On Learning Domains, Advanced Stimulation Technology, Experiential Learning, and Reflection in Nursing Education

Vico Chiang
Ph.D., RN (HK & Australia)
Assistant Professor, School of Nursing, Hong Kong Polytechnic University, Hong Kong

Abstract

Bloom’s Taxonomy of learning objectives and Kolb’s theory of experiential learning theory (ELT) contribute widely to the practice of teaching and learning in various disciplines. Given the recent increasing popularity of using advanced simulation that aligns with the focus on ELT in nursing education, the author suggested that such teaching and learning approaches through realistically simulated practice with an emphasis on reflection could contribute to the achievement of psycho-motor, cognitive, and affective domains of learning objectives. Based on this more integrated model, more studies may be conducted and contribute to the increasing body of literature regarding the outcomes of advanced simulation in nursing education.

Keywords: Advanced simulation, Bloom’s Taxonomy, Experiential learning, Reflection

Introduction

The use of high-fidelity (advanced) stimulation technology in medical education has demonstrated promising evidence regarding the development of better learning outcomes (Steadman et al., 2006). The use of such technology also aids teaching and learning in nursing education, and objectively measures competence in the application of knowledge and clinical skills of baccalaureate and graduate students (Nehring, Ellos & Lashley, 2001; Nehring, Lashley & Ellis, 2002). Unlike the medical disciplines, evaluation of advanced simulation for teaching and assessment in nursing education has a shorter history, and the literature on the use of such teaching and learning approaches in nursing curriculum is sparse (Nehring & Lashley, 2004; Bremner et al., 2006; Chiang, et al., 2010). Although there are also inconsistent or short term effects (Kuiper et al., 2008; Corbridge, Robinson, Tiffen & Corbridge, 2010), studies generally demonstrate the benefits of using advanced simulation in nursing education (Radhakrishnan, Roche & Cunningham, 2007; Blum, Borglund & Parcells, 2010; Buckley & Gordon, 2010; McCaughey & Traynor, 2010). Nevertheless, Rourke, Schmidt and Garga (2010) conducted a systematic review on the extent to which theory-based research had informed the understanding of advanced simulation use in nursing education. They found that the potential advantages of theory-based research had not materialized in nursing education, nor had the theories used in such body of research focused on studying the learning process, but instead had focused on teaching. The purpose of this paper is to discuss and propose an experiential-reflective learning domains model of advanced simulation for further research in this area.
Bloom’s taxonomy and philosophy of teaching

Bloom’s Taxonomy (1956) is a classification of learning objectives in education, which has been widely cited and applied by educators over many decades. It provides a way of recognizing the need for a range of different learning objectives that educators may set for students. Such a classification used in nursing education allows program developers to divide educational objectives into three categories of cognitive, affective, and psychomotor domains. Within these domains and in the opinion of the educator, learning objectives for students may also be set at different levels that are founded on either the learner’s previously acquired knowledge or pre-requisite knowledge deemed necessary. Bloom’s Taxonomy is a systematic and practical framework which provides teachers with a guide to better prepare learning objectives so that a more rational and holistic form of planning for particular educational outcomes for students will be achieved (Hauenstein, 1998). It also contributes to the preparation of teachers or educators to develop appropriate measures of learned sets of capabilities and higher order thinking skills.

The cognitive domain deals with student learning about processing and utilizing information in a meaningful way: knowledge acquisition and comprehension which contributes to more ‘critical’ thinking about particular subject matter. The affective domain relates to attitudes and feelings, reacting to the elements within learning processes. The highest level of learning outcome in this domain centers on achieving changes in attitudes (holding a new value or belief that exerts influence on the student’s behaviors after such affective learning). The psychomotor domain involves the acquisition and honing of physical skills and the ability to manipulate a tool or instrument, with the target outcome to successfully change and/or develop new behaviors and/or skill sets.

Having been an educator in nursing for over ten years, the author has greatly enjoyed the challenge of developing good teaching and robust education strategies. With the contemporary emphases on problem-based learning, outcome-based approaches, student-centered learning, self-directed learning, and life-long learning, the discipline and practice of education has never been more stimulating and exciting. Bloom’s Taxonomy of learning embeds the need to recognize the worth of establishing meaningful objectives to any learning event. The approach of humanistic psychology (Rogers, 1994) has provided the philosophical and theoretical bases which underpin the author’s practice of teaching and learning. In particular, there is a sense of trust that ultimately learning has occurred, and that the learner has succeeded and grown when there are observable behavior changes; attitude changes and better foundations for application of knowledge that underpins the development of processes and they contribute to critical thinking development in students. Nevertheless, in the field of nursing education, successful psychomotor skills development for the learner is just as important as the other two domains. The ideal ‘professional’ learning occurs in nursing students when there is evidence of successful acquisition of knowledge, and better processes of critical thinking as well as the sharpening of physical skills. Sound learning outcomes about nursing situations are founded on the personal acknowledgement about change in attitudes about the subject matter. The educator also needs to consider the resources available, any methods and/or instruments of teaching that learners and teachers may use to achieve optimal learning.

Simulation technology and experiential learning in nursing education

The ultimate goal of using advanced stimulation technology for nursing education is to successfully educate a new generation of professional nurses, who are competent in critical thinking and problem-solving given that they are working in dynamic care situations where patients experience shorter lengths of hospital stay. The nurses need to satisfy the ever increasing and complex health care needs of patients and expectations of our societies for optimal care.

Although formal evaluations of the use of advanced stimulation technology, for instance, the high-fidelity Human Patient Simulator (HPS), for teaching and assessment in nursing has been more closely scrutinized in the last 10 years, the literature on usage of HPS in nursing education...
is sparse (Nehring & Lashley, 2004; Bremner et al, 2006). Available evidence indicates a positive trend of nurse educators in acquiring and applying such technology in teaching and learning (Bearson & Wiker, 2005; Bremner, et al., 2006). Results of current studies also show promise of establishing a foundation for best practices by the use of HPS in baccalaureate nursing education (Bremner, et al., 2006). The use of the more advanced technology has become popular for nurse educators aiding the pursuit for excellence in teaching and learning. However the objective measurement of competence in the application of knowledge and clinical skills by baccalaureate, as well as graduate, students is crucial (Nehring, Lashley, & Ellis, 2002).

The use of advanced HPS in nursing education is one approach in a suite of options for experiential learning which allows learners to realize and consolidate the underpinning knowledge and theories that inform their practice. Through experience (actual and simulated) students learn new abstractions and applications, which also result from reflection on the more direct learning experiences (Kolb, 1984). The experiential perspective applied to educational situations, learning through highly realistic HPS technology with simulated clinical scenarios supplements the ultimate experiential learning opportunities in actual practice that students access in the real clinical environments (which remains a crucial component of the pre-registration nursing programs). Using Bloom’s Taxonomy in preparing and assessing outcomes, experiential learning reliant on the more advanced HPS technology can be a powerful means to develop sound learning events focused on the development of psychomotor skills, as well as learning outcomes in the cognitive and affective domains. It is essential that success in learning is also viewed as a process associated with ongoing reflection and positive behavioral changes, which are assessed appropriately and reinforced through ongoing experiences in actual practice.

Reflection in learning

Reflection is a key feature in the teaching and learning process. It needs to centre on guiding students on knowing what, why and how they have achieved in relation to the psychomotor, cognitive and affective learning objectives as set out in the curriculum. According to Boyd & Fales (1983), reflection is the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self (affective learning), and also results in a changed conceptual perspective (cognitive learning). Learning is both a mental and, when applicable, a psychomotor process (which is ultimately achieved as the establishment of personal meanings and experiences). Therefore, to successfully learn, learners go through cognitive and affective changes, and subsequently experience a genuine and meaningful behavioral change. The practice of regular reflection on one’s own learning is an essential medium for the learners to consciously examine their very own learning journeys (both mentally and practically), hence charting and realizing the level and extent of personal and professional growth. To achieve sound outcomes in student learning, honest and critical appraisal of one’s own learning processes against appropriate criteria is the fundamental aspect of reflection. The experience is fundamental and crucial for assessment of the nature and extent of learning.

A marriage of the multiple aspects of learning

Learning is not a linear or hierarchical process, but is multi-dimensional and interwoven with the experiences from the usual daily life of practice within or outside the educational structures and processes. Learning events need to address situations which mirror actual experiences of people within nurse’s care, progressing through experiences of people across the lifespan living within our different societies. Theoretical elements of knowledge and practice inform and facilitate critique in the educational, practical and lived contexts for the professional development of student nurses in or outside the tertiary education settings. Reflection that leads to abstract conceptualization and further experimentation is a critical component of the experiential learning process (Kolb, 1984). To achieve the learning objectives as expressed using the principles within Bloom’s Taxonomy and with the experiential learning that involves structured events reliant on advanced simulation technology with the emphasis on reflection, Figure
1 illustrates one of the models educators may better use to ensure comprehensive learning outcomes. Furthermore, ongoing evaluation and systematic experimentation through clear theory-based research with this model are needed to test the extent to which our teaching and learning events are appropriately structured and centered on realistic scenarios of patient care if students are to achieve appropriate levels of learning in all domains (Rourke et al., 2010).

Conclusion

There is a lack of theory-based nursing research and shortage of clear adherence to the teaching and learning theories in such educational research regarding the use of advanced simulation for students in nursing (Rourke et al., 2010). This paper discussed the classical Bloom’s Taxonomy (1956) and Kolb’s experiential learning process (1984) with the key focus on reflection, and proposed a model in which these essential aspects of teaching and learning for further research in advanced simulation are incorporated.

References


