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Berragan, Elizabeth ORCID: 0000-0002-3345-6341 (2011) Simulation: An effective pedagogical approach for nursing? Nurse Education Today, 31 (7). pp. 660-663. doi:10.1016/j.nedt.2011.01.019

Official URL: <https://doi.org/10.1016/j.nedt.2011.01.019>

DOI: <http://dx.doi.org/10.1016/j.nedt.2011.01.019>

EPrint URI: <http://eprints.glos.ac.uk/id/eprint/5211>

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SIMULATION: AN EFFECTIVE PEDAGOGICAL APPROACH FOR NURSING?

- **Summary**

Simulation features strongly within the undergraduate nursing curriculum for many Universities. It provides a variety of opportunities for students as they develop their clinical nursing skills. The nursing literature highlights the potential of this approach and the positive opportunities afforded to students in terms of developing competence and confidence. However, much of this literature focuses upon the more operational concerns of simulation. This paper offers some thoughts regarding the theoretical positioning and understanding of simulation in order to begin to explore the theoretical basis of simulation as an effective pedagogical approach for nurse education today.

- **Introduction**

Within the world of nurse education there is an increased focus upon simulation which has been widely incorporated into international undergraduate nursing curricula (Cant and Cooper, 2010). This paper considers the opportunities that simulation offers as a teaching and learning methodology for undergraduate nursing skills development. This paper will examine the literature on simulation as a teaching and learning methodology within the undergraduate nursing curriculum, drawing attention to positive experiences reported in the literature and concerns around the use of simulation. The paper also offers some thoughts regarding the theoretical positioning and understandings of simulation. Some literature on simulation has called for a more theoretical approach to the study of simulation (Bradley and Postlethwaite, 2003; Kneebone, 2005, Bligh and Bleakley, 2006). This paper begins to explore what this

theory might be, highlighting the work of Vygotsky (1978) and Lave and Wenger (1991). Their work provides a useful medium through which simulation, and its potential as an effective pedagogical approach for nurse education, can be explored.

- **Simulation: setting the context**

Simulation has been widely incorporated into international undergraduate nursing curricula (Cant and Cooper, 2010). Many Universities have developed and built simulation skills centres that depict actual ward areas. Simulators have been developed to look realistic and respond to interventions with more and more realism or fidelity (Maran and Glavin, 2003, Hovancsek, 2007, Nehring, 2008,). The degree to which the simulation depicts the real environment and equipment within which the student is required to perform, often spoken of as engineering fidelity (O'Neill, 2002), is important. This can play an essential part in making the transition to the real setting as smooth as possible, to reduce the reality shock of entering clinical practice (Du Boulay and Medway, 1999). It is when this is not followed that students do not see the benefit of the simulation (Ross, 1988; McAdams et al., 1989). The focus on a realistic patient scenario facilitates the inclusion of clinical and communication skills. This enables the student to view the patient holistically rather than as an individual problem. Therefore a variety of skills may be used together in the context of addressing the patient's needs (Freeth and Nicol, 1998). Psychological fidelity relates to how realistic the student finds the simulation and, subsequently, how they respond. Neary (1994) refers to the adrenaline gap which affects psychological fidelity, since the students are aware they are not nursing real patients and, therefore, do not feel the same pressure. Interestingly, Davis (2005) disagrees with this, and actually reports students crying if the patient (simulator) dies. With current technological advances, simulators can reflect engineering and psychological fidelity far more than the manikins of twenty years ago and move towards providing a "realistic" educational experience.

- **Learning through simulation: positive experiences and concerns**

Much of the research into the use of simulation is extremely positive, demonstrating that because time to develop skills on placement with real patients is short (McKenna et al., 2007, Murray et al., 2008), simulation can offer an alternative opportunity for clinical skill development. There are many positive evaluations (National Council of State Boards of Nursing United States of America (NCSBN) 2005, Nursing and Midwifery Council NMC UK, 2007, Murray et al., 2008); examples of opportunities for skills transfer (Hravnak et al., 2007); and emphasis on the development of student self confidence (Ker et al., 2003, Mayne et al., 2004, Telles 2010).

Seen in such a positive light, it might be proposed that the simulated learning environment should be used for all clinical skills development, enabling student nurses to learn in a safe, structured and supported environment. In this view, the simulated environment would certainly meet the requirements of the patient safety agenda (Corrigan et. al., 2000, Gaba 2000). It would also address practitioner concerns regarding patient safety and ill-prepared student nurses (Rognstad et al., 2004). From a student perspective, there would be greater opportunity for experiential learning to improve performance (Reilly and Spratt, 2007); learning through trial and error and repetition (Kardong-Edgren 2008). Simulation would offer permission to fail (Good, 2003), a notion which would be unthinkable in practice. Simulation would offer a way of bringing together theory and practice, enabling integration (Morgan, 2006) and the application of knowledge to patient care (Rauen, 2001).

Whilst acknowledging that there is evidence, within the literature discussed here, of the obvious benefits in including simulation within an undergraduate nursing curriculum, there are also some concerns. The literature demonstrates that simulation works, but consideration must be given to its capacity to translate to practice. Is there the potential that simulation may take over from or replace reality? As a nurse, whilst recognising and applauding the benefits and possibilities of simulation for clinical skills development, I have concerns about the “wholesale” and uncritical adoption of this pedagogical approach. Where is the patient in all of this – the living, breathing, idiosyncratic human being with whom we interact minute by minute and day by day? As part of this interaction with our patients, we, as nurses, learn to construct our own

professional identities. This social element of the nurse's role links well with theories of learning which highlight social participation in communities of practice, where historical and cultural context is important (Lave and Wenger, 1991). It is this theoretical view which particularly highlights the reflexive approach required by student nurses as they learn "how to be a nurse" as well as how to perform the clinical skills required to care for their patients.

Another personal concern is that we may be overtaken by the speed of developments within simulation technology; perhaps being encouraged to move away from our initial views of the undergraduate nursing curriculum. As supporters of simulation, it is natural to be seduced by new and more capable technologies. There is the very real possibility that our focus will move from real patients and the evolving identities of student nurses, towards the endless possibilities of the technology. SimMan becomes the substitute for the real patient thus denying the student nurse opportunities for realistic and responsive interaction. Similarly, the use of an actor, whilst offering human contact, reduces the possibilities for complex and realistic interaction as interventions are briefed and scripted. In such settings, the professional identity construction of the student nurse may be overlooked. Whilst some student nurses will competently transfer learning from the simulated environment to the hospital ward, there will be others who may not. Thus, as highlighted by Bligh and Bleakley (2006), this may inadvertently promote simulation of learning rather than learning by simulation. This may be related to inappropriate identity construction in the simulated setting where students fail to socialize into their roles as student nurses. Thus, within their practice placement students may be unable to manage their professional identity, finding it difficult to translate their learning in order to care for real patients and work as a member of a clinical team (Ross, 1988; McAdams et al., 1989). The student nurse may pretend or feign knowledge and understanding or competence which, in reality, they do not have. Bligh and Bleakley (2006) call this "unchallenged dissimulation", suggesting that this may be linked with inappropriate identity construction in simulated settings. Taken to its ultimate conclusion, the possibilities are extremely worrying and offer an important area for future research.

One final personal concern relates to my reading in the subject of simulation for health care education. Much of the theoretical debate originates from medical colleagues. The nursing literature on simulation tends to be more descriptive than critically reflexive, giving accounts of the potential of simulation (Alinier, 2003, Schoening 2006, Murray et al., 2008) and guides as to how to incorporate simulation within the curriculum (Rystedt and Lindstrom, 2001, Ramsay et al., 2008). Given the international incorporation of simulation within the pre-registration curriculum, these papers are important in raising awareness and demonstrating the excellent work already in progress. However, alongside this, exploration of the theoretical positioning, and investigation into what learning theories have to offer, would enable nursing to have greater confidence in this pedagogical approach.

Suggestions have been made that introduction of simulation into the curriculum, whilst challenging, will enable student nurses to “develop competence in clinical skills required for fitness for award, practice and purpose” (McCallum, 2006; p829). Whilst these aspirations are vital and sit at the heart of nurse education, concerns must be raised regarding the theoretical positioning and foundations of such proposals. There are concerns that developments in the world of clinical simulation have taken place in a “theoretical vacuum” (Bradley and Postlethwaite, 2003). Nursing should explore different theories of learning as a means to understanding simulation as a teaching and learning approach for undergraduate nursing skills development.

Simulation and theory

Learning to be a nurse

Simulation offers the student nurse the opportunity not only to practice clinical nursing skills, but also the chance to begin to learn and explore how it feels to be a nurse. This initial development of professional identity is important enabling the student to begin to understand the complexities of nursing (Scholes, 2008). It is vital that this role development takes place in a setting, which offers support, encouragement and feedback in order to help the student to gain confidence, (Morgan 2006), such as the simulation laboratory. This understanding of professional identity

can then be further enhanced within clinical practice through role modelling and mentorship (Gordon, 2005).

Traditional models of learning which focus upon the acquisition of knowledge and skills (Dreyfus and Dreyfus, 1980, Benner 1984) are challenged by models of learning which emphasize social participation and communities of practice (Lave and Wenger, 1991; Wenger 1998; Bleakley 2006). Learning theories have shifted their focus from individual learning to social learning in new and emerging pedagogies (James, 2008). Learning is increasingly described as a “cultural practice” (Crook, 2002) and can be theorized through cultural frameworks (Paechter et al., 2001; Lea and Nicoll, 2002). This is a shift in emphasis and as such, repositions learning from a passive, receptive and content driven process to one which is dynamic, active and requires reflexivity. The focus moves towards identity construction encouraging the student to learn how to “think” the job as well as how to “do” it.

This is exciting and suggests that there is potential here to use these developing models of learning to help student nurses to begin to construct their professional identities. Lewis (1998) examines the role of learning environments in the construction of nursing identity. He discusses theories of social interaction and particularly the socio-cultural views of Vygotsky, highlighting the important roles of significant participants in the student nurse’s learning experience. More recently, Scholes (2008) draws attention to the difficulties surrounding professional identity for nurses. She suggests that nurses need greater resilience to cope with the realities of their work and challenges to their professional identity. The contemporary healthcare context challenges nursing practice, as it tests the fundamental assumptions of what it is to be a nurse. There are many issues pertinent to the development of nursing identity; for example the role of the academic, the notion of practice, the role of employment and the need to acquire expert theoretical knowledge. However, there may be aspects of peer collaboration, role modelling and social participation which would benefit and support the development of professional identity for student nurses. Preceptorship, competency packages and rotation programmes have gone some way in supporting this, yet there is still some way to go as the new hard-edged managerialism challenges nurses’ identity and aspirations for professional practice

(Gordon 2005, Corbin 2008). Simulation has a part to play here in offering an environment where collaboration and participation can be practised alongside skill acquisition and development, thus preparing the student for the real world of nursing.

Learning within a professional context (cultural practice)

The traditional model of clinical skills acquisition, where a learner learns by “sitting at the feet of a master,” is being supplanted by a more contemporary view of apprenticeship based on communities of practice and of learning (Lave and Wenger, 1991). Instead of seeing learning as a process of internalization of individual experience, Lave and Wenger (1991) see it as an integral and inseparable aspect of social practice. In their examination of apprenticeship as a model for learning, Lave and Wenger point out that apprenticeship is about conferring legitimacy, not providing teaching. Much of the learning that takes place does so through relations between peers, as part of their engagement in practice. Mastery, they say, resides not in the master but in the organization of the community of practice of which the master is part.

Although Lave and Wenger's work is not directly related to health care, a wide view of the context of practice seems essential when considering the role of the nurse. The development of initial concepts of nursing, ways of working, understanding of professional, legal and ethical issues are all related to the student's existing knowledge base. Exposure to these concepts often takes place in a classroom setting using social interaction to draw out differing viewpoints and existing knowledge, and to enable students to begin to develop a shared view of the world of nursing. Nursing care delivery, based upon problem-solving strategies, involves complex terminology and philosophies of care to be internalized by the student. In order to develop the skills of problem-solving, students need to move from shared understandings to individual understandings. This relates to Vygotsky's ideas and emphasis upon social transaction (Vygotsky,1978). In moving towards individual problem-solving the student moves from the intermental to the intramental dimension through what Vygotsky termed “the zone of proximal development”(ZPD).The zone defines functions that are in the process of maturation, thus the student nurse is beginning to develop and hone the skills of problem solving. The zone relates to the potential each

person has for learning, with cultural learning developed and shaped by the social environment in which it takes place, in this case the classroom, the practice setting and the simulation laboratory. Vygotskian ideas, therefore, may be useful in understanding the nurse because of the emphasis on social transactions and “cultural tools” or resources, which can be used to shape and direct human activity (Guile and Young, 2001). In this case, the human activity is nursing.

Simulation may be viewed as one such resource. As the student progresses, simulation provides opportunity for gradual expansion and development of concepts and skills towards mastery through assistance from others (as in the initial stages of the ZPD). However, the simulation must reflect the contextual realities of everyday practice if it is to provide an effective addition to clinical experience. Practicing tasks on isolated models, however sophisticated, will undoubtedly offer a limited experience. Recent developments in scenario-based procedural skills, using inanimate models attached to simulated patients, provide contextual settings in an effort to address these limitations (Kneebone et al., 2003). Nursing students are often introduced to a patient through a written case study. The case study provides the contextual information about that patient enabling the student to plan and deliver a realistic package of care.

The affective component of learning

The theory of skills acquisition is dominated by cognitive issues, and much less attention is paid to the emotional content of learning experiences. Indeed, this component of learning is often ignored altogether in traditional teaching. However, there is clearly a strong affective element to any learning experience, and this may exert a powerful positive or negative effect (Boud et al., 1985). In “real” health care settings, learning is, in a sense, a by-product of care. The health care needs of the patient must always take priority over the educational needs of the student. Simulation, however, deliberately places the student's needs at the centre of attention and provides the opportunity to create conditions of best practice for teaching. Although the need for a supportive learning environment is widely recognized, the emotional climate within which clinical procedural skills are acquired is seldom acknowledged or explored. Ensuring that simulation-based training addresses these affective issues is a key challenge for nurse education. Future development through

exploration of the theoretical basis of simulation may facilitate a clearer understanding of these challenges.

- **Conclusions and recommendations**

In considering learning theory in relation to simulation, awareness of and engagement with a range of models is essential in the current context of nurse education. With reference to the skills acquisition model, there are occasions within nursing where executing a clinical skill is more important than performing the same skill in a socially situated context. Clinical areas such as Accident and Emergency and Intensive Care often require immediate action with little time to develop a therapeutic relationship with a patient. From a cultural theory perspective, there are clinical situations where context must take precedence. On-going management and care of the diabetic patient requires the nurse to assess the patient's past medical history, family history of illness and disease, lifestyle, potential to comply with treatment and past and current treatment, and make clinical decisions based upon this in-depth information before any further treatment commences.

Much of the learning and development of clinical skills for novice student nurses is shifting from real life to simulation. At a superficial glance this makes sense. The protected environment of skills laboratory and virtual reality simulators, are perhaps the only places in which it is safe to make mistakes and learn from them. Indeed, the opportunity to make mistakes, to explore the consequences of any given clinical action without risking actual harm, opens up possibilities that would be unthinkable within a real clinical environment.

Moreover, radical changes in patterns of international health care and decreasing exposure to patients are rendering traditional apprenticeship inadequate or unacceptable, especially in terms of gaining clinical expertise. Here, simulation is becoming a necessity rather than an optional extra (NMC 2007, McKenna et al., 2007). It is therefore all the more important to develop a critical approach to what any given simulation has to offer.

Simulated environments are becoming widespread; educational resources are limited, however, and not all simulations are equally effective. The nursing professional bodies have recognized this and are working to develop equity and regulation in relation to simulation provision (NCSBN 2005, NMC, 2007). Often it is the surface realism of a simulation that occupies the creativity of those who develop it, obscuring the key issues of learning and teaching. The relationship between simulator fidelity and educational effectiveness is still open for discussion, however, and lower levels of fidelity may reduce technological limitations and cost without compromising outcomes (Grober et al., 2004). Continuing evaluation of simulations is therefore a key challenge.

In the current context of pressures of workload and litigation, skills acquisition in practice environments may be difficult to achieve in terms of available time and cost-effectiveness. However, it is important that nurse education recognises that skills laboratory simulation can only provide part of that learning experience. It should never replace time spent with patients but be an addition to clinical placement experience. Simulation clearly offers enormous potential for safely developing expertise in clinical skills. In order to be effective, however, such activity needs to be part of a broader picture, supporting and linking with actual clinical practice and having a solid theoretical foundation. All too often, simulation-based training seems dominated by technology, losing its links with the wider worlds of health care and the important focus of enabling students to learn to be nurses.

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