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RETHINKING THEORY AND PRACTICE: PRE-REGISTRATION STUDENT NURSES' EXPERIENCES OF SIMULATION TEACHING AND LEARNING IN THE ACQUISITION OF CLINICAL SKILLS IN PREPARATION FOR PRACTICE.

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In the United Kingdom (UK) simulation learning has been recognised in the form of a regulatory agreement that may replace hours from clinical practice. This integration has become an embedded feature of the pre-registration nursing programme at a University in the North of England, along with strategic investment in staff and simulation suites developed to underpin this curriculum change albeit in the absence of sparse empirical evidence, hence the rationale for the study which was designed to explore the relationship between simulation, theory and practice. The study features a thematic analysis of evaluation questionnaires from pre-registration student nurses ($n > 500$) collected over a 2 year period which informed subsequent focus group interviews to explore the themes in more detail. Consistent data findings were the students' positive response to simulation as a learning approach facilitating the application of theory in a safe controlled environment. Students reported they felt prepared for practice, recognising that simulated learning improved their humanistic and problem solving abilities as well as the development of psychomotor, technical skills, and overall confidence. The theory-practice gap is a recurring narrative in the nursing literature, the findings of this study recognises that simulation offers an opportunity to enact the integration of theory and practice illuminating this relationship in a controlled environment thus, reinforcing the theory-practice relationship for nursing students.

Introduction

Internationally, throughout healthcare educational institutions, simulated clinical learning is an educational strategy that is being extensively developed in nursing. Simulation is embedded within the curriculum at the university involved in this study and these developments have been supported with comprehensive empirical investigations. This paper will explore the theoretical position and simulation policy drivers along with the local findings within the data collected from pre-registration nursing students following analysis of their perceptions and experiences of simulated learning.

Defining simulation

Billings and Halstead (2005, p.425) have defined simulation as:

A near representation of an actual life event; may be presented by using computer software, role play, case studies or games that represent reality and actively involve learners in applying the content of the lesson.

Simulation therefore, is the promotion of understanding through 'doing', adopting aspects of the behaviourist theory and using experiential learning techniques. Put simply, behaviourism refers to learning that occurs as the student forms associations between a stimulus and response that is then reinforced (Quinn, 2001). Whilst the term experiential learning has been variously defined, its most frequent interpretation is that students learn best when they are actively engaged rather than being inert recipients in their own learning (Weil and McGill, 1989). Experiential learning is regularly thought of as, 'learning by doing' or 'being there', sometimes on the basis of initial involvement as an observer but then participating in the care or particular skill with supervision (Boydell and Burnard, 1993; Heron, 1999).

Dewey's (1933) theory of experientialism claimed that the meaning of an action is related to its consequences. For example children learn best by being able to experiment by being given the opportunity to play and observe the consequences of their actions. The experiential perspective claims that the student cannot expect to learn solely as a recipient of experience and that the most important form of experience is direct action (Weil and McGill, 1989). As a result of this, students must be able to act upon their environment and observe the consequences of their actions. In this way the simulated experience becomes a transaction between the student and the circumstances over which they must achieve mastery. Hand (2006) recognised that if students are placed in conditions they know little about, learning will occur through trial and error and hence, learning this way, in nursing may have adverse consequences for the patient.

Simulation in Practice

Simulation has evolved as a teaching and learning strategy from the traditional 'practical rooms'. From the early 1990's nurse education has emerged in the United Kingdom (UK), with the transference of nurse education from local Colleges of Health into the Higher Education Institutes (HEI's). Although using simulation is not a new, its use can vary across HEIs and healthcare educational settings nationally and internationally, there has been much greater emphasis in recent healthcare literature (Murray et al., 2008; Moule et al., 2008; Prescott and Garside, 2009; Baillie & Curzio, 2009). Simulation's popularity can be attributed to technological developments, reduced healthcare placement provision and a shift in what is considered ethical in practising essential clinical skills (Alinier et al., 2006). Simulation allows learners to practise safely before they perform a procedure in clinical practice, reducing the exposure of patients to any unnecessary risk (Cioffi 2001), decreasing the potential for litigation of healthcare practitioners around patient safety

(McCallum, 2007). Simulation provides an intense learning experience allowing space for the student or facilitator to apply the theory to practice (Moule et al., 2008; Prescott and Garside, 2009).

At the site of the study, students have access to a general in-patient setting, a critical care area, an operating theatre, a paediatric in-patient area, and a home care setting. Care is taken to prepare the simulated working environment and appropriate fully working equipment and consumables attempting to recreate clinical settings as closely as practically possible (Nunn, 2004). Technological developments afford a range of sophisticated human patient simulators from relatively simple task trainers, through low, medium and high fidelity manikins (Alinier et al., 2006; Perkins, 2007). Sophisticated computerised software programmes have been integrated in conjunction with a suitable manikin that mimics human physiology, responding appropriately to a treatment or intervention by the student. In conjunction with the different manikins and actors can be utilised in the role of patient, relative or member of the healthcare team (Bland and Sutton, 2006).

Policy/professional development

Integrating simulated learning into a pre-registration nursing programme requires that particular consideration be given to the stage of training and the appropriateness of the skills related to the students' development needs. Current guidance in the UK is given through the 'Essential Skills Clusters' developed by the professional body, the Nursing and Midwifery Council (NMC) (2007a,b) all of which further support the National Health Service (NHS) Knowledge and Skills Framework (KSF), (Department of Health, 2004). Although not a global phenomena, the UK pre-registration curriculum prescribes 2300 practice hours and 2300 theory hours before the student nurse may gain registration. Traditionally simulation was situated within theory hours. Following a pilot commissioned by the NMC, of which this HEI was one of the 13 pilot sites, the Nursing and Midwifery Council (2007b) endorsed the inclusion of an optional 300 hours of simulated practice within preregistration curricula, from prescribed practice hours, therefore changing the focus recognising simulation as a practical phenomena as opposed to theoretical.

Local simulation

The local university commences simulation in week one of the pre-registration programme, focusing on the nurturing of essential and psychomotor skills, such as hand washing or administration of medications. As students progress through the course, integration of differing approaches to simulation place further emphasis on developing their clinical reasoning and decision-making abilities. Importantly simulation is embedded within the curriculum throughout all three years, it is not simply an 'add on' teaching strategy. The curriculum model aims to link simulation to theoretical delivery therefore supporting applied knowledge (Prescott & Garside, 2009). The empirical evidence on the benefits and outcomes of simulation as a teaching and learning strategy is limited (Henneman et al., 2010). This can make it difficult to justify the expansion of this resource intensive learning method, hence the rationale for this study.

Research Design

A mixed methods approach was adopted, "the mixed method central premise is that the use of quantitative and qualitative data in combination provides a better understanding of research problems than either approach alone" (Creswell and Plano Clark, 2007, p.5). The study took a 'two phased' approach to data collection: Phase one included an

evaluative questionnaire. Analysis of phase one data formed the basis for stage two which incorporated semi structured focus group interviews.

Research methods and ethical considerations

Institutional ethical approval was obtained for phases one and two of the study. To ensure that ethical considerations received the necessary prominence, students were all invited in writing to participate. Written information sheets were provided discussing the nature, purpose and methods of the study. Informed consent was required before either phase was commenced. The participants were made aware of their right to withdraw at anytime without any consequences.

Phase one of the study involved pre-registration nursing students from all stages of the adult curriculum. These students were invited from 2007 to 2009 to participate in the study by completing an evaluation questionnaire. This data was collected at the end of each taught element of each academic period when the students had completed the module learning that had involved simulation resulting in approximately 500 participants. The questionnaire included sixteen closed items exploring areas such as, previous experiences and self evaluation points to consider using an adapted 'Likert' scale response. The questionnaire concluded with open elements for comments on their simulation experiences such as what they learned and how their experience could be improved. A pilot study was undertaken with one pre-registration cohort (Prescott and Garside, 2009). The questionnaire was adapted from an evaluation form produced by the NMC/West Yorkshire Nursing Simulated Practice Pilot, first used in 2006.

Phase one data was optically read for the quantitative closed questions for individual cohorts. The responses to the open questions were analysed and manually coded which led to the emerging themes. These themes then informed the interview guide used for the semi-structured interviews utilised in phase two. This allowed for a secondary analysis to interrogate qualitative data in relation to the aims of this study, namely to explore the detailed student experience of a simulation embedded nursing programme. Subsequently phase two incorporated three focus group interviews with a total sample (n=35) of final year pre-registration students. These students were randomly selected following optional invitation to participate in the research.

Purposive sampling was adopted within phase two. This line of enquiry required critical thought about the parameters of the population being studied to secure an appropriate sample (Silverman, 2010). 'Good informants', according to Holloway and Wheeler (2002), must be willing to critically examine and share their experiences. The student participants were only invited to phase two after they had successfully completed the adult branch nursing programme as this group of students had experienced the complete range of simulation offered at the university therefore were able to provide a complete perspective. In addition, the students were only invited at the end of the course to reduce any hint of coercion arising from the research. The focus group interviews were audio recorded and transcribed verbatim. The themes from phase one informing the interview broadly included: the students' opinions of various types of simulated learning such as manikin, role play and rote learning; exploration of the students' perceptions of the local facilities and if they had any relationship to the reality of clinical practice. How the student felt during the simulation sessions and their thoughts of what and how they learnt or developed their chosen career.

The meaning and inferences during interviews was generated through encouraged discussions and reflections of the participants' perception of their simulation experiences. This approach allowed no comparison group or random sampling of populations, yet involved key stakeholders with appropriate experiences to gain suitable information. The overall aim of phase two being to refine and clarify phase one results. Data was analysed and coded by the authors using a computer software package and the final report was made confidential avoiding any participant identities being disclosed.

Findings

The following section presents findings from the analysed data from phase two. The eight themes are, the enjoyment of simulation as a learning strategy, the students learning styles and how simulation supported the implementation of theory into practice. In addition, simulation was identified as a low risk learning situation that also enabled the students to improve their confidence in skills prior to exposure in clinical practice although some students struggled with the thought of being watched by their peers. Other themes identified include professionalism and the simulated environment as a positive recruitment tool.

Enjoy/fun

An overwhelming outcome from the study was how much they enjoyed taking part in the simulated sessions. A student during phase two typified how they found simulation:

“It is great, and is always a session I look forward to each week”.

Focus Group (FG) 3

Repeatedly identified within phase one and two, students would prefer to spend much more time being taught using simulation. This was recognised thus:

“(I) learned more in one hour in skills lab than three hours of lecture and I think that this is because you're having fun”. FG2

Learning styles

Bligh (1998) identified that students learn best by active methods that elicit desired behaviours and that the best way to teach them how to apply their knowledge is to let them practice doing so. The students clearly identified the learning that they perceived to occur as follows:

“I find it...easier to remember than a lecture”. FG1

Some students reported that nursing is such a 'hands on' profession and simulation supported their individual learning style because, as one student reported:

“that's how I learn...through doing!” FG2

Theory to practice

Students voiced a view that simulation supported the integration of theory and practice. They appeared to have deduced the curricular approach. This was identified as:

“...good to have the theory before practice and piece together what we have learned and read. It gives you an idea about practice and the theory and skills and then placement all comes together, then it was useful to go to placement”. FG2

“...simulation has helped me to link and increase understanding between theory and practice”. FG1

When comparing learning from simulated strategies and practice, recognition was given to the restraints of how the busy placement areas impacted on learning. This was reported by:

“I like the simulation sessions because you cover things that we don’t always get the time to do it in practice”. FG2

Phase two allowed further exploration recognising that associated mentor workload pressures limited learning opportunities with reduced ability to discuss the rationale for aspects of patients care; simulation sessions in small groups afforded this opportunity.

One student reported that: “You do things properly here”. FG3

Facilitators of simulation sessions have a responsibility to ensure that students are exposed to appropriate, up to date and evidence based practice. In the words of one student:

“Jobs are just given in practice and sometimes you don’t know where to start, but if you have had it explained in simulation you know how and why you’re doing it when you have had no time to go through it in practice and no matter what the question teachers can give you proper answers”. FG2

Safe Environment

Simulation provides the student the opportunity to familiarise themselves with equipment and procedures within a safe, supervised environment. The students are encouraged to ‘have a go’, and acquaint themselves with the feel, use, safe handling and appropriate disposal of equipment. This was identified as beneficial by:

“It’s good because you can make mistakes in the simulation sessions, without frightening patients, or putting them at risk in anyway – it’s scary to think what it would be like without it wouldn’t it!”. FG1

Simulation gives the student the opportunity to practise in a low risk and safe environment. They reported they felt that they ‘feel secure and can make mistakes’, under facilitator guidance and importantly simulation gives the student the opportunity to correct any errors without exposing this practice to the patient.

Confidence

Small group learning provides students with the opportunity to ask questions which they may feel unable to do in a large group situation. This method of teaching with smaller numbers also allows the students to share practices observed in their clinical settings and get to know each other which is not always possible within the larger group. This was demonstrated in accounts such as:

“Peer support is helpful and you can ask your friends if you don’t know and sort it out between you which is good”. FG1

Many of the simulation strategies support the team approach to problem solving, and students are encouraged to share their experiences and individual practices, this was described as thus:

“Simulation makes you feel a useful member of the team which helped build my confidence ... (we could) give each other feedback”. FG3

Professionalism

Students identified with the authenticity of the simulated environment as a believable working environment (Nunn, 2004) representing a healthcare setting. A student identified this as being beneficial:

“The reality was reinforced by the skills rooms and being able to use the simulation equipment - It is very near to realism”. FG2

Principles of practice utilised with simulation mirror the clinical environments in order to encourage professional behaviour that will transfer from the simulated environment to practice and vice versa. Demonstrating professional behaviour is a significant element of simulated learning and students are expected to comply with clinical dress and behaviour codes similar to those expected in clinical areas. A recent development has been newly furnished changing rooms allowing the students to wear their nursing uniforms, therefore promoting appropriate professional behaviour associated to clinical practice.

Students identified that when they wore a uniform it encouraged the role modelling of professional behaviour. This was expressed as thus:

“Felt better wearing uniforms and you look much better too” FG2

“... it made you compelled to be bothered, I do things in my uniform that I would just usually think “no way” I’m not doing it, but in my uniform I just think it is part of my job and I just don’t think about it, no question, I just did it!” FG3

Being observed

Many commented that initially the sessions were vaguely threatening. Simulation forms part of an ongoing programme throughout the curriculum, therefore initial nervousness and anxieties settle as their exposure increases and they became comfortable with the approach. As they settled they began to learn from the experience. Comments included:

“Some people, especially the quiet people like me found it intimidating when we started”. FG2

“At first it is really embarrassing but you do get used to it, especially after the first year”. FG1

Some students indicated however, and the ability they were unable to suspend reality and interact with the manikins as if real patients, typified by a student response:

“You did feel a bit daft at first, talking to a manikin”. FG1

That resistance however, and the ability to transcend disbelief appears to reduce with regular exposure to simulation and the students reported assuming the behaviours of practice such as offering support, maintaining dignity and demonstrating care for patients:

“At first you were really self conscious and worried about saying something wrong but you get over that he’s plastic... it’s weird you treat him like a real patient... I think it also helps that you are working as a team... nerves settle”. FG1

Recruitment

The simulation suite forms part of a tour for prospective students on open and interview days. This has been reported to have a positive influence on institutional/programme choice. The study highlighted that the simulated clinical learning environments and the

range of fidelity manikins were attractive to applicants to nursing programmes. One such example identified:

“When I came for interview...I was impressed by looking at the skills labs”. FG2

Discussion

This study clearly identifies that pre-registration nursing students see simulation as a favourable learning strategy. This has been attributed to several factors which include working in smaller groups and the ability to discuss and apply theory and practice within a safe clinical environment. It is accepted that simulation is performed under artificial conditions that are not always directly transferable to clinical practice because in the simulated settings there may be fewer extraneous distractions than the clinical setting (Eraut, 1994), therefore, simulated practice may be considered by some as the ‘second best’ option for practice learning. Nevertheless, simulation is particularly useful in teaching subject areas such as clinical assessment and procedures that may be uncommon, hazardous or costly to set up. Simulation allows the learner to experience dimensions of the reality of clinical practice vicariously (Cioffi, 2001). The students in this study recognised the authenticity of the simulated environment and attributed that to the combination of the context and contribution of academic staff in constructing and facilitating scenarios, cases and/or procedures that reflected the real world of clinical practice. That said, unduly embellished scenarios may merely confuse without due focus on the required outcomes of the simulation (Prescott and Garside, 2009). Simulation places the student at the central focus of the learning experience as opposed to traditional didactic methods.

This study suggests students value simulation learning and recognise that it can provide experiences commensurate, if not in some aspects, more beneficial than placement learning. Although it is noted that this was a minority view, it may have reflected individual experience of a placement rather than practice learning. It is not the intention to devalue the learning experienced during clinical placements however, the present reality of healthcare environments is an ever changing, unpredictable and rightly patient focused environment (Baillie & Curzio, 2009). Simulation is not however, a standalone learning strategy it is a complimentary process to support theory delivery and application of the theory to practice learning

A significant finding of the study was ‘confidence building’. Confidence in the learning process is essential if it is to be embedded and influence future learning, motivation and development of skills (Crooks, 1988; Bremner et al., 2006; Baillie & Curzio, 2008). Although some students indicated they felt initial stage fright, with more exposure to simulation, this reduced and confidence increased. To accelerate comfort with the learning approach the requirement for preparation for participation is important. Wearing the symbols of being an adult nurse (uniform) and adopting professional behaviour helps to minimise feelings engendered by pretending to nurse rather than nursing. The literature confirms that students must feel safe to interact, experiment and explore new topics and constructs. “In dichotomist fashion, they must feel safe to succeed as well as to fail” (Shuck, et al., 2007, p.4).

Fundamentally, a limitation of this study is that the data collected represents the subjective students’ perspective. The main contribution that has been achieved by this study was to obtain the students views of their experience, objectivity not effectively being an issue. The volume of data, collected from consecutive cohorts over a two year period however,

given the consistency, strengthens the findings. This is with the caveat that this is a single institutional study which may reflect local characteristics not generalisable attributes of simulation as a valued learning strategy.

Conclusion

The evidence from within the study confirms that simulation allows students to be active rather than passive recipients within their learning experience. Simulated learning was evaluated positively by the majority of students in this study. They provided clear examples of knowledge transfer from the classroom to their clinical practice, a factor in enhancing their subsequent confidence when providing care to patients. It is accepted however, that simulation delivery is restricted in many institutions due to the high resources of staff time, high cost technology and ongoing maintenance (Moule et al., 2008), yet we believe that students deserve the best and most effective education available and recommend that empirical research is ongoing to justify and ensure the appropriate uses of restricted resources in the current climate. This study suggests that simulation provides a deeper learning experience which impacts upon patient care. This observation however, requires further investigation through other, more objective and generalisable perspectives.

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