6: They've got time to ask questions whereas they might not have time to ask

*Interviewer***:** *Ok now I know you've only seen a little bit of the video but what do you think of the skills room in the University and the LDRP environment in relation to how it's set up, the manikin, resuscitaire, how do you feel about that, is it all?*

MW 8: Yea

*Interviewer***:** *So that's ok for you?*

MW 7: It's realistic

Interviewer: *Realistic, yes that's a good word isn't it. How might this set up at the University help students when they work within the LDRP rooms within this hospital?*

MW 1: It's a bit more familiar for them, they're not just walking in and seeing this big resuscitaire sitting in the corner and not knowing what it is and why it's in, just really it makes it probably a bit more at ease to be honest so they know what's in the room

Interviewer: *Right we're moving onto an area called learning domains, maybe familiar to you, may not be. What do you think of clinical simulation and the development of midwifery clinical skills within the clinical setting? What role does this have to play?*

Long pause

MW 4: Um?

Interviewer: *Right ok so do you think it has a role to play?*

MWs 3 & 4: Yes uh huh maybe folk become more proficient in them but it's getting familiar to them the first time and then they can go back and try it again without again any risk to the patient or without being all nervous about that patient again. If it's in that environment then they'll not feel so nervous about doing it again

Interviewer: *Ok now we're still on the subject of learning domains and this is all really about how students learn. How do you feel about lectures to facilitate the student's development of knowledge and understanding of labour and delivery?*

MW 8: I think within midwifery because it is a visual and I think personally I mean I feel you do learn more when you're hands on when you're doing it rather than being spoken to

Interviewer: *Ok and that is, you have answered the next question, do not worry about it, we're just looking to cover all of this, so do not worry about that. So how do you feel about clinical simulation in the developing of student's knowledge and understanding of labour and delivery?*

MW 5: Good because when we were training you got your theory months before you went into practice so it's linking that theory and practice straight away so that it's fresh in your head whereas before you were going into the clinical environment and trying to rush through again and familiarise yourself with the theory but the standard didn't correlate properly until after you had been in the clinical situation, so I

think if they could get it right in their head at that point before they even come out to the clinical area then it would be better

Interviewer: *Anyone else got anything to contribute to that bit? No, well thank you. I'm now moving onto another area which relates to work based learning. In recognition of opposing priorities such as the needs of students versus the needs of mothers and babies, what do you think of the environment you work in as a teaching and learning environment for a new student? Feel free to say*

MW 1: It can be difficult. If you've got a very, very busy ward and you need to get things done quickly when you've got people saying this chart needs done, please get people out and you just feel sometimes you just don't have the time to explain what you're doing because obviously first year students are totally dependent on you, you have to work through everything with them and sometimes you just feel you just do not have the time and you feel so sorry for them because you just feel as if they're standing there and you try to involve them as much as you can but there's only so much you can do sometimes. Obviously if it's quiet you do more teaching then but it's more sometimes if it's dead busy they're just watching what you're doing and it just feels as if you try your best to get them in but it's really hard sometimes

MW 5: In theory it should good because they're getting a bit of everything

MW 3: Uh huh

MW 5: So in theory yea definitely but it's just not like that

Interviewer: *Anybody else got anything they want to contribute about that? Right well what do you like best or what do you like least about the environment you work in, the learning environment for the new student? Let's go for what you like best*

MW 4: The layout

Interviewer: The layout good

MW 4: Eh post natal and ante natal, I think there's a benefit

MW 3: You tend to find that because it's split across three wards as well you maybe don't have enough labouring patients for your students so maybe the same student and I know it's all about experience and trying to get everybody a different or a new experience every day but you tend to find that they're maybe always up the ward end for like maybe three shifts out of four or whatever and they never get a labourer or vice versa they're always you know they just, I don't know I think sometimes it was better when I did it that you had your

own ward and you had a labour ward setting where therefore all you ever done was kind of labour experience or whatever and then you had post natal and your antenatal because it was split up so I don't know maybe a bit more focused which would hopefully carry into whatever they had just learned

MW 5: It's a good way because you're doing the same thing every day you got used to it and you got used to the way of working

MW 6: Yes

MW 5: As opposed to going from one thing to another

MW 3: We do kind of maybe use them a wee bit as extra staff at times

MW 6: Which isn't fair on them

MW 3: No, no but they do when we have checks when it's mental and busy and they do our postnatal checks for us and…it is…

*Interviewer***:** *Ok thank you, do you think simulation affects learning in the workplace?*

MW 6: If you're quite eager, and quite a few of them, half and half, we're the same I suppose, they're eager to learn, they're eager to do things and some that are the teacher steps back. I think also that you can maybe if you've been in with somebody at a delivery and that and if it's reasonable the next day you can maybe focus and go over the notes and go over the problems because they wonder why did you do that particular care, why did you do that particular action that you never had at the time to explain and sometimes they're quite happy or even sometimes you can find out what happened when you go off shift

Collective: [All talking at once in an agreeable fashion but largely inaudible]

*Interviewer***:** *Ok what about the least thing about the learning environment for student midwives?*

MW 8: They don't always get the same mentor em there's quite a few like well just the way the shifts work out and things and sometimes the students themselves kind of work for whatever reason the same shifts as yourself so or maybe if you're part time worker or something but they don't always get the same mentor which could be a benefit or it could be an advantage. Sometimes it's good to have different ways of learning you know people do their own you know way of things I don't know. It might suit everybody else, it might not. I think it's quite nice to work with the same mentor as much as possible especially initially just till you find your feet in the ward

Interviewer: *What about anybody else in relation to that point? Would you like to add anything else about the least?*

MW 1: Just really the time sometimes

Interviewer: *Right ok I'll move onto the next question. How do you think a student applies or transfers clinical simulation to the workplace? Any of you who have dealt with a student between May, April to June, these are students that have come out having had clinical simulation for the labour ward*

MW 1: The girl I felt she wasn't as panicky

Interviewer: *Right ok*

MW: I think she knew how to set things out it was a wee bit more controlled and she wasn't as panicky trying to get things organised and she was a wee bit more confident in that sense that she could lay out her stuff and do the delivery obviously with supervision and things but I thought it was really different

MW 1: You just feel they're not so panicky now

MW 8: I thought my student was confident as well, I thought she was, you know especially for a first time in a completely, well it's not a completely alien environment if they've had that simulation

MW 3: I think they're more aware of the fact that they do have the delivery pack and things to sort out as well

Collective: [All talking at once in an agreeable fashion but largely inaudible]

MW 3: And then realise they have to get organised a bit more so

Interviewer: *Ok thank you, what do you think of the affects, if any, on students openness to other learning in the workforce?*

<u>Long pause:</u> No answer

MW 5: That's where I would say that, I think, just with the experience that I had as a student, that it was kind of like, this is the way you've to do it and that any other way...like we had a very, very quick delivery and there wasn't time to nicely get your pack open and lay the instruments out, it was a case of quickly get a glove on and deliver the baby so I think that then completely threw her because it wasn't the regimented way that had been learned em and she wasn't prepared for that at all

*Interviewer***:** *Ok, anybody else got anything else to say about that?*

MW 3: Maybe the way that the way they had been taught or was shown in University it might be completely different to the way then that the mentor does it so then that again that would completely throw them and oh hold on a minute…

MW 3: And because it wasn't in sequence then it was like oh no, that's not the same from say half way through the delivery but because it wasn't in the sequence that she had learned it totally threw her

*Interviewer***:** *Ok, what about their confidence? I think we've touched on this a little bit before but with those particular students you did feel that they were a little bit more confident than others. Right well moving on then to the topic of patient care. What do you think of clinical simulation as a way to improve patient care? Is there a role for it?*

MW 1: You would maybe need to kind of broaden it as well because also, we have to deal with maybe more the sick patient like through the day and things, I can think of other things as well like…

MW 3: How much can you simulate though, that's the thing like, I think you've got to…

MW 6: Like you've got your delivery, you've got like you said it shows a PPH and you've got if a baby comes out and it's needing resuscitation and that if you're giving the basic resuscitation to that, well adequate resuscitation to that baby then obviously triggers the light that you're doing it confidently and you're doing it properly rather than bag a real life baby doing all this not realising it's wrong

MW 6: I think they're the main things

MW3: I think resuscitation is a good one because students don't get, I mean they very rarely get hands on resuscitation until they're qualified and they have to do it themselves, because you don't get...

MW 5: A situation like that you don't say because you don't go hold on a wee minute and I'll show you how to do it properly, because you don't, it's a case of you take over if they're not doing it correctly. I think that is a good thing

MW 3: Yes definitely

Interviewer: *Ok ladies moving on. The next section relates to the topic of mentors teaching role. How do you feel about your teaching role as mentors?*

MW 1: I think we're all different

*Interviewer***:** *Uh huh*

MW 1: Everybody can do it all different, we've all got our own ways. And I suppose if we really have, they've been taught something in College and then they come and we can adapt wee things like the way we would do it in here and sometimes but we try our best but, we, it basically works through the aim, but you try your best

MW 3: I think I would like to be a better mentor, I think just with the wards being busy or whatever etc etc that makes it hard, harder

MW 1: Like I think we'd like the time to sit and talk like, PPH and that's what we would do in here and work through it but you sometimes don't have the time to do that

MW 6: I think also like paperwork, we all do paperwork differently in here and a few students particularly says oh so and so does it this way and I think what happens in our place is paperwork is given out but nobody sits down and tells us this is how you fill it out properly, it's more word of mouth, so you say to somebody do you fill this obs in here, do you do the blood pressure here and I think which we're trying to do too is maybe take some of the stuff back to basic and learn ourselves so we're not giving different information out to students because they will turn round and say well so and so does it different, so and so does this different so I think us ourselves we need to sit down and find out are we doing the wrong thing particularly for the student. We may have trained in different in different places, we trained in different areas too so that sort of brought in different hospitals, I think different ways

*Interviewer***:** *Ok has anybody else got anything to say about that? Ok in what ways might clinical simulation impact on your clinical teaching role? You may already have touched on things*

Collective: [All talking at once - inaudible]

MW 5: It builds on it. We can then ask them what they've learned to go with that and then you know the areas that they maybe haven't mentioned or they're not so sure about and we can then go over that again. It just it lets you learn exactly what to look for and what they've learned

MW 3: And perhaps the opposite way is that if they do something out in the clinical setting or have a delivery or bad experience, or whatever and maybe we've not had a chance to go over it then they can take that back with them into Uni and say, well listen this is what happened the other day and go through exactly what can happen in maybe probably a slower fashion and more therefore go into it a bit more

Interviewer: *Good point. Ok ladies we're coming to the end, this is one of the last questions. Of all the issues we've discussed today, take just a few moments, think carefully and what is the most important to you?*

Long pause

MW 1: Sorry can you say that again

Interviewer: *Right ok of all the issues we have spoken about, which is the clinical simulation, preparing students, it's about the learning domains, it's about learning in the practice settings, it's about the role of the clinical mentor in teaching student midwives, which of these is the most important for you?*

MW 6: I would say it's different for people

MW 8: I would say clinical setting, the clinical setting I think is very important

Interviewer: *Right so the clinical setting for yourself*

MW 1: Probably gelling basically all the knowledge they've had in the Uni and trying to correlate it back into here and just build on their confidence really

MW 8: The simulation they're getting, they've seen it in the College and then when they come out they're not scared because when they come out this is much the same

MW 4: It makes them more eager for a delivery now, now they've seen it

MW 8: Yea

Interviewer: *Any other takes on that one? Is there anything about clinical simulation or anything about student learning in the practice setting that you think we've missed out on?*

MW 3: The only thing that kind of worried me, well not worries me but it's good that it gets them sort of used to patient care etc and be involved in patient care but then sometimes on the other hand it might then kind of de-personalise it a wee bit you know like you know they kind of see this woman as only the fact that she's having a baby, like the fact that she's having a delivery or maybe it's a PPH, not the actual woman that's sitting on the bed, it's the actual thing that's happening so it kind of might….

Collective: [All talking at once - inaudible]

MW 3: It's like she'll forget there's an actual patient there

MW 5: It's just unnatural to talk to a doll em it's just not natural so

Interviewer: *Anything else that you think we may have missed out, just so that we make sure we have covered every aspect of clinical simulation for student midwives going into the labour ward and?*

MW 5: Like this is what should happen this is what you see in text books and you realise it's not always going to be like that and you need to adapt, it doesn't happen like that so

Interviewer: *Ok has anybody got any take on that, anything else to add? Nothing. Well we've come to the end ladies and you can ask any questions you want but thank you very much indeed for taking part and for your contribution and A has got a study to do and she can give you a summary of the findings, am I correct in saying that, and please feel confident to know that this is completely confidential*

END

Student Focus Group

Interviewer: Preamble (see Appendix 8)
I just want to open up our discussion today, which I've spoken to you about previously, it's about clinical simulation. Do you agree that you've all consented to be part of this group interview?

Collective: Yes

Interviewer: *And it's a follow up from interviews that were carried out in May and early June. Ok can I just ask you to start at this side please, just to say your name if you don't mind?*

Collective: Names provided

Interviewer: *Ok thank you. Can I ask you to take your mind back to when you were doing your Art and Science module and you were about to go to the labour ward, what did you think was the most important type of care you'd provide?*

ST MW 6: Deliver a baby

Interviewer: *How did you feel about that?*

ST MW 6: Very stressed about the delivery

ST MW 7: Hands on

Interviewer: *The actual process of assisting the delivery of a baby?*

Collective: Yes

Interviewer: *Ok thank you. Now way back in that module, I think it would probably be around about February or March you had what we call simulation-based learning, can you all remember that?*

Collective: Yes

Collective: Yes

Interviewer: *We also used the SMOTS system which meant that you were videoed and it allowed you then to go and watch yourself afterwards in your group. Now what we did use that time was simulation scenarios that included assisting a woman in delivery because that was one of the skills that you were going to be doing in practice. If you take yourself back to then when you came in to do that, can you tell me how you*

found the experience of it just in your own words, how did you find being in the University and using the equipment?

ST MW 6: I thought it was really helpful and working in small groups you weren't intimidated there was only, I think there was only five or six of us and I thought it was really helpful and getting to watch it back was good as well

ST MW 4: It was useful in seeing the equipment they used and everything and how it all happens

ST MW 5: And it helped to break you in gently, seeing it

Interviewer: How did you feel about that day, how would you describe your feelings?

ST MW 5: It was scary

ST MW 4: Not knowing what to expect

Interviewer: Ok thank you. What do you think you were scared of?

Collective: Doing it right

ST MW 5: What you were expected to, like do it properly

ST MW 7: To do it properly and remember everything

Interviewer: Ok.

ST MW 7: But it wasn't like that, it wasn't like that

Interviewer: Were you going to say something there [to STMW 5]*?*

ST MW 5: It was frightening as well

Interviewer: How did you feel about getting videoed?

ST MW 4: That was bad but it wasn't as bad as I expected it to be when we were watching it back because it was….

ST MW 4: ...it was people watching your work as well

Interviewer: How did you feel when you were watching it and you were watching the others?

ST MW 5: When it came to our turn...

ST MW 6: I think the repetition helped you watching like you done it and then you watched and then you kept watching and then the repetition showing you the steps and the stages and stuff, I think that helped. Even although it wasn't always yourself you were watching, you were still getting to see the procedure again and again so that was good

ST MW 4: Yes learning by your mistakes and you would know not to do that when you were meant to do it kind of thing

ST MW 5: I think it gave you a chance to try different techniques, manoeuvres as well, to practice on

ST MW 1: I find at a practical level was the best way that I learned, you take things in as well and then evaluating at the end with everyone else in the class

Interviewer: Ok thank you. So how did you feel within the group?

Collective: Ok

Interviewer: So way back then, how did the room compare to the hospital just the setting, did it compare in any way?

ST MWs 5 & 6: Very realistic

ST MW 3: About as realistic as it probably could get

Collective: Yes

Interviewer: Right, what about the equipment in the room?

ST MW 5: The equipment in the room, it is the same and things

Interviewer: Now you had said there that you learn quite good by doing things and obviously at that time we had given you quite a lot of lectures on issues that were related to childbirth. How did you feel or did you feel the simulation helped in any way with the theory you were getting?

ST MW 4: Just I think it all kind of fell into place once you see like the actual workings of it

ST MW 5: It's in your head better

ST MW 6: Aye

ST MW 3: I felt to an extent because every theory and every labour's different it goes a different way, it pans out differently so obviously if it's a

normal delivery that you're doing….but everyone's different stages, times stuff like that

Interviewer: *Ok thank you. How would you have felt if it just had been lectures?*

ST MW 6: I think you would have had to have watched, you would have had to have watched like we only had to watch three when we went out but I think we would have had to have watched a lot more. Like even knowing how to hold the equipment and how to use the equipment stuff made a big difference. You felt more confident when you went out because you'd actually had that practical session. You had an idea what was in a labour pack and how to set out your equipment

ST MW 3: Plus you didn't feel when you went to your first delivery you were just starting like you know from scratch there and now and you weren't getting into the way of other people like you knew, you were prepped before hand and you knew about it

Interviewer: *When I was talking to you over the summer you mentioned various things that helped in some way. Could you maybe think back again, was there anything specific in the clinical skills room that you used or did in here, the clinical area?*

ST MW 6: Well I just do it the exact same way I was shown on that first day and I think that will always stick with me

ST MW 3: The organisation of equipment and stuff

Interviewer: *What about the organisation of the equipment?*

ST MWs 5 & 6: Clamps and the scissors, opening a closing them

Interviewer: *Did you find that quite difficult, opening them and closing them*

Collective: Yeah

ST MW 6: I mean even just the basic things like the way to put your sheet down and everything I think when you're in your placement and a bit frightened, you're kind of rushed but because we had an idea in our heads what we had to do it was a lot easier

Interviewer: *Ok thank you. What about yourself* [directed to STMW 1]

ST MW 1: In the University we're just taught the official way of how to practice but when you go out into hospital without having had that you might watch obviously a way in which a midwife works, which could be a bad technique

Interviewer: *Do you think having an 'official' way of doing it you can adapt from that?*

Collective: Uh huh

Interviewer: *Ok so do you feel you've developed some skills that you use in placement?*

ST MW 3: I use that all the time

ST MW 6: Even then when you're delivering a baby as well I mean [inaudible]

ST MW 3: Aftercare I mean like everything, it's just the way I go through it

Interviewer: *Had anybody here worked in a hospital before?*

ST MW 7: I was a [she states previous healthcare role]

Interviewer: *Ok, so you had.*

ST MW 7: Yes

Interviewer: *Right just to move onto role and behaviour and to open this question up to everyone - did simulation give you any inclination of what was expected of you in placement?*

ST MW 6: No I think we found it awkward you can't talk to the simulator or that but when it came to actual mode of delivery it kind of taught me but not how to deal with the woman or anything about how to treat her

ST MW 3: ….in that situation?

Interviewer: *As far as communication goes then how would you feel?*

Collective: It doesn't do very much for communication skills

Collective: No

ST MW 3: But a lot of that I think comes in the situation

Collective: It does yea

ST MW 3: I mean we talk about communication, I think we do quite well with it so

ST MW 6: I think as well you or do you, did you just kept thinking, I just keep thinking this is a doll, well there's that

ST MW 3: And you end up, you're thinking too much of what you're doing as well

Collective: Yea

Interviewer: Ok thank you. Do you remember anything about clinical simulation when you went into the practice area?

ST MW 7: The way to stand when I was delivering and my dominant and non-dominant hand that was

Interviewer: Ok so hands-on?

ST MW 7: Yes

Interviewer: Practical skills ok and when you say where to stand, are you meaning your position, your role?

ST MW 7: Where to stand when you're delivering

Interviewer: Uh huh

ST MW 7: Where to stand and how comfortable just to make yourself more comfortable delivering, even remembering aseptic technique

Interviewer: So do you think the University set-up might help you in that room, the LDRP room when you went to work here and how?

ST MW 6: They're all pretty much the same as the room there and the trolley and everything and the packs are the same, when you open the packs so it kind of brought you back to everything you thought was going to be there was there, so it was quite reassuring

Interviewer: Anybody want to add anything on to that?

ST MW 3: Just the delivery pack

Interviewer: Ok can you remember your first delivery? Can you remember how that felt?

ST MW 5: I didn't need as much assistance as I would have thought at that first delivery

Interviewer: Did you need somebody to scrub with you?

Collective: No

Interviewer: Or put their hands over your hands?

ST MW 4: When I first done it? Not really

Collective: [inaudible, all speaking at once]

ST MW 3: I wasn't completely lost in the situation obviously because you're not familiar to it, you need a wee bit of reassurance

Interviewer: Oh?

ST MW 3: Obviously as well when you first deliver

Interviewer: Ok so you all remember your first delivery. And can you remember getting ready for it?

Collective: Uh huh

Interviewer: Can you remember what was going through your head at that moment?

Collective: Laughs

ST MW 5: You reassure yourself

ST MW 7: I don't think so, well I don't think I did. I knew I had done it before and I knew [mentor] was there you know to guide me but I don't know. It was scary

ST MW 6: I felt quite confident

Collective: Yea, yea

ST MW 3: I felt as if I'd done it before if I just knew what I had to do maybe you know there's obviously the difference of a real live person but I kind of had an idea of what to do

ST MW 4: I think doing the clinical simulation was better than going in having done nothing

Collective: Yes, uh huh

Interviewer: Ok thank you. Now I wanted just to talk about the transfer of skills from uni to here. How do you feel, or not, if that type of learning prepared you for communication - of any type?

ST MW 6: No because we didn't; just that person didn't exist

ST MW 5: I just used my own communication skills

ST MW 4: Yea maybe the normal kind of process, you could maybe explain some of the process of it do you know what I mean but I don't think it helps like interacting with her.

ST MW 3: It depends on the person that's doing it if you want to communicate with the doll and brush up on your communication skills, you can do it, but personally I never done it because I was too busy thinking about what I was doing with my hands and trying to learn and...

ST MW 6: I think you knew people was watching as well and you didn't want to sound ridiculous so...

Interviewer: And how did you communicate with the woman the first time?

ST MW 7: A real woman?

Collective: [inaudible, all speaking at once]

ST MW 3: A real person, I mean you wouldn't stand there and not talk to a real person

ST MW 6: No

ST MW 4: You've been with her so you kinda know her. I don't think, I think it was just a case of you spoke to her

Interviewer: Ok thank you, to move onto skills then and you did say that you did transfer some skills. Can you be more detailed about what particular things you took with you from one place to the other?

ST MW 5: Clamping the cord

ST MW 4: Clamping the cord yip

Interviewer: Was that a thing that scared you?

Collective: Yea

ST MW 5: I was worried that I wouldn't get my technique right

ST MW 6: And watching for signs of separation of placenta

Interviewer: Ok is there anything else, any other particular skills or anything, doesn't matter how tiny?

ST MW 6: Even washing the woman before delivery and stuff like that

Interviewer: *Ok and what about your knowledge?*

Collective: Emm [long pause]

Interviewer: *Some indicated that simulation helped you when you got lectures, to understand what had been said in theory.*

ST MW 3: I don't think so, thinking back you couldn't put stages, the right things at the right stages and stuff like that so obviously you delivered and you were with people

Interviewer: *Ok when speaking to mentors some felt that they themselves had been, their words were, they had been thrown into their first delivery, that's how they remembered the situation and I just wanted to know how you felt?*

ST MW 3: I think that whole mentality maybe comes from the fact that obviously we were first years and we were doing quite a lot of things quite early on but obviously the simulation I don't think would have been any better prepared

ST MW 5 Yes

ST MW 5 & 3: You know, it's never going to get any better than that

Interviewer: *Ok were you frightened when you went to hospital?*

Collective: Yes....deliveries

Interviewer: *Why do you think you felt frightened?*

ST MW 4: Yes I was

ST MW 5: Frightened of making mistakes

Interviewer: *Were you?*

ST MW 4: I think more excited

Interviewer: *Excited?*

ST MW 7: Uh huh but quite confident

ST MW 6: When you're fresh in, then maybe you'd not have an idea of what's in a delivery pack or where to put your hands or how to hold things, no. You can still be confident, I mean I really do think personally I was

Interviewer: *What about yourself* [to STMW 1]

ST MW 1: It lets you organise yourself with everything and you're taking all the small practical steps up into the reality of delivering a baby

Interviewer: How did you got on in your first delivery?

ST MW 7: I remember them [mentors] saying well done, well done

Interviewer: And how did you feel you had done?

Collective: Laughs

Interviewer: Ok so do you think it helped reduce the fear?

Collective: Yea [inaudible, all speaking at once]

Interviewer: Ok thank you. How did you feel about learning other things in the placement?

ST MW 3: Well I felt that, it did but then there was emergencies, you know so

ST MW 3: I felt a lot more confident because I've been in hospital and done the things I'd done, especially the deliveries and that so yea

Interviewer: So you felt a wee bit more confident?

ST MW 4: Uh huh, more confident all round

ST MW 6: But when you're in and you're dealing with deliveries you're doing a lot more concentrating in getting deliveries so you don't really, like you're doing what you're doing in between but your main concern is getting deliveries really so I don't think I've been looking to learn other things apart from getting deliveries getting used to it

Interviewer: What about other things?

ST MW 3: I have been doing other things, I did you know vaginal examinations, it helped me with that

ST MW 6: You see I didn't do many vaginal examinations because I was never given the opportunity to do that many so I felt it was just like, even my mentor, she was kind of focusing on me getting deliveries and I think the whole time I did something like five vaginal examinations so I don't even think I learned that much

ST MW 5: It isn't just deliveries, I'm caring for them and been to theatre too

Collective: Uh huh

Interviewer: *How did you feel about the practice area as a place to learn new things?*

Collective: Yes, yip, it is the best place to learn

ST MW 6: I think it's the best place to learn but then again my experience was maybe, some other midwives were feeling they didn't need us and we weren't getting the experience we should be because they felt we shouldn't be asking them, 'can the student do it'? I don't think there's as much learning as I would like to

Interviewer: *So did you feel in that respect that it was not always the best place?*

ST MW 6: Uh huh

Interviewer: *Right ok thank you. So in general then when it's very busy did you feel your needs were taken into consideration for somebody to take the time?*

ST MW 6: No I don't think they were

ST MW 3: No I couldn't actually say there was a time where you know I asked them anything, I was always you know I always, I remember that, always

ST MW 6: I admit even simple things I felt like if it was busy and the amount of staff on duty - like even giving the diamorphine and things they wouldn't let me kind of do, things like that that we should be kind of practicing, I felt that she would just want to do things herself, which was just her way of working but again it was taking away from me and I wouldn't get through as much as I would have liked to have done and I had my theory to do so I should have been actually doing it

ST MW 4: I remember how my mentor, she always gives me the opportunity of doing everything as well to try and get me the best experience that I could possibly get when I'm here

Interviewer: *Did you feel through getting simulation, did it give you any perception, idea of what it might be like in hospital from a professional?*

ST MW 4: What the actual delivery?

Interviewer: *In general.*

Collective: Yes

Interviewer: *Ok. How do you think you transferred your skills from that day into the clinical area?*

ST MW 3: Both knowledge and skills. I think personally it was that probably more from simulation then I kind of applied knowledge and then when I was doing the simulation I applied the knowledge but I think first of all it probably would have been, where the delivery's concerned it would have been the simulation

ST MW 6: I think it was memory because we'd seen it enough times

Interviewer: *Ok everything that we've talked about today in relation to using simulation, is there anything that you feel that you want to add to it, anything that you feel we've missed out?*

ST MW 7: By doing the simulation?

Interviewer: *Uh huh in relation to this whole topic would you say?*

ST MW 6: I think having the simulation made me a lot more prepared. Obviously nothing's going to compare to actually going in and having a delivery but I think just for preparing you for it, it was quite important having like hands on

ST MW 7: Aye just to know what was in the delivery pack because we would have went in, we would never have, we would have been too busy looking oh what's that, do you know, but we knew what was in that, when we opened it we knew what to expect

Interviewer: *It was or was not a surprise to you?*

ST MW: No not a surprise

Interviewer: *Ok thank you. Would you like to add anything?*

ST MW 7: I think I would have liked maybe a wee bit more exposure to the simulation maybe, once we got doing it and I felt that ??

Interviewer: *What about being in the small groups - did you like that?*

ST MW 4: I like the big group

ST MW 7: See I like the big group because I feel, like when you said at the beginning [to STMW 4], when you said you learn from people's mistakes, not mistakes but just things……

ST MW 3: Things you can remember

ST MW 7: Do you know, whereas if you weren't in my group and you did something and we weren't there to see it you know I wouldn't learn as much

ST MW 5: But sometimes in a big group you can't remember

ST MW 6: In the wee groups you didn't feel rushed or anything and also you knew you were getting videoed but it wasn't too bad because it was only a handful of people and it wasn't the whole class

Interviewer: Would you have liked it individually?

Collective: No

ST MW 3: Another thing I think I would have liked too is for the mentors, even just mentors from the hospital to actually see the simulation if they haven't seen it already to see what we actually go through before we come, so they know what we have done, rather than when we come instead of asking have you done this, have you done that, they know what we've done, they know what to expect from us as well

Collective: [inaudible, all speaking at once]

ST MW 5: I think that's quite difficult, I mean they never saw me doing the mock and everything

Interviewer: Anything else?

Long pause

Interviewer: Ok. Well thanks a lot. Just to, reassure that you will remain anonymous with any report that comes out of this for my thesis Ok thank you

END

Lecture Interview

Interviewer: Preamble (see Appendix 8)
I want to open up our discussion today about clinical simulation. Do you agree that you have consented?

LECT 1: Provides this information

Interviewer: *Thanks. First question is can you just tell me who you are and where you work please? And how long have you worked there?*

LECT 1: I've worked here three years, one year as a Lecturer Practitioner and two years full time Lecturer, teaching in pre-reg midwifery

Interviewer: *Ok and I've given you a background to this particular study and explained all what is expected of you and how this is related to September 08 cohort of first year midwifery students in* [names HEI], *those who have received simulation-based learning. Right now really just in your own words, did you provide any simulation-based learning to any of the September 08 students?*

LECT 1: Yes, do you want me to expand on that?

Interviewer: *You can expand. I will be asking you other questions but please do not hesitate to repeat yourself*

LECT 1: Yes we used simulation scenarios in various guises for the September 08 cohort first of all and simple things like blood pressure and urinalysis etc, more complex issues such as normal deliveries, preparing the student for you know delivering actually intrapartum, delivering of a baby and then reviewing first stage so it's first, second, mainly second and third stage labour were covered by simulation as well as all the basic vital signs, urinalysis, palpation as well

Interviewer: *Ok and as a student midwife about to undertake their first labour ward experience really in your own words what do you think they consider to be the most important midwifery skill that they will undertake in their first placement?*

LECT 1: The first placement before they go out to community?

Interviewer: *Yes*

LECT 1: I would say palpation would be the skill. Also I mean venepuncture as well is a simulated skill that we do that we teach as well but I think the one that they worry about really is palpation and blood pressure to a lesser extent but palpation. They worry about whether they won't feel the way the baby's lying or they won't be able to feel anything

and then they won't be able to be a midwife. At the same time and extent they worry about blood pressure but blood pressure is sort of more controlled you know than actual palpation is because you know it's there in front of them

Interviewer: *Ok thanks. Junior student midwives often experience fear when contemplating their first intrapartum care episode. How would you feel about this in relation to student midwives?*

LECT 1: Yea I would say from past experience even as a qualified nurse myself you know actually undertaking the first intrapartum care delivering the first baby was an exciting but challenging time and there was a lot of fear probably involved and I would say that that's replicated in the students that we have today that I've seen over the three years that I've worked here. They worry about lots of different things like where to stand, what the instruments look like, what they're going to say, eh, how they do different, you know they worry about intrapartum care a lot I would say before they actually deliver a baby

Interviewer: *In relation to clinical simulation itself, what do you think of the concept, the whole learning tool?*

LECT 1: I think clinical simulation is very good. The set up that we have certainly for the intrapartum care, preparing students for undertaking a normal delivery, the set up is very similar to the clinical situations that they're going to hit either in [names placement] or within [names placement], the bed's the same, the equipment's the same, the layout, the curtains you know it's very, very similar so it prepares them. So they get used to where to stand, how to, where to put their hands which is something, it is mechanical it's not exact but we can control it, we can control the environment, we control the speed that Noelle delivers this baby out or the birth simulator delivers this baby out so it is very controlled. We don't have interruptions, we don't have buzzers going, phones ringing we don't have anything you know that can interrupt that student. We also, at the end of it we can actually show them how they performed using the SMOTS camera. We can show them how it is just to, how they performed and also we can guide them you know looking back together over it, the student and also the lecturer, we do peer review as well so students kind of almost appraise each other and look over and say oh that's where you put your hands. It's things sometimes that we maybe take for granted as qualified practitioners now is about you know just about controlled contraction and guarding the uterus and it's sometimes actually those kind of things and where and how to move up instruments without with one hand you know for instance call clamps, cut the cord and different things so I think for that it's great and anecdotally and certainly the midwife mentors have mentioned that they think the

students are more prepared at least with equipment and where to stand and how to stand, and they get insight. It's very time consuming. It is labour intensive plus, plus, plus. You couldn't, for a class of 20 or 25 students which we have to get through it takes a lot of time to go through and you know we've only got four lecturers on [names HEI] campus so we can all be involved in that with the simulation to try and get the students through in maybe say a week you know it can take two or three days if longer to get the students through all the scenarios and skills that we need for intrapartum care. Obviously there are shorter episodes of care such as blood pressure and palpation or something that's completely different but actually using the clinical simulator even for normal birth experiences which the students have it's very, very labour intensive, time consuming and that's the main problem especially with the type and curriculum type timetables that we have with the modules, the heavy modules that the students have. They've not just got to learn how to deliver babies, they've got to learn a whole loads of other stuff and different modules

Interviewer: *Thank you. Now I'm going to ask a few key questions relating to how lecturers perceive clinical simulation in preparing the student midwife for clinical practice. How do you feel about the role of clinical simulation preparing a student for their first labour ward placement?*

LECT 1: I think it is very important for the lecturer I think it is a good useful tool for the student to have but it is time consuming

Interviewer: *And in what ways might clinical simulation prepare a student? Now you may have touched on this briefly.*

LECT 1: Uh huh I think I mentioned that the main thing is that the students worry about where to stand, where to put their hands, how to open the cord clamps, how to use the equipment, how to swab the woman down even. All that can be taught very nicely in clinical simulation especially for students who, let's face it are going into a very hands on profession. It prepares them and very often because they've chosen this hands on profession then it learns very visually and it's a visual aid for students to learn. They get shown how to deliver babies through the simulator, we do a mock delivery and where to stand and then they get the chance to participate in a scenario with us helping them

Interviewer: *Ok I'm now going to ask you what way or ways might clinical simulation prepare a student? Now I do appreciate you have given me some but is there anything in addition?*

LECT 1: Well hopefully it will give the student some confidence. I think that's a big key and reinforce what they've learned. They've got the written information, they've had a chance to look at it, just kind of watch us

lecturers kind of work with Noelle, the simulator then they've got a chance to practice it, they've got a chance to review it so hopefully confidence in their own ability before they hit you know women and babies out there

Interviewer: *Right thank you. Now I'm going to move to the actual skills room within the University and the LDRP environment, what do you think about the environment that you use the clinical simulation in?*

LECT 1: I think it's a good start. Obviously we're promoting normality and we're encouraging normality and there is, there's limitations to the model. At the moment, we're getting a newer model, but the model that we've got is very restrictive, she delivers in the semi recumbant position but it's a starting block for these students. They get to see, they're quite impressed even from going from the clinical setting how similar it is even down to the same kind of material the curtains are used and the same lockers, same beds that are used in practical area

Interviewer: *Ok how might the context of the environment help the students when they work in the LDRP room?*

LECT 1: I think it's, I mean especially I mean if they're using the same equipment as they do in the clinical simulation, I mean things like how to move the beds around and you know how to put legs up in stirrups and things are very valuable tools and actually feeling, if it makes them feel a bit less useless when they go into, I would say it makes them feel less useless when they go into the clinical area you know because it's a similar environment. Now they know that we encourage women to walk about and be more mobile in labour and we can't actually do that, we can show them different techniques you know to do that later on but actually they learn that with their mentor but it is a good starting block for them definitely

Interviewer: *Ok thank you. The next question relates to the topic of the learning domains, the knowledge, the skills and behaviour. What do you think about clinical simulation and the development of midwifery skills in the University and thereafter in the clinical setting, bearing in mind this is about knowledge, skills and behaviour?*

LECT 1: Well the students have the knowledge you know they receive the written underpinning knowledge surrounding the clinical skills or whatever the skills are, the theory underpinning all that, they receive that and they get discussed at the lectures. Then they actually start to go up to the skills you know observing and they take part in the skills and they learn you know the sort of manual, dexterity skills, learning about professional attitudes and also they learn about asepsis, lots of different skills they can put into context in here as well as actually just the process of mechanical delivering a baby and hopefully their

behaviour from that will because of their confidence in their own ability they have managed to deliver you know the baby through Noelle that will actually help them and their behaviour to be more confident by the time they get out, we're not expecting them to be experts, we're expecting them just to be comfortable when they go out to clinical practice

Interviewer: *Ok thank you. How do you feel about lectures compared to the clinical simulation to facilitate the student's knowledge and understanding of labour and delivery?*

LECT 1: I think you need to have the lectures, need to have the theory, you need to know the mechanisms of labour and that's something, yes you can see it, you can go through it even with a doll and pelvis you can go through it without actually using the birth simulator so it helps just to put it all together. I would say the clinical simulation when they see it all in practice then that starts to it's certainly it's the key to unlocking what they're going to learn out in the clinical area

Interviewer: *Ok thank you. Now this set of questions relates to the learning domains, knowledge, skills and behaviour and to what extent or not do you think clinical simulation allows students to participate in their student midwife role prior to attending workplace?*

LECT 1: I think probably I have touched on that before but I think really clinical simulation really just is that stepping stone almost from learning the lectures just getting the facts, information, to seeing how it's down in a very rudimentary way and then taking it forward into practice

Interviewer: *The next question relates to the topic of work based learning. What do you think of the clinical environment as a teaching and learning environment for the new student midwife?*

LECT 1: It's essential that the clinical learning environment, that's where they're going to be working, that's where they're going to be doing their day to day work. When they qualify as a midwife they've got to learn, they've got to keep that balance of fifty per cent theory, fifty per cent practice. If we lose that we're definitely down a slippery slope and I don't think clinical simulation can ever, ever replace you know the clinical setting, of course not but it does allow you to do, to just take the pace, clinical simulation, you can go slow, you don't have emergencies happening in the clinical simulation lab unless you want them to happen. You know it's very controlled, there's no, there's no interruptions, we hopefully I know there is, there is definitely time limitations within us and to a certain extent we can dictate the time. We're not getting interrupted to go and look after somebody else in labour or go and do you know or go and see Mrs so

and so or whatever, it's very much a controlled environment so it is a good stepping stone but obviously there's no way that that would ever replace the clinical setting

Interviewer: *Ok thank you. In relation to knowledge, skills and behaviour how do you think a student may apply or transfer clinical simulation to the workplace?*

LECT 1: I think I have mentioned this before as well. It's where to stand, it's how the other midwife or their midwife mentor can assist them, they learn where to put their hands, how to wash the woman down, it becomes a bit more familiar so hopefully when the adrenalin kicks in and they're doing this for real with a mum and baby that the skills that they have learned in the clinical simulation lab will kick in, how to use the instruments, how to move the cord clamp, cut the cord, how to deliver the placenta you know that kind of thing

Interviewer: *The next question relates to two particular areas and what do you think of its effect, if any, on the students openness to other learning in the workplace and secondly to confidence?*

LECT 1: Ok openness to the other experiences, I think that is where the mentors may say that they think oh but women don't deliver, they're not supposed to deliver in semi recumbant positions you know and you're that's all she does just now and you think well it's again that's used as a stepping stone so I think as long as it is explained to the students in that way that this is a stepping stone, this is just to get you used to where you stand, how to use the different pieces of equipment, the bed, you know the delivery trolley, how to open your pack, how to put even your gloves on, all of that you can teach them in there, the mentors and real women and babies will teach, they'll move that on, it's just a very much stepping stone for that

Interviewer: *Ok and what about their confidence?*

LECT 1: I think the students, I mean obviously, the students I talk to as well and their feedback as well as the mentors will be sought here but I mean talking to the students they do say that it does improve their confidence and I know from as a Lecturer Practitioner and really we're just starting to use clinical simulation and much more, much more robustly, the students were saying on the wards yea it did help me, it did prepare me you know for the actual the reality of the clinical situation

Interviewer: *Ok thank you. Now the next question relates to the topic of patient care. What do you think of clinical simulation in relation to patient care and patient safety?*

LECT 1: I think it's important that every practitioner be it student or qualified staff know exactly how to work all pieces of equipment that they are going to use and clinical simulation can do that very effectively and efficiently and take it down bit by bit and the student knows how to operate all the different parts of you know of equipment and then they are more confident in preparing that environment, working in the environment – sorry what was the other part of the question – was there two parts sorry?

Interviewer: *Patient care and patient safety*

LECT 1: I think obviously for the student where the student stands, we can correct things as well if they maybe just pull the placenta without guarding the, without guarding, we can say look what you've forgotten to do is guard that uterus, whereas if that happened in reality you know it might be too late, it might be an emergency, or they can say you know you actually didn't swab the woman down properly, she's going to be contaminated as an infection risk or we can teach how to check the perineum after delivery which obviously would be very uncomfortable for the woman in reality or can be, we can teach with the manikin so she doesn't feel a thing so it's much, it's much easier just to teach them the proper technique and say well hang on do that again whereas in reality you wouldn't be able to do that

Interviewer: *Ok thank you. I'm now going to ask you an aspect related to the topic of the lecturers teaching role. How do you feel about your teaching role in relation to your lectures, you skills labs etc in facilitating the acquisition of knowledge and skills directly related to the care of women?*

LECT 1: I think as lecturers we have an important role, we've got to keep it real, eh that's real and clinical simulation is our, again it's our stepping stone across the clinical setting and it would be in the past that Clinical Teacher's, Lecturer/Practitioners, myself, we go out there and work with students on a day to day basis where we now have obviously changed the focus and mentors are the most skilled people to do that but we have to make that, give the students that transition, that stepping stone to get to the clinical area. The more often we can do that, the more the students appreciate it but we have got to say that there are limitations, it is a stepping stone, it's not instead of clinical practice

Interviewer: *In what ways might clinical simulation impact on your clinical teaching role?*

LECT 1: It impacts by time consuming, it is very, very time consuming so and you've got to have small groups so you know it's I mean that's the biggest, it impacts by, it's good though you know you enjoy doing

clinical simulation because you can see it clicking in a student's you know face, you know all of a sudden they maybe haven't, you've been explaining about deliveries and how you know internal and external rotation and all the rest of it and then suddenly you can see it clicks with a student within the clinical simulation lab. Really that's, it's a good, that's a positive part and it helps us with our skills too but the time, the amount of time and it's very resource intensive, it's very labour intensive

Interviewer: *Ok - of all the issues we've discussed today which is the most important to you in your remit?*

LECT 1: Regarding clinical simulation?

Interviewer: *That's correct*

LECT 1: I think if we have, if we're going to maintain it and expand clinical simulation, we need the resources which would be staff to facilitate that, we need the staff to carry that on. The students are eager for clinical simulation to be used more, for more complex issues you know when we come onto you know sort of later, sort of second year, they're desperate to use clinical simulation but it's the time factor, sometimes it's can take a long time, well it does take a long time to set up Noelle or the simulator for abnormal deliveries and that in itself you know you could be talking about an hour, an hour and a half to run through one scenario with a small group of students, so you know, that, you can understand that that's going to be really, really difficult to achieve

Interviewer: *In relation to clinical simulation, do you think we've missed anything?*

LECT 1: I don't think so, I don't think, I mean the main issues are yes, the students say it prepares them for practice. The main issues from a lecturers point of view is actually the time factor and also the limitations of the clinical simulator, it's only a stepping stone, it's not to replace reality

Interviewer: *Ok, one final question – is there anything you would like to add to this interview that would be of benefit or just because you want to add it?*

LECT 1: No I don't think so

Interviewer: *Well I would then like to take this opportunity to thank you and really just advise you again of the confidentiality of the information within this tape recording and I will make sure that it is kept in a secure situation*

LECT 1: Thank you END

Appendix 10: Coding

An adaptation of the approaches to coding as advocated by Miles and Huberman (1994, p.65) and Edwards and Talbot (1999, p.124) was applied, in which both numerical and descriptive labels were created. To illustrate this process, the codes listed within the 'Codings' columns on p.304-306, derived from pre-specified categories originating from the conceptual framework (see Figure 2, Section 3.1) and from which the research questions had evolved. For example, in the data set relating to the mentors interviews code 1.1.1 developed as follows:

- The first column provides a descriptive label for the general category as, 'Category **1**:- Views of the Concept of Clinical Simulation'
- The second column shows the code as, '**1**. Thinks clinical simulation gives student perception of being in a hospital; it's realistic'; or '**2.** Thinks clinical simulation is good for student learning' and so on
- The third column shows the research question from which it derives as, 'Sub-question of Research Question **1**'
- Thus, when'**1**. Thinks clinical simulation gives student perception of being in a hospital; it's realistic' was attributed to a particular text in the transcript, it was identified as such in the left margin, and, for the purpose of tallying frequencies, was recorded as '**1.1.1**' on a content analysis table / data sheet (see example on p. 307).

All Categories and Codes

Category	Codings	Research question
1. Views of the concept of clinical simulation	1. Thinks clinical simulation gives student perception of being in a hospital; it's realistic (1.1.1) 2. Thinks clinical simulation is good for student learning; wished they had had SBL (1.2.1) 3. Approximation of clinical simulation to clinical reality; the university closely resembles the clinical setting (1.3.1) 4. Thinks clinical simulation is unrealistic; general negative thought of the concept (1.4.1) 5. Approximates with clinical setting; it's familiar for the student (1.5.1) 6. The student initially watches simulation scenarios and then participates in the controlled environment of the skills lab (1.6.1) 7. Clinical simulation has limitations (1.7.1)	Sub-question of Research Question 1
1. a)Experience of clinical simulation	1. Thinks clinical simulation gave them (student) perception of being in a hospital; it's realistic (1a.1.1) 2. Thinks clinical simulation is good for student learning (1a.2.1) 3. Approximation of clinical simulation to clinical reality; the university closely resembles the clinical setting (1a.3.1) 4. Thinks clinical simulation is unrealistic; general negative thought of the concept (1a.4.1) 5. Approximates with clinical setting; it's familiar for the student (1a.5.1) 6. University setting could be made to more closely resemble clinical setting (1a.6.1) 7. Hands-on helped contextualise theory (1a.7.1) 8. Anxiety provoking experience; fear of the unknown (1a.8.1) 9. Anxiety provoking experience talking to manikin (1a.9.1) 10.Small groups beneficial (1a.10.1) 11.Large groups beneficial (1a.11.1)	Sub-question of Research Question 1
1. b)Experience of peer review via audio-visual unit	1. Found peer review useful (1b.1.1) 2. Felt anxious about being filmed (1b.2.1)	Sub-question of Research Question 1

1. c) Clinical simulation and learning domains	1. Facilitated knowledge and understanding (1c.1.1) 2. Facilitated practical / skills aspect of learning (1c.2.1) 3. Facilitated professional aspects of learning; felt like a student midwife and part of team (1c.3.1)	Sub-question of Research Question 1
2. Preparation for practice and the role of clinical simulation	1. Reduces the fear of delivery; the student knew what to expect; increased awareness of what was going on (2.1.1) 2. Helped student conceptualise midwifery theory (2.2.1) 3. Provided a basic experience prior to practice in the clinical setting (2.3.1) 4. Performance is not different to students who have not had SBL (2.4.1) 5. It does not facilitate learning, nor prepare for practice (2.5.1) 6. It can identify practice errors prior to working in a real clinical setting (2.6.1) 7. Helps close the theory practice gap (2.7.1)	Research Question 1
3. Application of learning domains to practice setting	1. Application of knowledge and understanding (3.1.2) 2. Application of skills; knows what to do (3.2.2) 3. Applies behavioural aspects to clinical practice (3.3.2) 4. Does not facilitate communication skills or emotional issues (3.4.2) 5. Generally remembered or seemed familiar from simulation sessions at university (3.5.2)	Research Question 2
4. Clinical simulation - affect on work based learning	1. It has a positive effect on work based learning; increases confidence (4.1.3) 2. Students are open to other learning; they can build on the SBL (4.2.3) 3. They can remember from simulation labs (4.3.3) 4. It does not contribute to improved patient care (4.4.3) 5. The clinical area is sometimes too busy to teach the students; their supernumerary status can be abused (4.5.3) 6. The students and mentors attitude to learning impacts on work based learning (4.6.3) 7. It does contribute to improved patient care (4.7.3) 8. Sometimes hostile atmosphere between students and permanent staff (4.8.3)	Research Question 3
5. Effect of clinical simulation	1. It facilitates in the mentors teaching role because the student already has practical experience; don't always have time to teach	Sub-question of Research

on teaching role	(5.1.3) 2. Skills taught differently at university than taught in practice (5.2.3) 3. Skills taught differently between each mentor; inconsistent (5.3.3) 4. Skills taught the same (5.4.3) 5. Mentors should know about clinical simulation (5.5.3) 6. It is labour intensive and time consuming; heavy demand on teaching team (5.6.3) 7. It enhances lecturers teaching role; facilitates their own knowledge and skills (5.7.3)	Question 3

Developed from Edwards and Talbot (1999, p.124)

Example
Data Set: Midwives Mentors Focus Group Interview
Content Analysis Data Sheet

Identifier	Category 1 (Frequency of codes)	Category 2 (Frequency of codes)	Category 3 (Frequency of codes)	Category 4 (Frequency of codes)	Category 5 (Frequency of codes)
MW 1	1.5.1 X2	2.1.1 X2	3.2.2	4.1.3 4.5.3 4.7.3	5.1.3 X3
MW 3	1.5.1	2.2.1	3.2.2 3.4.2	4.1.3 4.5.3 X2 4.7.3 X2	5.2.3
MW 4			3.2.2	4.7.3	
MW 5	1.4.1 X2	2.2.1 X2 2.3.1	3.4.2	4.7.3	5.1.3
MW 6		2.3.1 X2	3.4.2	4.6.3 4.7.3	5.1.3 X2 5.3.3
MW 7	1.3.1	2.1.1		4.7.3	
MW 8		2.2.1 X2		4.1.3 4.6.3 4.7.3	
Totals	1.3.1 =1 1.4.1 =2 1.5.1 =3	2.1.1=3 2.2.1=5 2.3.1=3	3.2.2=3 3.4.2=3	4.1.3 =3 4.5.3=3 4.6.3=2 4.7.3=8	5.1.3=6 5.2.3=1 5.3.3=1
Repeated > 1 across full data set	1.5.1	2.1.1 2.2.1 2.3.1	3.2.2 3.4.2	4.1.3 4.5.3 4.6.3 4.7.3	5.1.3
Outliers (O) & Nuances (N)	1.4.1 (O) 1.3.1 (N)	N/A	N/A	N/A	5.2.3(O) 5.3.3 (O)

Repetition of Coded Datum

Concept of Clinical Simulation

- Approximates with clinical setting; it's familiar for the student

Preparation for practice

- Reduces the fear of delivery; the student knows what to expect; increases their awareness of what's going on
- Helps student conceptualise midwifery theory
- Provides a basic experience prior to practice in the clinical setting

Application of learning

- Application of skills; knows what to do
- Does not facilitate communication skills or emotional issues

Work based learning

- It has a positive effect on work based learning; increases confidence
- The clinical area is sometimes too busy to teach the students; their supernumerary status can be abused
- The students and mentors attitude to learning impacts on work based learning
- It does contribute to improved patient care

Mentor Teaching Role

- It facilitates in the mentors teaching role because the student already has practical experience; don't always have time to teach

Appendix 11: Extracts from Reflective Diary

12/9/06

I have just experienced my first EdD session. Thankfully, the topic for my research has already been decided. As we have recently introduced a childbirth simulator into the Midwifery undergraduate curriculum, its impact on the students' learning ought to be explored. I am undecided about the exact nature of the project, but I remain passionate about the clinical area and the development of clinical skills (I had been a practising clinical midwife from 1990 and then held a joint post as a Lecturer Practitioner from 2003 until February 2006 and thereafter as a full-time Lecturer). So I want to explore the topic from the clinical perspective as I am really interested in how simulation skills are transferred to the workplace rather than within the HEI. Anyway, the first day of the EdD course was quite enjoyable although my pre-existing apprehension about undertaking a doctorate returned whenever Dr. June Mitchell said, '…the course is a 'biggie', and as you're not registered yet, you've still got time to back out'! At least I have to find a 'critical friend' from my workplace who can provide me with some guidance throughout my course and cast an eye over my work, so that might encourage me. I'll email the lecturers from the School of Health who have a PhD and see if anyone wants to help me out.

20/10/06

It's about a month since I made my last entry but I've still been working on the coursework. Today I participated in a meeting with Professor Dalglish. The School of Health had invited him to our HEI to share his expertise on how the School could take forward research into clinical simulation. The HEI has started to be recognised as one of the key players in Scotland in utilising clinical simulation as a teaching and learning strategy in undergraduate nursing and midwifery education. In fact the School hopes to put in a bid to be recognised as a regional simulation centre. This would be a great step forward for our School and would raise our profile immensely. Professor Dalglish gave some advice in relation to research, as this would be our

main attraction in the bid. As midwifery is still in its infancy with regard to simulation, in comparison to the adult nursing branch, the bulk of advice was directed at this group. Nevertheless, it allowed me to network a bit and on speaking with one of the research committee, she suggested how my research study could also be used to raise the profile of the school, 'kill two birds with the one stone' so to speak. We've arranged to have a future meeting, which should help me become clearer as to the direction that my project will take.

Further Extracts from Reflective Diary & Field Notes (During Data Collection)

27/05/09

Went to the ward quite late on in the afternoon to interview MW X. Patient- staff ratio satisfactory. MWX was in charge so I felt there were constraints on our interview from the outset. She had the medicine keys and kept fidgeting with them. The ward was not unduly busy; was adequately staffed. We went to the pool room, however because MWX was 'in charge' I think she was under pressure to be visible in the ward. She looked outside of the pool to check that there wasn't anything clinically significant going on although a few women were coming up to delivery (typical transition stage groans and other noises). When shown clinical simulation footage, she laughed and said 'It's just like a big doll'. I thought she smiled 'knowingly' a lot. I was a bit overwhelmed and didn't know what to say by her unimpressed response. However following the interview MWX wanted advice regarding a general student issue and this may have been perceived as more important to her than the interview; even though it was just a straight forward query. But consequently it could have distracted her as I found her slightly underwhelmed and her body language was slightly defensive throughout the interview. She seemed relieved when the interview was over - so was I, actually even though it was quite short anyway.

Also, interviewed STMW X. Before the interview, ward tasks had been allocated and the student seemed rushed to have these completed yet someone else could have let her be free for the interview. Following the interview, the student was keen to comment on the workplace as an environment perhaps not conducive to learning. She

highlighted some issues concerning unprofessionalism and bitchiness which seemed to conflict with how the areas were addressed in the HEI. It seemed to her, that the workplace was slightly hostile. We talked at length but it transpired that the hostility was not directed to her but had been a one-off instance where she witnessed a midwife discussing a work-related issue in the staff room. We spoke about such situations and patient confidentiality (even among staff) and resolved her concerns. I had thought that maybe I should take this up with the ward manager, in relation to setting an example to students, but on reflection, I think it has been a minor incident and perhaps should not be raised again.

29/5/09

Had a meeting with my supervisor this afternoon. Talked about how data collection was going in the wards and mentioned MWX. She thought it quite funny when I told her exactly what she said – think it was how I told the story. Anyway afterwards we talked about this type of response. I suppose it made me realise that X was seeing it for the first time and it probably seemed quite surreal to her – seeing a manikin deliver a doll. Especially when we could hear what was going on in the ward that day – women crying in pain during childbirth. I suppose it just must've looked quite unreal to her.

2/6/09

Student Midwife 4. This student had been given some tasks to do and initially I got the feeling that she was torn between completing the working tasks and being interviewed. I reassured her that I could wait. Even the midwife in charge questioned why her mentor hadn't organised someone else to relieve her so she could be interviewed. Eventually when we started, the student said she was concerned that I would ask her 'bad' questions so I reassured her that there wasn't any right or wrong answers.

Also interviewed MW 1. She and her student had been given tasks. They were aware of my presence and felt a need to complete tasks beforehand which is expected. Context: ambience - quite relaxed; staff patient ratio satisfactory. In fact was pretty

much welcomed by all the staff on arrival which is a good sign if they can take time to make me feel welcome. So did not feel the ward was not too busy. Asked MW1 later if she had noticed I'd taken some notes of the ward, staffing etc but she said 'no'. Throughout, she was forthcoming, smiling, nodding her head in acknowledgement frequently. Sometimes she was slightly hesitant in finding the words to express herself. She was keen to take part and as a relatively junior MW had no other pressing commitments to the ward. Therefore she appeared relaxed and attentive throughout the interview. When shown footage, MW1 stated 'that it was really realistic'.