

## **Learning to Nurse: Developing knowledge and skills for practice**

### **Authors**

Ann L Bevan, RN, RSCN, PhD, FHEA, Senior Lecturer

Rosalyn Joy, RGN, DPSN, BSc(hons) MA, Lecturer Practice Skills

Sarah Keeley, RGN, DPSN, BSc(hons) MA, University Practice Learning Advisor

Petra Brown, RN, MA, Lecturer

All authors work in the Faculty of Health and Social Science at Bournemouth University, UK.

### **Correspondence to:**

Ann L Bevan RN, RSCN, PhD, FHEA  
Senior Lecturer and Programme Lead  
Children's and Young People's Nursing  
Faculty of Health and Social Science  
Bournemouth University  
B233 Bournemouth House  
17-19 Christchurch Road  
Bournemouth BH1 3LH  
Dorset, UK

[abevan@bournemouth.ac.uk](mailto:abevan@bournemouth.ac.uk)

Tel: (+44) (0)1202-961572

**Key words:** anatomy & physiology, simulation, nurse, education, practice

## Introduction

The importance of transferring knowledge and skills from theory to practice is paramount in establishing clinical credibility (Handley & Dodge, 2013). One way to achieve this is by integrating theory, simulation and practice. Simulation has been described as a dynamic curricular development (Cant & Cooper 2009) and a method to develop deeper learning (Ricketts 2011). The integration of nursing skills and nursing knowledge is enhanced by the use of simulation, and as a result theoretical concepts are more readily applied to patients and their presenting conditions (Wolfgram and Quinn, 2012) and students are better equipped to deal with high acuity settings and rapidly changing situations. In addition, a greater awareness of patient safety is evident following experiencing learning in a safe simulation environment (Henneman, et al, 2007). By linking simulated learning with relevant underpinning theoretical study it is possible to attain the required knowledge and learning necessary to meet the professional requirements for nursing (Cant & Cooper 2009). Differing approaches to simulation enhance the student's clinical reasoning and decision making abilities as they advance through their nursing programme (Hope et al, 2011). This means that simulation should be embedded into the nursing programme rather than being viewed as an adjunct in order to promote applied knowledge (Henneman et al, 2009). This is supported by the Nursing and Midwifery Council's (NMC) interpretation of the use of simulation in our pre-registration nursing curriculum (NMC 2010). One taught subject that links very closely with that of skill acquisition and simulated practice is that of anatomy and physiology.

Nursing literature says very little about the important links between simulation laboratory skill acquisition and taught anatomy and physiology content. Students are taught how to carry out a skill in simulation laboratories, but for optimal simulation learning to take place this must be accompanied by linked theory input (Bantz et al, 2007). However, the literature is sparse on whether simulation has any impact on student's abilities to perform skills in practice, and in addition it seems that few programmes teach skills and anatomy and physiology together. Rather they are seen as separate entities, and this makes it difficult for students to apply knowledge of anatomy and physiology to clinical aspects of physical assessments. This link is important for the development of critical thinking when applied to patient assessment and care planning (Kaveevivitchai et al, 2009) and has the potential to ultimately influence patient outcomes (Prowse & Heath, 2004).

The purpose of simulation is to replicate real life scenarios in order that student nurses can develop critical thinking skills whilst practising nursing care in a safe environment (McCallum, 2007). This supports the development of a simulation unit that includes anatomy

and physiology theory as an integral component. Demonstrating the link between bodily systems and assessment findings brings authenticity and understanding to that assessment that is difficult for students if taught in isolation. One of the challenges of nurse education is how to enable students to develop critical thinking skills based on reflection in the practice environment (Scully, 2011). The foundations of the learning process are reflection and problem solving, therefore it follows that these should be integral in nurse education (Jerlock et al, 2003). In order to be able to make sense of their learning in anatomy and physiology, and nursing skills students need to be able to reflect on the links between them and be able to apply that knowledge when carrying out assessments and nursing care in a practice situation.

### **Making the link**

As a result of the Nursing and Midwifery Council (NMC) nursing programme revalidation process and a review of the literature it was decided to integrate anatomy and physiology with the practice simulation activities into one unit (module) within an undergraduate nursing framework. This is a shared unit across adult nursing, mental health nursing and children's and young people's nursing and includes a total of 306 undergraduate students. A new team was developed which included members from both the theory unit and the simulation team. A major factor to include in the development of the new unit was the guidance provided by the NMC (2010) in relation to pre-registration nursing education. In this document, essential skills are identified. The new unit team identified the skills that could be addressed through simulation and mapped how these simulated activities would link with the relevant body systems.

Meeting regularly with the timetabling officer the unit team synchronised the simulation activities with the anatomy and physiology content. The unit was mapped so that students would attend a lecture on a particular body system followed by a seminar in the same week. The following week they undertook a summative assessment on the body system and this was followed by the related simulation session, for example the digestive system followed by nutritional requirements (see figure 1). The aim was to enable students to make links between theory and application of associated skills as recommended by Bantz et al, (2007).

Allowing for students to make mistakes is where the use of simulation comes into its own. Time needs to be taken into consideration and should allow for repeated practice of skills in a safe environment (Kneebone 2003). Regardless of where they are in their programme of learning; how the students respond to the activity will be dictated by their own individual style

of learning. Some students may require more assistance than others and opportunities are offered to book the skills facilities and equipment to revisit or further hone their skills techniques. By combining problem based learning and simulation scenarios a student's depth of understanding and their confidence can be increased. Students can therefore gain an insight into 'feeling' the experience of being a patient which provides an opportunity for these experiences to be recalled when the student is in an authentic situation,

For first year student nurses, an intensive period of simulation occurs in the first year with students receiving 11 full day sessions to cover the essential skills required to take into their first placement. These sessions follow a patient journey which unfolds over the 11 weeks. Each week the students are given a 'patient handover' and using the information are required to work through a variety of skills stations. Throughout these sessions, students are introduced to peer assessment, observational feedback and feed-forward from the tutors and a plenary that allows for questions and answers. These elements of assessment all allow for clarification of understanding of the session and the ability to develop constructive criticism skills amongst the students.

At the end of the 11 week unit the students undertake a Simulated Recorded Assessment, which provides the student with a filmed personal snapshot of their practice. In preparation for this assessment, students are recorded on a weekly basis undertaking a variety of skills in order to become familiar with being recorded and to discuss informally any anomalies with their performance. Students are then given a randomly selected skill that they carry out on their partner, which is filmed and recorded. The student reviews their own recording which unlike 'real life' offers the student the opportunity to review and appraise their performance several times in order to inform a written critique. The written critique enables students to develop critical thinking skills underpinned by knowledge of anatomy and physiology, and any associated pathologies that are applicable to the practice environment, as advocated by Scully, (2009). By integrating simulation with anatomy and physiology, students benefit from having an understanding of the system that informs the skills they are undertaking. This consolidates the learning that has taken place over the 11 weeks and encourages the development of proficiency through a process of critical appraisal and appreciation of evidence-based literature (Joy and Nickless 2008). In addition, application to pathology has been expanded in the unit, both in theory and simulation in order to enable students to better understand the patient experience in order to provide competent holistic nursing care.

Figure 1: Unit timetable showing integration of theory and simulation

Insert here

## Student Feedback

The unit evaluation includes questions requiring responses to statements on a 4 point scale of strongly agree to strongly disagree. Questions about the unit as a whole, seminar topics and delivery, links with simulation, objectives and assessment and support were included. When asked about the unit students reported that they wanted “*longer sessions with a practical side to them and more A & P*” by practical side it was assumed the student was referring to pathology. In addition, when asked if the unit was well structured, meaning with the two halves of anatomy and physiology and simulation, 97% responded strongly agree or agree.

The open questions simply asked what did they like about the unit and what improvements could be made. One student said he/she, “*found that the way the academic teaching linked with the clinical skills lab really helpful. It gave me a good foundation where I previously had minimal knowledge.*” Students felt that the taught “*A & P links well to clinical skills.*” Some students reported that the integration of theory with simulation enabled application of learning in real life situations. One student commented when referring to her involvement in a patient emergency situation; “*I remember feeling that I knew what to do, despite feeling the most scared and vulnerable I have ever felt*”, she went on to say, “*I shocked myself at my ability to focus and do what I needed to do at the time...[the unit content] gave me the knowledge and confidence to act fast!!*”.

Students who took this unit in their first year were surveyed in their second year, they were asked if they felt that this format impacted their learning and if this enabled them to make the connections out in the practice situation. 101 2<sup>nd</sup> year adult and mental health nursing students were surveyed randomly, of these all but one felt that the simulation sessions assisted them with their skills in placement and that the links made with anatomy and physiology assisted in their understanding of what they were experiencing. The one student who felt it had not helped offered no explanation.

Typical responses included: “*Learnt all the basic skills that helped build confidence in practice, loved how the anatomy, physiology and skills (simulation) all linked together*”; “*Yes especially as not a healthcare support worker before, so all was new to me*”; “*I feel I was able to put into practice what I had learnt in university (simulation sessions) and apply my knowledge of the system to what I was listening for (blood pressure)*”

Some students offered responses that although positive, were more specific to how they carried the format of this unit and applied it in practice: “*Some were more relevant than*

*others but all were helpful”; “Aseptic technique and injection techniques were very helpful as I had not personally experienced these before as a support worker”; “I was on a doctors round as an observer and was asked by the doctor about the fluid chart and the fact that the patients urine output was decreased.... As a result of my uni sessions I was able to give a possible reason for this. This increased my confidence, I felt really proud”.*

## **Discussion**

Students clearly valued the links between the taught elements of anatomy and physiology and their clinical simulation experiences which makes it surprising that there is a dearth of literature on this subject. Although there is a wealth of literature to support simulation as a learning strategy (Bland et al., 2011; Borneuf & Haigh, 2010; Ricketts, 2011; Valler-Jones, 2011) there is little about the importance of the need for anatomy and physiology to be linked to taught skills.

Anecdotally the attitude appears to be that simulation is separate from academia as it is focused on practice skills. Although the theory underpinning those skills are taught in the skills sessions, somehow this is viewed as being removed from the rest of the nursing curriculum (Dougherty & Lister, 2011; Endacott et al., 2009) This could be because there are no standards to guide simulation in nurse education, so discrepancies can occur on its meaning between institutions (Pike & O'Donnell, 2010). This attitude challenges the basis of nursing as an evidence based profession and arguably perpetuates the theory practice gap. The theory practice gap has had a number of definitions but generally relates to the separation of theoretical knowledge from the practical element of nursing (Scully, 2010). Nursing is challenged as an evidence based profession by the issue of the theory practice gap. This idea may persist due to a belief that education and practice exist in their own separate bubbles due to the mistaken understanding that theories and research have no place in the practice setting (Scully, 2010). Reflection on clinical experiences and education that demonstrates those links between education and practice promotes understanding and potentially diminishes the theory practice gap as an issue in nursing

It is clearly necessary that content knowledge is taught in order to inform nursing practice (Ironsides, 2003) however, this by itself is not enough due to the complexity of providing patient care. Persistent questioning, reflection and understanding of the patient situation and their underlying health or pathology is necessary in order to provide competent holistic nursing care. Nurses need to develop critical thinking skills in order to be able to accurately perform a holistic assessment, reflect on patient observations, ascertain priorities, plan care

and evaluate the care provided (Kaddoura, 2010). Education needs to enable nurses to become proficient reflective practitioners and in order to accomplish this they need to be equipped with nursing knowledge of both underpinning theories and research in addition to the skills knowledge necessary for practice situations. Providing humanising and holistic care to patients and their families requires nurses have the ability to explore alternatives to the care being provided on an ongoing basis (Ibarreta & McCleod, 2004; Ironside, 2003).

Todres et al, (2009) developed the concept of a humanizing framework to guide nursing practice. This was in response to the increasing media and cultural viewpoint that the personal dimensions of care in nursing are being neglected in favour of “bottom line” outcomes. A humanizing philosophy places the person at the centre of their own care in a reciprocal relationship between themselves and the nurse. Practicing within a humanistic philosophy requires nurse education to develop students to be reflective practitioners (Johns, 1995). In order to do this, theoretical nursing knowledge needs to be embedded in the context of a clinical situation such as linking simulation activities with theory. In this way students assimilate this experience into their personal knowledge and by doing so help to dismiss the dichotomy between theory and practice (Johns, 1995).

Integrating anatomy and physiology with simulation into one unit is one way to begin the process of bridging this gap and give meaning to student learning. To illustrate this concept the following model was developed by the authors.

Insert model

Figure 2: The Model of Integrated Student Learning

To achieve integrated student learning student's need to develop the capacity for critical thinking, reflective practice, and clinical competence through their engagement with simulation and practice situations. By doing this it is anticipated that students will experience reduced anxiety and satisfaction in practice and be better able retain skills knowledge. In addition, this model of knowledge attainment encourages the student nurse to be able to recognise the impact of their interventions and make links between learned theory and patient care.

## Conclusion

Following the introduction of this new unit simulation tutors recognised that students had a greater understanding of the anatomy and physiology that underpinned the procedure being undertaken. Feedback and exploration of students' thoughts as they undertook the simulation activity revealed these links. 'Ah ah' moments were more frequent than ever before. Arguably, this could inform students' application of clinical skills in practice and therefore improve care delivery to their patients. Whilst there is no doubt that students demonstrated the ability to apply the theoretical knowledge gained to simulated activities, there still remains a need to undertake further research on the integration of the two to improve patient care in practice.

## References

- Bantz, D., Hodson-Carlton, K., & Van, H. S., 2007. A daylong clinical laboratory: from gaming to high fidelity simulators. *Nurse Education*, 32, 174-277
- Cant, R.P. & Cooper, S. 2009. Simulation-based learning in nurse education: systematic review. *Journal of Advanced Learning*, 66(1), 3–15.
- Bland, A., Topping, A., Wood, B., 2011 A concept analysis of simulation as a learning strategy in the education of undergraduate nursing students. *Nurse Education Today*. 31 664-670
- Borneuf, A. M., & Haigh, C. 2010. \_The who and where of clinical skills teaching: A review from the UK perspective. *Nurse Education Today* 30, 2, 197-201
- Dougherty, L. and Lister, S. E. (eds). 2011. *The Royal Marsden Hospital manual of clinical nursing procedures*. 8th ed. Oxford: Wiley-Blackwell
- Endacott, R., Jevon, P., and Cooper, S., eds 2009. *Clinical Nursing Skills, Core and Advanced*. Oxford: Oxford University Press
- Handley, R, & Dodge, N. 2013. Can simulated practice learning improve clinical competence? *The British Journal of Nursing*, 22(9), 529-535.



Henneman, E.A., Cunningham, H., Roche, J.P., & Cumin, M.E. 2007. Human patient simulation: Teaching students to provide safe care. *Nurse Educator*, 32 (5) (2007), pp. 212–217.

Hope, A., Garside, J., & Prescott, S. 2011. Rethinking theory and practice: preregistration student nurses experiences of simulation teaching and learning in the acquisition of clinical skills in preparation for practice. *Nurse Education Today*, 31, 711-715.

Ibarreta, G. I. & McLeod, L. 2004. Thinking aloud on paper: An experience of journal writing. *Journal of Nursing Education*, 43(3), 134-137.

Ironside, P. M. 2003. New pedagogies for teaching thinking: the lived experiences of students and teachers enacting narrative pedagogy. *Journal of Nursing Education*, 42(11), 509-516.

Jerlock, M., Falk, K., & Severinsson, E. 2003. Academic nursing education guidelines: tool for bridging the gap between theory, research and practice. *Nursing and Health Sciences*, 5(2), 219-228.

Johns, C. 1995. Framing through learning through reflection within Carper's fundamental ways of knowing in nursing. *Journal of Advanced Nursing*, 22, 226-234.

Kaddoura, M. A. 2010. New graduate nurses' perceptions of the effects of clinical simulation on their critical thinking, learning, and confidence. *The Journal of Continuing Education in Nursing*, 41(11), 506-516.

Kaveevivitchai, C., Chuengkriankrai, B., Luecha, Y., Thanooruk, R., Panijpan, B., & McCallum, J. 2009. The debate in favour of using simulation education in pre-registration adult nursing. *Nurse Education Today*, 27, 825-831.

McCallum, J. 2007. The debate in favour of using simulation education in pre-registration adult nursing. *Nurse Education Today*, 27, 825-831.

Learning to Nurse: Developing knowledge and skills for practice

Nursing and Midwifery Council. 2010. *Review of pre-registration nursing education*. Available at <http://www.nmc-uk.org/Getinvolved/Consultations/Past-consultants/By-year/Review-of-pre-registration-nursing-education> [Accessed 30th June 2014]

Pike, T., & O'Donnell, V., 2010. The impact of clinical simulation on learner self-efficacy in pre-registration nursing education. *Nurse Education Today*, 30 405-410

Prowse, A., & Heath, V. 2004. Working collaboratively in health care contexts: the influence of bioscientific knowledge on patient outcomes. *Nurse Education Today*, 25, 132-139

Ricketts, B., 2011. The role of simulation for learning within pre-registration nursing education – A literature review. *Nurse Education Today*, 31 (7), 650-654

Scully, N. J. 2010. The theory-practice gap and skill acquisition: an issue for nursing education. *Science Direct*, 18, 93-98.

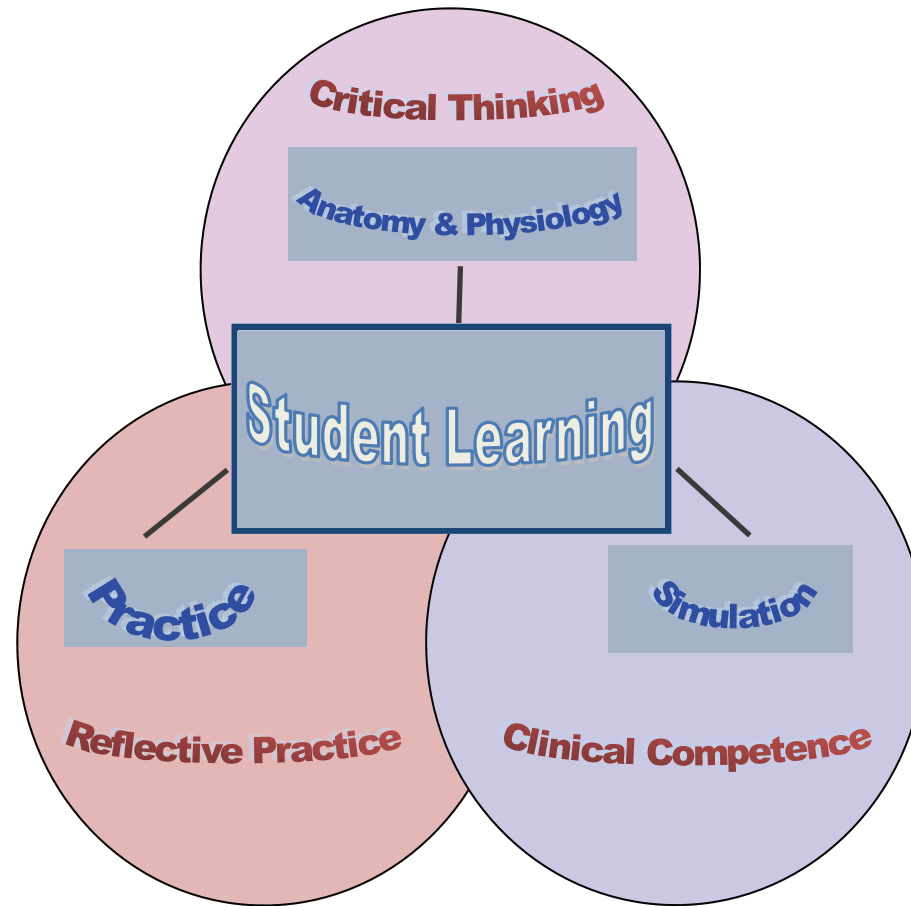
Todres, L, Galvin, K. T., & Holloway, I. 2009. The humanization of healthcare: A value framework for qualitative research. *International Journal of Qualitative Studies on Health and Well-being*. 4, 68-77

Valler-Jones T., Meechan, R., Jones, H. 2011 Simulated Practice – a panacea for health education? *British Journal of Nursing*, 20, 10, 628-631

Wolfgram, L. J. B. & O'Leary Quinn, A. 2012. Integrating simulation innovatively: Evidence in teaching in nursing education. *Clinical Simulation in Nursing*, 8, (5), 169-175.

**Figure 1: Anatomy & Physiology during the lifespan timetable**

Days	A & P 3 hours	Example of application to common conditions throughout the lifespan	Format	Format for Weekly summative assessments	Simulation
1	Introduction to the unit Pharmacodynamics Self-study of online materials: genetics, cells, biochemistry, homeostasis		09-0930 or 0930- 1000 1/2 hour formative supervised online test in the computer lab prior to a full day of simulation lab 3 hour seminar and 3 hours self- study of online materials	Formative test	Introduction to practice skills suite and standard precautions
2	Integumental system and Mouth Care	dermatitis	09-0930 or 0930- 1000 1/2 hour weekly supervised online test in the computer lab prior to a full day of simulation lab 1 x 3 hour seminar per week	Self-study materials – genetics, cells, biochemistry, homeostasis pharmacodynamics	Infection Control
3	Reproductive System and foetal development	Puberty/menopause		Integumental system	Personal hygiene incorporating moving and handling
4	Gastrointestinal system	Eating disorders		Reproductive system and foetal development	Health awareness Guidelines to RA
5	Urinary system	UTI		Gastrointestinal system	Nutrition
6	Endocrine system	diabetes		Urinary system	Elimination
7	Respiratory system	Asthma - COPD		Endocrine system	Safe Medicate and injections
8	Cardiovascular system and blood	Congenital anomalies Myocardial infarction		Respiratory system	Vital Signs (list of partners)
9	Neurological system	Meningitis - dementia		Cardiovascular system	Care of the dying /Basic Life Support
10	Musculoskeletal system	fractures		Neurological system And pain transmission	Moving and handling and recorded assessment practice
11	Quiz, revision of any system requested by students and Evaluations			Musculoskeletal system	Recorded Assessment



The Model of Integrated Student Learning (2015)