The Use of Peer-Led Simulation as a Pedagogical Approach. An Action Research Study.

by

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Dedication.

I want to dedicate this thesis to my Mother who I am sure is looking down and feeling proud. She has been an example to me and it is because of her that I am where I am now. Thanks Mum.

Abstract

The aim of this research is to explore the effectiveness of peer-led simulation on students learning. Simulation is a common pedagogical approach within the education of health professions. Whilst there has been a wealth of literature supporting the use of simulation and peer-led learning, there has been little reviewing of the long term benefits on student behaviours. Viewed through the lens of Wenger's Community of Practice (1998) and Vygotsky's (1978) *more capable peer* and using an Action Research approach, the concept of enabling students to design and facilitate their own simulations has been explored. Through cycles of action and reflection, the process evolved from students facilitating pre-written simulations through to student centric peer-led simulations. Over a period of seven years, students from child pre-registration programme participated in developing simulations. Interviews, focus groups, module evaluation and self-reflective diaries were used to generate data. Developing and facilitating their own simulations meant that students were able to improve their theoretical and practical skills and gained increased confidence and awareness of their own learning needs. The data from each of the cycles demonstrated that students had also gained levels of understanding about their role as a nurse that they could apply to other situations and their role as a teacher had facilitated their own learning. As a result of undertaking this Action Research project it is has been possible to view this pedagogical approach as effective in supporting students to develop both practical and theoretical skills.

Chapter One - Introduction

This Action Research study explores the concept of peer-led simulation as an effective pedagogical approach for helping students to develop theoretical and practical skills when caring for critically ill children. It started 8 years ago with a comment made by a student who wanted to know why, when assisting with facilitation; they felt they had engaged more in the process of a simulation. What then followed was an exploration of the concept of simulation and how clinicians, to support the clinical education of health professionals, have embraced this. Although the use of Action Research as a methodology was not the original intention, over the course of the study this became the preferred one. The cycles of action followed by reflection helped to explore the concept, as I was able to look back, review my teaching, plan for the next stage, and implement changes as a result.

During the process, I had to develop as an educator and this presented some uncomfortable truths at times. My background in academia has been based on the belief of simulation as a positive pedagogy. However, as I reflected on the cycles and reviewed the literature, I became aware of the disadvantages of simulation and the creation of clinicians who were at risk of becoming simulation professionals (Hanna and Finn, 2006), able to perform when in the simulated environment but not necessarily able to transfer this into clinical practice. This was the impetus for me to explore a way of delivering simulation to cover the regulatory body's requirements (NMC, 2010) (Please note these standards have been superseded by NMC 2018a) whilst still ensuring that the fundamental aspects of learning were considered to guarantee an effective experience for students.

1.1 Structure of the Thesis.

The use of Action Research as a method is a dynamic, spiral and evolving process this can make it difficult to present in a linear way. The presentation of the thesis captures the preliminary background, theory, overarching methods, analysis and ethics in the traditional fashion. I have presented reviews of the literature used to help develop my own understanding around the concept of peer-led learning and simulation followed by the cycles in their entirety. The Action Research cycles are presented one by one providing further information relating to results, analysis,

discussion and reflection. Finally, this has been brought together in a summary discussion and conclusion.

Chapter One outlines the background to the study. The structure of the thesis is explained and the use of simulation in nurse education within the present context is explored.

Chapter Two presents a literature review of the current research surrounding the use of simulation. It also draws on Foucault and Baudrillard to explore the background to simulation and the potential impact that learning via simulation may have in its application to the clinical area. There is also a discussion of the concept of competence within the context of the present day medical discourses.

Chapter Three explores the art of learning. Understanding the complex nature of learning is fundamental for educators and when introducing pedagogical innovations, there has to be an appreciation on how delivery can influence the integration of knowledge. There is also a discussion of the concept of Situated Learning and Communities of Practice, as outlined by Lave and Wenger (1991) and Wenger (1998) and how this can act as a framework on which to support the nature of learning. The discussion also links with Vygotsky's Zone of Proximal Development and his concept of the capable peer (1978). Peer-led learning is also discussed, providing definitions, advantages of the process with a note of caution about its use.

Chapter Four covers my research approach and rationale for my choice of Action Research as a methodology. It presents a background to the process and outlines my own beliefs on the use of qualitative research. The chapter then progresses to discuss the advantages and disadvantages of using Action Research. As a methodology, it enabled me, through critical enquiry and reflection, to search for meanings and bring about effectives changes to my teaching strategies.

Chapter Five outlines the different tools used to collect and analyse data through the Action Research cycles. Each method is discussed separately with their particular strengths and weakness within the research. Ethical considerations are also discussed.

Chapter Six outlines the ethical process that shaped the development of the research. There is also a discussion on the ethical consideration of the use of individual data collection tools

Chapter Seven concerns the first stage of the process, Action Research Cycle One. As each cycle is effectively a discreet project, they can be read in isolation. My own particular journey through the process is also presented via reflective accounts and discussions. This includes the challenges faced through the process.

Chapter Eight covers Action Research Cycle Two. Changes made as a result of reflections from Cycle Two are discussed and evaluated. This chapter concludes with a reflection on fluctuations in my own epistemological stance due to undertaking the research.

Chapter Nine covers the final Action Research Cycle. This was a much larger and more involved process. The data collected resulted in rich findings and the participants words have been used to provide context. Background to the participants is also presented in an attempt to demonstrate their unique characters.

Chapter Ten is the concluding chapter with a review the project as a whole within the context of simulation. Through the lens of Communities of Practice and the capable peer, it highlights the considerations required with the use of peer-led simulation, the transformative learning that resulted from participation and offers it as an alternative to facilitator-led simulation. It concludes by discussing the learning that has resulted from undertaking the project and the benefits of the symbiotic relationship between students and the researcher.

1.2 Background to the study

A second-year student nurse planted the original germination of my idea for research into peer-led simulation. We had been taking part in simulation activities, which involved groups of students working through a problem using simulation manikins. There were learning outcomes from the session that had particular emphasis placed on the acquisition of auscultation skills. The manikins were set up with pre-set respiratory sounds and the students were required to auscultate and use cognitive processes to determine the problem and make judgments about the interventions required to remedy the situation. They had to collaborate on a plan of action and make the necessary adjustments to their "patient". When they were able to make their decision, the manikin's respiratory observations would change in accordance with the intervention with visual and audible cues as to the outcome, successful or otherwise. This would include increased or decreased respiratory rate, changes to the breath sounds or a bluish tinge to the lips, which would indicate cyanosis. The manikin could also simulate a pneumothorax or a cardiac arrest if the situation continued to deteriorate. This was followed by debriefing, whereby the students' decision-making process was unravelled and examined so it could be analysed further.

To maintain a physical distance from the students to preserve the realism (Muckler, 2017) and reduce anxiety of the students (Teixeira et al, 2014), the facilitator was located in a control room. From here, it was possible to view the unfolding of the simulation as well as manipulate the parameters of the manikin in accordance with the actions or inactions of the students. One of the students asked if she would be able to observe the process from the control room, as she was particularly interested in how the manikin worked. As the facilitator, I encouraged her to work alongside me and as the simulation progressed, she started to take a more proactive approach, recognising when to manipulate the parameters of the manikin according to the interventions of the students.

At the end of the session the student approached me to investigate why she felt she had gained further knowledge in her capacity as a pseudo-facilitator than when she had undertaken the simulation herself. We decided to explore this further to "unpick" her thoughts on this. It became apparent that there were fundamental aspects of

learning that had the potential for further exploration. In traditional facilitator led simulation, students followed a prescribed process that stifled the natural imagination and inquisitiveness that plays a part in learning (Reddy, 2008; Trevarthan, 2014). The debriefing and assessment process in which outcomes were based on the facilitator's preferences for performing the task compounded this further. As a result, I decided to explore a different approach to traditional facilitator-lead simulation.

1.3 Identification of a problem.

As part of the end of a module, students were required to complete a paper-based evaluation, followed by a group discussion on what they felt went well and where improvements could be made for future iterations of the module. The module itself was a clinically focussed 20-credit level 5 module based on the care of a critically ill child. The formative and summative assessment was an Objective Structured Clinical Examination (OSCE) with students being assessed on their ability to recognise deterioration in a child or baby and commence appropriate treatment. In each case, the student was assessed on their competence to perform effective Advanced Life Support techniques, as outlined by Resuscitation Council (UK), 2010 guidelines for a baby under the age of one, a child from one year to 12 years or an adolescent. The students were required to have learnt and practiced on all three age groups as the assessment was randomised and the student allocated to one of the three stations on arrival to their OSCE.

The use of a simulator meant that the clinical parameters could be manipulated according to the actions of the student. A successful outcome was student recognition of deterioration and initation of approriate treatment. To prepare the students, theoretical aspects were covered within the classroom and practical aspects were rehearsed within the clinical skills suites. A recurring concern for the students was their perceived lack of preparedness for both the assessment and for the practicalities of the clinical area, a concern recognised by several researchers (Kneebone, 2000a; Stroup, 2014; McEwen-Campbell 2015; Morgan Green and Blair, 2018). Students did not feel confident in their abilities to make the link between the abstract world of the classroom and the realities of placement, a common theme highlighted by Dunnington (2014), Issenberg et al (2005) and Sharif and Masoumi (2005). In part, the simulations presented them with an idealised version of the norm,

and it is the authenticity of simulation, which is a departure from the real world that can cause misunderstanding. These recreations of reality are what Dunnington (2014) counsels against as there are implications for the transfer into actual care, especially if this deviates from what has been learned.

During this time, I was also involved in three studies looking at different aspects of simulation (Meechan, Jones and Valler-Jones, 2011a, Meechan, Jones and Valler-Jones, 2011b and Valler-Jones, Meechan and Jones, 2011). The outcomes from two of the studies (Meechan, Jones and Valler-Jones, 2011a, Meechan, Jones and Valler-Jones, 2011b) were positive and supported the use of simulation with improved confidence and competence demonstrated by the student participants. The third paper (Valler-Jones, Meechan and Jones, 2011), cautioned against the unquestioning use of simulation as a panacea for health education. This had been motivated by an article written by Hodges (2006) highlighting the maintenance of incompetence within medical education. The contemporary literature suggested that the majority of studies into simulation were based on observations of students within the skills laboratories and focused on their perceptions of their experience, rather than what changes had been facilitated and embedded into their practice. Therefore, I worked with two colleagues to produce a literature-based analysis that discussed the present discourse surrounding simulation to determine the status of the concept and outline notes of caution when using simulation as a pedagogical approach. This publication (Valler-Jones, Meechan and Jones, 2011) cautioned against fully embracing all aspects of the simulation process without casting a critical eye over it.

1.4 My position within research

In order to be able to seek answers to research questions, the researcher has to understand that there is a specific way in which they see the world and this has to be acknowledged (Maxwell, 2013 p42; Denzin and Lincoln, 2018 p19). During my research journey, my ontological position changed. Ontology refers to the way in which we view our reality, termed by Gray (2014, p19) as understanding “what is”. Originally, I had felt that research involved observable facts that could be interpreted and causal links made and this is reflected in cycle two whereby my theoretical perspective was aligned with positivism. However, during the Action Research cycles, I discovered multiple realities, and these are relative to the context in which it

is bound, these relating to the environment, the prevailing departmental philosophy of education, the student response to teaching and learning activities and development of personal knowledge and skill. In essence, in respect to research, there are numerous outcomes, and these are dependent on who is undertaking the research and when and where it is taking place. Cohen, Manion and Morris (2000) advocate an interpretivistic stance to enable the situation to be examined through the eyes of the participants and this became a key perspective as the research continued. Gray (2014) describes interpretivism with the goal to understand and interpret and this is open to capturing the meanings of human interaction through flexible and personal research structures. As will become evidence in this thesis, this stance worked to provide a philosophical framework for the pragmatic, responsive and evolving nature of my research.

My interest in enhancing the experiential educational process within simulation developed because of my lecturing role. Ancedotally, I found that facilitators using simulation as a pedagogy had conflicting experiences and some students described negative encounters during some sessions, which can have a paradoxical effect as increasing anxiety levels can reduce the receptivity to learning (Mandler and Sarason, 1952). This raised questions and challenged my preconceptions of simulation as an effective pedagogical approach.

I had often used an experiential approach in my teaching as my preferred learning style identifies with visual and kinaesthetic approaches. I am frequently involved in practical, clinical skills teaching and this reinforces Bandura's (1971) notion that knowledge is based on observation and action. I see participating and observing as a way to understand what was happening to the students and their learning, rather than being removed from the process. I am interested in exploring the experiences of students as facilitators, therefore shifting the responsibility for knowledge acquisition from the educator to student, principally where this is set within a simulated environment. I believe this enables students to cultivate an understanding of concepts central to their development in a more meaningful way. This accords with the concept of social learning; students would be in a social situation where they would be working with each other to develop their simulations and the natural expression of this in practice is peer-led simulation. Situated learning within a Community of Practice (Lave and Wenger; Wenger, 1998) would provide a theory on

which I would be able to explore this within an authentic situation. I also felt that there may be an opportunity to explore Vygotsky's (1978) theory of a more knowledgeable other (capable peer) to help advance potential development. These theories would help me to explore what happened to student nurses during the progression from novice to expert student.

From my perspective, the concept of simulation as a pedagogical approach has been a positive focus for any research I had undertaken. I had not been aware of the impact of ignoring suggestions that did not accord with my theoretical framework. My own perceptions of simulation formed the basis for how I determined what would be measured and what statistical relationships to look for. Inherently this process has the potential to distort any findings. As part of my doctoral journey there is what Somerville (2008) describes as the "becoming-other-to-oneself" and this necessitates the opening up to new knowledge that enables you to see the world differently. Green (2016) points out that starting a doctorate initiates an identity crisis. Although she is referring to the change from a professional to a student, this concept fits with the development of change required from deeply entrenched perspectives. In essence, the journey obliges you to question your perspective and through the initial processes, debate other beliefs and attitudes.

In the development of my teaching in effect, I was building the road by walking (Reason and Bradbury, 2008, p.26). The consequence was that I took many small steps along this road, some of which proved successful and others that could be construed as failures that required working through to explore the problems. This journey helped to shape a form of peer-led simulation that created enough energy to continue down the road. There was the concrete experience that students seized their own knowledge journey to take up the mantel and this, in turn, generated the energy for me to continue.

The theory of reflection is bound up in this and I found that the need for continuous self-assessment and reflection throughout the process challenged my own sense of responsibility to act outside of a prescribed model of reflection. As the study progressed, I became more adept at challenging my mis-conceptions during each cycle and then using the down time between each iteration of the module to pull together the reflections to facilitate and guide the next cycle.

The use of a reflective diary throughout my journey had helped to organise my thought process as I progressed through the research. Initially the diaries were used to document my original bias in my way of thinking yet when reflecting back on earlier entries I was able to see how I had sort to expand my existing viewpoint and used the evidence to support this. To begin with I would place greater significance on those opinions that reinforced the value of simulation as a pedagogical approach; reviewing the evaluations and comments from the focus group interviews that fed into this thought process. However, as I progressed through the process, researching and transforming through the reflective approach and developed my understanding of the art of learning, I became more tolerant and accepting of those opinions that did not always sit comfortably with me. This is what Mezirow (1997) feels is transforming by growth of our "*governing habit of mind*" and becoming critically reflective of our own bias in the way we view things. As previously stated, this required facing uncomfortable truths about my own personal beliefs.

1.5 The present situation with nurse education in England.

Nurse education needs to be fit for purpose, with patient-centred care at the forefront. Recent reports have exposed a series of failings within the NHS (Francis, 2013; Keogh, 2013; Parliamentary and Health Services Ombudsman, 2018; Pascoe, 2020). The Francis report (2013) highlighted unacceptable professional practice and the Nursing and Midwifery Council (NMC) outlined their response in 2013 that contributed to the rewriting of educational standards (NMC, 2018a).

Education and in particular nursing education takes place within a physical space where the educators as well as the student participate in both clinical work and research. For the patient to be cared for the student requires education to become competent health professionals (NMC, 2018a). Producing a first-class nursing registrant enables the nursing school to attract monies through an enhanced reputation, as health services are keen to recruit from those universities producing quality graduates (Chhinzer and Russo, 2018). Against this there is an increasing awareness and risk of litigation and increasing regulation that afford less freedom in what students can do in relation to the patient (Bleakley, Bligh and Browne, 2011, p.7). The UK system of health education must deliver appropriate instruction on due diligence and the development of mindful responses to cultivate self-sufficient, safe

practitioners (NMC 2018b). As a result, educational institutes must empower their students using pedagogical approaches that enable them to internalise the learning and self-evaluation process as well as improving patient outcomes (Zendejas et al, 2013). This requires us to review the nature of learning to reinforce these principles.

A change with the financing of pre-registration nursing (Department of Health and Social Care, 2017) has caused a burden of debt following their training and this can impact of the choices made upon qualification, directing them towards better salaried roles to recoup costs. This in itself is not good for the nursing profession or for the patient as nurses seek to leave the NHS or even the United Kingdom for better remuneration and perceived improved quality of life (Hardill and MacDonald, 2000; Drennan and Ross, 2019) . Recently health education has been transformed by reforms initiated by the government, the changing legal situation with increasing fear of litigation (McCallum, 2007; Steven et al, 2014; Allen, 2019) the better education of patients (Clements and Williams, 2011; Langford et al, 2019), and even the nursing personnel themselves. These transformations have changed the way the education is viewed (Papadimos and Murray, 2008) and this needs addressing during the foundation of health education in order for the future professionals to be able to cope with these changes and the challenges they face.

1.6 Integration of simulation into the curriculum

There is increasing pressures on placement capacity due to rises in student numbers, as well as other health professionals competing for clinical sites (Hayden et al, 2014, Bogossian et al, 2018). There is also a shortage and reluctance of experienced nurses to mentor students (Black, Curzio and Terry, 2014, Rooke, 2014, Bogossian et al, 2018) and this has led nurse educators to look at new ways to prepare their students for the health care environment (Hayden et al, 2014). As a result, simulation has become increasingly prevalent within nurse education (Yuan et al, 2012; Levett-Jones and Lapkin, 2014; Shin, Park and Kim, 2015; Warren et al, 2016; Cant and Cooper, 2017). It has been integrated into the undergraduate nursing curriculum (Cant and Cooper, 2010; Stroup, 2014), with drivers from the national regulatory body for nurses encouraging the use of up to 300 hours simulation in place of clinical practice (NMC 2010). Recent consultations have

suggested this figure be revised with HEIs making their own decisions on the hours they can use (NMC, 2018c).

To facilitate an effective programme to incorporate not only regulatory requirements, but the changing focus of theoretical perspectives and student expectations, educational reforms need to be examined to ensure the student nurse is “fit for purpose” at the point of qualification (NMC, 2018a). Whilst simulation as pedagogy is largely embraced by clinicians and nurse educators (Kneebone, 2009b, Hayden et al, 2014, Stroup, 2014, Cant and Cooper, 2017), there is a case for equipping students with the skills to scrutinise the subjectivity of these concepts. To explore the impact of simulation on student learning and developing strategies and to enhance the effectiveness of this approach, the researcher must first be aware of barriers. Linking this to the overarching research question involves understanding and exploring ways to provide meaningful interplay between the practicalities of nurse education within the context of the current educational ideas, simulation, and the strategies required by the students to deal with this. Although the focus is health education and nursing students, the application is appropriate for any field. This is one of the strengths of peer-led simulation as it has transferability to other settings and educational environments that use simulation as part of their teaching strategy.

1.7 The Research Question

This is an Action Research project that is stimulated by the desire to explore the use of simulation in nurse education. It is predicated on the belief that simulation is an effective teaching and learning strategy, but that changing the role of the student from participant to taking an active role will enhance their perception of the outcomes and maintain learning satisfaction

.The idea of handing control to the students can be seen as pushing the boundaries within simulation as the students becomes the facilitators and this has the potential to transform their knowledge. However, this has to be explored within the context of a research question to ascertain if this is an effective approach. In an Action Research project, the research question will change as knowledge and understanding emerge. An overarching question is supplemented with questions specifically related to the objectives of each research cycle and this is presented at the start of each Action Cycle chapter.

Overarching Question

Is peer-led simulation an effective pedagogical approach within student nursing programme?

Sub questions to this:

RQ1.1 **What are the factors that support or hinder the introduction of peer-led simulation into my module?**

RQ 1.2 **What are the outcomes of implementing peer-led simulation into my module?**

RQ 1.3 **Does peer-led development and facilitation of simulation facilitate the integration and transformation of learning?**

Chapter Two - Simulation

2.1 Introduction

This chapter will outline the theoretical aspect of learning spaces and approaches that are significant within the context of simulation in health education. The premise is that simulation is key to the development of health professionals and as such is a positive aspect of the pedagogy embraced by the clinicians and educationalists. Although there are those who have raised some concerns with the outcomes (Hammond et al, 2002; McFetrich, 2006; Kneebone, 2009a; Valler-Jones, Meechan and Jones, 2011; Valler-Jones, 2014), it is still *de rigueur* within any health education establishment (Stroup 2014, Cant and Cooper, 2017). All nursing students are required to undertake some form of simulated assessment during their training to progress onto their relevant professional registers (NMC, 2018a).

2.2 What is Simulation

Several authors have defined simulation. McGaghie and Issenberg (1999 p9) views it as a *"person, device or set of conditions which attempts to present evaluation problems authentically".* Bland, Topping and Wood (2011 p668) highlight the dynamic process of simulation that involves "*the creation of a hypothetical opportunity that incorporates an authentic representation of reality*." Whilst Parker and Myrick (2012 p365) call it "*a technology-based learning tool*" and Arthur, Levett-Jones and Kable (2013 p1357) considers it to be "*an educational strategy that provides students with realistic clinical situations"*

Whilst there are several definitions of simulation, these experiences are grouped within the literature according to fidelity. This is the degree to which the the simulated activity attempts to mimic reality (Tun et al, 2015). Simulation can range from simple low fidelity, such as case studies and role play (Jordan, 1997; Beaubien and Baker, 2004; Cant and Cooper, 2010; Stroup, 2014), through to high fidelity, complex simulations that provide interaction and levels of realism via the use of computerised manikins (McCaughey and Traynor, 2010; Parker and Myrick, 2012; Arthur, Levett-Jones and Kable, 2013; Doolen et al, 2016). It can also include complex multiple sensor experiences such as difficult theatre cases (Boulet et al, 2003) and major casualty events (Issenberg et al, 2005; Galloway, 2009, Schulz et al, 2014; Currie et

al, 2018). For the purposes of this project the focus is on the use of high fidelity simulators, although lower fidelity aspects did prove to be beneficial (see pg 143-144)

2.3 Benefits of Simulation

Literature surrounding simulation suggests it has positive outcomes and promotes the development of skills and competence (Issenberg et al, 2005; Cant and Cooper, 2010; McCaughey and Traynor, 2010; Stroup, 2014; Hustad et al, 2019). It has been incorporated effectively into the delivery of nurse education (Harder, 2010; Cant and Cooper, 2017) as well as other health profession courses such as medicine (Lane, Slavin and Ziv, 2001; Kneebone, 2009b; Cook, 2014), Physiotherapy (Roberts and Cooper, 2017; Mansell, Harvey and Thomas, 2020) Dentistry (Perry, Bridges and Burrow, 2015) and Pharmacy (Smith and Benedict, 2015). It has been suggested as a substitute for clinical placements (Hayden et al, 2014; Larue, Pepin and Allard, 2015) as well as helping to promote interprofessional learning (Decker et al, 2015; Costello et al, 2017; Sykes et al, 2017).

Within healthcare, students have to know how to execute practical skills, termed as know-how knowledge (Baillie, 2014 p5) and this is acquired through practice. However there is also the added dimension of perfecting these skills without detrimental consequences to the patients in their care but with varied exposure within clinical placements in terms of what learning can take place (Issenberg et al, 2005; Hayden et al, 2014; Larue, Pepin and Allard, 2015; Cant and Cooper, 2017). To succeed with this, students have to be exposed to a multitude of situations to enable them to develop strategies to be able to deal with the chaotic uncertainties of clinical practice alongside their knowledge acquisition. This has led to the formation of innovative learning practices in which students can rehearse skills in a safe and nurturing environment. This gives them the opportunity to make errors in clinical judgment and learn from them before exposure to the clinical area (Issenberg et al; 2005; Bambini et al, 2009; Cant and Cooper, 2010, Berndt, 2014; Groves et al, 2018). Simulation offers the students the opportunities to develop and enhance their fundamental skills within a structured environment (Berragan, 2011) and this form of active learning places the student at the centre of the activity (Jeffries, 2005; Larue, Pepin and Allard, 2015).

Clinical skills areas, virtual learning environments and online community based settings, are common pedagogical devices used for learning within nursing and the use of simulation affords students the opportunity to assess the situation, decide on the most effective treatment or course of action, and review and evaluate the outcomes and their own performance within a safe environment (Jeffries, 2012). This enables them to apply concepts based on theoretical decision-making within a realistic setting without risk (Bultas et al, 2014) and this, in turn, facilitates them to internalise the process, reflect and transform as a result (Kolb 2015 p68)

2.3.1 Preparation for the reality of clinical practice

The central tenet of Health Education has changed considerably and increasingly, health professional students practice and test their clinical skills, prior to clinical placements, through the use of simulated environments (Ziv et al, 2000; Kneebone, 2009b; Stroup, 2014, Wright et al, 2018; Hustad et al, 2019). Students have the opportunity to explore their problem-solving skills alongside their clinical skills within this safe environment and arrive at decisions and rationale which can be unpicked and critiqued, as part of the debriefing session that follows any form of simulation, (Decker et al, 2013, Bultas et al, 2014; Mills et al, 2014; Tutticci et al ,2016).

Dewey (1986 p. 247) feels that there is "*an organic connection between education and personal experience"* therefore students need to be able to appreciate their shared emotions and the educator has to be able to match this enthusiasm to stimulate their curiosity. This links with Kolb (1984) definition of learning as a cycle of actions in that the student participates in a concrete experience, reflects upon this experience, develops an understanding through abstract conceptualisation and then explores how this experience can be applied to new situations. He also felt that students foster a preferential way to transform this knowledge and encouraging them to move through this cycle of learning, with diverse learning experiences, will help to reinforce this and develop deeper and more meaningful learning. Ideally, working through the four cycles and experiencing each phase helps to embed the learning (Poore, Cullen and Schaar, 2014) and simulation is an effective format for providing students with the concrete experience. Students are then able to critically evaluate their performance through the debriefing process and video feedback and this helps to identify concepts that can be applied to future experiences (Fanning and Gaba,

2007; Decker et al, 2013, Levett-Jones and Lapkin, 2014; Halim et al, 2020). This creation of knowledge can be replicated and repeated under controlled situations for groups of students as simulation is able to mimic real life situations (Jeffries, 2012). The experiences, whether as a result of repeated exposure or as an unfamiliar experience add to the individual's cognitive framework and affect how they respond to new circumstances with each new experience.

Educational theories support the concept of simulation within a behaviourist paradigm, i.e. the achievement of demonstrable skills and constructivist approach, for example the development of clinical judgement and high order skills (Parker and Myrick, 2009; Arthur, Levett-Jones and Kable, 2013). Bush (2009) feels that exposure to the sights and sounds of the clinical area within a safe and nurturing environment enabling the ability to continually repeat practices without consequences to their patients is an effective learning method. A study by Bremner, Aduddell, and Amason (2008) found that the use of simulation helped reduce the anxiety levels in 65% of students prior to their first clinical placement with Szpak and Kameg (2013) and Ross and Carney (2017) achieving similar results in their studies. It has been identified that nurses do not feel confident in their ability to recognize a deteriorating patient (Cant and Cooper, 2017; Chua et al, 2019; Treacy and Stayt, 2019). If students perceive that simulation has improved their competence and reduced anxiety, this affects their self-efficacy when providing care to their patients (Khalaila, 2014). Studies by King (2010) and Akhu-Zaheya, Shaban and Khater (2015) found positive correlations between high levels of stress and reduced clinical performance with Harder (2010); Fisher and King (2013) and Yockey and Henry (2019), suggesting that there is a two-way link between clinical performance and self-confidence. In view of this simulation could be considered as an effective method to prepare students for clinical practice.

Simulation has also been shown to increase students' confidence within the clinical area as they know what to expect and how to conduct themselves. (Schroedl *et* al 2012) and can prepare them to recognise deterioration (Bogossian et al, 2014; Goldsworthy et al, 2019). Alinier et al (2006) confirmed that it helped to equip students with the minimum of skills. In fact, many authors recommend the use simulation as a prerequisite to clinical experience (Kneebone 1999; Haskvitz and

Koop 2004; Issenberg et al 2005; Larue, Pepin and Allard, 2015; Cant and Cooper, 2017; Hustad et al, 2019).;

2.4 Limitations with the use of Simulation

However further examination of the literature reveals there is a lack of robust evidence supporting the impact of the fidelity of simulation on the students' learning and transferability to practice (Issenberg et al, 2005; Lapkin, et al, 2010; Shin, Park and Kim, 2015; Doolen et al, 2016). In fact, Bland, Topping and Wood (2011) intimated that the largely uncritical literature gives cause for concern as there is little clarity around the concept. To be an effective approach, simulation has to be able to prepare students for the clinical area and the ongoing effects need critiquing. Empirical results for simulation tend to be generated through surveys of participants (Wunische, 2019) and involves self-assessment on whether the students perceived an increase in their competence or confidence with limited randomised control trials in the use of simulation to establish direct cause and effect (Murray et al, 2008; Doolen et al, 2016; Hegland et al, 2017). There are also varied evaluation methods and research designs that restrict the ability to draw definitive conclusions on its effectiveness (Khalaila, 2014; Cant and Cooper, 2017; La Cerra et al 2019). Another concern is that outcomes are usually measured immediately after the simulation with limited follow up on the ongoing effect (LaCerra et al, 2019).

There are potential risks with the indiscriminate use of simulation. There is the possibility that substitution of the patient with a simulator reduces the ability of the student to interact with a real person who have their own idiosyncrasies, thus dehumanising the approach, as well as concerns about the development of simulation professionals (Hanna and Fin, 2006) and simulated learning (Bligh and Bleakley, 2006; Berragan ,2011).

Financial implications, can affect the availability of resources to use for simulation to increase fidelity (Nousiainen et al, 2016). Simulators and equipment to support their use in High Fidelity Simulators (HFS) are expensive to buy and maintain and can require technical support for staff and facilitators, in order for them to feel comfortable integrating it into the curriculum (Hustad et al, 2019). There is also the risk that as newer technologies are embraced that enable simulations to become more realistic, educators move away from real patients and supporting students to

develop their identity as nurses, to what Berragan (2011) highlights as the endless possibilities of technology.

2.4.1 What is missing from Simulation?

Although one of the benefits of simulation is that it can help to alleviate some of the issues with access to clinical placement, increasing interactions with patients that are simulated risk the internalisation of this as the process of learning. Rather than the case with experiential learning, synthetic environments lack the authentic human connection of real life (Berragan, 2011; Bland, Topping and Tobbell, 2014; Dieckmann et al, 2017). Simulation precludes the need to feel the loss of a patient as would be the case when dealing with real people. The mastery of the psychomotor skill is only part of the process and the practitioner is also required to interact dynamically with the patient. Cognitive and interpersonal skills form part of the communication and decision making process and as Bligh and Bleakley (2006) point out, dealing with communication within a simulated context can pose the risk of learning in isolation. This has the potential to condense communication into technical skills to form part of the process within a controlled and structured environment (Gonzales et al, 2010; Dunnington and Farmer, 2015). The inherent risk is that the student formulates a diagnosis by observing their patient as part of a simulated practice rather than as part of an experiential process.

Bleakley and Bligh (2008) feel that process of simulation has illustrated the need for health professionals to focus on the "*absence,* as well as presence" i.e. what is not said or presented by the patient. Within the simulated learning environment, the ability to develop the skill of awareness of unconscious intricacies of patient communication are eliminated, and so there is the risk of what Foucault terms uni-dimensional clinical gaze (Foucault 1979).

Simulation can act as a barrier and the development of skills to cope with the multifaceted, real clinical environments and the individuality of patients has to be acknowledged. The use of simulation can turn the complexities of human interaction into absences but these are not what must be accommodated for in real encounters, for example, it is what is withheld, or is embedded in casual discussions that may well turn out to be significant for the development a relationship or even to assist in a diagnosis.

2.4.2 Hyper-reality

Baudrillard's work from 1983 and 1994 identified four levels of simulation. In the first instance, there is the copy that is easy to distinguish from the original, for example a task trainer that resembles part of the anatomy. Here the student can practise accessing veins for venepuncture but is fully aware that it is a copy of a real limb. Moving from this the second level sees the copy that becomes more life-like. Rather than a separate limb the body is viewed as a whole, and the sounds heard through the stethoscope so authentic that it is difficult to discriminate from the real. The third level Baudrillard (1994) views as a copy of the copy. At this point there is little to discern what is the real world, the copy comes to herald and determine what is tangible, the case studies are fictionalised to incorporate the required learning objectives of the session and the "patients" act in a predetermined way. It is at with this stage that Baudrillard feels new ways are learnt to respond and interact with this "hyper-reality". The student's perception becomes altered in an attempt to interpret their interaction with the simulated event and the risk is that they lose their capacity to make connections to the essence of what it is to be human (Dunnington, 2014). The fourth level is far more radical. The simulacrum becomes the alternative to the real. Much of the students' interactions within simulation are based on signs and symbols created by the scenario and these have the potential to create a reality for them. The simulations are the real world and how the student acts within this is based around their perceptions that do not necessarily fit with the true state (Baudrillard, 2005). Simply put, the practitioner sees the simulation as more real and is unable to recognise the patient when they deviate from the norm. Simulation constrains the roles of the educator and the health student, rather than teaching acceptance of the uncertainty of a real clinical world. This supports Baudrillard's explanation of the social world as simulacrum (Baudrillard, 1994, 2005).

In the era where simulation plays a dominant form of clinical practice and education what Baudrillard present is that virtuality replaces reality: learning within simulated clinical education can become more real to the student than learning experientially with real patients. An example is the experience of critical incidents and the dying patient; in scenarios simulated patients are not allowed to die (Høyer, Christensen and Eika, 2008; Zabar, 2011; Corvetto and Taekman, 2013). Students are given the direction and knowledge to prevent this and if their actions do not follow the correct

course the simulator is rebooted or the scenario halted in order for the process to be reviewed and reimagined (Weiss et al, 2017). Although End-of-Life simulations, through the use of professional actors, have attempted to tackle this issue by facilitating students to care for a dying patient and manage the bereaved relative (DiBartolo and Seldomridge, 2009; Smith-Stoner, 2009; Hamilton, 2010; Hjelmfors et al, 2016); this still precludes the need to feel the loss of a patient as would be the case when dealing with real people.

2.4.3 Panopticon and competence in simulation.

Assessing the performance of the students can be assisted by the use of video and audio recordings that enable the facilitator and students to stop the simulation, review and offer alternative decision-making processes or techniques as required. Video playback has become a commonly used tool to provide a visual record that can provide cues for discussion and stimulate self- reflection (Krishnan, Keloth and Ubedulla, 2017; Dyer et al, 2018, Halim et al, 2020). Whilst this is undoubtedly a powerful pedagogical tool there is the potential for behaviours to be modified because of the Panopticon effect (Foucault, 1991).

The idea of the “Panopticon” describes how it is possible that surveillance can work even when there is nobody carrying out the surveillance (Foucault, 1991). Initially the subjects are aware of the watching authority (either the examiner or the camera) and this modifies their behaviour to the appropriate set of rules. If the camera or examiner is replaced by a “fake”, the subjects will still obey the rules. Foucault (1991) predicts that the surveillance then becomes fully internalised with the effect that students unconsciously assimilate the learned behaviour and no longer require the physical stimulus of the examiner or camera in order to be reminded to do so. In essence, their behaviour has been reconstructed to fit with the requirements of the authority. His ideas on surveillance can help to explain how a nursing student develops techniques for learning clinical skills. In effect, the student learns by using simulators within a managed, simulated environment and surveillance of their performance via video camera to a central monitoring station or with their educator. These experts then analyze the student’s practical dexterity and patient interactions through an explicit set of rules based on culturally governed “skills” set by the prevailing discourse (Marshall and Bleakley, 2008).

As a result, competence is defined through the ability to perform (Hodges, 2006). The shift of focus is towards the development of skills by demonstration and observation and the assessment of competence by performance and practical based assessments such as the OSCE (Harden and Gleeson, 1979), which necessitate students exhibiting these skills under controlled conditions (Pololi and Potter, 1996; Yedidia et al, 2003; Norman, 2005; Kneebone, 2009b; Johnston et al, 2017). This mixture of learning, teaching and assessing, pushes students to develop skills of performing for observers, and as a consequence they need to spend time practising and perfecting these performances (Hodges, 2003; Bligh and Bleakley, 2006; Teixieira et al, 2014).

Foucault's (1991) concept of the Panopticon utilises the idea of internalised 'simulation of surveillance' (Bogard, 1991); the reactions and stances of the students may be formed by what they feel is expected or desired based on what they have learnt within the simulated environment rather than what the situation requires of them. Clinical reasoning depends on sophisticated decision-making that is able to discriminate between what the textbooks describe and the reality of the presenting symptoms of the real patient (Benner, Hughes and Sutphen, 2008; Hesook, 2015; p133; Carvalho et al, 2017). The risk is that learning by simulation can create learning whereby students create pseudo-competence that does not have the transferability from the virtual to real life clinical situations (Bligh and Bleakley, 2006;Larue, Pepin and Allard, 2015).

The education of nurses has to deal with the compromise of training within a Higher Education establishment and the aim to produce graduates with generic skills that can be used as a starting point for lifelong learning and reflection. However, the health care sector requires registrants with a level of competence that is appropriate for their area of practice (Lindeman, 2000; NMC, 2018a). Students are required to attain set competencies that are related to the clinical role they need to undertake and are based on clinical performance (NMC, 2018d). However, there are a particular set of cultural attitudes that affect the acknowledgement of competence, these are rarely questioned (Bleakley, Brice and Bligh, 2008), and for simulation as a pedagogical approach to be effective it is fundamental to establish first what is meant by competence.

The premise of education is to progress "*novices from a state of incompetence to one of competence*" (Hodges, 2006, p.690). There is a vast amounts of literature on the definition of competence within nursing (Bartlett et al, 2000; Clinton, Murrells and Robinson, 2005; Lima et al, 2014; Moghabghab et al, 2018) but there appears to be no standard consensus of what this means (Berragan, 2014). There is also confusion around the terminology, although capability and performance are the terms most commonly linked with competence (Cowan, Norman and Coopamah, 2005; Moghabghab et al, 2018).

In order to achieve the modular requirements within the Higher Educational arena, competence is evaluated by assessments based on a performance by the students that force them to demonstrate their skills in the form of OSCEs, oral examinations and case presentations based on physical examinations, tasks and clinical skills. Unfortunately, over-emphasis of these models of education can, on occasion, lead to incompetence, whereby students miss vital physiological cues if they do not form part of the examination (Hodges, 2006; Krishnan, Keloth and Ubedulla, 2017). These types of incompetence can be hard to detect as they may be hidden within a state of continuous fluctuation that is nature of learning (Lombardo, Milne and Proctor, 2009).

Developing competence is a dynamic process, which is inherently unstable as the student is continually rejecting and re-evaluating knowledge to transform their thinking, as well as experiencing setbacks and changing confidence in their abilities (Milne and Reiser, 2017 p. 142). Lombardo, Milne and Proctor (2009) feel that this creates a tension where new demands on their competence exceeds their perceived abilities and they can regress to a less competent level, in effect "falling apart". Whilst this is a recognised progression within the development of competence (Lombardo, Milne and Proctor, 2009; Gonsalvez et al, 2015), it can be difficult to ascertain whether this actually points to levels of incompetence as the assessments are often conducted at a single point in time.

Discourses are associated with power and they develop because there are economic, political and sociological events that enable them to dominate. The authority of one discourse over another has substantial consequences for what is considered appropriate (Bleakley, Bligh and Browne, 2011 pp 6-7), what positions are made accessible for people, what concepts and models of care will have funds

allocated and which establishments will gain control and influence (Hodges, 2006; Bleakley and Bligh, 2008). As a result, educators and assessors control the fundamentals of health education based on this discourse and this, in turn, moderates the behavioural patterns of the students to the same degree that it may produce forms of incompetence (Hodges, 2003; Hanna and Fins, 2006; Bleakley and Bligh, 2008).

2.4.4 Comparison of simulation with other pedagogical approaches

Students perceive that simulation has a favourable outcome for them (Issenberg et al, 2005; Hayden et al, 2014; Warren et al, 2016; Cant and Cooper, 2017). However, there has been little in the way of further studies to determine the effects of this approach in comparison with other methods such as the lecture-based approach or small group work (Stroup, 2014). In fact, most studies used evaluative approaches based on students' perception of the learning to discern the benefits (Issenberg et al, 2005; Lapkin et al, 2010; Shin, Park and Kim, 2015; Doolen et al, 2016) and this, in the view of McFetrich (2006) does not address the educational or clinical value of simulations. The difficulty faced by the educator is that teaching for assessment inevitably forces the students to perform for observers, and as a consequence large periods of their time is spent practising these performances (Hodges, 2003; Epstein, 2007; Teixeira et al, 2014). However, it is difficult to move away from this format as it is largely viewed as effective (Hodges, 2006; Cave et al, 2007; Bleakley and Brennan, 2011; Berragan, 2014) and they give meaning to the way in which the world can be viewed and communicated. This does present a difficulty in that it is possible to act in a certain way to be able to successful pass assessments rather than rehearse skills in order to be able to practice effectively. As there is little in the way of research of studying the educational impact of assessment in the context of student learning (Schuwirth and Van der Vleuten, 2011; Kordestani Moghaddam et al, 2019) this adds to the dilemma of learning for assessment.

Studies have shown that there is little or no difference in the effectiveness of simulation as a pedagogy when compared with other forms of delivery (Maddry et al, 2014; Solymos, O'Kelly and Walshe, 2015; Bodine and Miller, 2017; Raleigh et al, 2018). In fact, a study by Rao (2006) highlighted that Japanese medical students were taught within an environment that had little regard to the development of clinical

skills or case studies. These students were taught mainly via lectures, with practical skills and procedures undertaken within the clinical area and yet the Japanese health care is seen as having consistently better outcomes for patients than that of the West (Bleakley et al, 2008, Sakamoto et al, 2018). Although it is not possible to make a causal link it would appear to suggest that the use of lectures with practical aspects of the course gained within the clinical settings does not have a detrimental effect on outcomes on the development of the practitioner when compared with the simulation model adopted by the West.

There needs to be exploration of how the learning within simulated spaces transfers into the actual clinical environment. For the complexities of knowledge acquisition to be understood, the educator is duty bound to critique the environment in which it is positioned and in the case of simulation, there is has been a paucity of research that proves a causative link between exposure via simulation and via clinical practice (Vadnais et al, 2012; Krishnan, Keloth and Ubedulla, 2017).

There is also a lack of follow up with the participants post-simulation to evaluate the impact within the actual clinical setting (Harder, 2010; Hayden et al, 2014; Stroup, 2014; Cant and Cooper, 2017). There are also concerns that it is not the panacea for all the problems that some believe it to be (Valler-Jones et al, 2011), rather that it can create simulation professionals (Hanna and Fins, 2006).

2.4.5 Inhumanity

Following on from this it could be reasoned that, with the increase in focus of learning through simulation, education is unintentionally generating “inhumanity”. Within simulation, there is little risk of ambiguity as the situation is usually structured and learning outcomes adhered to, with set criteria for the students to achieve, which is not the case in a real clinical world. Although it is possible to produce more complex and challenging scenarios in an attempt to mitigate against this, there are still objectives that have to be achieved in order for simulation activities to be effective (Motola et al 2013). Therefore, there is a risk that a heavy reliance on simulation training may encourage the development of “simulation professionals” who are able to demonstrate the ability to cultivate the appearance of a sound relationship with their patients but with minimal or even no genuine connection with them (Hanna and Fins, 2006). When placed in the context of the recent reports by

Pascoe (2020), Department of Health (2014), Francis (2013) Keogh (2013) and Willis Commission (2012) this mismatch between what is learnt and the dependence on “competence as a performance” can lead to “hidden incompetence” such as inadequately assimilated knowledge. This in turn can lead to difficulty with students connecting with patients on a genuine level with the subsequent risk of failing to be able to provide compassionate care.

In the Birth of the Clinic, Foucault (1973) suggests that medical perception is not only an independent phenomenon; it is also a way of objectifying people. He categorises the clinical examination as a method to bring the patient into a close, and potentially intimate, interaction with health professionals. Foucault (1973) describes the “medical gaze” as something that signifies the dehumanising medical disconnect of the patient's body from the patient's mind. He saw the “gaze” as a kind of active vision based on perception rather than actions. However, to discuss the “medical gaze” there is an implication that there is an idiosyncratic and comprehensible “way of seeing” illness. It is possible to simplify the “medical gaze” to include key tenets of Western biomedicine, and yet the “medical gaze” is created by varied and contested medical practices and knowledge (Parr, 2002). Whilst Foucault imbues the professional with power it is possible that this can lead to dehumanisation which runs counter to the pro-patient discourse of the present time. Whilst this progression is evident and patient encounters could be improved, this development is exacerbated by the way health professional students now routinely study in their early education, within the protective bubble of simulated settings, with replica patients who understand what the objectives of the encounter should be. In essence, this environment creates the very Foucauldian concepts of the dehumanising disconnect.

2.4.6 Altered power relationship in simulation.

This moves neatly into what Foucault (1973) describes as the concept of the health professional-patient relationship, which is essentially a relationship of power and knowledge. The professional acquires information from the patient during examination and the knowledge learnt through training creates an imbalance between the knowledge held by the practitioner and the often poorly articulated knowledge held by the patient. They assess and evaluate, whilst the patient submits to the “medical gaze”; thus creating a dynamic relationship between that of the

patient and themselves. Gwyn (2002) views this dialogue as highly asymmetrical as questions posed relate to intimate bodily functions and are guided by the framework of medical knowledge and scientific meaning only the professional really understands. These findings are measured against the statistical norms of the current medical discourse and then used to effect changes in the thinking or behaviour of the patient; for example giving up smoking or losing weight. This discourse creates the power relationship as the professionals have given themselves the responsibility to improve the patient's condition.

However, the patient/professional power relationship is profoundly transformed, when the interaction takes place within a simulated environment. The "patient" simulates the required ill health (MacLean et al, 2017); and, as they are aware of the expected outcomes they do not come to the examination in an internal state of apprehension with the inherent dependence upon the professional for guidance. The "patient" has the simulated knowledge which has been gathered together and learnt to provide the appropriate cues required to advance the simulation activity and this knowledge can differ from the knowledge a real patient possesses. The simulated patient's objective is to provide the correct information and the outcome is to simulate the expected behaviours (Harden and Collins, 1998; Cleland, Abe and Rethans, 2009; Maclean et al, 2017). They do not have a stake in the outcome of the diagnosis and treatment process as this is not their primary objective therefore the control is with them. Since the power nuances of real health professional and patient relations are mostly disregarded or cannot be simulated (Dunnington and Farmer, 2015), the apparent dynamics of the simulation are altered, create a distorting effect and are impossible to exclude. Add to this the concept of the Panopticon and the student's behaviour becomes biased. The student performs for the assessor or educator (whether they are there or not) as there is no requirement to heal the patient, rather to complete the required components of the exercise (Gonzales et al, 2010) and the simulation can be mistaken as a true representation of what would be encountered in the clinical arena.

Although it is unreasonable be able to mitigate against all the issues outlined, simulation needs to offer a closer approximation to reality and replicate the chaotic uncertainties of clinical practice, rather than present a sterile simulacrum (Dieckmann, Gaba and Rall, 2007). One possibility is to set simulators or "patients"

in a more realistic setting. Such a context has been found to create the conditions for realistic responses, supporting the acquisition of skills around clinical areas without jeopardising patient safety (Kneebone et al, 2005; Rosen et al, 2012; Walker et al, 2013; Sørensen et al 2015; Hustad et al, 2019; Wang et al, 2019). This type of learning in situ can support the contact to challenges that area appropriate to the student's experience and clinical development, exploiting the likelihood of acquiring adaptive expertise through learning within authentic situations (Hustad et al, 2019). The students are also placed in a familiar or similar situation which helps to reduce the cognitive burden (Clapper, 2013) meaning they can concentrate on developing and perfecting their skills. Another possibility is enabling students to develop their own scenarios and use these to facilitate simulations (Valler-Jones, 2014). Working collaboratively and using their own individual experiences they may be able support each other as this limits the use of highly standardised scenarios. This may enable students to develop critical forms of thinking and grasp the concept of variations in how situations and cases may present (Hodges, 2006)

2.5 **Conclusion**

This chapter has explored the use of simulation within the education of health professionals. It is viewed as a method of preparing students for clinical practice by offering opportunities to rehearse skills within a safe and nurturing environment. Repeated exposure allows the students to make mistakes without consequence to themselves or their patients and students view simulation as effective in improving their confidence. However, despite the apparent convenience, the use of simulation as a pedagogical approach has limitations that needs to be considered. There are risks that student competence is based on the current medical discourse and students perform for the audience rather than developing an authentic connection with their patients. The indiscriminate use of simulation may have the potential disadvantages to enable students to develop into competent and caring individuals.

Chapter Three - Learning Theories and Underpinning Philosophy

This chapter explores the concept of learning and the importance of understanding the nature of student learning. In order for the educator to introduce pedagogical strategies, there has to be an appreciation of how delivery can affect the integration of knowledge. This is further compounded by the complex dilemma with situated learning (Lave and Wenger, 1991) that takes place within nurse education. During simulation, students' ability to learn can be impacted by the authenticity and fidelity of the experience. The theory of social learning and Communities of Practice is presented as a lens through which within the concept of peer-led learning can investigated with application to simulation.

3.1 An introduction to pedagogical approaches

Individual perspectives on learning affect pedagogic approaches within health education. These perspectives represent the theories and beliefs held about learning, and what educators and the government choose to emphasise in education drives the behaviour of students. This can create an unquestioning adherence to one discourse (Hodges, 2006) depending on the prevailing power and authority structure. As such, the structure of pre-clinical periods of education to be followed by the application of this knowledge into the clinical environment, have reflected the assumptions of pre-registration nurse training that then further established this as an acceptable pedagogy. Knowledge had to be taught prior to its application in practice (Bleakley, Bligh and Browne, 2011 pp 10-11; Karstadt, Thomas and Abed, 2016) and the educators are the experts who communicate this knowledge to the student with the student responsible for learning it (Weimar, 2013; pg102)

This means that education within the conventional sense is led by a belief that knowledge must be passed on by instruction (Yandell, 2017). The educator has the role of calling for the students to focus so that they can acquire the necessary cognitive and practical skills and then practicing this further to improve. The natural propensity of the physical rhythms of the body and its movement are held in check whilst the mind is occupied with the task in hand (Trevarthan, 2014). Inquisitiveness and imagination of the self-perceptive mind can be stifled by the very act of

education as formalised planned sessions are marked and rewarded with assessment and examination to achieve excellence.

Reddy (2008) and Trevarthen (2014) feel that learning and knowing should be enjoyed, that the student should pay attention with their imaginative “human sense” and that the educator should complement the student’s interest and curiosity. Studies of children at play have shown that they share invention and gain private satisfaction with rewarding experiences of sociability (Taylor et al, 2004; Vickerius and Sandberg, 2006; Bateson and Martin, 2013), and Piaget (1971 p. 28) sees that the knowledge derived from action becomes assimilated in a much deeper sense than that of “*ready- made truths*”. There is an argument that adult learning and child learning have similarities in this respect (Trevarthen, 2014).

The concept of learning through play is a common theme in the work of Vygotsky (1978). He suggested that children use play to grow socially and that through this they learn to interact with others using language and social interaction. He felt there was a link between social learning and the individual development and that although we possess the ability to learn as an individual, there is a distance between our knowledge and the potential level that can be developed through peers that are more knowledgeable. Although it is common, in the case of child development, to associate the more knowledgeable other as a parent or teacher, feedback and guidance to help master new skills and construct their knowledge can be gained by collaboration with a more capable peer.

3.2 Peer-led learning

Peer-led learning is a collaborative and cooperative form of teaching that has become synonymous with several differing terminologies: student-to-student, peer-tutoring, peer-instruction (Szlachta, 2013), peer-assisted-learning (Topping, 1998; Blohm et al, 2015) and near-peer-instruction (McKenna and Williams, 2017). Although there are varying definitions, with the emphasis on the content of the curriculum and the responsibilities of the peer in the learning process, essentially the ideology is the same in that students are learning how to teach their peers and learn through the process of teaching. It is a partnership whereby the learning process is a shared experience

Boud, Cohen and Sampson (1999) define peer led learning as

"…the use of teaching and learning strategies in which students learn with and from each other without the immediate intervention of a teacher". (p414)

This partnership of students to facilitate learning is seen as an instructional strategy that enables students to benefit from the observations and insights of their peers as well as improve on what Ten Cate and Durning (2007) term their "cognitive congruence". Thistlethwaite (2015) and Hanson et al (2016) support the notion that learning from peers is stimulating, thought provoking, and is an effective approach to learning with far reaching effects. Lave and Wenger (1991; pp.93-94) state that knowledge between peers spreads more rapidly and suggest that the engagement within their community is the condition for the effectiveness of learning

When students participate in peer-led learning, they are enabled to take more responsibility for their development (Carey et al, 2018). The "teacher" has to be able to develop and reinforce their own knowledge base (Szlachta, 2013; Nelwati et al, 2020) to be able to transform the knowledge in such a way as to help the learner to assimilate the information and this, in turn, requires them to learn the information in different ways. Ten Cate and Durning (2007) suggest that this actually leads to more long term retention of the information and the fostering of collaborative learning has been shown to improve skills of communication (Giuliodori, Lujan, and DiCarlo, 2006).

From a pedagogical standpoint active involvement of the student in the learning situation rather than as a passive recipient of information is seen as one of its greatest strengths (Goldschmid and Goldschmid, 1976). Peer learning also helps to create a more collaborative and cooperative learning environment whereby students may feel more able to express opinions and speculate in ways that are seen as less intimidating (Owens and Walden, 2001; Loke, Yuen and Chow, 2007; Roberts, 2008; Tai et al, 2016; Peters et al, 2019; Nelwati et al, 2020). Roberts (2008) and Szlachta (2013) found that students felt more able to ask questions and express their own opinions that enhanced their learning within a peer-led format. Brannagan et al (2013) also comment on the fact that

"..since students do not want to be perceived as incompetent by their peers, they may be more likely, as the tutors and tutees, to be more prepared for the lab experience with their peers" (p1446).

Findings that anxiety is reduced when compared with facilitator led teaching is disputed by Brannagan et al (2013) as they found students had increased levels of anxiety when performing skills to their peers and Lawrence et al (2020) also found that student anxiety was increased when dealing with their own lack of knowledge when questioned. However, they do counter this with their results demonstrating that peer tutors benefited from the relationship. In fact, students who have engaged in the process have reported the mutual benefits of both the student as the learner and student as the teacher (Giuliodori, Lujan and DiCarlo, 2006; Blohm et al, 2015; Tai et al 2016; Herrmann-Werner et al, 2017; Guraya and Abdalla 2020). Students have also reported that involvement in peer-led teaching has had positive outcomes on their perception of the exposure with enjoyment with the role of the "teacher" developing as a theme (Solomon and Crowe 2001; Tai et al, 2016). The underpinning of the learning process as a result of teaching others adds to the experience (Knobe et al, 2010, Guraya and Abdalla, 2020). This is further reinforced by the shared experiences that can be gained from the mutual support of each other (Lave and Wenger, 1991; Wenger, 1998; Ten Cate and Durning, 2007; Brannagan et al, 2013; Szlachta, 2013; Nelwati et al, 2020)

There is also an argument for the use of cognitive congruence to support peer-led learning. This is the concept that a more effective teacher is not necessarily an expert in the field who has large cognitive distance from the students (Lockspeiser et al, 2008), but is someone who has a congruent or similar knowledge base (Taylor and Hamdy, 2013). Peers are better able to anticipate problems and challenges faced and are in a position to explain difficult concepts at a more appropriate level (Schmidt and Moust, 1995; Bulte et al, 2007; Lockspeiser et al, 2008; Ten Cate and Durning, 2009; Loda et al, 2019)

Randomised control trials studying the effects of peer-led teaching on students' clinical skills found favourable outcomes when compared with traditional faculty led teaching (Perry et al 2010; Cameron, et al 2015). Perkins, Hulme and Bion (2002) Burke et al (2007), Graham, Burke and Field (2008), Nikendei (2009) Blank et al

(2013), Celebri et al (2019), Usman, Jamil and Waheed (2019) used OSCE and clinical assessments to study the effects of peer teaching and found statistically significant improvements in the peer led groups. Although the results suggest that, in the short term, peer-led teaching and learning is an effective method and is comparable to facilitator led teaching, there was little in the way of follow up with the groups to determine the ongoing effectiveness of the approach and so the long term benefits are poorly understood (Yu et al 2011). Counter to this is that the randomised control trials only studied learning within highly specific context and that in some studies students expressed concern around challenging competence in others and their own competence with enabling deeper discussions (Kassab et al, 2005; Knobe et al 2010). Perry et al (2010) found that there was little difference in long-term retention of knowledge and Roh, Kelly and Ha (2016) found that the instructor led groups had more favourable outcomes with satisfaction as well as improved performance.

From a financial perspective, the use of peer-led teaching may seem to be an obvious choice when considering the potential for saving on administration and academic costs (Goldschmid and Goldschmid, 1976). This is especially so when small groups have to be used as in the case of simulations as this requires a high ratio of facilitators to students (Jeffries, 2005; Lim, Steinemann and Berg, 2014; Hayden et al, 2014). Although peer-led teaching has the ability to utilise staff resources in a more sustainable way, there is a lack of comparisons with the cost effectiveness when compared with conventional staff-led teaching (Carey et al, 2018) and there is a risk that this form of pedagogy could be seen as a panacea for current financial constraints. Although it is an effective form of learning and assimilation of knowledge, this needs to be taken within the context of other formats and individual learning styles of students. Using lecture format would present a cheaper and more standardised format, by equipping students with skills to develop their own learning, and has the potential to deliver, at the point of qualification, a nurse who is more competent and ready to practice as an autonomous professional. There is a place for more formalised teaching via the use of lectures and this supports developing core knowledge base (Lisko and O'Dell, 2010). Nevertheless, there are concerns that this does not address the complexity of critical thinking that is required to undertake clinical decisions (Lisko and O'Dell, 2010; Buykx et al, 2012;

Merriam, Stayt and Ricketts, 2014; Stayt et al, 2015). There is a risk that, if the peer-led element of simulation proves to be an effective pedagogical approach, then the need for facilitator led simulations becomes superfluous. However, effective peer learning has to be supported by expert led education in order to provide additional benefits to both the “apprentice” and the capable peer (Ten Cate and Durning, 2007). Therefore, peer-led simulation is not a replacement for facilitator led, but complements each other.

3.3 Theories of learning

There are many different theories about how adults learn and these can be grouped into several categories. Although these categories have distinct foci, there are commonalities within them. Behavioural theories such as those supported by Skinner (1953) and Watson (1924) argue that a stimulus within the environment leads to changes in behaviour. When there is positive reinforcement of a behaviour, i.e. in the case of Skinner’s rats and the reward of food when a lever is pressed, this behaviour will continue but if there is a negative response i.e. no food is released when a lever is pressed then the behaviour discontinues. In order to provide effective learning the conditions need to be manipulated to change the behaviour. Within health education, this behaviourist approach is frequently used to develop clinical skills (Stainbrook and Green, 1982; Torre et al, 2006; Parker and Myrick, 2009; Arthur, Levett-Jones and Kable, 2013). The students observe the teacher performing the skill and imitates those behaviours, with the teacher as the expert and the students as recipients of the knowledge (Stewart, 2013, p.5). Over time these behaviours become embedded (Braungart and Braungart, 2003, p.43) However applying this theory can result in learning that endorses standardisation of outcomes and one of the issues is who decides what the outcomes are and how they can be measured (Braungart and Braungart, 2003, p.50; Taylor and Hamdy, 2013). It has also been criticised as it also assumes that the student is a passive partner in the learning process (Stewart, 2013, p.5) and does not account for internal factors affecting learning such as mood or feelings (Moore, 2013).

Experiential learning is based on the premise whereby knowledge is created through transformation of experiences and predominant theorist for this process are Kolb (1984) and Dewey (1986). It requires an intention to learn as well as active

participation in the process (Moon, 2004). The learner is believed to transform the knowledge through active participation and reflection and to think critically about how to improve upon it, with the framework based on Kolb's (1984) work being the most common understanding of this is. However, experiential learning focuses more on the individual aspect and limits any social context. This also links with the humanistic theory, which is more learner centric and supports the concept of self-actualisation and internal motivation. It suggests that students are capable of autonomy and freedom within their learning and are competent to develop their own outcomes. Although this may explain the motivation for learning, it does not account for the context and social means by which knowledge and meanings are constructed (Taylor and Hamdy, 2013)

3.4 Social Theory

Social theories of learning suggest that learning is not confined to the individual but is constructed around context and social factors (Brown, Collins and Duguid, 1989; Durning and Artino. 2011). Learning is viewed as a social activity and thinking is affected by the setting in which learning takes place. There are two crucial basics to social theories of learning and these are the context and the community in which it is situated (Lave and Wenger, 1991; Wenger, 1998; Durning and Artino, 2011, Taylor and Hamdy, 2013)

Wenger (1998, p.218) argues that mutual engagement in shared practices creates a framework for learning and development of new understanding. Learning can take place on an individual basis but the diverse perspectives of a group can force the learner to redefine their own knowledge to see other ways of interpreting it. Through the process of sharing knowledge and practices within a Community of Practice Lave and Wenger (1991) theorised that people learn from each other, and this enables them to develop personally and professionally. Wenger (1998) suggests that the characteristics of these communities are a result of three dimensions (See fig 3-1). Mutual engagement involves the ability to connect on a meaningful level to the contribution and knowledge of others. Although there may be conflicts within the group, disagreements and challenges can form part of participation. Joint enterprise concerns the ownership of the practice. Whilst there may be no control of the task required, as a community they have mutual accountability. They are engaged

together in the process and this determines how they respond. Shared repertoire is the routines, social understanding and language that is specific to their community. For example, student nurses are able to identify other student nurses by the language they use. They share a commonality that allows them to understand meaning within their own context.

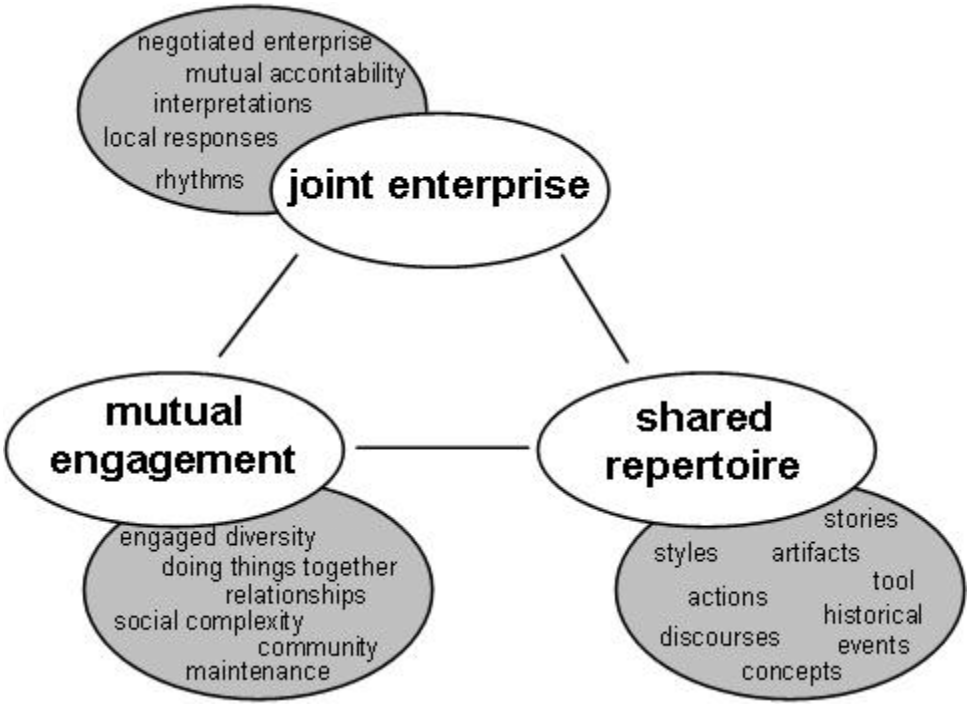

Figure 3-1: Dimensions of a community of practice (Wenger, 1998, p.73)

Although Lave and Wenger (1991) based their theory on the concept of apprenticeships and how these develop within communities, they suggest that there are nuances within the master and apprentice relationship and that Communities of Practice create knowledge through peer interactions as well as through the master. The social interaction and relationships of the apprentices allows for participation as a way of learning. However, the premise of the community is that there are newcomers (i.e. apprentices) who are there to learn and old-timers (i.e masters) who construct the knowledge required and how learning is controlled. Although the authority of the master varies across different communities of practice, apprentices acquire knowledge through observation and imitation of the master and through participation within their community (Wenger, 1998). For a Community of Practice to function effectively there is a need to generate a shared repertoire of ideas and commitment (Smith, 2009). Within the context of peer learning each student brings with them their own knowledge and expertise and this is interwoven within the

constructs of their community, i.e nursing students, meaning that in different situations they are both the master and the apprentice as they can bring skills and expertise as well as gain knowledge from others.

Lave and Wenger (1991) do not see learning as simply experiential; there is a sense of joint enterprise through their interactions and shared knowledge that engages their learning and is dependent on the social processes (Gherardi, Nicolini and Odela, 1998). This learning is “an evolving continuously renewed set of relations” (Lave and Wenger, 1991, p.50) and the learners are full participants. As a result, the acquisition of knowledge is not seen as an individual process but learning through social participation and the nature of the situation impacts on this. Understanding and experience interact and students learn vicariously through each other’s experiences. Roberts (2010) suggests that the sum of knowledge within a group is extended to all its members and that they learn from and with each other.

There is an inherent risk that this theory of learning generates the impression that meaningful learning does not take place outside of the context in which it is set and this seems to suggest the concept of learning is only possible within a Community of Practice. However it is possible for learning to occur outside and unrelated to context or situation (Cox, 2005; Smith, 2009; Taylor and Hamdy, 2013) and internal motivation to learn is a more powerful motivator as this engenders personal interest and desire to know (Ross, Perkins and Bodey, 2016).

Vygotsky (1978) provides a link between social learning and a person’s own development with his concept of Zone of Proximal Development. His theory is that cognitive development is furthered through interaction with others and in particular those who are more knowledgeable or skilful. As an example, if some students may have not yet mastered the skill of undertaking aseptic non-touch technique when changing a wound dressing, this is said to lie in their Zone of Proximal Development, as there is a higher level of potential development. A peer who has already had the opportunities to experience this can provide the support and guidance needed to assist students towards their own development. Vygotsky (1978) believed that the social community of learning helps to enhance the construction of knowledge. In fact, studies have shown that social interactions increase learning when compared with independent learning (Lave, 1988; Freund, 1990)

The concept of Communities of Practice links with peer-led learning in the sense that students share a common understanding. Within Communities of Practice there is mutual engagement in the process of discovery and learning through peers that are more capable and for this to function effectively, there needs to be ownership of the task as well as a shared language amongst the group. For my study, I have chosen to view a Community of Practice as one whereby expertise is distributed more evenly with the group. This is what Arthur (2016), refers to this as a Distributed Community of Practice. Within the student group, there are varying levels of knowledge and clinical experience but these are within a narrow range. There is no “Old-Timers” as, by the very nature of the group, student nurses are at the same point on their pre-registration course. This does link with Communities of Practice as outlined by Lave and Wenger (1991) as they acknowledge that learning occurs through peers as well as the established members of the community.

3.5 **Social learning and simulation.**

As discussed in Chapter Two, simulation is a common pedagogical approach within health education (Issenberg et al, 2005; Cant and Cooper, 2017; Wright et al. 2018). Student nurses are required to care for their patients according to the situation and in order for this to be achieved they must respond to the risks, resources and demands placed on them within a particular context. Simulation provides the community in which situated learning can take place and encourages the sharing of ideas (Humphries, 2002; Sykes et al, 2017). At the start of a simulation, there is an uneven distribution of knowledge between students but this changes as it progresses. Students, through participation and negotiation, are required to work towards a common goal. In essence, they are interacting with the common norms and culture of their community and learning collaboratively. Although simulation takes place within a controlled space, the authentic situation in which a properly executed simulation is set provides the opportunity for students to participate in an experience that is reflective of the way that knowledge will be used (Onda, 2012). There is a danger that if the contextual elements are weak the ability to develop and transfer the learning to other situations, for example to the clinical environment, is limited and the use of increasing fidelity of equipment and environment does not guarantee that learning will take place (Berragan, 2011; Bland, Topping and Tobbell, 2014; McFaden, 2020). Therefore, simulations need to provide the students with

opportunities to actively explore and engage in the process. A Community of Practice involves more than applying skills to a task. In fact, the sense of joint enterprise and identity from engaging in a simulation activity helps to generate a shared collection of ideas and accumulation of knowledge. In a study by Berragan (2014) students highlighted the fact that simulation offered them a more collaborative and participatory learning experience. They were able to share their knowledge and work together to provide a plan of care.

Whilst peer-led learning of clinical skills is becoming an increasing common pedagogical approach (Goldsmith, Stewart and Ferguson, 2006; Burke et al, 2009; Cole et al, 2018; Bugaj et al, 2019; Gray et al, 2019), there has been little research into the use of peer-led simulation. Matthews (2016) explored the use of a “flipped classroom” approach to research the development of critical thinking skills and Harvey et al (2012) and Perkins, Hulme and Bion (2002) used peers to teach and assess basic life support skills but these studies used standardised scenarios. House et al (2017) used simulation to compare faculty-led and peer-led learning. However there were set guidelines on how the case should progress and components of the simulation had to be standardised to minimise confounding variables when comparing the two interventions. Data were obtained via pre and post knowledge tests and results found similar results in both faculty and peer-led simulations. More recently, a study by Nunnink et al (2020) was undertaken whereby medical students were encouraged to develop a scenario based on a clinical case, which they then delivered as a simulation. Results were obtained via the use of a Likert survey and focus groups to help develop themes. Although the results were generally positive, reporting increased knowledge and learning amongst the students, they do recommend further research to determine the ongoing benefits of this approach. My review of literature so far has been unable to identify any studies undertaken of peer-led simulation using an Action Research approach.

The use of simulation within the context of situated learning can offer the students an environment in which they are able to explore further the skills and knowledge required to care for a patient. It is a powerful pedagogical strategy as it provides active participation from the students. When taught out of context, for example within a classroom, the knowledge of what they do is understood but not necessarily how they do it and how to apply this clinical setting and patient care (Onda, 2012).

Creating a learning environment whereby they are enabled to be guided through the complexities of clinical practice through collaboration and mutual discovery is a particular strength whereby simulation and Communities of Practice complement each other.

One of the strengths with social learning and, in particular, the theories expressed by Lave and Wenger (1991), Wenger (1998) and Vygotsky (1978) is that there is a harmony between what they theorise. Within Communities of Practice (Lave and Wenger, 1991; Wenger, 1998) knowledge is passed on through the master but this concept of the master being an “old-timer” is open to interpretation. Vygotsky’s (1978) theory of a more capable peer that can help provide guidance to further knowledge may prove to be a more valid interpretation of a master from the perspective of peer-led simulation.

Within peer groups there are varying levels of experience and knowledge based on the differing clinical exposure and these may help to co-construct the overall knowledge. Thus students can, at times be the master as well as the apprentice. There is also the cognitive congruence amongst peers who may be better able to anticipate and explain difficult concepts at a more appropriate level (Lockspeiser et al, 2008; Loda et al, 2019). Peer learning provides a supportive environment in which students can explore each other’s understanding of the situation and how they are best able to achieve the outcomes required for the simulation. Consideration does need to be given to the risk of increasing anxiety that peer teaching can produce. Little discussion within the literature has been given to preparing students for the role of the more capable peer, although this may not be explicitly identified as each member of the group is in a position whereby they are able to take on this role. However, when students engage in peer teaching there is a need to transform their knowledge in such a way that others are able to understand it (Szlachta, 2013; Nelwati et al, 2020) and this may be the motivation for development of their own learning.

Through the lens of social learning with particular emphasis on Communities of Practice (Wenger, 1998) and Vygotsky’s (1978) capable peer it is possible that peer-led simulation can be examined to explore its effectiveness as a pedagogical approach. The collaborative nature of peer learning and the situatedness of

simulation provide a compelling framework on which to base this. There is also an element of discovery required to understand if peer learning within simulation has a connection with social learning within a Community of Practice. It will be interesting to see if these concepts link together to support peer-led simulation. Using these frameworks may provide the opportunity to investigate whether there is a possibility of extending my own understanding of these theories by their application to a different way of learning and the effectiveness of peer-ledsimulation.

3.6 **Conclusion**

This chapter has presented some findings and discussions on theories of learning, and the effectiveness of peer-led teaching. Adult learning theories are intrinsically linked with educational, philosophical and social theories and help to understand the different ways of learning. Whilst some suggest that learning is individual and influenced by internal motivation, others suggest learning is a social event that is impacted by the community the learning is situated. The use of peer-led learning has been shown to have a positive impact on this as the students learn from each other using an instructional method that is suited to them. Peer-led learning enables the students to take responsibility for their own development to transform and assimilate the information (Ten Cate and Durning, 2007; Knobe et al, 2010; Herrmann-Werner et al, 2017). By using Communities of Practice and capable peers as a framework to identify what happens during peer-led simulation, it may be possible to identify if there is potential for it as an effective pedagogical approach.

Chapter Four - Methodology

This chapter will examine my preconceptions that may influence the research process. This method of critical self-reflection will enable me to recognise the inevitable influences that I will bring to the “research endeavour” (Denscombe, 2014, p.91). Although I have utilised elements of quantitive research to help explore some of the aspects of my research, for example the use of Likert Scales, the qualitative element became more of the focus in the latter stages of the cycles. Whilst within Cycles One and Two there were elements of quantitative research making this study a mixed methods approach, Cycle Three was purely qualitative. Qualitative research requires that the researcher look into their own beliefs, assumptions, preconceptions (Holloway and Wheeler, 2013, pp. 4-5; Parahoo, 2014) as the subjectivity of the qualitative approach mean that the research and the researcher are closely interwoven. Denscombe (2014, p. 301) recommends that there is a reflexive account by the researcher to determine the impact this may have on the outcome. However mixed methods research within nursing and healthcare has become increasingly recognised as a useful approach as it can benefit from the respective strengths of both qualitative and quantitative methodologies (Ostlund et al, 2011; Shorten and Smith, 2017).

This chapter will outline my rationale to help support my choice of Action Research as methodology. A full discussion of the methods used for collecting data and the context in which the research is situated will also be discussed.

4.1 Introduction

The aim of research is to create new knowledge, produce theories or to test hypotheses. The choice of a particular research approach is fundamentally linked to the researcher’s own philosophical understanding of their world as this shapes the essence of the research as well as the methods used to undertake the research. To select a suitable approach consideration has to be given to the nature of knowledge, how people relate to each other and what my position is within the research context. Ontological assumptions examine the way we view the world. From a realistic point of view, this is the belief that the world exists independently of my own perceptions and theories. Although I can believe that simulation is a powerful pedagogical tool it

does not necessarily follow that it is. To enable me to review the benefits of peer-led simulations as a pedagogical approach, I needed a research methodology that would allow me to explore it from multiple perspectives.

The choice of Action Research was more of a pragmatic decision to enable reflexive action. The cycles of action followed by reflection helped to explore the concept, as I was able to look back, review my teaching, plan for the next stage, and implement changes as a result. As each cycle progressed, I was able to observe what was happening and this offered me the opportunity to improve the simulation sessions. This was a main driver to help me develop the best version within the time constraints.

During the process, I also had to develop as an educator and this presented some uncomfortable truths at times. My background in academia had led to the belief of simulation as a positive pedagogy. However as I reflected on the cycles and reviewed the literature, I became aware of the disadvantages of simulation and the creation of clinicians who were at risk of being able to perform when in the simulated environment but were not necessarily able to transfer this into clinical practice (Hanna and Finn, 2006);. This was the impetus for me to explore a way of delivering simulation to cover the regulatory body's requirements (NMC, 2018d) whilst ensuring that the fundamental aspects of learning were considered to ensure an effective experience for students. The use of Action Research as a methodology enabled me to explore and challenge my own beliefs.

4.2 Reflexivity

Qualitative research is inductive and interactive with data collection that enables the researcher to study the perceptions and behaviours of the participants and themselves (Parahoo, 2014, p.56). This concept can only fully be explored within the context of the natural environments of the participants and from their own perspectives. By studying my "subjects" within their natural settings of a simulated space and attempting to understand and interpret the phenomena in the terms of the participants own experiences this implies a more naturalistic inquiry or interpretative approach (Green and Thorogood 2014, p.13).

For researchers to be truly reflexive Heikkinen,Huttunen and Syrjälä (2007) suggest that presumptions of knowledge and reality are questioned and that the research

contributes to the body of evidence around the subject rather than presents an ultimate truth.

Awareness of the need to be reflexive invariably requires the researcher to describe themselves in the first person and the use of a theoretical framework to orientate and shape understanding adds to the trustworthiness of the research (Falk and Miller 1998; Lopez and Willis, 2004). An important factor within research is critical reflexivity. Transformations within the researcher's own terms of reference initiate the questioning of beliefs to support the initial bias or exploration of evidence to expand the point of view or misconceptions of a particular conviction. This can be seen in the use of reflective diary as a form of data collection and excerpts included in Chapter Seven and Eight.

From my own perspective, I have an intrinsic part to play in order to achieve a successful outcome for students to achieve their NMC registration. My primary aim is to deliver a set of outcomes to enable students to reach a pre-determined level of competence and knowledge based on the professional requirements of the professional body (NMC, 2018a) and the academic requirements of the Higher Educational Institute. Studying my own students could be construed as having the potential for bias in that I may, effectively, view what the requirements for the professional bodies such as the NMC are, rather than what the impact of the approach has. This has the potential for me to judge the relative merits of peer-led simulation as a teaching and learning strategy through the lens of quality assurance to meet the aims of the regulators and education authorities, rather than using other criteria to signify success.

My specialised knowledge of the classroom and the context of simulation within this space enables me to add a layered knowledge to the process. This can also generate a risk of bias within the context of the research. In order to prove my pedagogical approach is effective, which ultimately has the potential to reduce the facilitator workload in the future, supporting the hypothesis rather than explore the findings more freely can become the focus. However, developing a reflexive approach can help towards recognising this as a potential risk. With the vantage point of my role as educator and my interaction with the students, Action Research, as a framework, permits me to examine the interaction between the process of learning when using the conventional facilitator-led simulation compared to that of

the process of learning whilst undertaking peer-led simulation. It is not my intention through this thesis to compare the two methodologies as I feel this is the basis for another project. A consequence of implementing peer-led simulation and the use of Action Research to gain an insight via observations, evaluations and reflections facilitates my own future teaching interventions.

4.3 Research design. Action Research.

The origins of Action Research is critical enquiry: the educator is able to examine the actions of the educational process and attempt to effect a solution to the problem by reflecting, taking action and then reacting to the findings. Action Research is a unique combination of processes. Those who are involved in the practice usually undertake the research. It has a long history (Kemmis, McTaggart and Nixon, 2014, p.4) and has been used in many fields. It is often viewed as a cyclical process of action and reflection (Reason and Bradbury, 2008, p.4) with four interdependent stages: planning, acting, observing and reflecting (Hughes, 2008, p.390). The cycles are iterative with each building on the previous and knowledge becoming embedded within each stage to enable practical problem solving to become more of a social transformation (Reason and Bradbury, 2008, p.181).
Field (1997) points to the duality of Action Research whereby it encourages the reflection of practice leading to potential changes that stimulate development and acknowledgement of change, but also empowers the academics to test themselves within the learning environment to establish what the most effective method to use is. There is also, as Reason and Bradbury (2008, p.26) suggest

> "..*an appreciation of the 'Aha!' moments in which people come to a meaningful and creative integration of understandings".*

This point is further endorsed by Phillips and Carr (2010, p.76) as they see it as

> "…*moments of clarity to help you see something you might have ignored, challenge your thinking or confirm a long-held hunch"*

Action Research has a critical impact on education in that it has the ability to research changes in practices and evolves from the problems and issues that arise from the classroom. Field (1997, p.192) considers it to be *'a small-scale investigation undertaken by a class teacher'.* In essence, rather than the research being

observed, the researcher is an integral part of the research and the collection of data using a variety of methods requires the researcher to be part of the dynamic process. The researcher acknowledges their own beliefs and this gives validation to their personal development.

Using an Action Research methodology offers an understanding of how systems and pedagogical approaches are employed within the classroom and this can then focus on improving the teaching practice. As the academic within the classroom is the one carrying out the research and implementing the techniques, it follows that they are the ones who can improve their circumstances and will be in the position to be able to produce data that can prove to be helpful to other academics. However this has to be taken in the context of the researchers own beliefs that may reduce the transferability of the findings (Finlay, 2006). In essence, the methodology merges the researcher's role with that of the teaching role, as they are able to understand the totality of the learning experience and study a process that cannot be detached from the classroom context (Herr and Anderson, 2014, p.22)

4.3.1 Aim of Action Research

As Dick (1993) points out, Action Research starts with a "fuzzy" question that is built up over time, refining the question and the methods until you have reached your outcome. The whole purpose is to be able to define an understanding of the social environment in which the research query sits with the best opportunities to enable change to take place. The cyclical nature of action and reviewing encourages responsiveness so that the researcher is able to adapt the process (Holly, Arhar and Kasten, 2009, p.40). The data gained through analysis and interpretation helps to develop and determine the next stage of the journey, the focus of the question and the methods of collection.

The intention of Action Research is to enable the researcher to learn from experience. This learning is the catalyst to bring about change, either confirming the strengths of your previous findings or deciding what had been learned is not adequate and requires a different focus. This links with the concept of transformative learning (Mezirow 1997) in that the researcher is able to reflect on their own assumptions and beliefs and critically explore those assumptions to help solve problems; in essence transforming the terms of reference.

4.3.2 Position of the researcher within research

Herr and Anderson (2014, pp.37-59) highlight a “continuum of positionality” that covers methodological approaches to Action Research.

1. Insider: Researcher Studies Own Self/Practice
2. Insider in Collaboration with other insiders
3. Insider(s) in collaboration with outsiders
4. Reciprocal collaboration (insider-outsider teams)
5. Outsider(s) in collaboration with insider(s)
6. Outsider(s) studies insider(s)
7. Multiple positionalities

The most relevant approach is that which is based upon, not only the context of the research, but also the philosophical viewpoint of the researcher. Positioning myself as an insider did not support an exploration of the problem as it is characterised by the student-teacher (facilitator) relationship. The data generated would not encompass the richness of the students’ view thereby limiting the perspective. As a researcher, it felt right that the “Insider in collaboration with other insiders” was the most appropriate approach. This was based upon the fact that as the academic I would be the one who was able to observe the students closely in order that I could understand the process and make the adjustments required; a viewpoint supported by Reason and Bradbury (2008), Cain (2011) James and Augustin (2017).

4.3.3 Advantages of Action Research

There is the notion that those who are in a position to stimulate change and improvement are those who are directly invested within the education process, i.e. students and educators, and this is one of the positive aspects of Action Research (James and Augustin, 2017).

The cyclic process of Action Research confers a helpful flexibility, as it is not necessary for the researcher to have a precise research question or research method before beginning their study. It is possible to make improvements to the research process and the comprehension of the process over time. This is one of the important strengths of Action Research in that it is a responsive.

4.3.4 The Advantages of data collection through multiple perspectives

Action Research enables the collection of data from a variety of perspectives whilst remaining within a single point of focus. An important aspect is the ability to collect data from myself as the educator and researcher. Macintyre (2000, pp.46, 87-91) suggests that the collection of data through multiple perspectives is a strength of Action Research as an approach as it has the capacity to eliminate bias. As she points out there is the variety of methods for data collection as well as the feeling and judgements of the both the educator/researcher and the students. This principle allows the concept of triangulation to add strength to the research process as a whole. The model also enables the research to follow a pattern of devising, implementation, monitoring and evaluation with amendments following the cycle to adapt and improve as the process evolves (Kemmis, McTaggart and Nixon, 2014, pp.19-20; Ulvik, 2014).

4.3.5 Disadvantages of Action Research as methodology

As a research strategy, Action Research has particular strengths but this has to be countered with the sacrifices made in order for the process to be developed. In reality, the process can be messy and this was represented within my research when a change of role within a new environment required a complete rethink of my progress within the cycles (discussed further in 8.7)

A disadvantage of Action Research is that it is not possible to replicate and there is a lack of generalisability (Dick, 1993). Essentially the harder the push to find an explanation to fit a specific situation, the less generalisable the findings becomes. This can make it difficult in its application to different cohorts but this is not necessarily the aim of Action Research. By providing enough detail of the context in which the research sits and methods used to generate data, it is possible to for the report to convey how this can apply to others. This requires the researcher to be clear and transparent with their methodology and report writing

The use of small participant groups further impacts on the ability for any findings from the data to be generalised beyond the context of the research and the lack of specific data collection methods can maintain this limitation (Price, 2017). The use of a representative sample can help to mitigate against this and I have attempted to clarify this by introducing brief summaries of the participants in my studies (see 9.3).

4.3.6 Rigour and validity

Another criticism of Action Research is that it can lack rigour or legitimacy (Dick, 1993; James and Augustin, 2017). For Action Research to be credible there has to be a connection with the concept of validity. In essence, does the research answer what it is claiming to answer? This links with the researcher's own epistemological stance. Validity when applied to quantitative research relates to how well the measurements used accurately reflect on the objects measured (Hammersley, 1996, p.77). However, the model of Action Research is not compatible with the positivistic approach and so the concept of rigour has to be redefined. This does not mean that Action Research is less rigorous. As a qualitative approach, it seeks to describe and understand (Feldman, 2007) and there is considerable debate on the criteria of quality within this type of research (Baillie, 2015). However, Hammersley (1997) suggests that if it represents aspects of the phenomena it seeks to describe then it is valid.

Melrose (2001) feels that it is the very nature of Action Research with the evolving cycles of research that add to the credibility and rigour of its findings. She believes that the flexibility of the process is a strength that some research methods are not able to provide. Rigour is developed through the continual cycles with findings from each progression used to decide how the later cycles should progress. By showing how the process evolves with openness and transparency this can be mitigated against. In order to address any potential concerns with rigour I utilised multiple data collection methods that had been previously validated (see 5.4). Module evaluation forms to collect data for Cycle One had been validated through the University as part of their evaluation process (see 5.5). Although these are standardised for use within the particular institution for which they apply, they can provide a robust mechanism for collecting data (Wiley, 2019). The added advantage is that they have been tested in a variety of settings and so it is possible to assume their validity (Wiley, 2019). Cycle Two utilised a pre and post questionnaire (see 5.7 and Appendix E) that had been previously developed for a study that attempted to gain information concerning the confidence, competence and transferability of skills taught (Meechan, Jones and Valler-Jones, 2011). Using a data collection tool that has previously been tested helped to increase its validity (Rattray and Jones, 2007) as, in essence, the items included on the questionnaire had been pilot tested (Oppenheimer, 2000, p. 48) and

reviewing of the questionnaire by academics and practice staff helped to identify any problems or potential measuring errors. Interview guides were also produced (see Appendix F and Appendix G) and these were examined by academics as part of my supervision process. The supervision process had the added benefit of providing the critical checks needed throughout the development of my research, as I was required to justify my choice of data collection methods and analysis of the data to experts.

There is the risk that an error within an earlier cycle can be compounded if used to build further cycles on but it can also enable earlier assumptions and interpretations to be tested in later cycles. This is where the strengths of the reflective stage within each cycle is crucial to progress through the process; (Dick, 1993; Herr and Anderson (2014, pp. 61-72; Kemmis, McTaggart and Nixon, 2014, pp. 33-37). Repetition through the cycles increases understanding and this in turn promotes further probing into the situation under investigation. The use of reflective diaries (see 5.9) not only helped to generate data (McDonough, 1994) but also allowed me to question my own position within the research, progression through the cycles and review of the outcomes to further increase the rigour (Price, 2017).

4.4 Reflection and its Relative Benefits

Through reflection, experiences can be explored so that they can become a “mental event” (Samuels and Betts, 2007) and this has the potential to develop into changes in actions and behaviours. Although there are various models for use with reflection that encourage practitioners to tap into their own practice, for example Kolb’s 1984 Experiential Learning Theory model (see fig 3-2). Each reflective journey is personal and is more than an action or thought process (Forneris and Peden-McAlpine, 2007, Tutticci et al, 2016). With active critical reflection, there is a crossover from deconstruction to reconstruction on a discrete and individualistic level (Samuel and Betts, 2007). Deconstruction is viewed by Mannion (2001, p.110) as a way of creating openings that allow for different thinking “*outside the epistemologies of certainty*” and as such will enable practitioners to confront issues that the reflection may have raised in order to re-evaluate their thinking and behaviours. This is transformative and reflexive and enables re-imagination of the experiences (Ryan and Ryan 2013). Mezirow (1991) describes this as perspective transformation that

has to take place to enable a critical awareness of how and why our own beliefs about the world in which we operate limit the way we see ourselves as well as others. Mezirow (1991) further explains that the act of reflection is validity testing and the assessment and reassessment of assumptions (p. 6). There can be a sudden understanding of the assumption and how this has influenced our thought processes. However, it can also be a series of mini transitions that assist in the revision of specific assumptions until a stage occurs whereby these assumptions are transformed. Thus, the story can be reconstructed in a different way (Samuel and Betts, 2007, Tutticci et al, 2016).

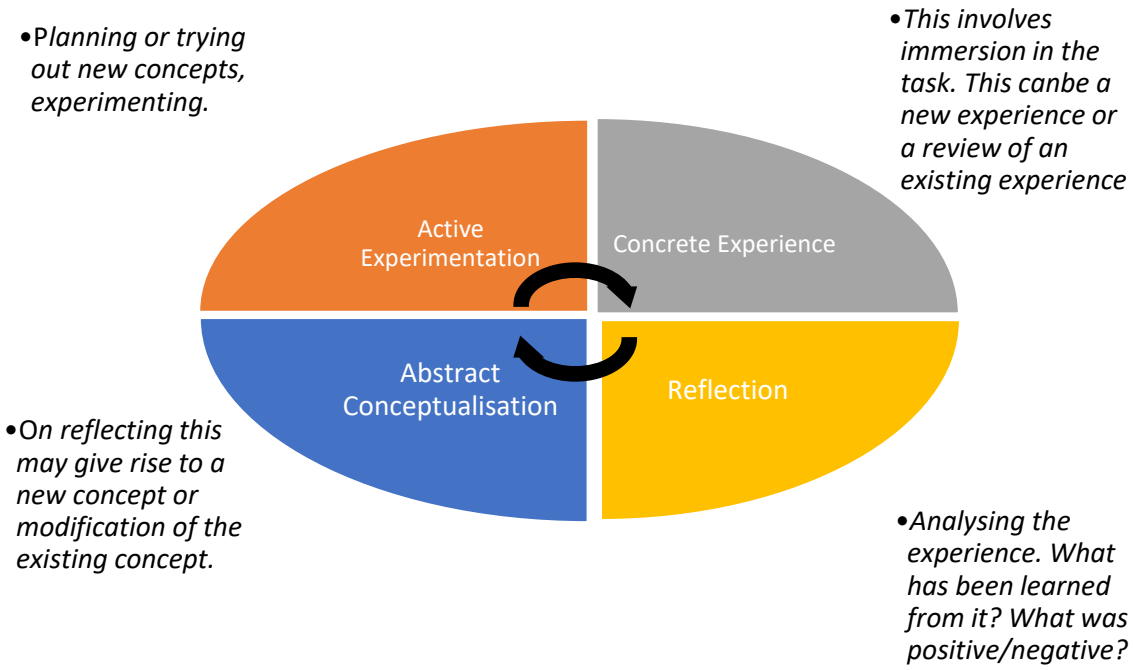

Fig 3-2 Kolb Reflective Model (1984)

However, for this to be effective the reflection has to be spontaneous and occur within all learning situations. When reflection is only stimulated by environmental cues such as part of a debrief or at the end of a cycle, the risk is that your reflective thinking becomes prescriptive. As part of the Action Research process there is a requirement that the researcher reflects on each cycle to generate new knowledge (MacIntyre, 2000; Holly, Arhar and Kasten, 2009, p.41). This seems counter-intuitive but a strength of Action Research is the emancipatory aspect that has the potential to exist during the process. Completion of each cycle prompts the researcher to reflect and this leads to further reading and reference to the literature to aid this reflection (Reason and Bradbury, 2008, pp.4-5; Holly, Arhar and Kasten, 2009, pp.40-41). Used effectively it can cultivate living knowledge that encourages

participatory intervention within its own community. It is recognised that this knowledge develops over time as the researcher acquires the skills of inquiry (Forneris and McAlpine-Peded, 2007; Ryan and Ryan, 2013).

4.5 Action Research cycles

Action Research is an emergent process with two phases, an action phase combined with a research phase so there is the possibility that the researcher is never in a position to reach a conclusion (Dick, 1993). Although the researcher defines the duration of each action cycle themselves, each one has to be carried out for enough time for it to be meaningful. Elliot (1991, p.85) cautions the researcher against the danger of "*forcing the process through*" when realistically there may be a need to continue for longer than was originally anticipated.

This is further complicated by the structure of the framework that can effectively trap the researcher rather than allowing them to develop independently. This framework can also generate the potential to assume that the project will take a linear approach and this is reinforced by the literature that represents the cycles as discrete entities in themselves (Dick, 1993; Kemmis, McTaggart and Nixon, 2014, p.85). However as previously stated, Action Research confers a flexible approach, actively encouraging the researcher to be reflexive to help mitigate against this.

For this project, I undertook three cycles, although the first cycle was more of fact finding to ascertain the nature of the research question. This initial curiosity was related to the delivery of a pedagogical approach that differed from the normal of facilitator led simulation. To explore this further I needed to look at this from a different perspective. Changing the focus from teacher centric control to a more student centric control had to be explored on a more fundamental level. Although it is not possible to assume what students feel about their role within their own education, by questioning their own assumptions as well as my own helps to frame the research and methods employed to discover some answers.

4.6 Use of Action Research within simulation.

Although the approach of Action Research has been used within simulation, this has related to the effects on interprofessional learning (Baker et al, 2008), use of virtual worlds (McElhinney, 2011, learning through experience (de Oliveira et al, 2015) and

faculty and curriculum development (Reierson et al, 2013; Randall and Randall, 2021). An Action Research study by Erlam, Smythe, and Wright-St Clair (2018) did investigate the benefits of simulation to help develop critical thinking but this study involved students who made revisions to simulations as the process evolved. It is not possible to ascertain whether the students' knowledge developed due to the simulation itself or because of taking part in the Action Research reflective process. My review of the literature has been unable to find any studies using an Action Research approach to investigate the development of knowledge as a result of simulation and this provided a rationale for me to use this approach.

4.7 **Conclusion.**

Action Research as an approach provides a means to find a way around the complexities present within the workplace and is based upon the notion that generalised solutions may not fit within particular contexts. The choice of Action Research as a methodology is situated within my own conceptual ideologies. The critical enquiry aspect enables me to search for meanings and attempt to bring about effective solutions by the use of reflection. The collaborative nature corresponds with my own view of the educator and student relationship and so consequently by the effective utilisation of Action Research I am able to gain insights into the students' own perception of their new learning and the language they develop to experience this. This also has the added benefits that I am able to further enhance my own teaching techniques for use in the future.

Chapter Five - Methods

This chapter outlines the different methods used for collecting the data throughout the research cycles. The predominant method of collecting data was via focus groups and individual interviews but in the initial phase, I used modular evaluations and pre and post-interventional questionnaires. This was partly due to my lack of confidence with conducting interviews and focus groups as well as the prospect of attempting to interpret vast quantities of transcripts. The added advantage of the use of module evaluations was to gauge responses to peer-led simulation and assess whether it was an approach worth exploring further. It would also help to give some direction for the early phases of the study. If the evaluations revealed that I had not introduced the concept to the students well enough, or that they disliked it as an approach, then it would have required a different approach.

As previously stated, Action Research offers the opportunity to view the research from multiple perspectives and this helps to reduce bias. It also enabled me to develop into my role as a researcher. As each cycle progressed, I was able to reflect on the previous iteration, make improvements, eliminate extraneous and superfluous processes and hone my skills. Researching the relative merits of each form of data collection enabled me to gain an understanding of the uniqueness of each method and appreciate how they fitted into research. I have also attempted to review the various methods used for data collection. Whilst each one had their own particular merits, this had to be countenanced against any potential disadvantages that might have influenced the overall validity of the eventual findings.

5.1 Overview

Although research took place over seven years, the format and structure changed through the evolution of the cycles. Table 1 presents an outline of the structure with the different methods used to collect data.

Table 5-1: Format for Action Research Cycles

Source	Time period	Method of Data Collection	Rationale for Data	Data Analysis used	Student Numbers in cohort	Numbers involved in data collection	Comments
Preliminary data	July 2011	Impromptu Focus Group	Data to determine the feasibility of the use of student led simulations for formative OSCE practice	Simple thematic analysis	N=12	N=12	Generation of the curiosity following simulation session during module. Initial basis for peer-led simulation. 2nd year student nurses undertaking Critical Care module
Action Research Cycle One	Sept 2011-July 2012	Module Evaluation.	Data to evaluate the student led simulations process	Analysis completed through University Module Evaluation Process	N=12	N=12	Students demonstrate simulations based on standard templates. Completion of OSCE demonstrating 100% pass rate of those who took assessment N=11
Action Research Cycle One	July 2011-Jan 2012	Field Notes	Personal reflections on process.				

Source	Time period	Method of Data Collection	Rationale for Data	Data Analysis used	Student Numbers in cohort	Numbers involved in data collection	Comments
Action Research Cycle Two	Sept 2012-June 2014	Pre and post intervention Likert scales (See Appendix E)	Data to evaluate the perceived confidence of student led simulations process	Paired sample t-test	N=12 (first cohort) N=12 (second cohort)	N=12 (first cohort) N=12 (second cohort)	Introduction of peer-led simulation into Critical Care Module 2nd year students. Students develop their own simulations based on learning outcomes for module
	June 2014	Interviews. No interview guide used	To provide some context to the quantitative data	Thematic analysis utilising Braun and Clarke framework (2006) (See 5.10.4 for explanation)	N=12 (first cohort) N=12 (second cohort)	N=3	Explorative questioning from interviewer.
Conclusion of Action Research Cycle Two	Field Notes	Personal reflections. Change of Post requiring review of process.					

Source	Time period	Method of Data Collection	Rationale for Data	Data Analysis used	Student Numbers in cohort	Numbers involved in data collection	Comments
Action Research Cycle Three	March 2016-Sept-2017	Interviews. Post peer-led simulation (See Appendix F for interview guide)	To explore students' perceptions of peer-led simulation	Thematic analysis utilising Braun and Clarke framework (2006). (See 5.10.4 for explanation and Appendix K for diagram of themes)	N=16 (first cohort) N=26 (second cohort)	N=4 (first cohort) N=5 (second cohort)	Introduction of modified peer-led simulation into 2nd year child module (March 2016 and 2017) followed by peer-led simulation in third year (Sept 2016 and 2017). This is due to different levels of exposure to simulation and to provide a framework for student progress to full peer-led simulation
Action Research Cycle Three	Sept 2016 Sept 2017	Focus Group Interviews. Part of module evaluation process (See Appendix G for interview guide)	Data to evaluate peer-led simulations	Thematic analysis utilising Braun and Clarke framework (2006) (See 5.10.4 for explanation and Appendix K for diagram of themes)	N=16 (first cohort) N=26 (second cohort)	N=7 first cohort N=8 second cohort	
Action Research Cycle Three	March 2018 (second cohort)	Interviews 6 months post peer-led simulation event. See Appendix F for interview guide)	Data to evaluate student perspective of ongoing impact of peer-led simulation		N=26 (second cohort)	N=3	Exploration of ongoing impact of involvement in peer-led simulation.
	Field Notes	Personal reflections					

5.2 Sampling and recruitment

Sampling was purposive in that participants were recruited from cohorts of undergraduate nursing students from the child field of practice. These predetermined criteria have to be taken in context of the research question. My question could be construed as a general question based on a broad sample but my choice of sampling strategy is a way of attaining representativeness to help obtain specific data. As part of Action Research it is possible to study all of the students within my field and then progressively focus this down as the study progresses. However, there is an advantage of studying a relatively small group of students for the activity as this meant I was able to provide appropriate amounts of support. As I would be studying an area where little research has been undertaken, this would also enable me to study more closely from different angles.

5.3 Group Size

It was important to consider the management of the research and in particular the organisation of the simulated activities. Whilst the sampling was purposive, the process of simulation had to adhere to recommended guidelines for the size of each group. As the simulation to be undertaken was related to a paediatric resuscitation, it was imperative that the group sizes were comparable to these recommendations. Mahling et al (2014) and Rezmer et al (2011) suggest that groups of 4-8 are just as effective for resuscitation simulations. However, a study by Rezmer et al (2011) found that there was not an optimum size for simulation activity with paediatric resuscitation and Hensel and Ball (2013), Lim, Steinemann and Berg (2014) and Nabecker et al (2019) support this. The use of smaller groups is perceived to help student engagement and learning with larger groups supposedly more disruptive (Mahling et al, 2014; Nabecker et al 2019). Nevertheless, time constraints and resource availability does affect the structure of simulation and as a result, group size can influence the authenticity of the simulation experience. In essence, the true nature of the clinical arena cannot be replicated as the makeup and size of the team is not representative. Larger group sizes run the risk of generating a lack of psychological fidelity for the students. This is the ability for students to suspend disbelief and fully engage with the simulation (Beaubien and Baker, 2004; Hun, 2015). When the numbers of personnel involved in the simulation are an unrealistic representation of the clinical area in which they are supposed to be taking place, there is a lack of authenticity. This authenticity is fundamental to increasing the pedagogical benefit of simulation as a learning tool (Reid-Searle et al, 2011; Parker and Myrick, 2012; Muckler, 2017)

Alternatively, with several simulations there is a real possibility of disengaging students who are not actively involved through facilitation, taking part in the simulation or acting as observers to provide feedback. Studies have highlighted the risk of boredom or disengagement when students do not have a role in the activity (Hober, 2012; Harder, Ross and Paul, 2013a; Bethards, 2014; Bonnel and Hober, 2016) and this can have implications for their learning.

The sizing of groups has to be considered within the state of tension that exists with fidelity and student engagement. By involving students in the process, it is possible to mitigate against this as they are able to take ownership and make their own decisions about how the group sizes would work best for them and how they would engage others during the simulation.

5.4 Data collection

As the data are collected using differing tools this means that Action Research grants the researcher the ability to collect various seams of data that can help to focus issues from differing perspectives which allows them to comment on the pedagogical process at hand. The knowledge gained can be contextualised and used to illustrate problems that are often indicative of other issues (Reason and Bradbury, 2008; Drost, 2012,).

Several methods of data collection were use over the period of the study. Initially an impromptu focus group was set up to discuss the students' thoughts on managing their own simulations and facilitating each other. The data collected from this along with module evaluations helped to shape the original composition of my research. As I progressed through the cycles, I revisited the use of focus group interviews in a more structured format to help explore in more depth the context behind students' thoughts on the process of peer-led simulation as a pedagogy.

5.5 Cycle One: Collecting data via evaluations

Initially, a module evaluation form evaluated the first iteration of peer-led simulation. All modules are required to carry out an evaluation on completion and the module leader takes responsibility for reviewing and the follow up of any actions required. Module evaluations are an important part of the quality and standards of higher education (Brennan and Williams, 2004) and as such are perceived to be an effective way to provide relevant information and feedback (Lim, Gan and Ng, 2015).

However, module evaluations have a standardised format with questions focused on the structure and content of the module and the degree to which the learning outcomes have

been addressed and the students' perceived effectiveness of the teaching delivery. The use of a Likert Scale of Strongly Agree through to Strongly Disagree provides some quantitative data for analysis that can then be used for feedback to the programme as well as the regulators and NMC. This feedback is an important aspect to closing the loop as it provides the module team the opportunity to scrutinise the students' comments and modify any concerns in order for the learning outcomes to become more explicit (Leckey and Neill, 2001; Jara and Mellar, 2010)

Likert Scales were originally developed as attitudinal scales and are therefore expressions of desire and not a statement of fact (Likert, 1932, p.44). The concept behind this is that people can have very different attitudes but will agree on a fact. Each section had a space for free comments and these can help give context, making the qualitative element a fundamental aspect of the feedback. The degree to how the open-ended questions are used can help to support constructive changes in teaching practices (Hoon et al, 2015).

5.6 Cycle Two: Collecting data via pre and post intervention questionnaires

During cycle two data was collected using a pre and post interventional questionnaire (see Appendix E) based on students' perceptions in three key areas, confidence, competence, and transferability. This questionnaire had been developed for use in a previous study that had researched the confidence, competence and transferability of skills gained by student nurses (Meechan, Jones and Valler-Jones, 2011b) and I felt that this lent itself to use with development of peer-led simulation activity (Valler-Jones, 2014). This did mean that the questionnaire had gone through the process of consultation and testing and this increased the face validity of the items included (Rattray and Jones, 2007). The pre and post questionnaire was further scrutinised by 5 academic and practise staff to ensure content validity (Artino et al, 2014) and permission to utilise the formatted questions was gained from the lead author who had developed the original questionnaire. The completed pre and post questionnaire that was used for this part of the cycle can be found in Appendix E

Quantitative data was collected via a 5-point Likert Scale (Strongly Disagree to Strongly Agree). Initially, I had toyed with the idea of having no neutral. Nowlis, Kahn and Dhar (2002) feel this removes the option to avoid the cognitive burden of making choices between positive and negative feeling on a subject and I was keen to ensure that the students were obliged to use the mental effort to push them into confronting their true feelings. Whilst this was a valid viewpoint, I felt more comfortable with the concept of preventing false responses (Johns 1987), and allowing the students to choose neutral

when they felt indifferent about a comment. This resulted in an adaption of the module evaluation into an 8-question 5-point Likert scale and covered;

1. Their perceived confidence levels with their ability to care for a critically ill child (3 items)
2. Their perceived competence level with their ability to care for a critically ill child (3 items)
3. The perceived values of the use of the skills and knowledge gained from the peer-led simulation and their ability to transfer this into practice (2 items)

The university recommended that mid module evaluations were completed where applicable to garner any responses from student and deal with any issues that may have arisen or that may affect the remainder of the module. This provided a suitable point for the pre-simulation evaluation. I wanted to see if the students' perceptions had changed as a result of the peer-led simulation. This would also give some indication of their pre simulation levels of confidence, competence, and transferability of skills.

Responses from the 5-point Likert scale were scored in such a way to ensure that positively favoured statements and non-negative favoured statements were assigned a high score

Therefore, a statement such as;

I feel more confident in my ability to care for a critically ill child

Strongly agree would score 5 and strongly disagree would score 1 but if written;

I feel less confident in my ability to care for a critically ill child

Strongly disagree would score 5 and strongly agree would score 1

This was to avoid the risk of attitude ambivalence (Nowlis, Kahn and Dhar, 2002) whereby the participants have a preference to score the same comment throughout, for example strongly agree.

The maximum score for each evaluation was out of 40 points (8 questions with a maximum score of 5) and a minimum score of 8. An evaluation with a score of 40 points indicated that the student had a high level of perceived confidence, competence or ability to transfer the skills learnt. A score of 8 points would indicate a negative perceived level of perceived confidence, competence or ability to transfer the skills learnt.

5.7 Cycle Three: Collecting data via the use of interviews

Cycle Three was more of an undertaking as I decided to use interviews and focus groups to try to unpick some of the thought process and try to understand their world from their own point of view. For both the interviews and focus groups the students were self selecting and this can have the potential to reduce the generalisabilty of the findings as it is likely that those who wish to be involved may not be representative of the population sample as a whole (Keiding and Louis, 2016). However, I have included summaries of the students involved in the interviewing process to help demonstrate their diversity (see 9.3.1).

Whilst it may seem a simple and straightforward task, poorly constructed interviews have the ability to destroy an otherwise excellent project and no amount of conceptualisation and "*sophisticated statistical analysis would be able to resurrect it*" (Oppenheimer, 2000, p.65). There are potentially four main purposes for the interview as described by Simons (2009, p.43)

1. To document the interviewees perspective
2. As active engagement and learning for both the interviewer and interviewee
3. To allow for inherent flexibility; to change direction and pursue emergent themes
4. To uncover and represent unobserved feelings and events that cannot be observed

Standardised interviews are mainly used for large-scale data collection (Oppenheimer, 2000, p.66), but the use of exploratory or semi-structured interviews enables the interviewer to deviate from the pre-set questions to explore individual responses and gain a greater depth of understanding (Simons, 2009; Rubin, 2012). This does have to be tempered within the constraints of the broad themes identified for ethical approval to be secured. However, it does allow the interviewer to rephrase the question and encourage more philosophical and reflective exploration. Oppenheimer (2000, p. 67) further explains this as more of a collection of ideas rather than of data, the interviewing process can reveal more about the interviewee than from simple observation (Simons, 2009, p.43). This was an important aspect of my research and I needed to be able to unpick the thought processes that the students used during the whole of the peer-led simulation activity.

The name implies that there needs to be some structure to the interview process and the use of pre-set questions or prompts helped to aid a focus to enable me to find the common themes. As the process evolved, I was able to develop my skills with interviewing to investigate the more nuanced answers. With the initial iteration, the questions were unsophisticated, and I was unable to gain much insight into how the students "experienced

the process". During the third cycle, more in-depth interviews were completed to try and gain a deeper understanding of the process. An interview guide was developed and questions to be included were reviewed by my supervisors prior to submission for ethical approval (See Appendix F). This helped to ensure that the questions were appropriate and, in essence, provided a critical eye.

5.7.1 Interviewee bias

What others say derives from their own context and so the analysis of the interviews requires insight into the positionality of the interviewee and the interviewer. I was aware that I wanted to highlight the benefits of peer-led simulation and "prove" its effectiveness. However, I had concerns that the students would give me the answers they felt I wanted to hear. The relationship is asymmetrical due to the implications of the power balance between me and the student both as the interviewer and as their lecturer (Brinkmann and Kvale, 2015, p.99). Although this would appear to be counter intuitive, the very nature of this relationship can elicit valuable information. As I had built a relationship with the students during their course, there evolved a dynamic that I had enabled in which they were encouraged to debate and question my teachings. As part of the critical thinking process and the practice of reflection that had been cultivated within the nursing curriculum the students were in a position to reason and problem solve and have the confidence to challenge assumptions. This gave me the belief that they would be able to overcome the power dynamic, to develop a more equitable relationship and encourage them to feel comfortable in telling the truth as they saw it.

5.7.2 Timing of the interviews

Initially the interviews took place as close as possible to the conclusion of their peer-led simulation session as I felt I needed to capture the immediacy of their thoughts and feelings on the process. However, as I developed more of an understanding of the process of learning and conceptualising knowledge I realised that, in order for them to make sense of the concepts they had to relate this to other concepts, to form connections, to evaluate and reflect; a process that Dewey denotes as the "*concrete logic of action*" (Boydston, 1980, p.93). Therefore, I decided to invite the students to take part in the interviews 6 months following completion of the peer-led simulation and this meant that some had reached the point of qualification.

I was conscious that the information I had originally obtained had been based on interview questions developed during earlier iterations of the research cycles. The interviews that took place later within Cycle Three were more conversational as I became

more adept at them. I was able to explore these further as changes within my role and place of work required additional ethical approval to be gained to continue with the study. Therefore, the information gained would not be a direct comparison between immediate responses and measured responses several months later. However, they did offer me an insight into their thoughts on the process and the very fact that they were able to recall what they had learned and how their own particular simulation played out, indicated that learning had taken place.

5.7.3 Setting for the interviews

Although the interviews took place in a variety of settings, it is important to ensure that it is quiet and that the risk of interruptions is reduced. There needs to be a comfortable and relaxed atmosphere to avoid interviewees feeling pressured or intimidated (Oppenheim, 2000, p.69). With individual interviews, it was relatively easy to organise a small room for this purpose and to increase exposure to the participants, I also visited them in the clinical area and interviewed them in a private space setting at a time and place convenient for them.

5.8 Focus group interviews

Although focus groups have been synonymous with market research (Munday 2006), they have become increasingly popular as a form of data collection within health and a social science and can produce quick results (Kroll, Barbour and Harris, 2007). As they are also a device to elucidate group opinion they are suited to socio-behavioural research (Mack et al, 2005, p. 51) and as such can be used to develop and meet the needs of particular populations (Krueger and Casey, 2015, p.2).

Morgan (2002) feels that there are two broad types of focus groups. One is a more structured approach where the moderators take a more active role within the group and seek specific answers from the participants. There is an obvious interaction between the moderator and the participants, with discussion centred on set questions. Although this generates directive information to guide the data collected, this lack of spontaneity can produce results that the researcher requires rather than what the participants feel.

The other type of focus group is more spontaneous and encourages the participants to discuss the issues with each other. The moderator facilitates the discussion rather than leading it, this enables a more interpretative approach, helping to understand the concepts developed within the group and seek meaning from the participants. Wilkinson (2004, p. 272) views this as an informal discussion on a specific subject with selected individuals

and it is focused because there is a shared activity whereby the group have a collective familiarity. It can often expose aspects of understanding that conventional interviewing is not able to and can capture the shared experiences. There is the inherent risk that the participants may not discuss some of the issues that are important to the researcher but skilful moderation can help to steer the discussions with flexibility for the participants to explore other areas as appropriate. As the focus group involves the use of more than one participant for the collection of data, it is referred to as a focus group interview (Wilkinson, 2004, p. 271). Although it does not seek to provide a consensus on the themes identified it can encourage a more in depth understanding of the participants own opinions or perceptions and can create data from multiple perspectives.

The addition of focus groups had not been an initial consideration for my research but had developed from the positive outcomes of the impromptu focus group during the preliminary stages. Reflecting on the conclusions I had drawn from this encounter, I decided to research the relative merits of using focus groups as another method of data collection, to ascertain whether it was a reasonable method to use to help further my research.

5.8.1 Advantages of focus group interviews

The advantage of focus group interviews, especially in the form of class discussions, is that they can be used to help shape answers to the research questions (Holly, Arhar and Kasten, 2009, p.156); although at this stage, I was not aware that I wanted to ask any questions. Another advantage of the class discussion as an initial method for collecting raw data was that it allowed me to gain an understanding of the breadth and depth of the primary concern. As I had little exposure to focus group interviews within my research history, I did not initially recognise it for what it was. However, because of the reflection and evaluation process within my Action Research journey, there was a realisation that this is what had occurred and that the lack of structure to the session did not detract from the information gained and the progression of the process. It also provided me with the confidence to utilise focus groups within my research to provide a more focused perspective.

The certain degree of spontaneity with little preparation corresponded with the benefits of focus group/class room discussions (Kroll et al, 2007). As the focus is not on individual students, it can help to create a more relaxed atmosphere and facilitate discussion as well as capture idiosyncratic experiences and views (Mack et al, 2005, p.52; Krueger and Casey, 2015 p.4). In fact, Kitzinger (1995) sees the use of group interaction as a particular strength as it encourages the participants to talk to each other, to ask questions and to

exchange anecdotes as well as commenting on each other's experiences and points of view. The give and take of a relaxed informal discussion enables a range of perspectives to be aired which in turn generate authentic data that might not be forthcoming during the more formalised approach of an interview (Holly, Arhar and Kasten, 2009, p.157). This was an added bonus and as a result the students were able to offer unique thoughts and insights into what they felt the benefits of devising and delivering their own simulations might be. Familiarity with the classroom setting as well as each other could have created this situation, with the real possibility that this could not be replicated, and couching it in a different way may have influenced the outcome of these focus group interviews. However, they seemed genuinely excited about the prospect of it and getting to "play with the manikins".

5.8.2 Disadvantages of focus group interviews

Although focus groups enable the participants to discuss the issues raised, it can be problematic relying solely on this as a method for collecting data if there is insufficient depth to the data that are collected. Personalities within the group can influence the discussion, especially if there is a power balance (Krueger and Casey, 2015, p.16) and dominant characters can influence how the discussion evolves and the direction it takes (Morgan, 1996; Wilkinson, 2004, p.280; Holly, Arhar and Kasten, 2009, p.156). Kitzinger (1994) cautions about the effect of group conformity and its potential to distort the data when compared with individual interviews. She found that, although during individual interviews participants were accessible and circumspect with their information, during group interviews, they were more likely to act up to the social norm of their peers. This has the risk of censuring any deviations from the standard view, which could have provided invaluable data from another aspect.

The role of the moderator can also influence the interaction within the group. By directing the participants, they can inadvertently disrupt the flow of the conversation, which is one of the strengths with group dynamics. Morgan (1996) believes that a power dynamic can be destabilising, as the participants are more likely to feel they need to provide answers rather than admitting they do not know something. This can be a particular disadvantage when the moderator has a degree of authority over them and has a stake in the research itself. I was aware that there was a potential for the students to give me the feedback they felt I wanted to hear and although I recognised this in the beginning, this did not present as a problem. In fact, during the research process the students were very forthright in some of their discussions about the relative merits of peer-led simulation.

This did present a difficulty with moderating the focus groups whilst directly involved in the research itself and this is also recognised as a potential disadvantage by some authors (Morgan, 1996; Krueger and Casey, 2015, p.105). The first impromptu focus group interview provided positive feedback on the process and generated discussion on its relative merit. They were genuinely enthused about taking part and offered advice on how this could be managed. A further two focus groups undertaken enabled me to hone my skills with this particular method. However, it did open me up to the potential for criticism and that was something I had to learn how to manage. One of my concerns about asking the question on their experiences with peer-led simulation, was the inherent discomfort of finding out that there was a potential for the strategy to be ineffective or disliked. At times, it was hard to listen to students unpicking the process and then to ask them to explain rather than become defensive; but this was part of my development as well.

The size of a focus group interview can be anywhere between a minimum of 4 and a maximum of 12 (Krueger and Casey, 2015, p.6) although 8-10 is generally agreed to be a suitable size (Morgan, 1996; Beyea and Nicoll, 2000; Mack et al, 2005 p.56, Stalmeijer, McNaughton and Van Mook, 2014). This can be problematic as it involved booking a room big enough to accommodate the students who took part. The setting also needed to be conducive to a relaxed environment as well as offering the maximum degree of privacy (Mack et al, 2005, p.56). Timings were also challenging. Due to the nature of the nursing programme, when students are on their clinical practice they are allocated to various Health Trusts and placement areas. Therefore, it was only possible to meet with the group when they were altogether during academic sessions. To accommodate for this I arranged for an extension to the timetabled session so the allocated room remained available. It also meant that the students were together in the same place and had the added advantage of minimising any disruption.

A total of two formalised focus group interviews took place within Action Cycle Three (see table 5-1) and time taken was 30 minutes and 25 minutes. Students for the focus groups were self-selecting. When the research project was launched, students were asked if they wished to take part in interviewing, either as a one to one or as part of a focus group. Dates for the focus groups were set to take place following the module evaluation session during Cycle Three as this were timetabled within the module. This did mean that students were aware of when focus group interviews would be. Ground rules were set to ensure that all perspectives could be heard and it was identified that all opinions were valid and that we agreed to disagree. A guide was also used to help direct the interview (see Appendix G) and this was based on the guide used for the single interviews. Both formal

focus groups were audio recorded for transcribing purposes and students were consented beforehand (ethical considerations are discussed in Chapter Six).

5.9 Data Collection via use of reflective diaries

Reflective diaries can be a rich source of data (McDonough, 1994) and are a useful tool for professional development and reflection as it encourages exploration of context specific concerns outside of the classroom (Price, 2017). To develop my growth as a reflective practitioner during my career I had kept diaries but this was on a more ad hoc basis. I found I would use them when there had been particularly difficult and challenging events in my clinical work and latterly as part of a process in order to achieve the necessary outcomes for personal development. This linked back to my need to develop a more formalised approach to my reflection. Therefore, I made a more conscious effort to incorporate reflection in my day-to-day activities and not confine it to a set structure. Maintaining reflective diaries is an opportunity to set aside time for daily reflection (Larrivee, 2000) as such it enabled me to chart my own development and increase awareness of the impact I may have on experiences I encounter. These diaries became a personal journey, although I admit that I was not always diligent in completing entries. I did try to make a conscious effort to record weekly and review on a monthly basis.

5.10 Data analysis

The various forms of data produced throughout the research cycles required differing methods to analyse their meaning.

5.10.1 Module evaluations

Each question on the evaluation form was scored on a 5-point Likert scale with 1 equating to the negative based answer through to 5 equating to the positive based answer. Students were encouraged to write free comments to contextualise their scoring. The free comments were part of the module evaluation process to explore the degree to which students felt the module had addressed their individual learning needs as well as covering the outcomes and as such were designed to ascertain the degree to which peer-led simulation had helped achieve them this.

5.10.2 Data analysis for pre and post interventional questionnaire.

The Pre and Post Intervention Questionnaire (see appendix E) produced quantitative data that were explored using both a parametric (t-test). In order for research to be undertaken effectively there has to be a recognition of the impact of statistical tests on the conclusions. The independent t-test is the most widely used statistical tool in educational

research (Sawilowsky, 1990; Hulley et al, 2013). When behavioural modifications because of interventions are researched, the parametric t-test tends to be seen as more valid by researchers (Hunter and May, 1993) and as it originates from the assumption of normality with normally distributed data, Bridge and Sawilowsky (1999) suggest that it is the most powerful unbiased test. However, there are features with the dataset that may influence the use of t-test and it is questionable whether it maintains its unbiased properties when assumptions of normality are disordered. The t-test makes assumptions that the pre and post intervention are at the interval levels. This means that someone who has increased their perceived confidence level from disagree (score 2) to agree (score 4) will have improved twice as much when compared with someone who has increased by 1 point. The t-test also assumes that the differences between the levels are normally distributed and this may make the t-test less valid when smaller differences are offset by one very large difference for example from strongly disagree (score 1) to strongly agree (score 5).

The Wilcoxon Matched Pairs Signed Ranks Test takes into account that pre and post intervention data can be arranged systematically. Although this means that the test is slightly less critical than the t-test, assumptions of normal distributions are not necessary and it is a highly influential test. In fact, some statisticians recommend considering non-parametric tests as they avoid the assumption of normal distribution (Hunter and May, 1993; Bridge and Sawilowsky, 1999).

Sample size also has an effect on the performance of the t-test. There is a belief that when sample sizes are small (i.e. less than 10) non-parametric should be used (Blair and Higgins, 1980) and that as the size increases the t-test becomes more suitable (Lumley et al, 2002). As the sample size used for both groups was 12 it is possible to assume that the t-test could be used.

5.10.3 Transcribing data from interviews

Interviews whether individual or group generate large amounts of data that needs to be interpreted and this is a very time consuming process. Kvale (1996) points out that this task rests with the researcher but should start during the interview phase. He suggests condensing and interpreting the meaning of what the interviewees say and sending this back to them (p.189). This process allows the interviewee to clarify and correct the information and enables the interviewer to confirm or refute his or her own interpretations. It also enables the interviewer to demonstrate to the interviewee that they are engaging with them and by revisiting the topic, different angles of the same theme can be unpicked further (Oppenheim, 2000, p. 75).

Most authors recommend the use of audio recording with note taking to act as a back up if necessary (Kvale, 1996, Oppenheim, 2000, Mack et al, 2005, Holly, Arhar and Kasten, 2009, Maxwell 2013; Pallotti, Weldon and Lomi 2020). However, the interview transcripts still require interpretation and this will involve listening to or reading them. Initially this process was daunting, with terms such as coding or thematic analysis or cleaning the data discussed as part of the analysis.

I read and reread each interview to help understanding and “live” the information presented. This immersion within the data is a particular strength with this method as I was able to unpick each interview in an attempt to understand what the interviewee had said and what I felt they were saying. Listening to the interview tapes starts the process of transcribing and analysing the data and encourages a familiarity with the words and meaning and the taking of notes during the process is further enhances this (Maxwell, 2013 p.195). This helped me to develop tentative ideas about what relationships can be built up and if there were any recurring themes or concepts that could warrant further exploration. As previously stated in Chapter One, my understanding with research was based around quantitative research and as such involved number crunching. Having a quantitative focus had the potential for me to give more credence to the issues raised by a number of people rather than exploring the range of differing topics that emerged. Previously I had been more comfortable with this approach as the extraction and analysis involved the use of programmes that produced the data into manageable tables and graphs that I felt more of a familiarity with. The immersion within the data gave a nuanced edge that facilitated me to stimulate and capture my own analytic insights. The challenge was looking at the data in terms of what it meant rather than how many times it occurred and attempting to look beyond the phrases to incorporate the context and surrounding data.

At this point Kvale (1996, p.190) suggest that further interviews can be undertaken to explore the interpretations with the interviewees and enable them to elaborate on this. As previously stated I did approach students for further interviews 6 months following the peer-led simulation and I was able to unpick some of the themes that developed to try and gain further understanding.

5.10.4 Thematic analysis.

Thematic analysis involves searching within the data to find repeated patterns and generating themes. However, this is dependent on the theoretical positionality of the researcher, as this requires selection and editing in order to answer the research question.

When transcribing the interview scripts I was aware that I was interpreting what was said and that others reading them would ascribe different meanings. What I am presenting are my own theoretical understandings and do not claim to be presenting the absolute truth. From a hermeneutical point of view the interpretation of the text is the fundamental theme, and this interpretation seeks to find a common meaning (Brinkman and Kvale, 2015, p.60). As humans, we are self-interpreting and our understanding is based on our own traditions, historical perspectives and prejudices. Although I am presenting the words of the students, I am analysing them within my own context and whilst I acknowledge that this is a potentially challenging philosophical minefield I am not purporting to represent the truth, rather following a valid hunch (Brinkmann and Kvale, 2015, p.282) to provide strength to the statements.

Whilst I have classed this as analysing the data, the term is potentially confusing when used within the context of language, as this is subjective. The data presented are not definitive but forms a framework on which I can apply my own theory. The process of data analysis is recursive and dynamic (Merriam and Tisdell, 2015, p.195) and so the concepts have been expanded and developed, inevitably involving a sense of individuality due to the uniqueness of the research setting and myself as the researcher. I am not seeking to provide the correct explanation but finding what makes sense to me. Holly, Arhar and Kasten (2009, p.212) see this as a valuable and valid process as what appear right in one context can appear wrong in another. They suggest that to validate inferences the researcher needs to be reflexive and be prepared to revisit the data to look for new meanings. This was something I became aware of as I re-examined earlier interviews and reinterpreted the data. As I had progressed through my research journey, I had to challenge my own assumptions and I had to develop a more critical analysis of information as it was presented.

To help structure the analysis of data from the interviews I used Braun and Clarke's 6 phase guide to thematic analysis (Braun and Clarke, 2006). They encourage the initial immersion in the data that enables the researcher to familiarise themselves with what has been said and looking for repeated meanings. As stated in 5.10.3 this involved reading and rereading the transcripts. Following this, different coloured pens were used to highlight common words, phases or themes. So for example where the word confidence was included in the students responses this was highlighted in green and added under the general theme of confidence to help generate initial ideas and codes. Phases where synonyms of confidence were also included, such as "had **faith** in myself" or "I was surprised I had the **courage** to do this" along with antonyms "feeling less **anxious**" were

included within this theme. However, I was aware that viewing the ideas this way related to my own interests and that I was interpreting the data in relation to the arguments I was attempting to answer. From these broad themes, further focusing helps to discover how different codes could be combined to form overarching themes. Reviewing phases such as “proving I know the topic” or “improves my clinical practice” “found I did know this” related to confidence and so at this stage were merged. This involved the use of more visual representations with highlighter pens and mind-maps so that phases could be linked. Further refinement helped to identify those themes that may not have enough data to support it or that are too diverse. At this stage, it is also possible that two seemingly disparate themes may actual form one overall theme.An example of this was the theme for authenticity (see 7.5.2) related to a student comment about “playing” with the manikins. Transcripts of interviews for Cycle Three (See chapter nine) also identified similar thoughts on this but were also linked with the fidelity of the equipment and how this “forces you to play a game” and this became the theme of Psychological Fidelity (see 9.3.5). Phase 5 requires identification of the essence of what each theme is about and how the data collected enables an accompanying narrative to be developed. The 6th phase involves the final write up of the findings, using the data to narrate the story. The decisions around what to include and what to exclude is based on the researchers own personal stance, and as I have stated previously, I have recognised that what themes I present may not be what others reading the interview transcripts would synthesise from it. However, the themes I present are those I feel have helped to answer my own research question.

5.11 **Conclusion.**

This chapter has outlined the methods used during stages of the Action Research study. The use of various data collection methods and data analysis has been discussed, alongside their advantages and disadvantages and this has highlighted their relative merits with their use within different situations. Justification for the use of the different methods within each cycles has demonstrated the flexibility of Action Research,for gaining multiple persepctives. The difficulties that can be encountered and the cautions that need to be applied when utilising these methods has also been presented.

Chapter Six - Ethical Concerns

Designing Action Research projects can raise potentially complex ethical issues that are not necessarily applicable to other forms of research (Nolen and Vander Putten, 2007). The development of a relationship between researcher and participants is based on trust and there is a potential risk that information may be revealed inadvertently. This was something I had to be cognisant of, to ensure that there was no harm to the students involved and that I did not misuse any sensitive information. I also had to be mindful of the fact that I could unconsciously mis-represent the views of the students. Although this presents a challenge, I am faced with a conscious decision to act in an ethical manner. Therefore, I have attempted to examine my own ethical standpoint and highlight the factors involved in the process.

6.1 Ethical approval

Throughout the Action Research cycles, ethical considerations were taken into account utilising the British Educational Research Guidelines (BERA, 2018). These guidelines recognise the need to extend knowledge and understanding but consider that any researcher who is undertaking educational research should "operate within an ethic of respect for any persons involved in the research they are undertaking" (BERA, 2018, p.5). They recommend a framework in which ethical researchers should work within.

1. **Voluntary Informed Consent.** All participants need to fully understand the process and why their participation is necessary. This means that the participants have adequate information about the study and can comprehend the intentions of the study (Polit and Beck, 2017 p.83)

2. **Openness and Disclosure.** Researchers must avoid any deception. However where there is recourse for subterfuge due to the nature of the research, this should be fully deliberated and consent gained on a post hoc basis (BERA, 2018, p.17).

3. **Right to Withdraw**. Any participant has the right to withdraw from the research for any or no reason. Researchers should not use coercive measures to persuade the participant to remain. This includes the perceived substantial loss to the participant if they chose to leave, i.e. the potential impact on a student's progression (Midzinski, 2010)

4. **Detriment Arising from Participation in the Research**. Researchers must make the participants aware of any detrimental effects that may arise from the research or with the findings. Any detrimental concerns that occur during the research have to be drawn to their attention and advice sort (BERA, 2018 p 19). An example would be the potential disclosure of information by the student or, in the case of

peer-led simulation as a pedagogical approach, that the students learning had been compromised as a result of taking part.

5. **Privacy**. All participants' data is treated with anonymity and confidentiality and all information has to be stored in securely for the duration of the research (User Research Community, 2018)

6. **Disclosure**. Where illegal behaviours or behaviours likely to cause harm to the participants, the researcher has to make consideration to the duty of disclosure. (BERA, 2018 p.25)

Ethical approval was applied for through the relevant University Ethics Committee to use the students' evaluations to form part of my research study and further ethical approval was obtained for interviewing participating students to ensure I followed the ethical guidelines outlined by BERA (2018). Ethical Approval had to be gained from two different Ethics Committees due to the change in role discussed further in 8.7. In both cases, a standard consent form from the individual institution was used and the relevant committees (see Appendix C and Appendix D) approved this. Consent was also gained for the use of images and stills from the simulation and this was incorporated as part of the consent form in the subsequent approval.

I was keen to reassure the students that I was reviewing the evaluation of the process and not their individual peer-led simulation. I explained that at the end of the module, they would complete a standardised module evaluation with some further questions relating to their confidence with peer-led simulation. This was part of the quality assurance mechanisms as explained in Chapter Five. However, the questions relating specifically to peer-led simulation were not a requirement for this and so the students could chose to answer these as well.

All students were fully informed of the process. At each stage, the students were given a participant's information sheet (See Appendix B) with information about the research and what was the intention for it. I also felt the need to discuss with the students the fact that they would all complete the peer-led simulation as part of the module but that they would be volunteering to take part in the interview process. This was an important feature of the ethical consideration as from a pedagogical standpoint the content of the module had to be delivered and it was my intention to deliver the simulation aspect via peer-led simulation. I was not expecting all the students to participate in the research. A characteristic of Action Research is the duality of the researcher's role (Dick, 1993, Nolen and Vander Putten, 2007, Holly, Arhar and Kasten, 2009). The extent to which my own

personal reflection, as part of the cycles, needed to be made explicit as there is the potential for tensions to be a concern within areas such as confidentiality. Therefore, the students had to be fully informed. They needed to be aware of the fact they had free choice and could withdraw their consent to take part at the evaluation or interviews.

6.1.1 Ethical consideration with the use of module evaluations

During the preliminary cycles data was gained via module evaluations. All students complete evaluations as part of the quality assurance process within Higher Education. (Quality Assurance Agency for Higher Education, 2015). Although this is now completed online, this was not the case initially. Paper based evaluations were the accepted norm. There was a standard template for use with generic questions and the capacity to add more module specific questions. Time within each module was allocated for students to complete the evaluations and these were collected in at the end of the session. Evaluations have to be completed anonymously to maintain confidentiality and the students would then place them into a document wallet with the module name and number. The document wallet would then be handed into the School administration office for collation of the data.

I wanted to be able to utilise the evaluations to gather data to assist with my study. I was well aware that I did not want to feel that the students had been coerced into taking part. I also wanted the students to be mindful of the fact that they would not be consenting to take part in the evaluative process until after the taught element and in particular, the peer-led simulation session had been completed. Essentially, they could consent to take part in the evaluative process but choose not to fill out the questions relating to peer-led simulation, in which case I would have no data from them, or they could complete the evaluation part of the quality assurance requirement but were not for use with the peer-led simulation project. This presented a problem for ensuring that only those who consented to the use of their evaluations were included in the data collection. In order to circumnavigate this issue, I used two document wallets. One for the evaluations to be used as part of the research and one for those evaluations not to be included in the data. I absented myself from the paper based evaluation session during the collection of evaluations as I felt that I did not want any of the students to feel obligated to consent. I also wanted ensure that those who had consented would not feel constrained by my presence and therefore provide a more positive evaluation. Essentially, as the consent forms were handed in separate to the evaluation forms, all the data would be anonymous and those who agreed to share their evaluations would remain anonymous.

6.1.2 Ethical considerations with interviews and focus groups

Due to changes within my role discussed later in section 8.7, ethical approval had to be sought through a different ethical committee, within another University. This also necessitated gaining approval to interview and use the data gained to help address my research question (see Appendix A). The use of face-to-face interviews adds an inherent complexity for the interviewer as by its nature the participant is known to them (Kvale and Brinkmann, 2009 p 74-5). The maintenance of confidentiality is intrinsically linked to the individual identity and the researcher has to ensure that there can be no association between the data generated and the participant (Whiting, 2008). The concept of confidentiality had to be outlined as students needed to feel confident that any data collected and subsequent findings could not be associated with individuals.

Before each interview or focus group, written consent forms were completed (see Appendix D). Students were informed of the purpose of the interview and the potential benefits of taking part, for both themselves as individuals and the group were outlined. The consequences of taking part in the interview process were outlined to ensure the students were fully informed of the process. They also needed to be given the option to withdraw from the study. As the peer-led simulation activities had already taken place, I hoped that this would ensure they did not feel pressurised to take part in the interview as there was no perceived detriment to their progression.

6.2 Conclusion.

This chapter has presented the ethical considerations that took place during the various stages of the Action Research Study. These considerations are dependent on the context in which the research study is taking place and so this chapter has demonstrated the importance of an awareness of situation and the potential difficulties that can be faced when undertaking differing methods.

Chapter Seven - Action Research Cycle One

The following three chapters deal with the Action Research journey and the organic process that evolved over the seven-year period from the initial spark that ignited my curiosity with the use of peer-led simulation. Their purpose is an attempt to answer my overall research question (see 1.7) to explore the effectiveness of peer-led simulation as a pedagogical approach. In this Action Research cycle, I set out to answer a preliminary question upon which future work would depend.

Research Question 1.1 What are the factors that support or hinder the introduction of peer-led simulation into my module? :

Research Question 1.2 What are the outcomes of implementing peer-led simulation into my module.

Reflections are presented at the end of each cycle to demonstrate the development of knowledge and understanding that has occurred throughout each respective cycle. Although my reflective diary entries are personal, I have presented some excerpts from them to help add context.

I have covered reviews of the literature within Chapter Two and Chapter Three and the use of Action Research as a methodology in Chapter Four. I have also outlined the data collection and analysis within Chapter Five. These chapters have presented an overview of the process. Within each cycle, this is referred to but for each of the following three chapters, further review of the literature provides additional context and background.

7.1 Definition of Simulation in the context of the research

In Chapter Two I outlined definitions of simulation within the current literature and it is evident that the concept of simulation is wide ranging. For my study, it was important to be able to maintain a standardised approach. Incorporation of standards of best practice is a necessary component of the pedagogy of simulation, therefore it was important that these were integrated into the simulation activity and standards from International Nursing Association for Clinical Simulation and Learning (INACSL) were used. These standards outline best practice in aspects of the framework recommended for simulation and advise on best practice for terminology (Meachim et al, 2013), participants' objectives (Lioce et al, 2013), facilitation (INACSL Standards Committee, 2016), simulation design (Lioce et al, 2015) and debriefing (Decker et al, 2013).

For the purposes of this study, my focus was on high fidelity simulation with the use of Human Patient Simulation (HPS). These simulators are a close representation of a real person with the advantage that they can be programmed to exhibit physiological behaviours that can provoke responses from the students (Weaver 2011; Arthur, Levett-Jones and Kable, 2013; Shin, Park and Chin, 2015; Lioce, 2020). The interactivity of the simulators enables changes to occur because of the action of the student (Cant and Cooper, 2010; McCaughey and Traynor, 2010; Arthur, Levett-Jones and Kable, 2013; Harder, Ross and Paul, 2013b; Stroup, 2014; LaCerra et al, 2019). For example, if the student applies defibrillator pads to a simulator that is presenting with ventricular fibrillation (VF) and delivers an electrical shock, the simulator can revert to normal sinus rhythm. If this action is not performed, the simulator will remain in VF, and the physiological parameters will continue to deteriorate.

7.2 Barriers to the Simulation

The handing over of the control and direction to the student can help to promote self-reflection, especially when supported with appropriate feedback (Perkins, 2007). However, this can still have drawbacks. The initial leap from passive to active engagement within the learning process can provoke anxiety with feelings of helplessness (Levine, 2008). This challenge to learning of unfamiliar material can provoke feelings of failure that create barriers to future learning (Lasater, 2007; Clapper 2010; Valler-Jones, Meechan and Jones, 2011; Parker and Myrick 2012, Schlairet et al, 2015; Abelsson, 2019). Students need to feel safe to make mistakes without fear of ridicule (Clapper, 2010; Ganley and Linnard-Palmer, 2012, Shearer, 2016) but Bong et al (2010), Holland, Gosselin and Mulcahy (2017) and Yockey and Henry (2019) suggest that the anxiety provoking effects of simulation can overwhelm and affect their learning.

To ameliorate against some of these factors, literature suggest the following measures should be put in place.

1. Academic preparation (Ganley and Linnard-Palmer, 2012; Arthur, Levett-Jones and Kable, 2013; Cant and Cooper, 2017)
2. Orientation to the simulation (Elfrink et al 2009; Kable et al 2013; Hayden et al 2014)
3. Small Group sizes (Bremner, Aduddel and. Amason, 2008; Elfrink et al, 2009; Arthur, Levett-Jones and Kable, 2013).

7.3 Methods used for Cycle One

7.3.1 Preparation of students for Peer –Led Simulation

Simulation within nursing must be aligned to the curriculum and the course objectives. There must be adequate support to promote learning, and the support decreases as the students develop. Some authors refer to this as scaffolding (Parker and Myrick, 2012; Arthur, Levett-Jones and Kable, 2013), a process where the facilitator provides sufficient support for the students to be able to to solve the problem and then steps back. This links with Vygotsky's concept of assisting development of learning and the zone of proximal development (Vygotsky, 1978, p.84). To provide the necessary support, the expert adapts the level of assistance required and builds the content or tasks in a progressive way so that the student is gradually exposed to tasks requiring more sophisticated understanding and skill. This means that integration within the curriculum, scaffolding of the content with an appropriate knowledge base is a recommended strategy for simulation (Kable et al, 2013) and so theoretical preparations for the students had to be built within the module.

Successful outcome of modules involves passing the assessment process and, in this case, the OSCE. Therefore, students had to be appropriately prepared for this. However, this is not the ultimate objective. The students had to be able to care for an acutely ill child, know how to assess them, what signs and symptoms to be aware of and what treatment protocols were the most applicable. The OSCE can only cover a small aspect of these outcomes and some objectives can only be achieved within the clinical area, for example communicating with distressed parents. The theoretical component of the module has to focus on these aspects and the learning outcomes had to be addressed to ensure a coherent structure with the ultimate aim of producing students who are fit to practice (Kable et al, 2012). Curriculum alignment meant that the students had already studied and passed the assessment in three child specific modules with a sequential and organised approach, progressing the students' cognitive abilities and building on previous learning. They had already had teaching about the theory of assessment of a well child and basic and intermediate life support. This was revisited to ascertain their levels of comprehension before advancing the cognitive burden.

During the taught element of the module sessions were delivered on three individual case scenarios (see Appendix H), each with a designated start point and an expected trajectory. These were facilitator-led simulations and all students were able to participate in at least one and observe the other two. The scenarios were age specific to signify the developmental differences within the assessment of children. It also had the advantage of

enabling the practicalities of applying the age appropriate resuscitation skills that were the requirements of the OSCE assessment.

Academic components were covered via small group discussions and lectures, with simulation, using high fidelity manikins, employed as part of the learning and teaching strategy for theoretical application. This should enable the students to relate the physical presentation of the manikin with the underpinning knowledge and making the cognitive links between physiological effects and visual cues. An example for this was the assessment of a child in respiratory distress. An understanding of the anatomy of the respiratory system would mean that, when the manikin parameters were changed to represent hypoxia, the students should be able to make the cognitive connection between this and what was happening physiologically. This included the relationship between the decreasing oxygen saturations and increase in respiratory rate and heart rate.

Prior to the simulation activity, any theoretical preparation had to be complete so the students felt comfortable with the content. This was covered by lectures in the first instance and facilitation packs for each simulation. These packs provided guidance on the structure and learning outcomes, a preamble to set the scene for their scenario and a sequence of events to enable them to progress the simulation towards its appropriate conclusion. Although I would be present to provide support if required, I intended to take a more unobtrusive role and offer guidance only when requested or if the situation warranted further intervention.

7.3.2 Orientation to the simulation

An orientation to the simulation is advocated to creative a supportive environment. This involves providing the opportunity to practice within the simulation labs.

Nielsen and Harder (2013, p.510) suggest

> *"An orientation to the environment, appropriate prompts or cues, the opportunity to practice individual skills prior to simulation, and an introduction to the scenario beforehand have been recommended to contribute to a supportive learning environment, along with taking active measures to increase student self-confidence, such as ensuring their academic preparation"*

Thus, there are several essential elements to the successful employment of peer-led simulation. First, students need to be familiar with, and comfortable in the environment. Therefore, the module introduction took place within the skills laboratory to familiarise the

students with the configuration of the area. The simulated manikins were set up and the first taught session, Assessment of a Critically Ill Child, was delivered using the manikins as visual clues. Previously this had been a lecture-based session, but I felt there would be more benefit by exposing the students early on in the module to simulation and the potential for the acquisition of their practical as well as cognitive skills.

Second, a pre-briefing is used. Meakim et al (2013) and Dileone et al (2020) recommend a pre-briefing to set the stage and assist students to be able to achieve the learning outcomes. It can also enable them to prepare for the suspension of disbelief during the simulation, which is important in promoting learner engagement (Rudolph, Raemer and Simon, 2014).

The third issue is that of student confidence. Students must be able to take control of the learning experience. While the immersive nature of simulation appeals to those who value active participation to help construct their knowledge (Harder, 2010) others may need more support. Scaffolding is used to provide this support. Although Vygotsky (1978) does not refer to scaffolding within his theory, this has become synonymous with the concept of enabling learners to be led through the Zone of Proximal Development (Shah and Rashid, 2017). Scaffolding refers to the graduated support offered by a more capable other such as an academic. However, this can also apply to support offered from a more capable peer as part of the Community of Practice. Providing appropriate scaffolding for simulation helps to alleviate some of the stress and anxiety that can result from performing in a fishbowl (Parker and Myrick, 2012) as well as enhancing learning (Kable et al, 2013).

Finally, aspects of simulation have to be given the opportunity for maximum exposure in order for it to integrate into the learning process (Gordon, Oriol and Cooper, 2004; Issenberg et al, 2005; Berragan, 2011; Boese et al, 2013; Cant and Cooper, 2017).

7.3.3 . Group size

The cohort was divided into 3 groups consisting of 4 students that fitted with recommendations from Mahling et al (2014) and Rezmer et al (2011). Each group would facilitate one scenario, take part as facilitatees in another and observe and debrief the third.

7.3.4 Framework for Peer-Led Simulation

The structured format of the resuscitation scenarios provides a framework to support learners' independence (Perkins, 2007) and the opportunity to practice as often as required within this supportive network of peers can provide the motivation essential to

improve skills. This is fundamental to achieving expertise (Kneebone, 2005), a crucial component of resuscitation as immediacy of response and accurate techniques are required to prevent disastrous sequelae for the patient (Nolan, Soar and Eikeland, 2006). Outcomes of a cardiorespiratory arrest are dependent on time sensitive sequence of events and interventions must be optimised to increase the chances of survival, the Chain of Survival (Figure 7-1)

Figure 7-1: The Chain of Survival (Resus.Org 2018)

Students need to be competent in the assessment and early recognition of a deteriorating patient and, although this was linked to their assessment, it was a vital skill that they would need to have. The students' ability to perform effective resuscitation was paramount at this stage. Resuscitation in children is a high-risk, low-incident event as less than 1% of all in hospital cardiac arrests occur in the paediatric population with 57.2% of them occurring in emergency departments or Paediatric Intensive Care Units (National Cardiac Arrest Audit, 2018). Clinical placements were within the local hospitals and these care for general medical and surgical child admissions. The paediatric population that require specialist interventions are admitted to the regional Children's Hospital. Therefore, a lack of exposure to high-risk, low-incident clinical events meant it was particularly relevant that their skills were immersive to help ensure recall if the occasion ever arose. They had minimal opportunity to learn from actual experience or exposure. It is well documented that nurses do not feel confident in their ability to recognise and escalate deteriorating patients (Cooper et al, 2011; Buykx et al 2012; Bogossian et al, 2014; Treacy and Stayt, 2019) and so it is essential that health education equip the student nurses with the capability to provide safe and effective nursing care. As the module was specifically

designed to prepare student nurses to provide care for an acutely ill child, the OSCE assessment needed to reflect and draw together the fundamentals and essence of the teaching. OSCEs were based on a critically ill child or baby who required an intervention to prevent potential further deterioration, thus formalising the content of the module and permitting the assessor to ascertain the level of competence and safety of the student.

The structure of the peer-led simulation ran in a similar format to previous iterations of the module with the facilitator-led approach. Each of the groups were given one of the three simulations at random and had the opportunity to read the dialogue, cues and format of their simulation. The students planned their scenarios within their small group as this has been shown to facilitate social interaction between each other (Perkins, 2007). This also links with the concept of social constructivism theories and Vygotsky's (1978) view that collaboration with peers is an effective way to develop skills and strategies. With respect to the resuscitation the students are in the "Zone of Proximal Development" in that they are able to perform the resuscitation task but the support of their peer group and the social context of learning create support and a greater emphasis on that learning.

Along with the simulation each group were given the OSCE mark sheet that had expected outcomes, grading system and a structured feedback form to provide comments (see Appendix H). They also had access to facilitator sheets with the clinical progression and cues. This framework is an essential part of any simulation, as the facilitators need to be able to respond to the participants actions (Lioce et al, 2015). The cues help to refocus as well as progress the simulation by offering visual or acoustic signs. With all simulations there is an intended outcome and these cues are necessary to guide the students to a successful outcome if they respond appropriately to them (Jeffries, 2005; Boese et al, 2013). The cues also enable the facilitator or examiner to determine the safety and competence of the student (Boese et al, 2013).

Time was allocated within the module for students to rehearse their simulation and they were given self-directed study to encourage them to prepare. When each group had rehearsed their own scenario, they were given the opportunity to demonstrate to the other groups. This was an informal process to enable the students to present the information without fear of failure. As the facilitator for the session, I provided feedback and guidance as required. I wanted the students to get a sense of what the procedure was for undertaking resuscitation, without the perception that they were being scrutinised by their peers.

All scenarios had specific roles for the students. These included a team leader, nurse 1, nurse 2 and a family member. This is in line with the recommendations from Hayden et al (2014). The rationale for designating roles is to help the students to construct and connect with the simulation as this can offer some clarity to what is expected from them. However, there is a risk that the simulation then becomes partly a test of their acting abilities (Taylor, 2014; Lejonqvist Eriksson and Meretoja, 2016) and this is enhanced when students are in roles that do not reflect their own perspective (Harder, Ross and Paul, 2013a; Thidemann and Söderhamn, 2013).

Figure 7-2: Students taking part in the simulation simulation (Reproduced by kind permission from the students)

Each simulation lasted for between 10 and 15 minutes and the students were able to direct the pace. The facilitating group would provide the facilitatees with presenting information and background to the simulation. An age-appropriate simulator manikin and relevant equipment had been set up beforehand. The team leader would act as the facilitator and manipulate the parameters on the manikin according to the progression of the simulation. Each scenario contained a gradual deterioration with the manikin programmed to adapt the physiological parameters for a period of 3-5 minutes. At the end, the manikin would simulate a cardiac or respiratory arrest, prompting the facilitatees to have to intervene (Figure 7-2). When they had completed two rounds of resuscitation the programme manikin would revert to normal sinus rhythm with relevant palpable pulses, blood pressure and pulse oximetry readings. If the facilitatees failed to reassess the manikin, the team leader could switch back to the cardiac or respiratory arrest programme. The nurse roles were primarily to manage the simulation and provide handovers and

support the facilitatees with any equipment they may ask for such as the resuscitation trolley or prescription charts.

The family member provided added constraints to the resuscitation as the facilitatees would be expected to support them throughout the simulation. In real life, there will almost certainly be family members present when a child needs resuscitation (Crowley, Gallagher and Price, 2015). The students must decide whether it is appropriate for them to stay and watch or whether they should be taken away from the bed space.

7.3.5 Observation role

Whilst the simulation group took part, the rest of the group took on an observation role. If students are not actively engaged in the process there is a possibility of disengagement with some studies finding that students become bored (Hober, 2012; Harder, Ross and Paul, 2013a) or disengaged (Bethards, 2014; Bonnel and Hober, 2016). Dieckmann, Gaba and Rall (2007) highlight the fact that students need to feel the simulation has relevance and this increases their emotional connection to it. The observational role has to be clearly defined with outcomes and objectives (Helm et al, 2017; Reims et al, 2017) or there is a risk that the overarching principle of the simulation is not internalised with limited opportunities for the students to increase their learning (Bethards, 2014).

Following the conclusion of the simulation, the facilitating group using standardised feedback sheets (see Appendix J) gave feedback on the group they had facilitated. The group observing were offered the opportunity to feedback from their perspective, as they were not immersed within the simulation and so were able to offer insights from a differing viewpoint. This is a valuable aspect of simulation if used appropriately and has clearly defined objectives (Helm et al, 2017) as this can ensure that the observers remain engaged with the process (Bethards, 2014).

7.3.6 Debriefing.

Debriefing is a cognitive reconstruction of events (Fanning and Gaba, 2007) and is seen as an essential part of the learning process (Shinnick and Woo, 2015) with some authors believing it to be more important that the actual simulation (Shinnick et al, 2011; Forneris et al, 2015; Tutticci et al, 2018). Dreifuerst (2015) point out that deeper learning takes place as part of the reflection during debriefing. A study by Savoldelli et al (2006) used a randomised control approach to assess the effectiveness of debriefing methods. They found that, although technical skills of students showed similar improvements within all groups, non-technical skills such as team working, decision-making and situational

awareness increased significantly in those who were debriefed following simulation when compared with those who did not receive feedback.

However, a poorly constructed debrief has the potential to harm the student (Rall, Manser and Howard, 2000) and Fanning and Gaba (2007) found that few students reacted well to derogatory styles of debriefing. Conversely Rudolph et al (2006) feel that non-judgemental debriefing does not address difficult issues, as any too-critical insights are "sugar coated" or avoided and this results in a failure to learn from the experience. They suggest instead that debriefing is designed to include objective observations as well as subjective judgments of the students' actions. This has the benefit of enabling acquisition of knowledge in a structured manner whilst considering the simulation experience from a more personal perspective (Rudolph et al, 2006).

I did not intend for the students to have added cognitive burden of leading the debriefing and felt that, at this stage it would be more appropriate for me to lead any debriefing. I developed a debriefing form based on the standardised tool used for simulations within the University as recommended by Decker et al (2013) (See Appendix J). At the end of each simulation, there was a period allocated for debriefing before moving to the next simulation. I split the debrief into two parts so that the group who were facilitated received feedback based on how they managed their patient and the group who facilitated the simulation were debriefed on how they managed to support their peers.

7.4 Findings and Discussion.

7.4.1 Quantitative data

At the conclusion of the taught element of the module, the module evaluation was completed. All students who took part in peer-led simulation agreed to take part in the evaluation of the process (n=12). The module evaluated positively with a 4.8 out 5.0 satisfaction rating as based on the university's standard module evaluation findings.

All 12 students undertook the OSCE assessment: 11 (91%) achieved a pass at their first attempt. One student did not complete the OSCE and was offered the opportunity to retake but subsequently withdrew from the programme for personal reasons. As the results were on par with previous cohorts, this indicates that the use of a peer-led simulation did not have a detrimental effect on their preparation for the OSCE. Anecdotally the students indicated that they had found the experience a useful exercise and valued its contribution to their learning

7.4.2 Qualitative comments

Although students were able to add comments to the evaluation form there was relatively few made. From the 12 evaluations, only five had added comments so a simple qualitative analysis was used. While comments were limited, they nevertheless could be identified as representing putative themes of confidence, play, and social context of learning.

7.4.2.1 Confidence

The free text comments indicated that students felt their confidence had increased, especially when related to outcomes of the module: One student identified that they felt more confident in the management of the critical ill child, utilising effective knowledge and competent practical skills to care for a child with critical needs.

"Feel more confident in my understanding of resus [sic] and how it should be done" [ST1]

Other comments highlighted the repetitive nature of skills that allowed them to gain confidence in their own abilitiy with development of skills that are applicable to them

"We were able to practise it over and over until we had it right" [ST2]

However, while some students improved in confidence, one pointed out the anxiety provoking nature of undergoing simulation.

"Nervewracking experience but really good" [ST2]

The exercise was perceived to be valuable for future practice, demonstrating a power in relevance.

"Worthwhile, valuable skills you are going to use" [ST3]

7.4.2.2 Social Context of Learning

The students highlighted the opportunities to learn from each other and this supported their own learning.

"Learnt so much from the others. It was amazing that they knew so much but it was also good to see that I knew things as well" [ST4]

7.4.2.3 Play

One participant reveals the idea that the experience was enjoyable in the use of the word 'play'.

"Have learnt loads. Playing with the dummies and showing others how to do it made more sense to me". [ST5]

7.5 Discussion

This action cycle revealed that peer-led simulation was feasible, enjoyable, and delivered good learning outcomes. The repetitive nature of simulation as a strength (as discussed in Chapter Two) was identified, where there is the opportunity to practice with no consequence to the patient (Issenberg et al, 2005; Bush, 2009; Harder, 2010, Cant and Cooper, 2017). Students also identified the applicability of the skills learnt, which is an important factor in the students' ability to contextualise their meaning. There has to be a connection between what is taught and their own personal experience as this is viewed by Dewey (1986, p.245) as an integral part of learning and enabling the students to learn skills they have exposure to help with its integration. This also links with the shared learning within their own Community of Practice (discussed in Chapter Three).

7.5.1 Community of Practice

The student participants had a joint enterprise in the development and facilitation of their simulation and were mutually engaged with actions whose meanings they had negotiated with each other. As student nurses, they appeared to have a shared repertoire that is unique to their Community of Practice and this includes shared fears. Although students may never come across a situation as presented in their scenarios, they were able to create knowledge from each other through collaboration to achieve a successful outcome. They were encouraged to bring their own experiences and knowledge within their community of practice, at times being the master or capable peer (Vygotsky, 1978) and at others being the apprentice. Students were able to appreciate the integration of their learning through each other. As a group, they were able to share the experience and that each one had contributions to make to their simulation. The peer-to-peer aspect in the demonstration of skills to others helped to reinforce their own learning (Goldschmid and Goldschmid, 1976; Thistlewaite, 2015; Cash et al, 2016).

7.5.2 Authenticity

The use of the word "playing" in one of the comments is interesting. This identifies simulation as an artificial act (Parker and Myrick, 2012; Taylor, 2014; Tun 2015). The student is required to suspend their disbelief, and this remains a challenge when attempting to engage with the manikin on a more human level (Parker and Myrick (2012). Even so, the immersive component of social learning suggests that the aim of role play is to construct aspects of real life that can be applied to the situation and that, by looking at

the situation from different perspectives, this helps internalise their learning (Jeffries, 2005; Wang et al, 2015; Kim, 2018; Demir and Ercan, 2019). Another aspect is that allowing the students to manage their own simulations they are given the freedom to experiment. Although the outcomes remain, through their ability to adapt the route taken to achieve those outcomes, using logic and reasoning to evaluate its success adds further complexity to the overall learning.

Encouraging the students to rehearse and perform their simulations had the risk of creating the competent simulation professionals as outlined by Hodges (2006) and Hanna and Fin (2006). This was, also something that had come to light during literature reviews (see Chapter Two). The use of the OSCE and the facilitation of their simulations to their cohort had the potential to force the students into the "Panopticon" effect of performing for the audience (Foucault, 1979); although I feel this is less of a risk than with facilitator led activities.

7.5.3 Confidence

An important part of nursing is having the confidence to carry out procedures. The ability to perform effectively can be aligned to students' self-confidence (Reilly and Spratt, 2007; Fisher and King, 2013;McCabe, Gilmartin and Goldsamt, 2016; Nelwati, 2020) with low confidence levels seen as detrimental when undertaking complex skills (Fisher and King, 2013). Simulation can help to increase confidence, leading to increased knowledge and critical thinking skills (Kiernan, 2018; McGabe, Gilmartin and Soldsamt, 2019). However, there are links with high levels of anxiety and reduction in self-confidence (Khalaila, 2014) and participating in simulation has been shown to increase anxiety (Schlairet et al, 2015, Yockey and Henry, 2019)

There were concerns raised about anxiety and how nerves were a part of the experience but it was not clear if these related to the peer-led simulation or the OSCE or both. As discussed in Chapter Two, feelings of anxiety and apprehension for students undertaking simulation are well recognised (Cant and Cooper, 2010; Parker and Myrick, 2012; Dearmon et al, 2013; Stroup, 2014; Schlairet et al, 2015; Shearer, 2016; Yockey and Henry, 2019). Adding to that, peer-led learning, (discussed in Chapter Three), has the potential to further this anxiety (Brannagan,2013; Lawrence et al, 2020). However it can have a positive impact from the point of Mezirow's (1997) concept of transformative learning as the simulation environment can generate disorientation, thereby disrupting the students' beliefs and requiring them to reflect and reimagine to help gain some understanding of the experience.

7.6 Evaluation of research phase of Action Cycle One

At this point, I needed to review the research questions, to ascertain whether they had been addressed.

Research Question 1.1: What are the factors that support or hinder the introduction of peer-led simulation into my module?

Some of the barriers to simulation have been identified. These include the increase in anxiety due to taking part as well as the handing of control to a more student centric approach. I used this for planning the next stage of the cycle. This would not only include ways to reduce student anxiety but also how I could be able to further explore the overarching research question, exploring the value of peer-led simulation as an effective pedagogical approach.

There were limitations to this phase of the study in that only 12 students were involved and the evaluation data relating to the peer-led simulation free comments were limited. Therefore, I knew I would need to look at different ways of collecting data.

Research Question 1.2 What are the outcomes of implementing peer-led simulation into my module?

The introduction of peer-led simulation did not have a detrimental impact on the outcome of the module. Students had achieved a pass in their OSCE assessment, which was comparable with previous years. It was evident that the students enjoyed the process of facilitating their own simulations but whether this was a pedagogical strategy that could contribute to the module and address the learning needs of the students had not been fully investigated. Evaluations had highlighted some interesting points of view meaning the results were positive. Although it did not prove that peer-led simulation was a more effective strategy, it did however support my feelings that students could be successfully prepared for their OSCE using peer-led simulation as a learning approach.

I was able to appreciate the students' development and mastery of their performance and viewed this through the lens of Vygotsky's (1978) collaborative model of social cognitive learning. Within a safe environment, students were enabled to attain their target goals i.e. successful completion of the assessment. They were able to make mistakes with no consequences and practice the simulation until they had achieved a successful outcome, a fundamental aspect of simulation (Kneebone, 2009b; Cant and Cooper; 2010; Arthur, Levett-Jones and Kable, 2013; Hayden et al, 2014; Stroup, 2014; Jarvill et al, 2018). They were also influenced via vicarious learning experiences and social persuasion through

their Community of Practice (Wenger, 1998) as they were able to observe each other and provide feedback, further enhancing the integration of their knowledge.

7.7 Reflections on the First Cycle.

The purpose of the reflective stage at this point was to reflect on what went well and what could be improved. However, I needed to establish whether there was an imperative to implement further changes within the module. I also had to question my own epistemological assumptions, i.e. how do I know simulation is an effective pedagogy? Because my knowledge of simulation is based upon my own perception of it, I cannot conclusively know of anything that is external to this. As previously stated in Chapter One, I had my own assumptions on the effectiveness of simulation and this was based on the positivistic approach in that valid knowledge is scientific and it is possible to prove that simulation as a pedagogy is effective at improving knowledge. Studies have been carried out with several systematic and integrative reviews from the last decade all highlighting the positive impact of simulation (Issenberg et al, 2005; McFetrich, 2006; Cant and Cooper, 2010; Rosen et al, 2012; Skrable and Fitzsimons, 2014; Stroup,2014, Cant and Cooper, 2017). However other studies have cautioned against the over reliance on simulation and the potential negative impact on student learning (Bligh and Bleakley, 2006; Kneebone, 2009a; Bland, Topping and Wood, 2011; Mills et al, 2016; Holland, Gosselin and Mulcahy, 2017). As part of the reflective phase, I needed to cast a critical eye over the process and the use of simulation and my research journey required me to confront uncomfortable truths about my previous assumptions.

Some of my reflective diary entries appear to suggest that frustration arose from my own poor self-esteem. Although I was competent to deliver the sessions, I did not feel I could fully question the authority of researchers who had been able to study the effects of simulation and proved it to be an effective approach. Simulation had been part of the health education since 1960s (Good, 2003), with increasing reliance since the 1980s (Ziv, Small and Wolpe, 2003, Issenberg et al, 2005). I found I was questioning my own beliefs, and this did not fit comfortably with me. One entry sums up this frustration up.

> *"I am not sure if I am right to continue with research. Need to discuss with [supervisor]. I keep reading around and it is all seems to be positive so why am I still questioning it? The students love it and I have less to do now as they do it all. So far there is no sign that I am adding anything more to the simulation debate" [Reflective diary entry]*

"Monthly meeting with supervisor. We discussed progress and it seems as though I am on the right track. She feels I am possibly overthinking the process and that I need to follow my gut instinct. Thinking back I am not sure if she means to continue with the PLS or to follow my thoughts on the negatives of simulation [as identified in Chapter Two]. I don't want to do this as I still feel it is really positive but I am having some qualms about it [Reflective diary entry]

7.8 **"Playing with the manikins"**

Further reflecting on the process, I found myself coming back to the comment regarding "playing" with the manikins. On reflection I realised this was an important novel perspective. I had developed the simulations based on my own perceptions of how they should progress. The overarching principles of the simulation needed to be internalised by the students for learning to take place and the students needed to have an emotional connection with it (Dieckmann, Gaba and Rall, 2007; Bethards, 2014). As discussed in Chapter Three, social learning theories suggest that there needs to be this emotional connection to the enterprise for learning to be effective. It is possible that 'play' provides part of this connection.

As I was being reflexively critical of simulation as an effective pedagogical approach, so I needed the students to be reflexively critical of themselves and to question their own assumptions. They had provided me with feedback that, to a degree had supported my assumptions. However, I wanted to ascertain whether the peer-led simulation was a more effective way of engaging them in the learning process from a social aspect for example within their Community of Practice (Lave and Wenger, 1991; Wenger, 1998) as well as exploring ways that would reduce some of the risk of imposing my own perception of simulation on the process.

The overwhelming consensus is that simulation must be able to reflect reality for it to be effective (Bland, Topping and Wood, 2011; Tun et al 2015). My own perspective can be a distortion of this as it relates to my experiences and ontological positioning within simulation. There was a risk that I was in the position whereby my own perception of simulation was more akin to the hyper-reality as discussed in Chapter Two. This is further compounded by the potential lack of cognitive congruence with the students as I have spent the last 10 years faciliating simulation and the educational asymmetry between myself as the expert and the student can produce a misalignment that highlights radical differences. Creation of discreet simulations based upon my own interpretations runs the

risk of skewing the learning objectives. Essentially, I am creating a version of events that fits with my own epistemological viewpoint. For the next iteration of the module I needed to try to counter these arguments and this presented me with the opportunity to further develop the concept of peer-led simulation but with a more learner-centric perspective.

Although I was not rejecting the format of peer-led simulation as presented in the first cycle, or even simulation as a pedagogy, I did feel that there was a need to overhaul the way the simulation was integrated into the module. The logical step was to enable students to develop simple simulations that they could manage in small groups. Although peer-led instruction and peer directed simulation has been undertaken within other educational establishments (Szhlata, 2011; Matthews, 2016), the participants in these studies were given standardised scenarios with predetermined parameters. Following discussions with the students it was agreed that developing their own would have offered them a more realistic and authentic learning opportunity.

This would mean that I was giving them more autonomy for their learning. From the principle of social learning, as discussed in Chapter Three, by giving students ownership of their learning with mutual support from each other to help, they would be able to bring their own experiences and knowledge in order to generate wider learning. Critical to this situation though was the added complexity of students undertaking the OSCE itself as their assessment. Studies into student experiences of OSCE assessment have found that it is an anxiety producing experience (Brosnan et al 2006; Muldoon, Biesty and Smith 2014; Stunden, Halcomb and Jefferies, 2015) and although it is recognised that examinations do induce anxiety, an integrative review by Johnston et al (2017) identified that OSCEs were the most stressful. This can be related to the lack of control and in particular what is expected of them (Cazzell and Rodriguez, 2011; Stunden, Halcomb and Jefferies, 2015). Paradoxically I may be adding to that stress by imposing on to them the responsibility for preparing, not only themselves, but also the rest of their cohort for their OSCE. Referring back to the literature it was heartening to see that this did not necessarily have to be the case. As discussed in Chapter Three peer-led learning can help improve understanding as there is cognitive congruence (Ten Cate and Durning, 2007; Lockspeiser et al, 2008) meaning they are better able to explain using a common language within their Community of Practice (Lave and Wenger, 1991; Wenger, 1998). Johnston et al (2017) feel that by facilitating students to take some ownership of the process and peer assess each other within a favourable environment, physiological and emotional stress can be reduced and guidance from more capable peers can support this.

7.9 Transformation of self

Although the first stage of the process was not intended as a research study, Holly, Arhar and Kasten (2009, p. 40) point out that there is an impulse in those who are involved in teaching to look at something within our practice that intrigues us. Stenhouse (1981) views this as systematic self-critical inquiry and this is what I found myself doing; a naturalistic curiosity leading to the adoption of a systematic mode of inquiry (Stenhouse, 1985, p.29).The reflections from the first cycle had demonstrated that the process was something that could be explored further but it required a more detailed and structured approach.

During the process I was able to understand a little more of my own transformative learning process. My rudimentary frame of reference needed to be disrupted and challenged in order for me to critically evaluate my perspective on simulation as a pedagogy and because of the evaluation and review of the first cycle discussed above I needed to rethink the process in an attempt to ameliorate against some of the issues highlighted.

7.10 Conclusion to Cycle One.

In this cycle the choice to view Peer Led Simulation through the lens of Vygotsky's theory of social learning, and Lave and Wenger's Communities of Practice, has proved helpful. The Community of Practice formed by the students was the most obvious benefit of the approach. The students' demonstrated a joint enterprise: the students engaged in the process and took ownership of their learning. They enjoyed this experience and were satisfied with the teaching and learning despite the fact that some found it to be anxiety provoking and in one case 'nerve-wracking'. They experienced a growth in their confidence and they passed the OSCE module assessment.

Cycle One had ended with conclusion of a research project that had helped to structure my own thought and perceptions of peer-led simulation. The first cycle had been a "toe-dipping" exercise sparked by curiosity but this had given me more clarity. It had not been able to conclusively answer my research question but as part of the Action Research journey it would enable me to further explore this. The purpose of the curriculum is to develop skills and behaviours in student nurses to ensure they are competent practitioners upon qualification. However, from a learner's perspective, although their goal is to qualify as a registered nurse, the curriculum does not necessarily meet their social and emotional goals. Any changes to the module have to be driven from a learner centric approach (Sanson-Fisher, Rolfe and Williams, 2005; Parker and Myrick, 2012). This was the

impetus to start planning for the second cycle to generate a more learner centric approach and attempt to ascertain the effectiveness of peer-led simulation on the students' learning.

Chapter Eight - Action Research Cycle Two

This chapter will outline the second cycle of my research to assess the effectiveness of peer-led simulation. Although this is part of the overall journey, this chapter is able to stand on its own as a project. It provides a more detailed discussion on the preparation of the students and the methods used to carry out the research and the results and discussion are presented with reference to Lave and Wenger (1991) Wenger (1998) and Vygotsky (1978) in order to situate the research. The review of the literature is outlined in Chapter Two and Three so it is not the intention to discuss this here. I felt at this point that I needed to act on this knowledge and internalise the social construction of my reality. The difficulty arises from the fact that I needed to recognise my own structures that I had built around the theory of simulation as an effective pedagogy. As these frame my own approach to teaching I had to confront the reality that my actions in some cases may produce undesirable results and whilst the use of simulation had been part of my pedagogical certainty for so long it could prove difficult to imagine any other alternatives. I was compelled to confront my own assumptions. Taylor, Rudolph and Foldy (2008, p.663) neatly frame this as "*Taking action to reshape our reality*".

The main difference between this cycle and preceding one was the use of the students as both developers of the scenario and facilitators. This is moving peer-led simulation on further and would be able to provide an opportunity to answer to my **Research Question 1.3.** Does peer-led development and facilitation of simulation affect student perceptions and outcomes of this learning strategy?

8.1 Methods used for Action Cycle Two

8.1.1 Preparation of the students

Although preparation of the students was a repeat of the first cycle (see 7.3.1) the difference between Cycle One and Cycle Two was that the students would need to develop and facilitate their own simulations. They would have greater input into the process as a whole. Students in the previous cycle valued the hands on exposure to simulation and their learning from the first session and the structure appeared to work well. One of the original findings of the previous cycle was the students' willingness to take an even more central role that also included scenario development.

The theoretical component remained the same, with small group discussions and lectures followed by simulation to reinforce the cognitive links between theoretical and practical applications. To meet the learning outcomes for the module and ensure adequate preparation for their OSCE, ground rules had to be provided. All scenarios had to include some form of critical event with the manikin developing a noticeable deterioration. All scenarios had to include resuscitation, either respiratory, cardiac or both with administration of medication such as fluids or oxygen built into it. Each scenario had to take between 15 and 20 minutes with a structured debrief from the facilitating group for their facilitatees. The group observing would also provide feedback.

The cohort size of 12 made it possible to continue with three groups of 4 students. Sample simulation templates and other resources were made available, including observation charts and laboratory results. Students' time was allocated in the module for research into their scenario and to practice their clinical skills. The students were encouraged to make effective use of the open access clinical skills room available to them.

Although this would still be part of teaching strategy within the module, students needed to be informed of the nature of the research project. Students were given the opportunity to withdraw from the evaluation of the peer-led activity but would still remain part of the learning process. This would ensure that no student would be disadvantaged. Sessions were timetabled into the module to accommodate for the peer-led activity so there was no penalty for students who chose not to participate in the actual simulation event. I was genuinely surprised that all students decided to take an active part. The primary factor motivating the students could have been based on their anxiety surrounding the OSCE and that not taking part would undermine their ability to competently manage a successful outcome. Preparation for the OSCE was delivered throughout the module meaning that involvement in the peer-led simulation activity was not a necessity.

The students were given a free reign to decide what their simulation would be. At first, this proved problematic, as there were three potential OSCE resuscitation scenarios, one for a baby, one for a child and one for an adolescent. As the OSCE randomly allocated on the day of assessment, students need to feel confident in the three categories of resuscitation. They also need to be able to calculate medications based on differing weights during the OSCE. I realised when launching the concept to the students that there was a potential for all three groups to build a scenario based on only one of the categories and if that was the case I would need to be able to accommodate this within the module to effectively cover the other two.

Each group had to provide a template for their scenario with background information and expected outcomes from the simulation (see Appendix I). They would also need to demonstrate their understanding of the consequences of action or inaction by the group they would facilitate. As this was part of the module and was preparation for their OSCEs, the information had to be made available for the whole cohort and not just the group who developed it.

8.2 **Results**

Two interations of this cycle took place with twelve students in each that participated in the peer-led activity and OSCE. All passed the OSCE assessment (N=24).

Pre- and post- simulation activity scores were compared and this revealed a statistically significant increase in student levels of perceived confidence, competence or ability to transfer the skills learnt ($p<0.001$) following the simulation activity.

Initially data were reviewed for normality. Because there were less than 200 cases a Shapiro-Wilk test was used (Shapiro and Wilk, 1965). Comparing pre and post intervention of the totals for each student there is no significant departure from normality and therefore a t-test was used.

Data obtained from the pre- and post- simulation activity questionnaires were explored using the parametric t-test on each sample (see 5.10.2). Each of the questions carries a score between 1 and 5 with 8 questions in total, giving a minimum of 8 and a maximum of 40 points. The t-test indicated a significant difference between the total scores for pre- (mean 22.00 SD 2.39) and the post-intervention (mean 35.96 SD 2.42; mean difference 13.96, 95% confidence interval 12.92 to 15.00, $p <0.001$) meaning that the intervention had a substantial impact on the overall perceived levels of confidence and competence and transferability.

For each of the questions in the pre- and post-evaluation a t-test was used and there was a significant difference between the pre- and post- scores with the post scores having improved (Table 8-1). This indicates that the effect of peer-led simulation on improvement with students' perceived confidence and competence levels and transferability is most likely to be the reason rather than a chance occurrence.

Table 8-1: Pre- and post-scores Item	Pre	Post	Difference	P
I am confident that I have the ability to recognise when a child's condition is deteriorating	2.96	4.38	1.42	<0.001
I have a good understanding of course of action required when a child's condition deteriorates	2.5	4.00	1.54	<0.001
I feel confident in my ability to care for a critically ill child	2.87	4.59	1.71	<0.001
I am able to carry out an assessment on a child who is critically ill	2.92	4.75	1.83	<0.001
I am able perform effective resuscitation on a child.	2.46	4.67	2.21	<0.001
I have the skills required to care for a critically ill child	2.58	4.75	2.17	<0.001
I do not think peer led simulation will give me the skills to be able to care for a critically ill child*	2.75	4.42	1.67	<0.001
I do not think peer led simulation will give me the knowledge required to care for a critically ill child*	3.00	4.38	1.42	<0.001

*See 5.6 for explanation of scoring for these questions.

8.3 **Qualitative data**

The free comments provided data that were used for analysis. Initially data were categorised as positive comments and negative comments. In general terms the feedback was positive and with students identifying a feeling of achievement that they had taken part and survived the simulation experience. Themes were identified using Braun and Clarke (2006). The themes identified were confidence, questioning assumptions, and social learning. Where comments have been taken from the evaluation form these have been identified with [ST] followed by the number allocated to the form. Where comments have been taken from one of the three interviewees these have been identified and the number designated to the student

8.3.1 Confidence

Improved confidence levels were an identified theme and this related to the students' perceived ability to manage the care of a critically ill child.

Feel I have a better understanding of how we would manage it. [resuscitation of a child] [ST1]

Not all comments were positive but these related to anxiety "*out of my comfort zone [ST 5]"* and the feeling that they were being judged by their peers *"the focus is on you to deliver[ST 2]", "don't want to appear stupid [ST 4] ".*

8.3.2 Questioning assumptions

I was also able to identify a more interesting aspect that emerged from the comments as well as the interviews that took place with three students; they had to question their own assumptions when dealing with the resulting sequelae of a clinical situation.

"Have to rationalise actions. Know why we are doing something" [ST2]

and one student found that they had to transform the theoretical content in such a way as to facilitate the "student" to assimilate the information

. "*Explaining things to others mean you have to know about it, what you are doing and impact it is having" [Student Interview 3]*

They felt more able to ask for clarity, question the theory and express their own beliefs and these findings are supported by other studies (Roberts, 2008 and Szlachta, 2013).

Students commented on how the simulation enabled them to reflect more deeply on events that had occurred in practice placement. One student during their interview [Student Interview 1] gave an example of using an incident from clinical placement and having the opportunity of revisiting the situation through their simulation to try to make sense of their own understanding of the situation.

8.3.3 Social context of learning

They appreciated the opportunity to work together in small groups as this was felt to assist their own cognitive development and knowledge base as well as those within their group.

"Our group chose something we wanted to find out about. Something some of us had never done before because we felt we needed to know what to do if we came across it in practice" [Student Interview 1]

They were also able to support each other with the development of knowledge and skills required to facilitate their simulation.

> *"We helped each other. If someone knew something or had done it before they would help the rest of us" [Student Interview 2]*

While there are clear benefits and positive regard by students for social learning there is another aspect. One student commented that they were "*doing the lecturer's job for her*." [ST 7]

8.4 Discussion

There was a significant difference between the pre and post simulation activity with all students achieving a pass in their OSCE assessment. This indicates that the taking part in peer led simulation did not have a detrimental effect on their learning. The qualitative findings were able to add some more context to the learning that took place. Improving confidence through their involvement in facilitating their own simulations was an important aspect of the activity. As previously stated, students need to feel confident in their ability to care for a critically ill child (see 7.3.4) and this is clearly demonstrated in the improvements to their post activity confidence levels. There was also an improvement in their perceived competence levels, which indicates that taking part had a positive outcome. There were concerns raised that they would appear stupid and this has the potential to be a disconcerting and disruptive influence on their learning, a common theme with the use of simulation (Teixeira et al, 2014; Najjar, Lymand and Miehl, 2015; Mills et al, 2016; Abelsson, 2019). There were feelings that they should be at the same cognitive level as their peers and so being asked what they would do in the simulation, can be intimidating. Studies have shown this to be a particular fear for their students (Ganley and Linnard-Palmer, 2012; Nielsen and Harder, 2013; Abelsson, 2019) and I felt this needed to be addressed as this had potentially detrimental effects on their learning (Al-Ghareeb,Cooper and McKenna, 2017). This necessitated reviewing the preparation of the students and exploring these concerns through the debriefing process. This supports the notion that peer learning must be facilitated by expert led educator to provide additional benefits to both the "apprentice" and the capable peer (Ten Cate and Durning, 2007)

The concept of social learning as described in Chapter Three and the notion that knowledge is supplemented by a more capable peer (Vygotsky, 1978) was reinforced by the fact that students worked together to support each other and and provided guidance when others needed it.

Another aspect that supported the social concept of learning was the distribution of age appropriate scenarios to encompass all aspects of OSCE assessment. The cohort discussed this as a whole and divided the categories between themselves. For me this reinforced the collaborative nature of social learning as a positive demonstrating their mutual respect and collaborative learning to ensure they all had their learning opportunities met. The students had a joint enterprise, with the development and facilitation of their simulations, and had mutual accountability for the task. They took ownership of the simulations and there was mutual engagement in their ability to connect to the contribution of others in the process.

Although the social aspect of learning enabled a more student-centric philosophy of freedom and independence, within education this can be a difficult concept to comprehend and can lead to dismissive behaviours by some lecturers (Moore, 2009). When students articulate these opinions as in the case of “doing the lecturer’s job for her” the lack of control can lead facilitators to experience anxiety about their own purpose (Lekalakala-Mokgele, 2010). However, the role of the facilitator is to facilitate learning and to support students with the process. Although this comment caused me to reflect on whether I was passing over the responsibility to the students, the mutual benefits of collaborative learning as outlined in the literature discussed in Chapter Three, helped to support my decision to continue with peer-led simulation. Included in this was the fact that as a group they had taken responsibility for development of their simulations and had valued the learning they felt had been achieved. and linked to that is their realisation that in order to effectively facilitate the simulation they would need to understand what changes there would be to the physiological parameters as a result of the action or inaction of the group they facilitated.

8.5 Evaluation of the research phase

Cycle Two was successful. I demonstrated the effectiveness of peer-led simulation in a small-scale study. The focus of a student centric perspective did not have a detrimental effect on their learning and they developed some insight into their learning and their ability to transfer this into practice. However, I realised that this study had not helped to explore the more fundamental aspects of my **Research Question 1.3** Does peer-led development and facilitation of simulation affect student perceptions and outcomes of this learning strategy?

The use of Action Research as a methodology encouraged me to further reference the literature to help inform the question and subsequent actions (Holly, Arhar and Kasten,

2009, p 41, Price, 2017). The increasing autonomy that the sense of responsibility this gives to act on findings proved to be thought-provoking. Viewed through my existing frameworks of thinking it was easy to perceive that peer-led simulation in this format was effective. Again, the difficulty of positioning myself outside of the phenomena to view the activity in a more reflexive manner presented me with uncomfortable truths. I was concerned that because of my own journey through my doctorate I had forced the changes within the module for my own personal motives, rather than from an altruistic perspective. However, I also had to counter this with the necessary period of deconstruction that in-depth reflection and analysis promotes within the cycles to challenge my existing frameworks and expose alternative ways to interpret what was happening.

I had also to question whether I needed to change the process and develop peer-led simulation further or whether I had reached a point within the Action Research cycles whereby I could effectively step back from it and view the structure as complete. One of the disadvantages of using Action Research as a methodology, is that it is possible never to reach a conclusion (Dick, 1993) but my own personal position was that that I could further develop this process.

Becoming more critical of the process, I was able to see patterns and identify relationships, but I was also aware that I was becoming frustrated. There was a disparity between what the students were writing in their evaluations and areas of concern that were highlighted through my reflective diaries and the increasing wealth of literature I was reviewing. These concerns centred on the art of learning and how students assimilated the information. For peer-led simulation to be effective I needed to be able to reassure myself that the learning was meaningful and that new information had been incorporated into their frame of reference. This is supported by Mezirow (1997) with his belief that in learning, we have to make our own interpretation. Therefore I realised I would need to explore further into the students' own perspective and the use of interviews to help scrutinise this seemed to be the obvious next cycle.

I had attempted to explore the use of interviews during this cycle as another form of data collection. A small sample of students (N=3) were invited for interview to discuss further their thoughts on the process and to provide additional data to contextualise the module evaluation and questionnaire responses. Although these provided some interesting data, my inexperience with this particular technique meant I restricted myself to simple questions based on the questionnaire. Reflecting back, I realised I did not explore critically

what interviewees were saying in order to investigate the validity of their meaning. I took the statements made at face value without asking for clarifications, following up with suggested connections and interpretations of responses or revisiting at a later stage in the interview process.

A reflective diary account illustrated frustrations at my inability to gather what I felt would result from the interviews

> *Spent day reviewing the interviews. I have reread the transcripts and the information is similar to what came out of questionnaires. At the moment they are not generating any new thoughts and I still am not understanding what their [the interviewees] feelings about it are. They are enjoying it but are they learning from it? Not sure if I was expecting more but I think I need to look at more effective ways to unpick the information. Not sure if I am asking the right questions or if I need to revisit my interview techniques. [Reflective Diary excerpt].*

On reflection, I knew that I needed to explore other aspects of the process of peer-led simulation and investigate the outcomes to see if the approach was effective. I realised that interviewing skills cannot be learned from books and that presenting standardised questions left little room for exploration of the students' personal view on the subject. Although I had only interviewed three students, I noted there had been slight improvements. This may not be directly attributable to my developing skills as this may have been due to the differing relationships between interviewer and interviewee that affect the way information is shared (Dingwall et al 1998, p.118) or the individual personality of the interviewee and their motivation for the topic (Kvale, 1996, p.146). Due to my lack of experience, I did not effectively explore this in an attempt to clarify and extend the meaning to try to elucidate further on the implications for them but I had recognised, on reflection, the missed opportunity and the need to reconstruct my framing of thinking and behaviour with my skills of interviewing. Kvale (1996 p147) recommend that developing effective skills have to be achieved through practice and scrutiny. In an attempt to step back and consider alternatives I involved myself in other research projects so that I could carry out observations of more experienced interviewers as well as practice my own interviewing skills.

8.6 Fluctuations of my epistemological stance

What did surprise me when further reflecting over the cycle was that I became aware that I felt more connected with the data generated from the students' comments and the

discussions with three of the students during their interviews. I had found the quantitative data analysis difficult to conceptualise. Although post simulation activity scores had improved with each question, attempting to understand the complexities of analysis to prove this was significant became an obstacle. My previous perception of quantitative data had been based on the premise that data could be inputted into a statistic package that would generate figures to support or dispute the hypothesis but now I needed to be able to understand what those figures meant and how they could be applied to my own data. I knew what the data were telling me but I did not know how I knew this. The data produced could be managed and this, in turn, could distance me from the research, the so-called "scientific self" (Herman, 2018) but I felt more of an affinity to interconnectedness of the research between myself and the human interactions with the participants. As I reviewed the data from the interviews and reflected on the actual interview process itself an awareness of the subjective nature of my research had been stimulated. This proved a challenge and questioned my original positioning within the research paradigm. Therefore, I needed to challenge myself to deconstruct my current thinking and create alternate approaches. Here I was questioning whether the positivism standpoint I felt I had previously was the actual epistemology on which I existed. In essence, my epistemological stance had continued to deviate from positivism towards more interpretivism. Although I had previously questioned this with the first cycle, I felt this had become more concretised during this cycle. For me this proved to be an epiphany. However, this needed to be countered with the associated doubt that invariably followed as I was questioning how I could represent my participants' voice to help me understand the process of peer-led simulation from a pedagogical approach.

8.7 Changes to circumstance prompts further reflection.

A change in circumstances meant I took on a new role within a different university. The Pre-registration programme was organised differently from that in my previous post with learning outcomes and assessment processes that did not correspond. A similar module based on the care of a critically ill child ran in the third year of their programme with a written examination and successful completion of a clinical placement as the assessment. This reflected the prominent discourse of competence assessed by reproduction of knowledge and as such creating the potential for student learning by rote (Hodges, 2006). Although I was not in a position to affect changes to the assessment of the module, I did feel I could offer some alternative methods of delivery to help support students to assimilate the information from a more kinaesthetic approach.

Because of this change in circumstances, I had to adapt my focus. Fortunately, this aligned itself with one of the strengths of Action Research, which is its responsiveness (Dick, 1993), and the spiral process allowed for a certain degree of receptiveness to the situation at hand. During the previous cycles, I had started to work with colleagues to look into ways that peer-led simulation could be expanded further and used within other modules. However, when I moved to another university there was the very real risk that this focus would need to change. The use of simulation was a concept that would need to be explored further within my new role, as the emphasis on academic processes was more prevalent than in my previous post and the current students had not received the same deliberate practice of clinical skills. The theoretical frameworks were in place and academically the students were better prepared but their exposure to clinical skills was largely because of their clinical practice. From a pedagogical point of view, this presented me with challenging demand that I had to confront. However the ongoing spiral nature of Action Research counteracts the unpredictability and uncertainty of real practice by encouraging self-reflection within the process and then re-planning (Holly, Arhar and Kasten, 2009, Kemmis, McTaggart and Nixon, 2014). By its very nature, teaching a module is fluid and overlapping as students move into and out of the process and as such, they determine the direction. Whilst the consequences of the change define the next stage, the self-reflection phase prompted further cycles of action. The fact that an alteration within my role had influenced the students I was exposed to meant I had to apply self-knowledge and theoretical underpinnings from the first two cycles and adapt the process to accommodate for these changes.

Following on from the reflections outlined in the second cycle, I had to consider the barriers to simulation and in particular orientation to simulation. This would require me to investigate the more context specific concerns and provide a framework of support for the students. In essence, I needed to revisit the process to develop an action plan that would prepare them in a different way. The challenge of their exposure to an unfamiliar format dictated how they would need to be prepared for it and this involved introduction to the concept of simulation and in particular facilitator -led prior to exposure to peer-led simulation. As previously stated simulation can provoke anxiety (Bong et al, 2010; Schlairet et al, 2015; Mills et al 2016; Yockey and Henry, 2019) and this has a paradoxical effect on learning (Mandler and Sarason, 1952; Holland, Gosselin and Mulcahy, 2017). The increased cognitive burden that peer-led simulation required had the potential to further affect the students learning process and data collected from the previous cycles had shown that anxiety had been a concern. .

8.8 Opening up my innovation

I did have concerns about spreading myself too thinly as I would need to provide support to integrate the process. There was also a small part of me that hesitated at the prospect of opening up my innovation to others. One of my reflective diary entries demonstrated my own internal confusion.

> *"Monthly meeting with supervisor: So far the process has been an experience. We discussed how the research had been progressing and I told him that I had been able to complete the latest analysis that showed the students seemed to appreciate PLS [peer-led simulation]. The evaluations were mostly positive and I had written up latest findings. He asked what I planned to do with it now and how I proposed to disseminate the findings. I explained I was writing it up for publication and he asked if I was planning to involve others. I thought about this but I do not feel I can force this onto others. This is something I feel comfortable doing but not everyone works in the same way."[Reflective diary excerpt]*

I was aware that I had a method of delivery that, when established, appeared to effectively reduce the facilitators work load and was proving to be an effective way to deliver some of the modular content. However, I also had concerns about allowing others into the process. I wanted to take ownership but when revisiting the diary entry I began to wonder if my actual concern was that someone else would take the process and develop it further, essentially improving, so that it no longer belonged to me.

The previous cycles had so far been my own individual journey and changes I had instigated had been because of my own interpretation of the data. Gaining the perspective of other colleagues can promote questions that require exploring diverse viewpoints and different readings of situations and this could help me work through the explanations I had developed throughout the process. Although I had already made tentative steps in this direction before changing my workplace, this was an aspect of the process I felt uncomfortable with. However, I was not in a position to remain introspective and part of my own reflective journey enabled me to view this as a necessary development and create uncertainty within myself to look for critical clarity.

Nevertheless, although I was part of the teaching team I was not the lead. This would mean I was not in a position to continue with peer-led simulation in its previous iterations, and so discussions with the module lead took place concerning the possibility of

introducing it as part of the module delivery. Reassuring, they were enthused by the concept and welcomed the opportunity to develop this further.

As part of the reflective process, Larrivee (2000) points out that the practitioner has to be able to act with integrity and candour and this required that my beliefs about the effectiveness of peer-led simulation had to be open to criticism from the team. They would provide the critical checks needed to allow for a deeper exploration of the process and, in turn, force me to challenge my own assumptions. This is an important component of reflective practice as I am aware that everything is contextually bound and viewing the process through multiple lenses enables personal biases and personal beliefs to become more visible (Larrivee, 2000) and unravels the “shroud of silence” Brookfield (1998 p200).

8.8.1 Changes for Cycle Three

There was a common interest that developed through the discussions with colleagues and this became a valuable interaction for me. I respected their expertise and the valid contributions they made. I was revisiting peer-led simulation but through the lenses of other academics and I found I had to question my own assumptions. One of the more difficult concerns for me was when I was questioned about what I meant by simulation. I had previously expected others to appreciate the concept of simulation from my point of view. However, this related to my own exposure and as such was more aligned to definitions such as those discussed in Chapter Three and as previously stated the simulations were high fidelity simulations utilising HPS. Justifying my use of HPS meant I had to confront my ontological position in an attempt to understand my own reality in a different way. Researchers apply filters for preferences according to their own principles and beliefs, which in turn decide what is to be noticed and what is not. I was acutely aware that my review of the literature supported the theory that the higher the fidelity of simulation, the greater the impact on learning and that student perception of their learning was increased (Butler, Veltre and Brady, 2009; Cant and Cooper, 2010; Busak et al, 2016). This categorised the evidence I collected to support my arguments. However there are studies that do not appear to support this belief (Beaubien and Baker, 2004, Waldner and Olson, 2007; Tosterud, Hedelin and Hall-Lord, 2013 Tun et al, 2015). In fact, they question the overall benefit of high fidelity, with its inherent financial implications and the increased structural framework required to support facilitators and enhance their confidence with the technical expertise required to manage simulations (Lane, Slavin and Ziv, 2001).

Colleagues queried whether the use of lower fidelity simulation such as role-play and case study based scenarios would be a more appropriate method in the first instance to introduce students to the concept of simulation, develop ownership of their learning and reduce any anxiety the cognitive burden of peer-led simulation may provoke. They also suggested comparing peer-led simulation with facilitator-led simulation as this would enable those students who did not feel comfortable to facilitate their own simulations to participate in the process. As a concept this had potential for further development as students were facilitators during the peer-led simulation and this offered an opportunity for students who may have found the thought of leading simulations particularly stressful. They could be involved in the simulation activity and take part in a simulation facilitated by other students

8.9 **Conclusion**

In this cycle, the data reinforced the findings of Cycle One in that confidence, competence, and development of transferable skills were all improved. The research methods allowed a deeper exploration of some of these issues and it was revealed that while the students valued the improvement in confidence they also felt an anxiety about being judged by their peers and they compared themselves with others.

In this cycle, the social context of learning was more clearly discernable: the students co-operated to ensure all learning objectives were met. The students also spoke about reflection on their practice and clearly made links between practice and the skills laboratory environment.

However, they also questioned their role and whether this was their ‘job’. The concept of the more capable peer was demonstrated and the advantage of this role was identified as students had to become more knowledgeable and develop a higher level of understanding to be able to support their peers to understand the concepts.

This chapter has presented the second phase of my Action Research journey. It has explored the methods used to conduct the research and presented findings as well as discussion on the implications of this part of the research journey. The second cycle had produced positive results demonstrating that peer-led simulation had positive outcomes for the students in their preparation for their assessment. What I had learned was peer-led simulation was an effective pedagogical approach. There were some unexpected outcomes as a result of changes to my role as well as the way I viewed research and how I needed to adapt as a result of circumstances.

Chapter Nine - Action Cycle Three

This chapter concerns the final Action Research Cycle. The earlier cycles had helped to confirm my previous learning and build on this, through an emerging interpretation of the findings. This had helped me refine my method as well as further develop my research question. The chapter presents the changes that were required to accommodate the different student group and how the preparation for peer-led simulation was adapted for this. It also presents the findings for this final cycle and a discussion on the on the effectiveness of peer-led simulation as a pedagogical approach.

Research Question 1.3: Does peer-led development and facilitation of simulation facilitate the integration and transformation of learning?

9.1 Changes for Cycle Three

In this cycle I aimed to improve the scaffold on which the students build their learning (Parker and Myrick, 2012, Kable et al, 2013) and this meant exposure to simulation and the concept of developing scenarios for simulation prior to the launch of the critical care module and peer-led simulation. I also wanted to further explore my main research question "**Is peer-led simulation an effective pedagogical approach within student nursing programme?**" and discover whether taking part in peer-led simulation would enable students to transform their knowledge. Although my original ethical approval was for comparision of peer and facilitator led simulation. I was surprised to note that all students wished to be involved in the peer-led aspect and this required a review of my original ethical approval to incorporate these changes (See Appendix A)

Cycle Three took place over two cohorts to collect rich data from interviews. The interview schedule was developed to incorporate aspects of learning from an individual perspective as well as through social engagement with the process. Section 2 dealt with the simulation itself, section 3 related to the peer group and its interactions and section 4 dealt with knowledge, whether they perceived they had increased their knowledge as well as the transferability of this knowledge to clinical practice (see Appendix F). This interview schedule was used for both one to one and focus group interviews, although the focus group schedule was adapted to reflect the multiple voices that makes up a focus group (see Appendix G).

9.2 Methods used within Action Cycle Three

9.2.1 Preparation of students for Peer-Led Simulation

To improve the scaffolding required to support students' learning the concept of peer-led simulation was introduced into a module running the semester prior to the module that was the focus of the research. The module was constructed around the planned care of a child and this incorporated caring for children who were undergoing elective surgeries. As part of the learning outcomes, students were required to be able to complete admission and discharge from hospital as well as preparing for a child undergoing surgery and care of the child following surgery.

The session that were developed supported students to gain an understanding of simulation, whilst still addressing the necessary learning outcomes for the module. This involved working with the students to produce case-study based scenarios that could be developed into simulations using either lower fidelity simulation or HPS.

Figure 9-1: Students engaged in simulation during Cycle Three simulation (Reproduced by kind permission from the students)

Students were exposed to case-based scenarios relating to learning outcomes. They were divided into groups of four to work through a case study, which they would present to the rest of the cohort at the end of the module. To reduce the risk of increasing anxiety case studies and resources were provided but students were encouraged to adapt them. This could involve adding context to the situation with development of family background, or past medical history for the child. They were encouraged to diversify the presentation to fit with their group dynamics, having the options to present as a discussion or demonstration using manikins (Figure 9-1). Directed study time was set aside within the module for

students to practice their presentations and they were able to request any further resources required, such as paperwork, clinical supplies or audio-visual equipment. The case study did not form part of a summative assessment as this was a 2,000-word assignment but the information provided could be used as part of this.

Following their presentations, students were given feedback and were encouraged to reflect on their learning because of their work on the case studies. Students observing the presentations were also encouraged to ask questions and provide feedback. Feedback and debriefing remained an essential part of the learning process with sharing of critical judgements helping to reframe internal assumptions (Rudolph et al 2006; Levett-Jones and Lapkin, 2014; Tutticci et al, 2018). It would have been a valuable experience to help students to explore their own learning needs through debriefing (Kable et al, 2013; Dreifuerst, 2015) within a safe space in which they would be able to scrutinise their own and others' actions. However, although in the previous cycles students provided feedback to their peers and this had not been raised as a concern in the evaluations, I did not want to place additional cognitive burdens on them in providing what can be a challenging exercise. Instead I used the opportunity to informally explore with them what they may include if they were to give feedback. Students were informed that this format would be revisited during their Care of the Critically Ill Child module

9.2.2 Format of the Peer-Led Simulation

This cycle followed a similar format to Cycles One and Two with the students taking part in peer-led simulation during a third-year module addressing care of the critically ill child. The aim of this cycle was to further the understanding of whether peer-led simulation was an effective pedagogical approach and to more fully explore the longer-term impact on learning, through the use of exploratory, semi-structured interviews.

As previously stated in Chapter Five, timings of the interviews were a consideration. Straight after the simulation demonstrated the immediate effect of the process but in order to ascertain the longer-term effects, the interviews needed to take place at a later stage. Students were therefore invited to interviews six months following the process. See Table 5-1 for an outline of how this was incorporated. As stated in 5.2.2 all students interviewed were self selecting as were the focus groups.

9.2.3 Changes to cohort size

The cohort size for this interation was larger (26 students) leading to logistical considerations as the group sizes and case studies had to be redefined to incorporate the

extra numbers required. Although groups of four had previously worked, with all students able to actively participate in the process, maintaining this number would create difficulties with the amount of simulations that would need to take place. Larger group sizes risked generating a lack of psychological fidelity for the students because of challenges to their ability to suspend disbelief and fully engage with the simulation (Beaubien and Baker, 2004). When the numbers of personnel involved in the simulation are an unrealistic representation of the clinical area in which they are supposed to be taking place, there is a lack of authenticity and this is fundamental to increasing the pedagogical benefit of simulation as a learning tool (Reid-Searle et al, 2011; Parker and Myrick, 2012; Muckler, 2017).

Alternatively, with several simulations there is a real possibility of disengaging students who are not actively involved through facilitation, taking part in the simulation or acting as observers to provide feedback. There is a risk of boredom or disengagement when students do not have a role in the activity (Hober, 2012; Harder, Ross and Paul, 2013a; Bethards, 2014; Bonnel and Hober, 2016) and the potential implications for their learning. I discussed this concern with the students and the common consensus was that they would prefer the bigger group sizes to increased simulation activities. Their rationale for this was that whilst some within the group would benefit from facilitating the simulation, equally there would be those who would feel more comfortable developing the simulation and resources and undertaking background research to support their colleagues.

9.3 Finding and Discussion

For the format for this section, I decided to follow structures as outlined by Burnard (2004); Treasure et al (2008) and Wu et al (2016) who suggest combining findings with discussion to help add context. Data collected for this cycle was analysed as outlined in section 5.10.3 and 5.10.4.

I have presented the discussions from the focus groups alongside individual comments. The nature of focus groups meant that the conversations developed naturally with students interjecting and so I have endeavoured to represent the essence of their thoughts. I have not identified the participants within the focus groups individually as I felt that the comments made were intrinsically linked and there was a natural flow. From the data collected from both the individual interviews and the focus group interviews five themes were identified: confidence and self-efficacy, individual motivation to learning, social context of learning, psychological fidelity and transformative learning.

9.3.1 Response rates

Fifty two students took part in the peer-led simulation over the two cohorts. Nine students were interviewed individually, with a further fifteen students taking part in two focus groups. Three students were re-interviewed six months following the peer-led simulation to explore the ongoing impact of their involvement in peer-led simulation.The students were self-selecting and there are inherent risks that this does not capture the heterogeneity within the cohort (Lavrakas, 2008 pg 348) and threatens the validity of the data (Keiding and Louis, 2016). However, the following description of the students evidences their unique backgrounds and experiences and provides context and assurance that diverse perspectives have been incorporated.

I have chosen to use non gender-specific pronouns when presenting information about the students to preserve anonymity as there were only two male participants and only one was interviewed.

9.3.1.1 Students

Ali

Ali was a mature student who entered nurse training following differing career choices that had diverged from their original master's degree. They viewed the peer-led simulation as an opportunity to develop their clinical skills. Although they did not anticipate gaining anything else from the experience, they were keen to be involved as they felt that their own clinical skills required attention. During training they expressed concerns that the focus was more on the academic side of training with the development of clinical skills seen as something that was the responsibility of placements, in essence "learning on the job". .

Sam

Sam had originally undertaken and successfully completed a degree course. Like Ali they had no clear career plan and had decided to apply for nursing as they felt it was a safe option. They found that they had an affinity for nursing and an interest in Child Nursing. Although they took part in the peer-led simulation only because it was a requirements of the module, they found a value in the process and so were happy to volunteer for further sessions.

Naz

Naz had entered the nursing programme straight from school as they knew that nursing was a career they wished to pursue. They had come in with no preconceptions about the

course or what the role of a nurse was but was prepared to embrace as many aspects as they were able to. They were enthusiastic about qualifying as a Registered Nurse and this enthusiasm had not been dampened as they progressed through the course despite experiencing difficulties both academically and personally.

Drew

Drew entered the nursing programme straight from school. They had come from a family of nurses and medics and so this was an expected career pathway. They had not thought of anything else as a career. As they said "*it's just something I was meant to do"*

Reese

Reese had worked within the care sector before deciding to start their nurse training. From a practical perspective they felt competent and this had helped them to settle into the course, but the academic side was something they were less comfortable with. They felt that, although initially advantaged by having the fundamental clinical skills when they started, the cohort were primarily school leavers with higher academic qualifications. This had left them feeling under prepared for the transition to higher education as there was an internal expectation on them to know everything and struggles with the theoretical components of the course had only compounded this fear.

Charlie

Charlie had entered the nursing programme as recognition of the need to care for people and felt that this was the most logical step to take. They had come through via further education and had found that they had to work hard to cope with the learning. At times, they had struggled with the academic side of the course and had low confidence about their ability to complete the programme. They found that they had to assess their learning style and look at what worked for them.

Ellis

Ellis had entered the nursing programme straight from school and had embraced all aspects of the programme. The academic side was manageable and making links between the theoretical and clinical components was intuitive. They were a high achiever and sometimes felt they had unrealistic expectations. This did cause a degree of anxiety and the fear was that the peer-led simulation would expose any vulnerabilities they had.

Finley

Finley had also come straight from school had never imagined being anything other than a nurse. A confident student, they felt comfortable with both the academic and the practical aspects of the course.

Alex

Alex was a mature student who had entered the nursing programme following a career in marketing. Although nursing was a departure from this, they found they were able to use skills gained in negotiation and their understanding of psychology when dealing with children and their families. They also felt it had given them a deeper empathy with their peers and had developed a degree of emotional resilience that would help them to deal with the stresses of the course.

In Appendix K, each of the themes have been presented as spider diagrams with the relevant quotes used to help demonstrate how they were developed. Quotes in green indicate a more positive comment whilst those in red indicate more challenging aspects. As can be seen in the spider diagram for confidence there are positive and negative connotations but these have been discussed in the following section to provide further context to this.

9.3.2 Confidence

An overwhelming theme that was identified throughout the data was the issue of development of confidence. In Appendix K the diagrammatic representation of example codes that coalesce to this theme shows that there is a balance between positive and negative perceptions relating to confidence seen as green or red circles.

Confidence in performing the skills was related to the level at which the simulation was pitched and the fact that students could relate the sessions to their future practice. Thus, confidence was not just a feature of the simulation but was perceived to have a future effect for the students.

> "*Situations were appropriate to us and so we could apply them to our practice. We also got to try out different conditions, focus on something we had not seen before. Practice and question what happens. Put what we had learned into practice in future so feel more confident in doing this"*
>
> (Naz)

Studies into the effects of simulation on increasing confidence is well documented (Bambini Washburn and Perkins, 2009; Schroedl et al, 2012*;* Hayden et al, 2014; Stroup, 2014; Cant and Cooper, 2017) and these appear to relate to increased exposure to the skills and situations to help the student develop the skills to cope with them in the clinical area.

Naz's comments demonstrated the simplicity of simulation. This links with Kneebone (2009b) who points out that one of the merits of simulation is *"deliberately placing ourselves in an unfamiliar field—using simulation to participate in a new procedure, work with a different team, experience inexperience".*(p.956). This concept of experiencing inexperience is highlighted as part of the learning process that enables students to make sense of what they are exposed to.

> *"Getting the chance to practice with the dummies so that I feel confident enough to actually do it. Gave me chance to have lots of attempts until I felt comfortable with it. Made me learn it better." (Ellis)*

And Sam valued the exposure to simulation as this helped when they went back out into the clinical area.

> "*Good we had access to the manikins to practise but we needed this. We were in the learning and then there was no more, we were out there in practice. I learnt that way and we gained confidence in the simulation"* (Sam)

The opportunity to prepare for their simulation provided the students with the confidence in their skills as well as reinforcing their cognitive capabilities, in essence the sense-making processes.

> "*Focus was going away and researching our scenario which helped to reinforce the knowledge. We had to look at different procedures to ensure we knew what to do if the student went down a different pathway. Worked out prompts to help with the student and provided rationale*" (Finley)

This also demonstrates that the requirement to facilitate their own simulations added another dimension to the aspect of confidence. They felt they needed to be the expert as it was their own and they were supporting the learning of others. In this instance they were taking the role of a capable peer (Vygotsky, 1978), supporting and encouraging the less experienced peers in the process of learning

This was further emphasised when students linked the knowledge gained back to the introduction to simulation in their second year and their progress from this

"…. increased my confidence as it enabled me to revisit areas and reinforce the knowledge that was there. I could watch the transition from year 2 and see how far I had developed".(Alex)

"*I was impressed at the knowledge that came out and the confidence I gained in this*" *(Sam)*

Although this theme of confidence generated confirmation of the positive aspects of peer-led simulation, not all relating to this were. There was concerns that it put pressure on some of the students with the risk of increasing their anxiety due to the simulation (as discussed in Chapter Two) and the peer-led element (as discussed in Chapter Three). The need to be responsible for someone else's learning drew some interesting viewpoints. Although I had not recognised this as an initial component of the peer-led simulation, it was a concern that impacted on confidence levels. Comments by Ali gave me some appreciation of this

"*Do I have confidence in my topic and do I have confidence in myself? The use of poster helps me to have the knowledge but it may not have the extra information required to teach. What if they [the group they facilitated] come off script and throw curve ball? Prepared work cannot cover every eventuality. Pushes you to learn extra information, more than you need and retain it. I would not want to lead on a session where I was not comfortable with the content. I need to feel an expert so would make sure I knew my topic."* (Ali)

This was an interesting insight and links with Harden and Crosby (2000) theory of the teacher as a transmitter of information and the notion of the lecturer as the subject-matter expert. The questions Ali poses are those traditionally posed by the lecturer. They assume that they need a higher level of knowledge than the 'student' to be credible. Within their role as facilitator, the students collaborate to enhance the information needed to manage their own simulation. In essence, they are the more capable peers but this does not appear to be enough for Ali. They feel they need to have the answers as teaching is about being the transmitter of knowledge (Harden and Crosby, 2000) and at what point do they have enough knowledge. However, teaching is more than this, the knowledge is almost secondary as it can be held by other members of the Community of Practice and does not,

therefore need to sit within the expert or teacher. From this perspective, it is possible that support for the facilitators is key in understanding that it is the nature and design of the learning experience that is more important than complete knowledge of the content. Ali expounded further on this process

> *"I thought about the curve ball question. Would I have confidence in myself, can I confidently give an answer that might be correct or do I admit I don't know and find out? Do they, the teachers, have the confidence to admit they do not know?* (Ali)

Teachers are learners as well and so it is acceptable to not know the answer. However, this is part of the teacher's own development, as they need to have the confidence to admit they do not know an answer and accepting that it is the translation and internalisation of the knowledge that is the key element to effective learning.

Students also considered the experience to be anxiety producing and stressful for them and this can affect their confidence (White, 2014; Ross and Carney, 2017)

Reese felt the experience was "*nervewracking"* and Ali felt

> *"….performing as a teacher your weaknesses are laid bare. No one wants a teacher who makes them worse so you don't feel you have gained anything. Pressure is on you to perform, to know. You are facing a challenging situation and you need to know there is someone to help you out but what if they [your group] are looking to you for help? What if I let them down?"(*Ali)

The intention of this exercise was to support the development of knowledgeable and confident nurses, but the experience seemed to be disabling as well as enabling. It is possible that the additional 'burden' of developing and facilitating the simulation might have increased anxiety levels above those in a traditional simulation setting (although this was not measured) and this might heighten the risk of reduced receptivity. However, Lasater (2007) found in their study that although students undertaking simulation were anxious, they also had an increased awareness and did learn. Other studies also support the theory that increased anxiety can contribute to improved learning (Buchanan and Levallo, 2001; DeMaria et al, 2010; Palethorpe and Wilson, 2011; Teixeira et al, 2014; Najjar, Lymand and Miehl, 2015; Al-Ghareeb, McKenna and Cooper, 2019; Lewis, 2019)

To create an optimal learning experience simulation needs to address the environment, the equipment used and the psychological impact for optimal cognitive validity (Fritz, Gray

and Flanagan, 2007). Whilst I had addressed the environment and equipment used to replicate, as far as possible, the clinical context, I had not sufficiently considered the psychological impact of the process.

There was also the concern about relating to the purpose of the simulation. Initially it was meant as a revision in preparation for their module assessment. As this formed part of their overall progression as well as counted for part of their final degree classification it was fundamental to the process that they had all the information needed to fully prepare them. It had to address their learning and the threat that this approach could jeopardise that was a very real concern. Finley underlined this in their comment about student questions after they had led the facilitation. At the end of their simulation the group asked if anyone wanted clarification and Finley expressed their concerns with this.

> *"Do they ask questions and does this mean I have covered everything needed or have I not and that means it [the simulation] has not done what I wanted it to do? However if they don't ask are they not interested as I have not been able to engage them in the process*?"(Finley)

Here Finley had suffered with the dilemma that can be faced by teachers. There is the doubt of whether the subject presented has been sufficiently delivered; and if so why is there a need to question? However, this is also held in tension with the fact that if no one asks for clarification, are they disengaged or apathetic about the content or teaching. A fundamental part of the constructive learning theory, as outlined by Vygotsky (1978), is the generation of new information and asking questions and clarifying is part of that learning (Bugg and McDaniel, 2012). Therefore when students do ask they are seeking to construct their knowledge and this is an integral part of learning and inquiry (Chin and Osborne,2008). Questioning helps to stimulate debate and promote a more broad exploration of the subject (Tofade, Elsner and Haines, 2013) and it is this that creates a powerful reason for encouraging students to explore further by the use of questioning. In fact, students are more likely to ask questions of their peers (Bulte et al, 2007; Ten Cate and Durning, 2009; Peters et al, 2019). However this does need to be recognised as a concern and students need to have the confidence to be able to question and to be able to recognise that they do not need to have the answer, as this is an important component of meaningful learning for both the student and the teacher (Chin and Osborne, 2008). This reinforces the concept that peer led simulation is effective but that students need to have adequate preparation to support them with the process.

9.3.3 Individual motivation to learn

Motivation to learn captures several concepts including the students' perception of their preferred learning style and how they believe this informs their response to the simulation, as well as the drivers for learning. The diagrammatic representation of this theme (see Appendix K) shows that the comments from participants were more positive than negative.

The concept of learning styles has been questioned in as much as there is little evidence that a preference for one way of learning above another has any bearing on how well a student learns when different strategies are used (Pashler et al 2008). However, the students in this study spontaneously talk about their 'learning style'. Awareness of the way students learn as individuals may not be a formalised process within their own consciousness, but acknowledgment of the tools used to help support their style is important.

> *"I have prepared the simulation so from my learning perspective I have done it in my learning style. Used kinaesthetic visuality stuff such as post it notes. Bright and bold arty background so I learn by creating posters and visual cues, making something to look at. That's how I learn. I had a visual memory of poster because I have made it. I use that as a fallback to explain the topic I am teaching*". (Ali)

Simulation takes advantage of the fact that students appear to value the experience of learning by doing. From a constructivist point of view the students engage in and take responsibility for their learning. As Shuell (1986, p. 429) states "*what the student does is actually more important in determining what is learned than what the teacher does*". Linking with Kolb (1984) abstract conceptualisation occurs as the students make connections between the abstract principles that have been learnt within the classroom and the concrete experience of simulation. Actively involving students in exploration of the "what ifs" that can occur within simulated activities, encourages them to consider potential variances to the situation and identify applications for future experiences. By encouraging students to explore further through the dynamics of social constructive interaction with cooperative and collaborative dialogues is seen by Vygotsky (1978) as a way of internalising the process. This draws on the theory of Community of Practice (Wenger, 1998) whereby shared practices enable the creation of knowledge.

The concept of their own individual learning style appears as a unique focus for Ali as they were able to recognise this. However, while the individualised nature of learning was

picked up by others the contention that it suits one but may not suit another is demonstrated to be unfounded.

> "*This way matches my learning style so improves my clinical practice but that is quite personal. Whole point is setting of goals to help improve others' practice"* (Naz)

If it were true that learning style is an important concept and dictates the potential value of the peer-led simulation experience then students who express different preferences would have found the learning experience to be more or less valuable, this was not the case.

> *"I learn more by doing, going through the actions of how to deal with shock, or anaphylaxis or whatever. It helped me learn a lot more than sitting down and writing it out. I recognised that investigating helped me to make sense of it more*". (Sam)

The act of engagement supports the theory of situated learning (Lave and Wenger, 1991) whereby learning takes place within the same context in which it is applied and the learner centred focus that Dewey (1997, p.25) feels is the "organic connection between education and personal experience". Both Ali and Sam had recognised how they learned effectively and this was further reinforced by comments made by Naz and Finlay.

> *"Teaching forces you to learn the subject, have a greater understanding. I needed to know about the subject to be able to respond to any queries or questions. Having someone question you means having to think about what you do and why*." (Naz)

> *As the facilitators my group had to know what to do depending on how they reacted to some change in condition... meant I had to learn loads more that I would have done had I just taken part in a simulation* " (Finley)

In relation to the process of learning as discussed in Chapter Three, peer-led simulation appeared to strengthen the impact of their learning as the higher cognitive processes required to develop and facilitate the simulation help to underpin the knowledge gained. Dewey (1986, p. 248) argues that there needs to be a connection with their learning and this links with the facilitative learning processes that peer learning enables within the student (Boud, Cohen and Sampson, 1999).

However, during Ali's interview they added some perspective that had not been apparent.

I *like learning this way, in a group, but not everyone does. Are you taking someone else's enjoyment of learning because they learn in a different way? Who has precedent? You have decided that peer-led has priority so those who learn in a different way are penalised*. (Ali)

Ali had highlighted an issue that is common when dealing with individual requirements within the context of learning. Although nursing students are said have predominance towards more kinaesthetic learning (Meehan-Andrews, 2009; Alkasawneh, 2013; Bostrom and Hallin, 2013; Johnston et al, 2015), not all fall into neat pigeonholes and focussing on a particular pedagogical approach can prove problematic. The erroneous belief that students learn best when teaching and learning styles are *meshed* has no evidence to support it (Massa and Mayer 2006; Pashley et al 2009; Hussman and O'Loughlin 2019) and it not only persists among educators but this study suggests it has become part of the 'truth' for students.

Linking this with the discussion on theory of learning covered in Chapter Three, thought needs to be considered to the individual perferences for learning. Lave and Wenger (1991) argue that learning is not seen as gaining knowledge as individuals but takes place as part of social participation. However, Ali had identified that this may not always be the case. Focussing on individual motivations to learn is more akin to humanistic theories than social learning theories but this did not lessen the fact that Ali had raised this as a concern they had been able to recognise.

9.3.4 Social context of learning

A strong theme identified from the interviews was the collaborative and cooperative nature of learning from their peers to develop and facilitate the simulations. There were two strands to this; learning that took place as they developed and practiced the simulation and the learning that took place from observation of the other groups. The diagrammatic representation of this theme illustrate the richness of the data that emerged and the balance between positive and negative aspects of the students' experience (See Appendix K).

"One scenario was set in A&E and they had a broken arm but did not know if they had head injury or not. Some people [in the group] had been on neuro wards so they knew about GCS [Glasgow Coma Score] and others had done trauma so knew about the fractured arm and limb sensation observations" [Focus group 2].

This helped to demonstrate the benefit of pooling information to come to a decision on how to progress the simulation. Students appreciated the opportunity to work together in small groups, developing their knowledge base through cooperative working. This nurturing collaborative support is one of the dominant themes of peer-led learning (Goldschmid and Goldschmid, 1976; Giuliodori, Lujan and DiCarlo, 2006; Tai et al, 2016; Herrmann-Werner et al, 2017) as there is a mutual benefit to the student as the learner and as the teacher. Working collaboratively they can take responsibility for their own development (Ten Cate and Durning, 2007). The students valued each other's contribution as well as their own expertise and how this consolidation of information helps to build more interconnectivity. This links to Lave and Wenger's (1991) theory that the meaning of learning is constructed through participation in a sociocultural practice. They recognised that different aspects of care all have significance, and this then felt like a powerful message had been sent.

The maintenance of integrative care requires that health care teams speak to each other to prevent fragmentation in the delivery of care (Foronda, MacWilliams, and McArthur, 2016) and the peer learning exercise in this study made the students more aware of the importance of sharing or pooling information. It also had the effect of requiring them to acknowledge the ability to integrate incongruent elements and this helps to challenge their existing framework

> *"We worked together but if we had experience on certain placements people may turn to that person for information [Focus Group 2].*

Here the peer group provides the greater emphasis on learning and the interaction with a capable peer to solve problems and generate new ideas (Wang, 2007). In this situation the capable peer changes depending on the question asked, and is the one who leads the students into the Zone of Proximal Development (Vygotsky 1978). From the perspective of Community of Practices (Lave and Wenger, 1991) this concept of interchangability between roles is not made explicit but the students were demonstrating their ability to recognise each other's contributions.

Sam made the point that even though they pooled their knowledge, they were also encouraged to read around the topic, to research the areas they had little or no exposure to so they could understand it better.

> *We all had different experiences and knowledge but it also meant they went and researched further into this to catch up. The experience was*

shared…I had to go away and research it and then coming together as a group made me question it more. We discussed as a group "I think at this point we would do this" and decide on the best action. That made me think more" (Sam)

What is emerging is a picture of the role of the Community of Practice of the peer-led simulation group as part but not the whole of the learning experience. Sam acknowledges that they would discuss as a group and decide on the best action based on their collective knowledge but they also recognised the need to to learn outside of the group to "catch up" and to bring knowledge to this group from other Community of Practices that the students are involved in. This demonstrates another aspect of social learning, as the students were encouraged to further their knowledge to actively participate within the group. The students feel an obligation to be prepared and a motivation to continue their learning.

Links to evidence-based practice were also highlighted as a part of the process of learning together. Learning within their own Community of Practice, they had a shared repertoire of mutual accountability for the enterprise for the task. (Figure 3-1).

We all had bronch [bronchiolitis] babies so we know about putting prone in practice but now we needed to know why we did this. What was the evidence behind this? Even it is wasn't based on evidence there had to be a reason we did it" [Focus Group 1]

The group had acknowledged that this is a procedure based on custom and practice but that there was had to be a rationale for it. Even though there is little evidence to support it (Turner et al, 2008) it is still recognised as the gold standard for positioning of babies with respiratory difficulties. They felt, as part of the group, that this was something that needed to be investigated and this was further supported by their own thoughts on when it was necessary for intervention based on the clinical observations.

We also wanted to know why is it OK for them to have sats [oxygen saturations] of 92% before we needed to give oxygen. On wards they say it is nurses' intuition but it has to come from somewhere, does it? We had to justify why we are doing it. We know there is a reason behind it so we needed to find this out. [Focus Group 1]

This is a significant finding as students were questioning the standard protocol for management to seek confirmation of the "correctness" of this procedure. The group had acknowledged that they needed to explore this further and this strategy encourages

students to question and debate what is common practice to seek the evidence behind it. Here, not only were they contextualising the care, they were thinking beyond the actual care to be delivered and considering the most appropriate course of action. They had been encouraged to question practices. Students need to have the opportunity to discuss what they have found and be able to fasten their own experiences into their own cognitive context for it to make sense. Kolb (1984) describes this as the process of learning through experience.

The social context of learning was further expanded when they observed the other groups, even when there was no active involvement on their part. Reese highlighted the nature of their own perspectives of learning based on their needs

> *"Everyone was paying attention to everyone else as they wanted to learn about their condition. I never saw it [septic shock] in practice so seeing how to approach it in real life I think will help me. We are constantly taught by other students so they know where we are with things".(Reese)*

And Ellis valued the duality of learning where they were aware of their own learning and the significance of information from others for their own development.

> *"Learnt so much from everyone else's. You have the added pressure, knowing you are going to be doing your simulation so that you have to learn it. You put head down, try and concentrate on what you have to do but then you want to learn from others. You see what they are doing, what they are saying and how they do stuff, like assessing the child. I learnt about direct admission to medical ward which I did not know about" (Ellis)*

This was a common reoccurring factor in that the students felt they could apply the theoretical aspects of their learning, fixing it onto the practical components to make the links between what they can see because of their actions and the theory that underpins it.

> *"Watching other's scenarios bought it to the surface, bought it to life so to speak" (Reese).*

There is potential, particularly in larger group sizes that students not actively involved in a scenario will disengage from the learning. Knowing that they would have to facilitate their own simulation could increase their anticipatory anxiety levels so reduce their receptivity for the process of learning (Mandler and Sarason, 1952). However, once they have completed their simulation there is a potential for boredom (Hober, 2012; Harder, Ross and Paul, 2013a) or disengagement (Bethards, 2014; Bonnel and Hober, 2016). However,

the results of this study demonstrate that this did not happen. Students recognised the benefit of observing other simulations. There was an an emotional connection in this study, which Dieckmann, Gaba and Rall (2007) highlight as an important aspect of learning through simulation and supports Lave and Wenger (1991) social theory of learning within Communities of Practice

Naz also saw it as an advantage to develop their own confidence.

> *"I was more engaged by my peers' thoughts and feeling. Normally when doing simulations the facilitator does it the right way…[textbook] …but watching the groups I could see if they were hesitant that reinforced the fact that they did not know and this helped with my confidence".(Naz)*

The student recognised that the simulation did not have to be perfect and that they could admit that they did not know everything about the condition in their scenario. Drew put it succinctly when pointing out that;

> *"We are all there for each other. It was not a competition".(Drew)*

And Charlie further reinforced this when they pointed out

> *"You are the expert of that scenario so expectation on you is high. As a group you supported each other so that made it easier but definitely stressful. At the end I enjoyed it. Everyone came out saying they felt it was worth doing. Build up to it was dramatic. We were dramatic" (Charlie)*

The social context of their learning affected distribution of the workload and contributions made by the group. Some of the groups worked well together and roles and responsibilities were evenly distributed. A cohesive group identified individual strengths and used this to enhance the process. This was particularly notable in groups that naturally worked and socialised together throughout their course. Alex comments on their group demonstrating how this had a positive impact on their simulation

> *"People picked what they liked, playing to their strengths. The confident person who was able to talk in front of the class was obviously going to be the lead facilitator. This was not explicit, we did not discuss or argue over who did what, we divvied up the roles automatically. We know each other so well after 3 years."(Alex)*

This links back to Trevarthen's (2014) concept of learning as a shared invention, Lave and Wenger (1991) theory of Communities of Practice to enhance learning and peer-learning's

association with collaboration and cooperation (Goldschmid and Goldschmid, 1976; Topping, 1998; Topping and Ehly, 1998; Boud, Cohen and Sampson, 1999; Szlachta, 2013; Blohm et al, 2015; McKenna and Williams, 2017). Effectively students were taking an active approach to their group learning and demonstrating their understanding of the difference in characteristics of cognitive processes; although it is not clear whether this is a consequence of conscious or unconscious decision making.

It was a conscious decision on my part to leave groupings up to the students, wanting them to make that decision. Random allocation to groups may have made the process more authentic as students need to be able to work within a team in the clinical area and they do not get to choose who those people are. However, as the objective was to enhance the learning process, working with people they felt comfortable with would limit the potential stressors. Although this benefited some groups, there were others who struggled with the equity of the workload and this proved particularly difficult for one of the groups as the work was divided up in the absence of an individual. This individual had issues with engagement in the programme and had a sporadic attendance record. They had been given work to research for the simulation and a role allocated. Unfortunately, they made little contribution to the work they had been allocated and did not attend for the simulation leaving their group with an incomplete scenario. The group attempted to cover the gaps, but it was obvious they were disappointed with the result.

> *"Some people ride on coat tails and although it is divided up some people do not do their share. Other people then end up sorting it out. Some people do 90% of work and some do very little. They are always like that and this reflects on how they are as nurses. I want to learn and understand so I will put the effort in. As a group we covered for this which is something we do in practice anyway but it was a shame" (Ellis)*

Expectations from the group that all members would contribute to the simulation are reasonable but probably unrealistic. The individual and group preparation for the simulation session should theoretically reduce the risk of disengagement by combatting some of the main reasons that this occurs (low confidence, low knowledge and lack of preparation) (INACSL 2016).

Peer-led simulation has the potential to promote engagement because individual contributions add to the development of knowledge as a whole and as these results show, the contribution of low confidence to disengagement is reduced. However, as Wenger (1998, p.203) points out, if contributions from a member of a Community of Practice are

not used there is a risk that this results in marginalisation and subsequent disengagement. The potential difficulty is that, due to perceived lack of engagement on previous occasions any contributions made by the individual may not have been valued, further increasing the likelihood of disengagement from the process. A lack of access to participation within a Community of Practice reduces the ability to learn (Wenger, 2008, p.185). Allowing people to select their group may exacerbate the problem as an 'outsider' will be less likely to immediately feel part of their Community of Practice when others within it demonstrate their established relationships with each other. Bland and Tobell (2016) found that constructing groups had as many issues with students reluctant to participate until they got to know one another but gradually the group coalesced and moved from 'initial hesitation' to 'immersion in the simulation' (p.10).

This highlighted the importance of engagement and interaction in the formation of a successful team and studies have suggested that this has a fundamental links to patient safety (Manser, 2009; Havyer et al, 2014). This was a challenging consequence of engaging students in peer-led simulation. This is a concept that runs counter to Community of Practice enhancing the knowledge within the group and could be viewed as a disadvantage of Lave and Wenger's (1991) theory of learning in that there is a risk of the negative impact of social learning. It should not be the object to compromise the learning of a group because of lack of engagement within their team. However, Ellis had recognised how this does have an impact on other members and how they managed this amongst themselves was an important learning point. This would support the development of knowledge because of social groups, although the learning that takes place may not be the initial intention. As they articulate, they covered for that eventuality and this appears to be another strength with the use of peer-led simulation.

Drew offered solutions for how they felt this could be managed.

"Linking it to assessment means they have to do the work. If they have not engaged they get a worse mark as you still have to learn it".(Drew)

And Ellis suggested

"You can mix things up. Get those who like to learn from books to do the research or give them the role of team lead so they have some responsibility".(Ellis)

Here Ellis is making links with engagement and how this can be managed by involving members with tasks that suit their strengths however, it should be noted that students' efforts to encourage engagement in this way can impair learning (Bethards, 2018)

Within the context of social learning, collaboration is a key to success, as students learn from each other as well as about each other. For a Community of Practice to be effective there needs to be a joint enterprise as well as mutual engagement (Figure 3-1). Ellis is attempting to find solutions to help engender this when there is a risk of disengagement of others. However, as Alex pointed out

> *"There are some who won't [engage] and that is who they are. You can put interventions in place to penalise but others may feel it is directed at them. It's not going to change someone who isn't prepared to help or wants others to do the work for them. They are always going to be like that. Ultimately you have to have to be able to confront people for not pulling their weight".(Alex)*

This also links back to the comments made by Ali (9.3.2) who highlighted the fact that not everyone prefers to learn within groups. Their individual motivation to learn is the driver and it cannot be assumed that social learning is a more effective method of learning for everyone. One of the ways to counter this is to ensure that the learning objectives are clear for the group. The knowledge and skill associated with the scenario may be one component of learning, but another component is learning how to work as part of a team.

When student disengagement affects the group as a whole this can lead to students encountering difficult situations that they may feel are unprepared to manage as contributions within the group help to increase the knowledge for the group as a whole. These situations can be how to manage a student within their team who are not contributing effectively and how to respond to the exposure of personal experiences or vulnerabilities in the group.

Alex defined this as "*don't want to feel a numpty"* but Ali presented a different slant on this

> *"Some of us were very open and talked about traumatic events when we were younger. One had come into nursing because their little brother had been seriously ill. We had not created a safe space for that to happen. We needed to create boundaries, to protect ourselves but there is a problem if you haven't laid the ground rules. We had created a character within the simulation [sibling of a critically ill child] and this became too real. It felt*

uncomfortable and we didn't want to put that person into the situation of dealing with it. We were not aware of this beforehand and did not want to make a conscious effort not to deal with it because that is like brushing it under the carpet".(Ali)

Ali had highlighted a very real risk with simulation. Students may associate experiences and emotions during the simulation with their own circumstances and this raises concerns about the psychological impact of the simulated event (Nestel, Sanko and McNaughton, 2017, P.49). Increased stress and anxiety because of participation may further compound what could be a difficult situation. Students must be enabled to have autonomy over their decisions on whether to participate and their psychological safety considered if the simulation proves too real for them (Gillan, Jeong and Van der Riet, 2014). Although there is little research in this area (Leighton, 2009) support for the students through pre-briefing and debriefing can help to recognise when this may occur. Stafford (2005), emphasises the importance of the discharge of emotions through the debriefing process to allow students to discard the role and Nestel, Sanko and McNaughton (2017, p.50) recommend writing a journal to help separate the simulation from reality and process the event.

Further exploration with Ali raised the issue of stereotyping in simulation and how this could influence the allocation of roles within simulation and the assumptions made as a result.

"We are assuming someone's past. You've created these characters that cover what is required for the simulation and you assume that this person is the best for that role. Like the role of the mum will be for those who have kids, but they may not be the best person for this. They may not have an understanding as it is something they will never have dealt with so are they the best to simulate it?" (Ali)

This comment provides an interesting point as there are potential risks to the fidelity of simulation if the roles are not appropriate but the learning requires students to adopt new roles. This relates to the earlier finding that students can collude with each others preferences and unintentionally hinder learning (for example allowing an underconfident student to always be the note-taker and therefore prevent them from bettering their clinical skills).

There is also, within the context of mutual engagement, expectations about how to interact with each other and how to work together (Wenger, 1998, p.152). This supposes that there is understanding within the group of the individual, but Ali is pointing out that

assumptions can be made. Linking this with the capable peer, there is potential for an unquestioning adherence to idea that, when attempting to understand a concept, those who are seen to have competence have the correct knowledge, which may not always be the case (Roberts, 2007, p. 200). One of the potential disadvantages of peer-led simulation is a failure to notice and remedy over-confidence in a student, which if left uncorrected can contribute to clinical errors (Yang et al 2012).

9.3.5 Psychological fidelity

As discussed in Chapter Two one of the disadvantages of simulation is lack of psychological fidelity, the ability to suspend disbelief to engage in the process (Beaubien and Baker, 2004; Tun et al, 2015). Simulation is immersive and to be effective it requires that students accept the situation and that consequences of any actions or non-action are represented as if they had occurred in a real situation (Dieckmann, Gaba and Rall, 2007; Muckler, 2017).

When fully immersed the student can apply multiple perspectives (Hagiwara et al 2016) and the authenticity of the situation links to the concept of situated learning (Lave and Wenger, 1991). A potential risk with peer-led simulation is the interaction with their peers when attempting to role-play as this could reduce the ability to create a more authentic situation. However, this did not appear to be a concern and some of the students identified their ability to connect with the experience.

> *"It was scary, doing the simulation was scary but then you forgot people were watching you because the child was getting worse and alarms were going off and mum was crying. It felt real. I was literally shaking"*

> *"Yes, even though [another student] was playing mum, you knew it was her but she was really upset and it felt like it was really her baby and it was going to die [Focus group 1]*

However there were concerns raised that by its nature, simulations cannot fully replicate real life and that the learning that takes place is a distortion of this in order to fulfil the requirements of the session Drew recognised this as a concern.

> *"There is a difference between what you learn in the classroom and what you learn in practice" (Drew)*

And Ali highlighted the unease they had with simulation as pedagogy. They recognised that it can be unreal despite psychological fidelity because there are learning objectives that must be achieved and the progression of the simulation must compensate for this.

> *It is teaching us to play a game. Someone comes in with SOB [shortness of breath], you oxygenate them, titrate the oxygen and therapy and then send them off to where they need to be. What does not happen in real life is that someone makes that harder. The body does not transform into something else to fit the criteria of the session. Therefore, they don't always present and progress in a linear fashion. Adding more learning outcomes along the way means it is not always real life". (Ali)*

However, Ali did feel that peer-led simulation was more realistic as they had control over their learning and they also emphasised the fact that

> *"Nursing is vocational and nursing via simulation is more real for this" (Ali)*

This point was further elaborated on by Naz.

> "*Textbook and academic requirements need to be part of course but from a practical/clinical perspective you need the one-to-one interaction and thinking on your feet behaviour to take into practice. Textbook to real life does not translate well all the time and this is closest you can get to real life. You need to be able to feel what it is like and although you know it is not real, sometimes you get anxious because the baby is crashing and you need to do something quick. It feels real when you are there in the moment" (Naz).*

Another aspect in the consideration of psychological fidelity is appropriate group size for the activity. As previously stated this can affect the realism of the experience. Although this was considered when dealing with the groupings for the simulations, this was not highlighted during the interviews.

9.3.6 Transformative learning

The point of any pedagogical approach is to equip students with the ability to transform their knowledge in such a way that they can assimilate the information. The diagrammatic representation of this theme demonstrates that the students were largely positive about the ongoing impact of the peer-led simulation (see Appendix J)

Collaborative learning in the form of peer-led activities is recognised as an effective way to nurture and exploit students natural interest and curiosity as well as reinforce their own knowledge base (Ten Cate and Durning, 2007; Szlachta, 2013; Thistlethwaite, 2015; Tai et al, 2016; Peters et al, 2019). There had to be some level of evidence of the transformative nature of the activity to validate its effectiveness.

Whilst it was reassuring to note the positive insights into their own experience, longer-term benefits must be explored. Although some of the interviews took place close to the simulation activity, students were invited back for further interviews six months after. This gave me an opportunity to investigate how they had been able to internalise the process and transform as a result and Alex was able to sum this up effectively.

> *"I was on a neonatal unit and there was an incident with a baby. I went to help and the stuff we'd done for our scenario came flooding back. I didn't have to think I just did. My mentor spoke to me afterwards and said the team were really impressed with me. She wanted to know how I knew what to do. I told her about the simulation stuff we had done and how it seemed be there. I just knew it".(Alex)*

And Charlie stated:

> *"I still remember my scenario and what was done. I remember the work we did for it and what we found out. Rehearsing it and then getting another group to do it meant it is stuck there".(Charlie)*

Both these students have been able to demonstrate the ability to recall the experience and apply it to what had been learned from the simulation. It could be argued that this is simple recall and that the students have not transformed as a result but referring back to Charlie's comments relating to performing care based on custom and practice appear to present a different argument to this:

> *"We researched for the scenario. We had to research but we also wanted to know why we did it. It has made me question practice. I have more confidence to ask why? I want to know why."(Charlie)*

Another aspect uncovered was the transformation through others and how they viewed the situation.

> *"In our scenario we had our baby put onto a Neopuff [infant resuscitator] and they [the group they were facilitating] asked if the training was in-*

house or manufacturer. Why was that important? I didn't know so I had to go away and find out for myself but it made me think about it. I still do" (Ali)

This comment highlighted the fact that Ali had identified that questioning of why was important. They had been forced to confront a concept that had not been obvious to them. They needed to know what the difference between in-house and manufacturer training and the impact this may have but they were also questioning why this was significant enough that someone had raised this as a question.

Charlie also explored this idea that facilitating their simulations asked them to question common practices

We had given the child a fluid bolus and someone asked where they could find the evidence to support this. We had the NICE guidelines [National Institute for Health and Care Excellence NG 29] but someone else said they had read that this was expert opinion and not based on evidence. But NICE guidelines are what we have to follow aren't they? Why are we following them if that is the case? I question a lot more now" [Charlie]

Although the causative effect of this transformation cannot be directly linked to their involvement in peer-led simulation, as part of the process they have been encouraged to apply parrhesiastic values. They have needed to question the basis of care so they are able to seek the truth and to challenge opinions. By working collaboratively and teaching others they have demonstrated, to some degree, a reframing of their judgements, to internalise the process and transform their own frameworks.

9.4 Limitations

There are limitations to the interpretation of the data. As the study took place within a restricted pool, pre-registration nursing students on the child field of practice, the findings are applicable within that particular area. This is a frequent issue raised by the use of Action Research (Dick, 1993; Price, 2017); however, the purpose is to engage in reflective processes that can help improve teaching practice. Whilst the concept of peer-led simulation within modules based on the care of a critically ill child had proved a positive pedagogical approach, the need for further exploration into its adaption to other areas has not been investigated. Further studies are needed to explore the transferability of knowledge gained through simulation into clinical practice as well as generalisability of peer-led simulation as a pedagogical approach.

The inherent risk with Action Research is that reflections from each cycle produces new avenues for research, to continually improve from previous cycles (Dick, 1993, Holly, Arhar and Kasten ,2009, p. 219). At some point I had to reach a conclusion about my research and this appeared to negate the ethos of Action Research as a methodology. However the ultimate aim of Action Research is to improve professional practice (Holly, Arhar and Kasten, 2009, p.266) and empower educators which, in turn, has a positive impact on teaching and learning (James and Augustin, 2017). Although I am aware that I need to continually reflect on the process, I felt that I had reached a natural endpoint. Findings from Cycle Three had helped to re-inforce my assumptions about the benefits of peer-led simulation and the data collected supported this. I had been able to tweak the format through the various cycles to provide an effective structure which was appropriate for me and the students who had engaged in the activity.

9.5 Summary

Research Question 1.3: Does peer-led development and facilitation of simulation affect student perceptions and outcomes of this learning strategy?

Learning from each other proved to be powerful in the generation of knowledge, understanding and transference to practice. Learning outside of the context of the group was also a key driver to help provide them with the ability to participate. The students identified their own anxieties that came as a result from taking part in peer-led simulation but they also continued to appreciate the confidence they gained (see 9.3.2). They were able to demonstrate the' ability to make cognitive links between theoretical and practical aspects of care delivery. Working within their Community of Practice fostered a collaborative approach where they learned from each other as well as learned about themselves (see 9.3.4). They suggested that they had developed transferable skills and their learning had been transformed by taking part (see 9.3.6). This links with the concept of situated learning and the relationship between learning and the social situation in which they are participating. Students acquired skills and knowledge through engagement in the process, which is further enhanced because of the differences of perspectives among their community of practice. While the Community of Practice is important, the students also provide evidence of bringing knowledge and skills acquired from their own individual motivation to learn (see 9.3.3) and in other communities of practice and in some cases are able to use peer-led simulation as a safe space in which to challenge that prior learning.

Simulation is a powerful tool to support learning and the additional level of complexity that peer-led simulation was able to offer students appeared to have added to this. Students

were open and honest about their experiences and by providing them a safe space in which to discuss their thoughts, they were able to present a critical discourse of their opinions of peer-led simulation. Students offered insight into fears about exposing their own limitations in front of their peers (see 9.3.2) but also appreciated the need to work together to support each other (see 9.3.4). They were able to recognise the limitations with simulation in attempting to replicate real life but found that through shared experiences they were able to immerse themselves into the process (see 9.3.5). Interviews had highlighted more in depth information that offered me some glimpses of the logic they had used to integrate their learning. As illustrated by comments made by Alex (see 9.3.2) attempts appear to have been made to contextualise the processes they had used during peer-led simulation and how they applied them to other aspects of their learning.

9.6 **Conclusion.**

This chapter has presented the final stage of the Action Research Cycle. Reflection from previous cycles had helped to enhance the methods used to undertake the research as well as the changes required to provide a framework to support the students in the process. Data collected during the cycle demonstrated that learning had been transformed through participation and facilitation of their simulations. Themes of confidence, individual and social motivation to learn as well as psychological fidelity were identified and these helped to reinforce the notion that peer-led simulation is an effective pedagogical approach.

Chapter Ten - Overall Discussion and Conclusions

This Action Research study explored the concept of peer-led simulation and its potential benefits to student learning. The original research question sort to evaluate peer-led simulation and investigate whether it was an effective pedagogical approach in student nursing programmes. The findings suggest that it is an effective pedagody and using the lens of Vygotsky and Lave and Wenger has provided a valuable insight into the learning process. In the following discussion, the key findings of this study are debated in relation to the concepts of Communities of Practice and the more capable peer.

Peer-led simulation has the potential to combine the power of peer learning that facilitates students to work collaboratively towards a greater understanding with the benefits of simulation, enabling students to learn in a safe space that attempts to mimic the clinical area.

This study has shown that at the very least peer-led simulation is as effective as facilitator-led simulation. The students who participate achieved similar results in OSCE assessment as those who, in previous years, had undertaken facilitator led simulations to prepare for their assessment (see 7.4.1). This study has also revealed additional benefits to this teaching and learning strategy that may yield a greater degree of student transformation than the facilitator-led approach (see 7.10; 9.3.6). It was also possible to see that the Community of Practice is a natural result of the teaching and learning strategy in which the experiences of students are largely positive (see 7.5.1; 8.3.3; 9.3.4). What was revealing though was that the role of the more capable peer has both negative and positive connotations for students and while they gained a lot from taking on this role, there is a need for careful preparation and clear expression of expectations (see 9.3.4).

This approach is unique in that, even when students are able to facilitate their own simulations as is the case in studies by Harvey et al (2012), Matthews (2016) and House et al (2017), this still follows the expected trajectory and addresses the learning objectives identified by the facilitator. Peer-led simulation is student centric in that they are able to identify their own learning needs and can progress the simulation using their own experiences and expectations. The concept of more student centric simulation activities also has the potential to be utilised in other areas whereby simulation is used as a pedagogical approach. Whilst my study involved the use of HFS, the students were able to demonstrate that it was not always the most expensive pieces of equipment that provided the best learning resource. One group used a low fidelity simulator and a pair of glasses

and wig to transform a student into a parent to produce a very effective learning point about the need for simple communication skills despite the fact that the “child” required sophisticated machinery to maintain their physiological observation. This inventiveness of students to improvise in order to achieve their objectives has tranfersability into other areas.

However this does need to be countered with the potential for academic staff involved in this pedagogical approach, to feel discomfort at giving up control to the students. As Lekalakala-Mokgele (2010) points out this can make them question their own abilities and in particular with their role within facilitation. This was can be seen in 8.4 where a comment caused me to reflect on my own role. Reassuringly, Lekalakala-Mokgele (2010) did find that facilitators opinions changed as they become more confident in their new roles and INACSL Standards Commitee (2016) for facilitation highlight that facilitation should go beyond the actual simulation event to help develop new ways of thinking. In essence the academic staff become the facilitators of learning from the simulation and taking part in the process.

10.1 Confidence and anxiety

A common theme that emerged throughout all three cycles was the theme of confidence and the feeling that taking part in the activity helped to improve their confidence. This was not only with the management of a critically ill child but also confidence within their own abilities and knowledge. Counter to this was the acknowledgement that undergoing simulation can be anxiety provoking and this is supported by other studies (Cant and Cooper, 2010; Parker and Myrick, 2012; Dearmon et al, 2013; Stroup, 2014; Shearer, 2016; Holland, Gosselin and Mulcahy, 2017; Yockey and Henry, 2019). This may then lead to subsequent reduction in receptivity to learning (Mandler and Sarason, 1952; Lasater, 2007; Bong 2010; Parker and Myrick, 2012). There is evidence that increased facilitator anxiety when dealing with HFS reduces the likelihood of educators engaging in the process, thus limiting its implementation within faculties (Harder, Ross and Paul, 2013b). By its very nature, peer-led simulation places this phenomenon onto the students and this could have had the potential to compound any difficulties relating to implementation of peer-led simulation. Throughout the sessions, this was identified as a particular theme and had to be managed effectively. In order to address this, there was appropriate preparation for the students as well as opportunities to practice within the module. As they were only facilitating one simulation they were able to develop familiarity with the equipment, to understand what it was capable of and how it could be effectively

implemented into their individual scenario. Although peer-led simulation did produce feelings of anxiety, with students using words such as "*scary"* (see 9.3.5) and *"nervewracking"* (see 7.4.2.1; 9.3.2) *t*he mutual support they were able to offer each other within a relatively safe environment appears to have facilitated the students to participate in the process more effectively.

When students are not actively engaged in the simulation process, there is a risk that they can disengage from it (Bethards, 2014; Bonnel and Hober, 2016). Students suggested that this did not appear to be the case with peer-led simulation as they were interested to learn from each other and they all had a stake in the process (see 8.3.3; 9.3.4). They had a genuine curiosity to learn and felt that it was a shared experience. This supports Lave and Wenger (1991) theory that mutual engagement helps to generate a community of learning with shared practices helping towards development of their own personal and professional practices. Overall, they seemed to embrace the concept and valued its collaborative nature that enabled them to explore their own learning as well as supporting each other. This links with the positive aspects of peer learning as discussed within Chapter Three.

It has to be remembered that the advantages of the use of simulation, and this includes peer-led simulation, has to be offset by disadvantages that are inherent within its process. While it attempts to replicate real life, it is still, yet, unable to mitigate against the unexpected. There are patients who do not fit into neat categories that enable all aspects of the outcomes of the session to be covered (see Ali's comment 9.3.5). Progression through their treatment may not be linear and the structure of simulation is such that it follows a set pathway (Franklin et al 2013; Lioce et al, 2015; Aebersold, 2018). As a result, there is a real risk of equipping professionals with the skills to be able to demonstrate competence working through the set criteria but who are unable to translate this into real life situations (Hanna and Fin, 2006). This has the potential to be further exacerbated by the Panopticon effect of surveillance (Foucault, 1979; Bogard, 1991); whereby students undertaking simulation perform for the camera or assessor and modify their behaviour according to what they feel is expected rather than what it required for the situation. However, peer-led simulations enables the students to lead the performance, as the expectations of the construction of the simulation is theirs rather than that of the lecturer's.

The aim of simulation is to facilitate learning for students and to enable them to develop their identity as a nurse (Aebersold, 2018). In order to enable this, the environment needs to mimic the clinical setting in an authentic way whilst maintaining a safe space in which students can explore, practice and reflect on aspects of care. By flipping the concept of

simulation, students were able to study their own perceptions independently before applying this to the hands-on activity and explore how principles used within their scenarios could be applied to future practice (see 9.3.6). The focus of providing a scaffold on which students could develop their cognitive framework added an extra dimension. During the study and as a result of the data collected from the interviews and focus groups, I was able to gain an insight into students' own experiences that provided me with opportunities to see their learning as they viewed it.

10.2 Social context of learning and capable peer.

Peer-led simulation facilitates the sharing of values and learning collaboratively that support students with their cognitive development and integration of knowledge. Students demonstrated their increased confidence in both dealing with their learning as well as that of their peers and this supports the theory of Community of Practice and situated learning expressed by Lave and Wenger (1991) and Wenger (1998). The activities sought to solidify previous experiences and build on these to make the cognitive links between theory and its practical application creating a context for learning and development of knowledge. From observing student interactions, it was possible to see, through the lens of theories by Wenger (1998), and Vygotsky (1978) that they had developed a Community of Practice through mutual engagement, joint enterprise and shared repertoire as a result of their participation in peer-led simulation. The capable peers provided the additional guidance required to develop other students beyond their individual potential development.

I have used these theories as guidance but feel that I need to explain my interpretation as a result of undertaking this Action Research. During the cycles, the capable peer was not a static entity. Lave and Wenger (1991) discuss the concept of old-timers within the community. They view becoming the old timer as the goal of the apprentice full membership into the Community of Practice (p.122). This also implies that the expert is the old timer. However, I felt that, within the students' Community of Practice, the view of old timers was not necessarily those who had spent more time within this and that the role of the expert was changeable. The concept of Vygotsky's (1978) capable peer, as discussed in Chapter Three, became more relevant. Each student had differing exposures to clinical practice that would allow them to learn *from* and *as* a capable peer (see 9.3.4). Over the course of the activity, the capable peer role changed with student providing guidance to each other. There was an accountability within the groups to support and further each other's learning and this links with the collaborative nature of social learning.

When this collaboration was disrupted, as in the case of non-participation by a student, there were impacts on group interaction and cooperation. It was down to others in the group to ensure completion of the task. They were also able to recognise strategies that could be used to manage this (see 9.3.4).

Lave and Wenger (1991, p.29) theorise that members become inculcated into their Community of Practice through the way meaning of learning is configured within the sociocultural practice. This would suggest that learning of knowledge and skills is only part of the process. As individuals, they had contributions but the coming together of the group enabled an exploration of knowledge in more depth. Linking with Vygotsky (1978) and his Zone of Proximal Development, students were guided towards their own potential development through guidance of a more capable peer. They each had their own contributions to this process and their role within their Community of Practice changed depending on the requirement of the group (see 9.3.4). In essence, they could be both the capable peer and the apprentice in slightly different situations.

I have also been able to learn from the students as I realised we shared a common philosophy of learning. Working together, we learned from each other as well as about each other. The students developed an understanding of their own knowledge and how this is built on and, no matter what my own responsibilities concerning what teaching might be, Action Research created an awareness of the need for me to be more responsive to the students. I realised that they were able to teach me as well and this created a symbiotic relationship with mutual respect, a skill that is essential to nurses. Ultimately, within a Community of Practice, students learnt from each other through the role of the capable peer.

10.3 Transformational learning

During the study, students demonstrated their ability to recognise that the role of an educator added complexity to learning and required an increased cognitive burden to be able to facilitate effectively but realised that this had transformed their knowledge (see 9.3.6). They were able to judge what needed to be learnt and adjusted their learning accordingly. This would seem to indicate their engagement in their learning, attuning to evolving situations and developing new perceptions. The students appeared to demonstrate an expansive approach (Berragan, 2011) rather than simply performing the tasks required for the simulation process.

There are potential benefits to this process. Nursing students have to be able to develop competence to effectively assess, plan and implement a course of action and the use of

peer-led simulation to provide concrete experiences on which to scaffold this would appear to support this. Due to their cognitive congruence (see 9.3.4) students who facilitated were more able to understand the issues and challenges and appear to be better able to explain the more problematic concepts at a more appropriate level (Ten Cate and Durning, 2007; Lockspeiser et al, 2008; Stone, Cooper and Cant, 2013). Learning was enhanced by the incorporation of this approach although it could not conclusively prove that this was a causative effect. They appeared to be able to make clinical decisions independently and reflect on their actions within the support network of their peers and engage in a learning strategy that resulted in further development of their cognitive abilities. Essentially, taking on the role of a teacher helps with the learning process and taking part in peer-led simulation activities meant students becoming the teacher. Although there is a risk that this approach could be seen as a way to reduce the need for the expert to facilitate as the students are essentially "doing the lecturer's job" (see 8.3.3), there is still a need for an expert. The students take on the roles of more capable peers to guide and support each other but there are challenges due to the nature of the topics covered and the emotions that can arise from facilitating the simulation that may have to be addressed. For example, Ali's comment (see 9.3.5.) highlights the fact that involvement in peer-led simulation can have a negative impact if students are exploring their own personal experiences within the context of their simulation. This has to be addressed by effective pre and de-briefing and this is where the expert has to be involved.

10.4 Strengths and limitations of the study.

As previously stated, this Action Research study was limited to a specific group of participants using purposive sampling. This has the potential to restrict further applications to other areas of education. However, throughout the cycles I have discussed the different methods used to collect data and how the findings have been generated. The use of multiple data collection methods can increase the validity of the findings (Maxwell, p 102), but this has to be countered with the risk of self report bias within the tools used to collect data (Maxwell, p128) To help counter this I have used a reflexive approach and included reflective diaries to help demonstrate this. (See 7.7, 8.5 and 8.7 for diary excerpts and 4.2 and 5.9 for further discussion on this).

Interviews and focus groups were used in Cycle Two and to a greater extent in Cycle Three and it is possible to see how my skill as an interviewer developed. As part of my ethical approval, I had to produce an interview guide (see appendix F and G) and this was

reviewed by my supervisors. This provided a critical eye to the questions meaning I was able to gain some reassurances that the questions were appropriate.

Whilst I do not profess to have provided a definitive solution for the management of simulation and, by not comparing it to facilitator-led simulation, I am not offering it up as an alternative, I do feel it is a pedagogical approach that has the potential for significant application within nurse education. As stated previously in Chapter Three, there has been little research completed in the area of peer-led simulation using Action Research and therefore this study has been able to demonstrate the value of this pedagogical approach.This has added to the field of research within simulation and the use of peer-led simulation has provided originality. As also discussed in Chapter Three, peer-led activities are powerful tools to enhance knowledge and engage students in their learning as well as increasing their confidence. Simulation, as a pedagogy, is also an effective learning strategy (see Chapter Two). This study has been able to demonstrate that a combination of peer guided learning using simulation has enhanced that learning by allowing students to take ownership of it. It is also possible to view the wider applications of this method in other areas whereby simulation and peer learning are common pedagogical approachs.

Further research into the concept of peer-led simulation does need to be carried out to identify if there is a place within health curriculae that utlise simulation as a pedagogy. As previously stated there was no comparison with facilitator-led simulations and so the the benefits cannot be fully asserted. Additionally the question needs to be asked as to whether peer-led simulation is more amenable to certain subject areas. For example is it more appropriate for use in single scenario simulations or could it be effectively used within a multiple sensory simulation or for managing ethical considerations with the dying patient? Another consideration that needs further exploration is the ongoing impact of taking part in peer-led simulation and does supporting students to teach and support peers help improve their skills at working with their patients to help improve education and compliance? Ultimately impacting on patient outcomes and satisfaction.

10.5 Personal reflection

The motivation for embarking on this project stemmed from an observation raised by a student. This resulted in a personal journey that obliged me to question my own epistemological assumptions on the nature of learning and the effectiveness of simulation as a pedagogical approach. This was a way of unravelling my own personal and professional conflict in relation to simulation and its perceived benefits for students. In undertaking the process of Action Research, I have developed and re-imagined my

thoughts from what started as curiosity and progressed through the cycles. I have been able to gauge how the process has evolved, reflect on each cycle and plan changes dependent on what my findings were. This has enabled me to conceptualise teaching as cycles of action, observation and reflection. Although previously, I may have followed this process unconsciously, the very act of undertaking Action Research has focussed my attention. One of the strengths of Action Research is that there is the opportunity for academics to explore another way of thinking when the current way no longer works or cannot be explained by the current discourses (Holly et al, 2009, p.31). The research problem had begun with a situation that had the potential to be unsustainable as well as counterproductive. As part of my research journey, I was able to study the problem through the lens of Action Research in order to be able to capitalise on the true situation and find a way to institute change.

There are limiting and pragmatic factors that affect the capacity to undertake the research and in particular, there is a necessity to be flexible with the ability to amend and adapt when circumstances require modifications (Phillips and Carr, 2010, p.38). On reflection, this need to transform led to my own personal development in that I have had to learn how to question, to shift my perceptions and to apply these new understandings to my own living pedagogical theory. My use of Action Research to scrutinise and analyse teaching and learning within the specific groups of students has been able to show how the dynamics of pedagogy and its relationships within an institute can be integrated with individual practices for improvement.

This particular study evolved over a period of seven years. There is a certain amount of flexibility within the teaching system that allows for creativity and this enquiry into my own teaching process enabled me to gain new knowledge, within the field of peer-led simulation, the process of learning and the engagement of students, as well as with research methodologies and their applications. As Action Research is often collaborative and is conducted to ascertain a plan for innovations or interventions (Donato, 2003), it had the advantage of allowing me to gather insights into the possibilities of change. As a result, I had learnt how to improve as a teacher with the positive benefits for my students. I had also developed an understanding of the process of Action Research as a methodology. Fundamentally, I was able to confirm my assertion that peer-led simulation is an effective pedagogical approach

10.6 Take Home Messages

a) Peer-led Simulation is a powerful and effective pedagogical approach that supports the students to develop their own skills and knowledge. It also has a transformative effect on their learning.

b) Students like the approach of working together to develop and facilitate their simulations. Their satisfaction scores are high and many of their comments talk about the enjoyment of the experience. Simulation and peer teaching is associated with anxiety and this might be a hindrance to learning. However, some degree of anxiety helps enhance the learning process.

c) Students naturally formed Communities of Practice and the sense of joint enterprise offers students a supportive environment in which to learn. They co-operate to make sure all Learning Objectives are covered. They appreciate the Community of Practice, and working together and they value each other.

d) The strategy is transformative in the sense that the students are able to transfer the skills and knowledge gained into their practice. Students draw on each other's experiences to help them make sense of the situation. They have cognitive congruence and that helps them to appreciate how this applies to their own practice.

e) Student understand the fact that they are able to learn from their peers as well as provide support for others. They compare their knowledge base with others and feel they should be at the same level but appreciate that they are able to bring their own unique experiences to help advance the pool of knowledge.

f) Students gain confidence about the skills and knowledge but importantly this clearly relates to practice – they reflect on experiences in practice and use this to question their own assumptions.

g) Although some students feel they should take on the role of the more capable peer at all times, others are aware of the fact that they are able to be guided by others within their Community of Practice. Anxiety because of feeling responsible for other's learning can be disabling and it is important to consider whether this interferes with their own learning.

h) When undertaking the role of the facilitator they exhibit the same anxieties in that they feel they need to know everything and cover for every eventuality. Some question the approach – are they doing the job of the lecturer? However, the expert is still needed. Students might have the skills and knowledge to manage the skills and theory acquisition but it may be beyond their scope to handle the negative emotions and challenging stories others tell. The need to support in debriefing is really clear.

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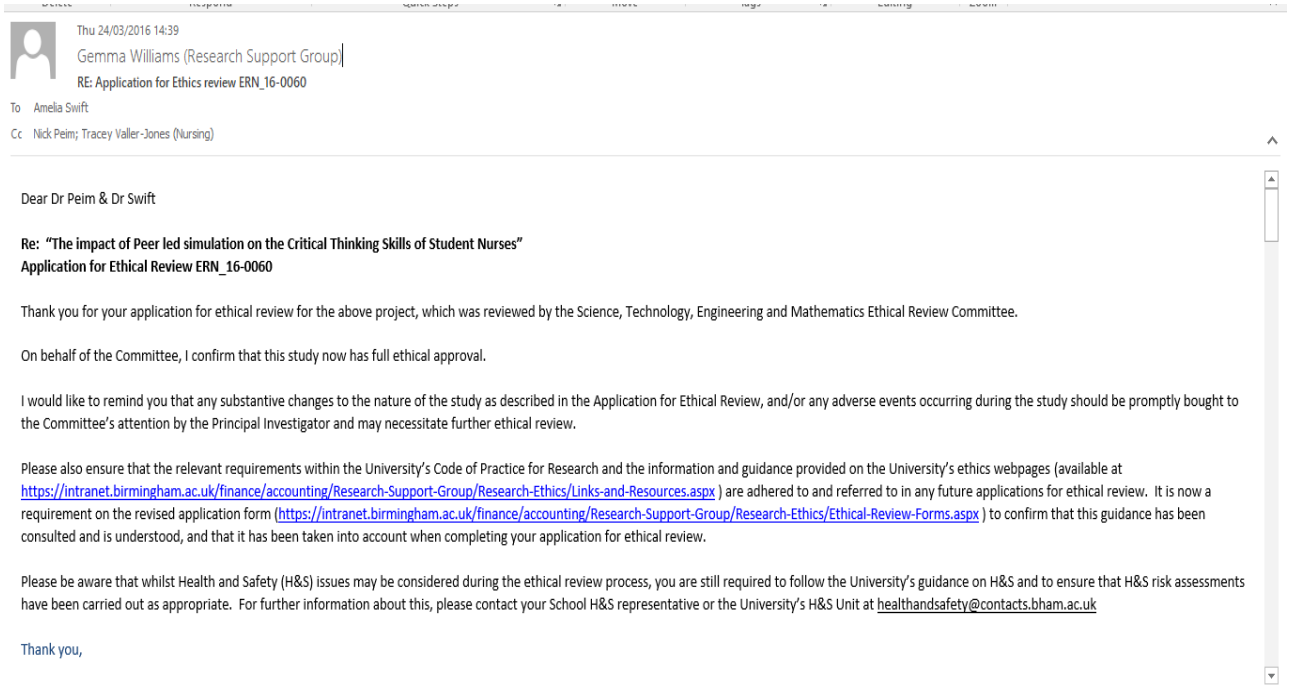
Appendices

Appendix A: Confirmation of Ethical Approval and Amendments



Thu 24/03/2016 14:39

Gemma Williams (Research Support Group)

RE: Application for Ethics review ERN_16-0060

To Amelia Swift

Cc Nick Peim; Tracey Valler-Jones (Nursing)

Dear Dr Peim & Dr Swift

Re: "The impact of Peer led simulation on the Critical Thinking Skills of Student Nurses"
Application for Ethical Review ERN_16-0060

Thank you for your application for ethical review for the above project, which was reviewed by the Science, Technology, Engineering and Mathematics Ethical Review Committee.

On behalf of the Committee, I confirm that this study now has full ethical approval.

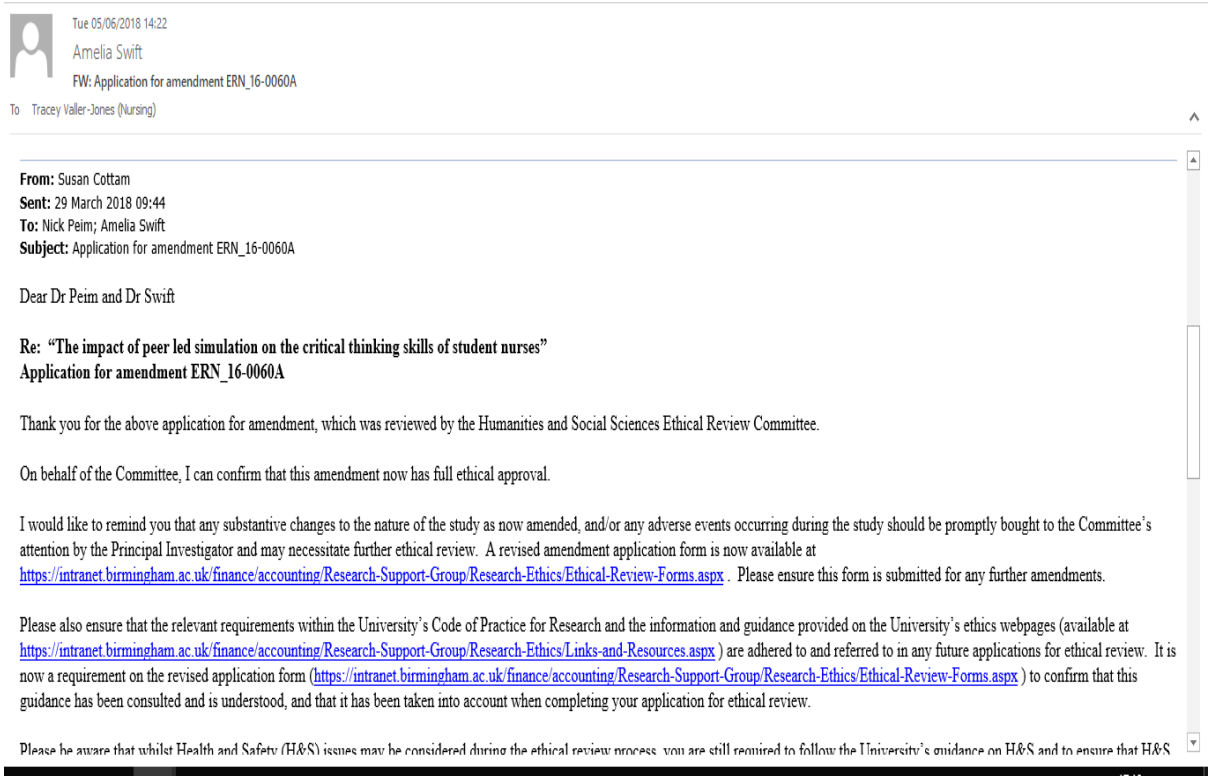
I would like to remind you that any substantive changes to the nature of the study as described in the Application for Ethical Review, and/or any adverse events occurring during the study should be promptly bought to the Committee's attention by the Principal Investigator and may necessitate further ethical review.

Please also ensure that the relevant requirements within the University's Code of Practice for Research and the information and guidance provided on the University's ethics webpages (available at https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Links-and-Resources.aspx) are adhered to and referred to in any future applications for ethical review. It is now a requirement on the revised application form (https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Ethical-Review-Forms.aspx) to confirm that this guidance has been consulted and is understood, and that it has been taken into account when completing your application for ethical review.

Please be aware that whilst Health and Safety (H&S) issues may be considered during the ethical review process, you are still required to follow the University's guidance on H&S and to ensure that H&S risk assessments have been carried out as appropriate. For further information about this, please contact your School H&S representative or the University's H&S Unit at healthandsafety@contacts.bham.ac.uk

Thank you,

The following form was completed due to changes made from the original Ethical Approval based on comparison of Facilitator led simulation with Peer-led simulation.



Tue 05/06/2018 14:22

Amelia Swift

FW: Application for amendment ERN_16-0060A

To Tracey Valler-Jones (Nursing)

From: Susan Cottam
Sent: 29 March 2018 09:44
To: Nick Peim; Amelia Swift
Subject: Application for amendment ERN_16-0060A

Dear Dr Peim and Dr Swift

Re: "The impact of peer led simulation on the critical thinking skills of student nurses"
Application for amendment ERN_16-0060A

Thank you for the above application for amendment, which was reviewed by the Humanities and Social Sciences Ethical Review Committee.

On behalf of the Committee, I can confirm that this amendment now has full ethical approval.

I would like to remind you that any substantive changes to the nature of the study as now amended, and/or any adverse events occurring during the study should be promptly bought to the Committee's attention by the Principal Investigator and may necessitate further ethical review. A revised amendment application form is now available at https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Ethical-Review-Forms.aspx . Please ensure this form is submitted for any further amendments.

Please also ensure that the relevant requirements within the University's Code of Practice for Research and the information and guidance provided on the University's ethics webpages (available at https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Links-and-Resources.aspx) are adhered to and referred to in any future applications for ethical review. It is now a requirement on the revised application form (https://intranet.birmingham.ac.uk/finance/accounting/Research-Support-Group/Research-Ethics/Ethical-Review-Forms.aspx) to confirm that this guidance has been consulted and is understood, and that it has been taken into account when completing your application for ethical review.

Please be aware that whilst Health and Safety (H&S) issues may be considered during the ethical review process, you are still required to follow the University's guidance on H&S and to ensure that H&S

Appendix B: Participant Information Letter for Cycle Two and Three.

Study Title

The Effects of Peer led Simulation on the Critical Thinking Skills of Student Nurses

Invitation

I wish to invite you to take part in a research study. In order for you to make an informed decision I would like to explain why the research is being done and what it would involve for you. Please read the following information and ask questions if you would like more information. Take time to decide whether or not to take part

What is the purpose of the study?

This study will look into the effectiveness of simulation as a method of learning. In particular it will focus on the development of critical thinking skills.

Do I have to take part?

You are under no obligation to take part in this study and there will be no consequences for participation or non-participation.

What will happen to me if I take part?

As part of the study you will be assigned to either a peer led or facilitator led simulation group. You will be required to undertake a simulation followed by an interview. You will then have a follow up interview within the next 12 months. The simulation will take a maximum of 20 minutes and the interview will be a maximum of 30 minutes. Those in the peer led simulation group will be required to develop a clinical scenario which will take approximately 60 to 90 minutes preparation.

The simulation will be videoed for review of critical thinking behaviour purposes. It will not be used to form an assessment of your knowledge or clinical skills and will not be used in any way to influence your progress on the course.

What are the possible disadvantages and risks of taking part?

There are no risks in taking part in the study. There will be an impact on your time but this will be kept to a minimum as described above.

What are the possible benefits of taking part?

I hope that you will gain some valuable knowledge during the study that will be applicable to your clinical practice. I also hope that the findings will be useful in supporting the concept of peer led simulation within the nursing curriculum.

What to do if there is a problem.

In the first instance, if you do have any concerns about aspects of this study, please contact the researcher (Tracey Valler. [redacted] who will endeavour to answer them.

If you have concerns about the conduct of the researcher, please contact either the Principle supervisor (Nick Peim. [redacted] or Secondary Supervisor (Amelia Swift. [redacted]

Will my taking part in the study be kept confidential?

All interview data will be anonymised and given a code, which will only be known by the researcher.

.The main list identifying participants to the research codes data will be held on an encrypted device that is password protected and accessed only by the researcher.

Video and audio files will be stored securely in a password-protected area of the Medical and Dental Sciences server until fully analysed. At this point, they will be deleted and the paper transcripts retained in a locked cabinet in a locked room for a period of ten years. After this time, the paper records will be destroyed as per confidential waste.

The data will be used for the purposes of this study. If further studies by the researcher involve the use of this data, further ethical approval and consent will be sought.

Only authorised persons such as researcher and her supervisors will be able access identifying data.

What are the implications for me if I choose to withdraw from the study?

You can withdraw from the study at any time. All your data collected up to that point may still be used. If you have already taken part in the video portion of the study you can decide whether you are happy for the video to be used or destroyed. If you have taken part in the interview process you can decide whether you are happy for the information to be used or disregarded. ***Following the interview process there will be a period of 2 weeks whereby you can request withdrawal from the study.*** After that we will assume you are happy for your data to be entered into the analysis phase and withdrawal of the data from the study will no longer be possible.

Withdrawal from the study will not impact on your course or subsequent research participation.

What will happen to the results of the research study?

The researcher intends to publish the findings at the end of the study. You will have the opportunity to view this should you wish.

Researcher Contact Details

Tracey Valler

Email: [redacted]

Telephone: [redacted]

Appendix C: Standard consent form used for Cycle One and Two

Informed Consent Form –Peer-Led Simulation.

The data will be destroyed once the report has been completed and all data will be stored in accordance with in line with the University Ethics policy and Data protection act.

I, the undersigned, confirm that (please initial boxes as appropriate):

1.	I have read and understood the information about the project, as provided above .	
2.	I have been given the opportunity to ask questions about the project and my participation.	
3.	I voluntarily agree to participate in the project.	
4.	I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn.	
5.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymization of data, etc.) to me.	
6.	If applicable, separate terms of consent for interviews, audio, video or other forms of data collection have been explained and provided to me.	
7.	The use of the data in research, publications, sharing and archiving has been explained to me.	
8.	I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.	
9	I, along with the Researcher, agree to sign and date this informed consent form.	

Participant:

_____ _____ _____

Name of Participant Signature Date

Researcher:

_____ _____ _____

Name of Researcher Signature Date

Appendix D: Consent form for Interviews used in Cycle Three

RESEARCH ETHICS: CONSENT FORM

Full title of Project:

Peer led Simulation Student Nurses

Name, position and contact address of Researcher:

Tracey Valler
Senior Lecturer Child Field of Practice.
EF13 Medical School
University of Birmingham
Edgbaston
Birmingham B15 2TT

	Please Initial
I confirm that I have read and understand the participant information for this study. I have had the opportunity to ask questions if necessary and have had these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.	
I understand that my personal data will be processed for the purposes detailed above, in accordance with the Data Protection Act 1998.	
I agree to the interview being audio recorded	
I agree to the sharing of the peer-led simulation video amongst the members of my group only	
I understand that any sharing of the video outside of the group will result in referral to Fitness to Practice and may affect my continuation on the course.	
I agree to the simulation being video recorded.	
I agree to the use of anonymised quotes and images in publications	

Name of Participant Date Signature

Name of Researcher Date Signature

Appendix E: Pre and Post Questionnaire used in Cycle Two.

Thank you for taking the time to complete this questionnaire. The purpose of this questionnaire is to review the effectiveness of peer-led simulation as a method of learning. You will be required to complete both pre and post simulation questionnaires. Data collected from this questionnaire will be used for the purposes of this study. If further studies by the researcher involve the use of this data, further ethical approval and consent will be sought. Only authorised persons will be able access identifying data.

Pre Intervention: You will need to complete this prior to your peer-led simulation session. These questions relate to caring for a critically ill child. From the 8 statements below, please circle the appropriate response in BLACK.. There is also a section for comments

I am confident that I have the ability to recognise when a child's condition is deteriorating	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I have a good understanding of course of action required when a child's condition deteriorates	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel confident in my ability to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am able to carry out an assessment on a child who is critically ill	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am able perform effective resuscitation on a child.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I have the skills required to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I do not think peer led simulation will give me the skills to be able to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I do not think peer led simulation will give me the knowledge required to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Please add any comments.

Post Intervention: You will need to complete this following your peer-led simulation session. These questions relate to caring for a critically ill child. From the 8 statements below, please circle the appropriate response in BLACK.

1.	I am confident that I have the ability to recognise when a child's condition is deteriorating	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2.	I have a good understanding of course of action required when a child's condition deteriorates	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
3.	I feel confident in my ability to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4.	I am able to carry out an assessment on a child who is critically ill	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5.	I am able perform effective resuscitation on a child.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
6.	I have the skills required to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
7.	I do not think peer led simulation will give me the skills to be able to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
8.	I do not think peer led simulation will give me the knowledge required to care for a critically ill child	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Please add any comments you may have about your experience.

Appendix F: Interview Guide Used for Cycle Three

Interview Schedule

Preamble:
Permission to record. Consent gained and signed?

Section 1 – Introduction:

How far are you into your course?

Did you take part in the peer led simulation activity?

Section 2 – The simulation

Can you describe the simulation you took part in?

What do you believe are the main issues with the scenario?
- What were the learning outcomes/
- What was the sequence of events?
- Could you explain what the interventions used were?
- What was the impact of these interventions

Where there any specific issues that you can recall from the simulation?
- Did the simulation follow a logical path?
- Did you or anyone deviate from the treatment protocol?
- If so why do you think this happened?
- What circumstances caused this deviation?

Section 3- Peer Group

Can you tell me how the development of the simulation came about?
- Did one person take the lead?
- Who decided how the work, preparation was to de divided up? Were there any issues with this?
- How did your group decide what roles you would each take?
- What was your role in the simulation?

Were there any concerns with facilitating/managing your own simulation?
- Were there any concerns with facilitating/managing your peers?

Section 4 -Knowledge and Skills.

Following the simulation do you feel you have developed new knowledge or did it enhance existing knowledge?
- If new knowledge could you explain what that is?
- If enhanced knowledge can you explain what that is?
- How do you feel this knowledge will help you in your clinical practice?

. Do you feel that you have gained any further skills from developing and facilitating a simulation?
- Explore what those skills are.
- If no new skills have been gained can you explain why you feel this maybe so?

Finally, is there anything you would like to add?
Thank you for taking part.

Apprendix G. Interview Guides used for Focus Groups in Cycle Three.

Focus Group Interview Schedule. Peer-led simulation activity.

Preamble: Welcome, Overview of research.

Section 1 – Introduction:

Ground rules
Permission to record.
Consent gained and signed?
As moderator I will guide discussion.
No right or wrong answers. Please be respectful of others views.

Section 2 – The simulation

Did you all take part in same simulation?
Can you describe the simulation you took part in?
What do you believe are the main issues with the scenario?
Where there any specific issues that you can recall from the simulation?
- Did the simulation follow a logical path?
- Did you or anyone deviate from the treatment protocol?
- If so why do you think this happened?

Section 3- Peer Group

Can you tell me how the development of the simulation came about? For example, did one person take the lead?
- How did you decide roles and work distribution?

Were there any concerns with facilitating/managing your own simulation?
- Were there any concerns with facilitating/managing your peers?

Section 4 -Knowledge and Skills.

Do you feel you have developed new knowledge or did it enhance existing knowledge?
- If new knowledge could you explain what that is?
- If enhanced knowledge can you explain what that is?
- How do you feel this knowledge will help you in your clinical practice?

. Do you feel that you have gained any further skills from developing and facilitating a simulation?
- Explore what those skills are.
- If no new skills have been gained can you explain why you feel this maybe so?

Finally, is there anything you would like to add?
Thank you for taking part.

Appendix H: Scenarios used for used in Cycles One and Two

Scenario One.

You are in the Emergency Department when a 3 month old baby is brought in by the paramedics

• She has a 2 day history of being “snuffly and off her feeds”

• She did not wake for a feed overnight and this morning her mum found her floppy and grey in her cot

• On initial observation the baby appears to be floppy, blue around the lips and has mottled skin

The expected outcomes for the scenario

Initial observations = apnoeic and no palpable central pulse; ECG shows asystole

- **Effective Bag Valve Mask ventilation resulting in bilateral air entry**
- **Effective Chest compressions at a rate of 100-120bpm, ratio of 15 compressions to 2 breaths**
- **Requires x1 dose Intra Osseous adrenaline 10mcg per kg of weight and x1 fluid bolus of 20 ml per kg before return of Spontaneous Circulation (sinus bradycardia)**
- **Ultimately requires tracheal intubation and transfer to a Paediatric Intensive Care Unit**

Scenario Two

You are in the Emergency Department when a 6 year old is brought in by her parents

She had a witnessed fall from her bike whereby she fell forward over the handlebars and hit her head on the pavement.

- The parents have rushed her to the hospital in their car
- As you approach the child appears to be floppy, blue around the lips and has mottled skin

Clinical course (The child is in cardiorespiratory arrest secondary to hypovolaemia due to a ruptured spleen)

The expected outcomes for the scenario

Initial observations = apnoeic and no palpable central pulse; ECG shows asystole

- **Effective Bag Valve Mask ventilation resulting in bilateral air entry**
- **Effective Chest compressions at a rate of 100-120bpm, ratio of 15 compressions to 2 breaths**
- **Requires x1 dose Intra Osseous adrenaline 10mcg per kg of weight and x1 fluid bolus of 20 ml per kg before return of spontaneous circulation (sinus bradycardia)**
- **Ultimately requires tracheal intubation and transfer to a Paediatric Intensive Care Unit**

Scenario Three

You are in the Emergency Department when a 15 year old is brought in by his parents

He had complained of a sore throat and feeling “under the weather” for the last day

- This morning he was very drowsy and unresponsive and his mum noticed a rash on his arms
- Paramedics were called and he was rushed to the Emergency Department
- As you approach you notice that he is unresponsive is blue around the lips and has mottled skin

Clinical course (The child is in cardiorespiratory arrest secondary to a possible sepsis)

The expected outcomes for the scenario

Initial observations = apnoeic and no palpable central pulse; ECG shows asystole

- **Effective Bag Valve Mask ventilation resulting in bilateral air entry**
- **Effective Chest compressions at a rate of 100-120bpm. Ratio of 30 compressions to 2 breaths**
- **Requires x1 dose adrenaline 1mg and rapid infusion of intravenous fluid via an intravenous cannula before return of spontaneous circulation (sinus bradycardia)**
- **Ultimately requires tracheal intubation and transfer to a Paediatric Intensive Care Unit**

Appendix I: Sample Simulation Guide.

This is an example of a completed student simulation guide.

SKILLS SIMULATION

Scenario Title	**Neonatal resuscitation following birth**				
Child's Name	xxxxxxxxx				
Hospital Number	xxxxxxxxx	**DOB:**		**Age:**	
Scenario type	Resuscitation of the newborn (respiratory failure)				
Year of training	Year Two	**Module Code:**			
Author	xxxxxxxxx				
Learning Objectives:	To be able to recognise an acutely ill newborn baby To be able to competently manage a baby with respiratory failure				
Keyword – systems	Respiratory system, Cardiovascular system				
Keyword – skills	Psychomotor skills Communication skills Decision-making Team working				
Standard of Care	Critical				
Learning Outcomes	Recognition of an acutely ill baby suffering respiratory failure Management of a baby requiring respiratory resuscitation Effective communication and documentation Team working and decision making (multidisciplinary)				
Participant Objectives. Facilitatees					
Nurse 1	Dealing with newborn baby				
Nurse 2	Reassurance and care of mother				
Scribe	Record details of events, document APGAR scores				
Baby(SimBaby)	Newborn – respiratory failure				
Parent	Mother – newly given birth, still in the room				

Child Name: xxxxxxxx

Hospital Number: xxxxxxxxx

DOB:

Student Learning Goals: Competent management of a newborn baby with respiratory failure.

RECORDS

Relevant History:	**Social history:** Mother 23, first baby, single parent, 37weeks, spontaneous vaginal delivery **Medical history:** Born 37/40, first child spontaneous vaginal delivery, no known complications in pregnancy, limited antenatal contact.				
Allergies:	Nil Known	**Height:**		**Weight:**	3 Kg
Laboratory Reports:	None				

Introduction

We are here in the delivery room with a single mother, aged 23, first baby, 37 weeks which is a spontaneous vaginal delivery. No complications are known, however mum has reported decreased movement of the foetus in the last couple of weeks. It has also been noted mum has had minimal antenatal contact. Passage through the birth canal can be a hypoxic experience for the baby. After birth it is important to assess the child regularly and complete an APGAR score.

Time	Baby	Action	Reason	Prompt
0-4	-	Introduction -	Students familiarise themselves with scenario and determine roles	
5	Born	Start timer on Resuscitaire. Take baby and place on Resuscitaire. Head at end	Head Position – to ensure easy access to airway for maintenance and access	Ensure baby positioned correctly on resuscitar
6		*APGAR Score* Dry/stimulate baby. Place hat on baby. Mother enquiring why baby not crying	In attempt to prompt spontaneous breathing To help maintain temperature	Don't forget the mother!
7	Pale, blue, floppy, not breathing, HR 80	Recognise baby not breathing. Assessment of airway. Assessment of HR 5 Inflation Breaths using air Explanation to mother of action	Ensure nothing blocking airway as if there is a blockage then inflation breaths will be ineffective. Ensure head in neutral position. Babies do not need oxygen at birth, air is adequate to establish breathing by aerating the lungs	Inform them HR 80 Remind to check airway for blockage and suction if necessary. Prompt type of bag breaths given (slow) Ensure using air
9	Not breathing No heart rate	*APGAR Score* Reassessment of breathing and heart rate		Inform no change to baby's condition
10	As above	Commence chest compressions and breaths ratio 3:1 Explanation to mother of action	Cardiac function deteriorated; circulation is inadequate preventing oxygenated blood from the aerated lungs to the heart	Inform of newborn resus ratio
12	Heart rate 110 Spontaneous breathing	Reassessment of child Preparation for transfer to neonatal unit Explanation to mother of action	Always reassess child as deterioration can occur rapidly	Prompt to reassess
13-16	-	-	-	Debriefing explaining what did well. What should have been done differently?. What other complications there could have been e.g. Drugs?

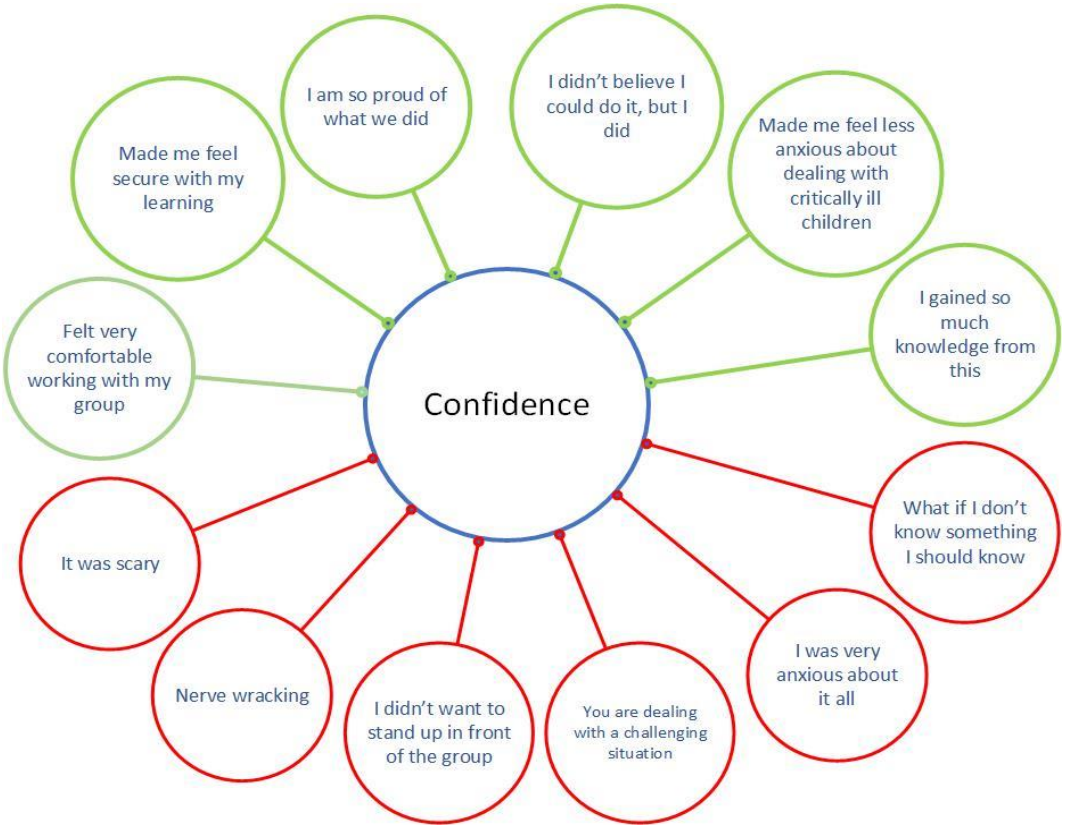
Actions in italics – scribe Information regarding the mother

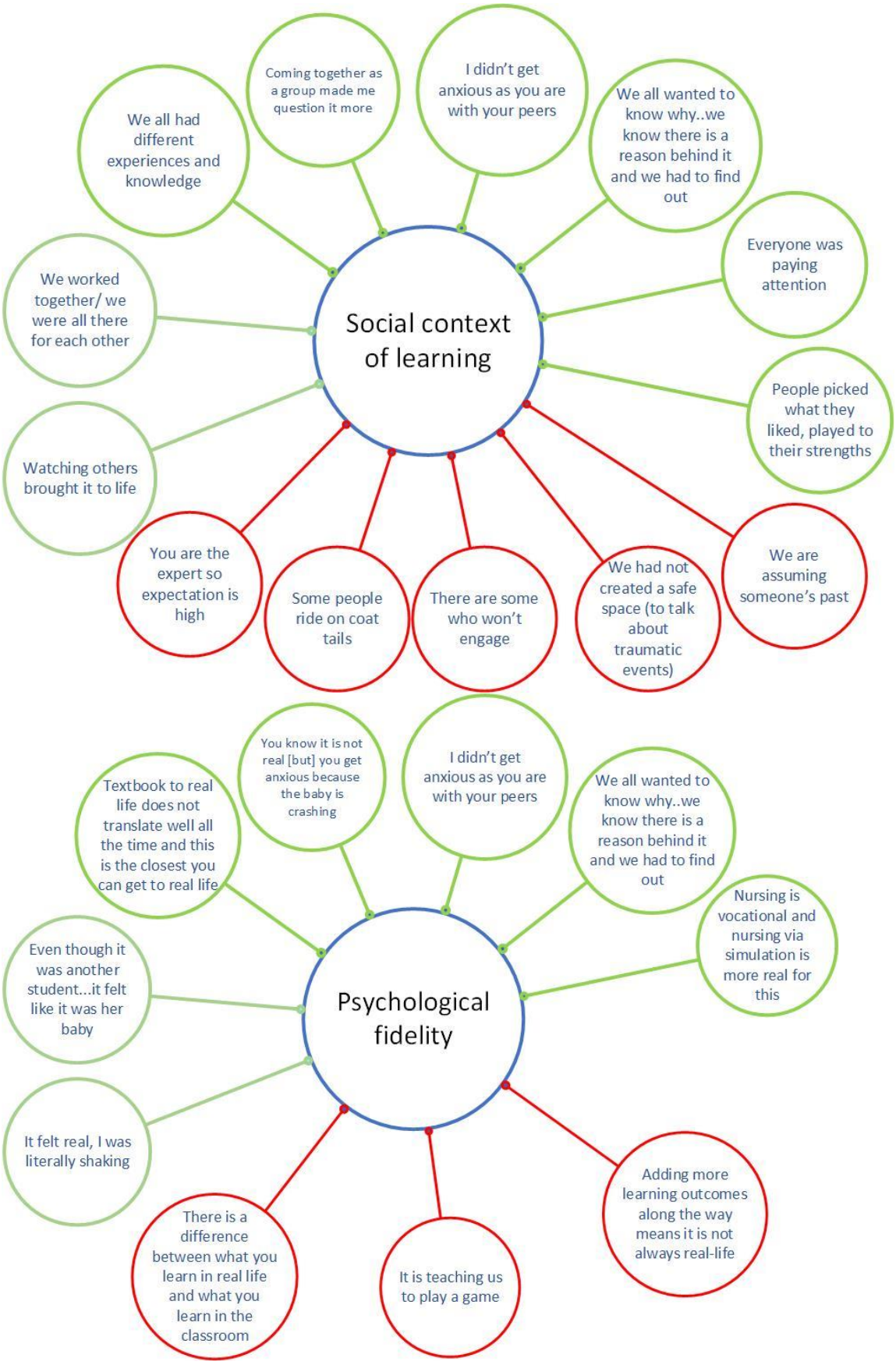
Appendix J: Debriefing Guide.

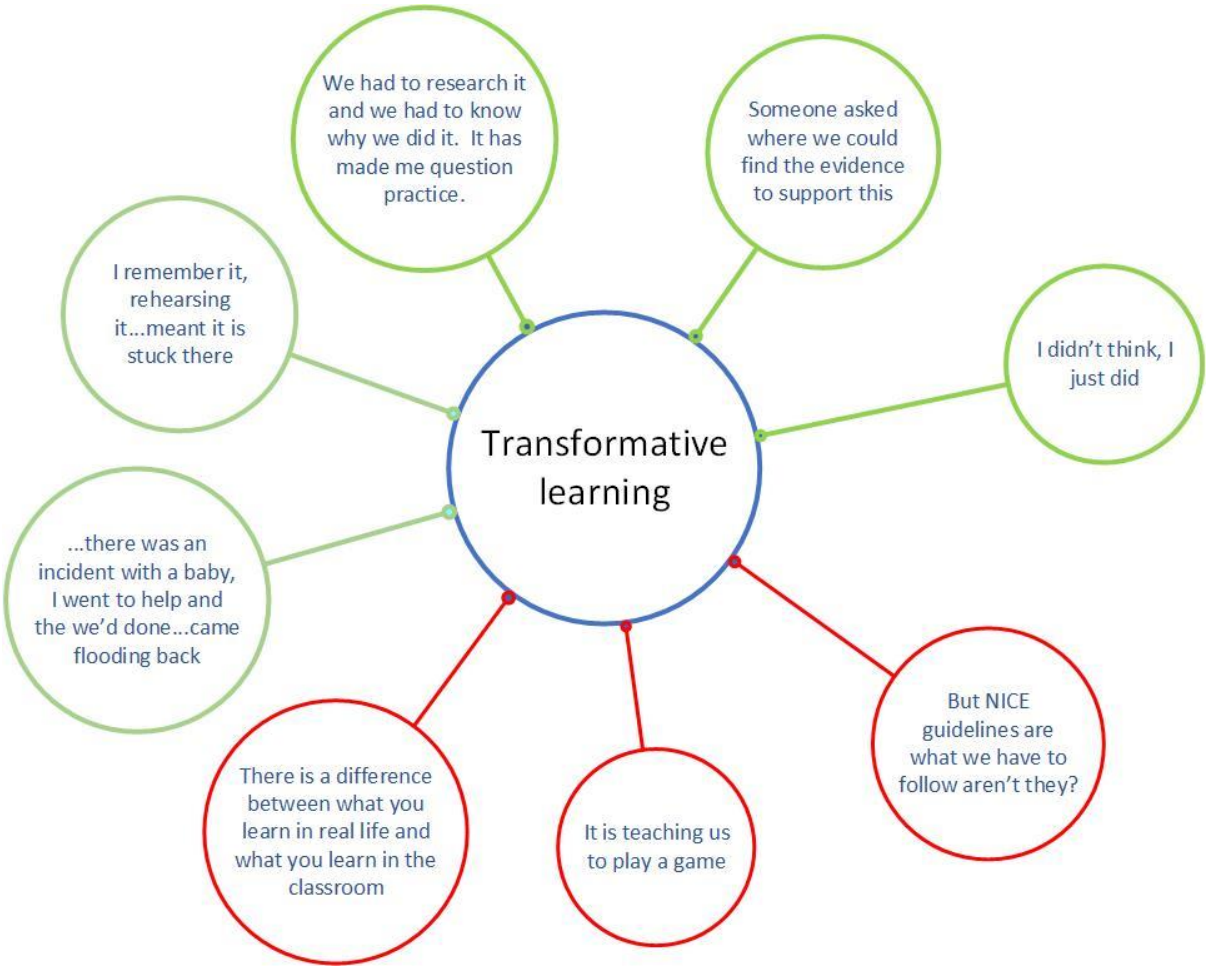
This is a sample of the debriefing tool used at during the period of Action Cycle One Two and Three. This may not be representative of any current tools used for debriefing

Observation	Understanding	Response
Was there anything with the condition of "[insert child 's name] that informed your management of the situation? Anxiety level Position adopted	What do you understand about care of [insert Child's name] What do you understand about the signs and symptoms of [insert medical condition].?	How did you use this knowledge in the scenario?
What role did you notice other students took in this scenario?	How did that impact upon the supervision of the situation?	How did you determine if your interventions were effective
Attitudes & Behaviours: The interaction with the peer group seemed to • Go well…… Have difficulties What happened to make it • Go well…… Have difficulties		Communication with [insert Child's name] and her family seemed to • Go well…… Have difficulties What happened to make it • Go well…… Have difficulties
Effective Evaluating: • What did you learn today from managing this simulation? • What do you need to review? • What do you want to know more about?		

Appendix K: Diagrammatic Examples of Theme Development.




Social context of learning
We all had different experiences and knowledge
Coming together as a group made me question it more
I didn't get anxious as you are with your peers
We all wanted to know why..we know there is a reason behind it and we had to find out
Everyone was paying attention
People picked what they liked, played to their strengths
We are assuming someone's past
We had not created a safe space (to talk about traumatic events)
There are some who won't engage
Some people ride on coat tails
You are the expert so expectation is high
Watching others brought it to life
We worked together/ we were all there for each other
Psychological fidelity
Textbook to real life does not translate well all the time and this is the closest you can get to real life
You know it is not real [but] you get anxious because the baby is crashing
I didn't get anxious as you are with your peers
We all wanted to know why..we know there is a reason behind it and we had to find out
Nursing is vocational and nursing via simulation is more real for this
Adding more learning outcomes along the way means it is not always real-life
It is teaching us to play a game
There is a difference between what you learn in real life and what you learn in the classroom
It felt real, I was literally shaking
Even though it was another student...it felt like it was her baby


Transformative learning
We had to research it and we had to know why we did it. It has made me question practice.
Someone asked where we could find the evidence to support this
I remember it, rehearsing it...meant it is stuck there
I didn't think, I just did
...there was an incident with a baby, I went to help and the we'd done...came flooding back
But NICE guidelines are what we have to follow aren't they?
There is a difference between what you learn in real life and what you learn in the classroom
It is teaching us to play a game