Systems Theory in Nursing Education

Elizabeth Simon

Systems theory can offer potential for achieving a workable framework for planning, implementing and evaluating nursing education. Organisations such as nursing schools are engaged in ongoing evaluation and feedback to improve the quality and the quantity of the output. Evaluating the graduates' readiness to take the NCLEX-RN or any other terminal examinations for licensure will allow them to self-evaluate and enforce aggressive pedagogical measure to meet the educational and societal goals. Nursing faculty influence the throughput system by fostering clinical judgement, planning, and problem solving. By gaining self-awareness and knowledge of human behaviour, group performance, and learning styles, performance of faculty in enhancing nursing education can be improved.

According to systems theory, functions of a living organism are identified with various functions of a society. In a natural system, input, throughput, and output are regulated in an organism to meet a particular goal. In a human system, input, throughput, and output are carefully selected to produce specific outcomes. Likewise, an educational system can be compared to an organism with input, throughput, and output components or processes to accomplish educational goals.

Discussion
Educational Systems
Higher organisations tend to lean towards open systems. Conventional physics deals with closed systems and the sciences that deal with the living organisms are open systems. Educational systems advance the culture of education and productive citizenry. However, they are different from organisational systems; yet a systems approach is based on the societal embedding of education. General systems theory gives not only a foundation for scientific education but also an integrated approach to science education at the tertiary level (Gulyaev & Stonyer, 2002).

Systems Theory and Nursing Education

Nursing Process
When systems theory is applied to nursing education, the input becomes the personal system of the student: values, beliefs, and knowledge, which is evidenced partially by scores on standardised tests. Throughput is the interpersonal system that encompasses students and faculty in the educational environment. Interaction is the process that influences the output. Output is defined here as passing the board or University exams or any other terminal examinations and effective clinical practice. Higher education is the boundary of nursing education where input, throughput, and output are embedded. Education influences, transforms, and maintains changes in personal and interpersonal systems and the social system. The aim of education is to bring about social change through influencing personal and interpersonal systems.

Nursing process has its roots in general systems theory (problem, assessment, planning, interventions, and evaluations); it is the strand of knowledge and practice where supervised clinical practice is correlated with classroom materials (Mason & Attree 1997). In systems dynamics, the nursing process is associated with open systems in which the cyclical pattern of activity improves its state by a process of input, throughputs, outputs, and feedback loops.

Hill & Stephens (2005) used Complex Adaptive Systems (CAS), as described by Holland, to explore better ways to educate physicians in a complex health care environment. The authors emphasised the effect of group interactions that emerge from group members' influence on one another. The resulting internal relationships and behaviour patterns help groups achieve more than the sum of their members' individual actions. Clinical conferencing in health education is an example. The authors argued that the practice-based

Visiting Professor, Faith Institute of Nursing Sciences, Bangalore, and Assistant Professor, Hunter College, City University of New York.
learning that takes place in a clinical environment is effective in undergraduate medical education. To accomplish the desired results from the clinical learning, the course coordinators need a complex adaptive style of leadership training. A conceptual approach based on systems theory to translate new knowledge to clinical practice is useful in health care education (Harrison, 2004). New information is received, as it passes through the system, its internal environment changes to a certain extent in order to maintain equilibrium. In this manner an open system continuously responds to the demands of the external environment and uses feedback from the environment as a new input (Salvatori, 2000).

In the personal system, strengthening of the personal system is accomplished with adequate training, orientation, and continuing education (Gilles, 1994).

**Interpersonal System**

Interpersonal system is the vital aspect of nursing education. The throughput process of communication and interaction aimed at a goal attainment influences the outcome. The concept of goal attainment can be applied to the interpersonal or the throughput systems of nursing education. The major elements of goal attainment are the educator and the student, communication and transactions. Measuring goals enables the students, educators, and the institution as a learning organization to evaluate them and strive for mastery (King, 1981).

When human beings with personal systems interact, interpersonal systems evolve. The individuals interact in dyads, triads, and small and large groups. As the number of individuals interacting increases, the interactions become more complex. Interactions involve verbal and non-verbal communications that are goal-oriented. Individuals’ personal needs, experiences, and goals influence the interactions.

Communication involves the total person and it is circular and not linear. The use of other senses in non-verbal communications is also important in interactions. To be effective in communications, the educator should be a good listener.

Communication is the nucleus of interpersonal systems. Traditionally, educators send messages and students receive them. In the new paradigm or the client-centred view, the process is reversed i.e., the students are the senders and teachers are the receivers. At the same time, the paradigm does not change the definition of communication: it is still considered as the transmission of information. Communication involves information, utterance, and understanding as a three-part unit (Vanderstraten, 2000). Selection of information is important in communication.

The selected information should be in a form that both the sender and the addressee can understand. The last factor, understanding, is most important and it involves change in the state of the receiver. Understanding occurs only if the receiver delineates information from the utterance.

All human experiences are essentially social, involving contact and communication. It is the educator’s role to discriminate between the attitudes generated from the experiences which are conducive to positive growth, and which lead to negative growth. It is the overall responsibility of educators not only to observe the direction of growth but also to understand the effects of the physical and social environment that promote growth in a positive direction. In addition to identifying factors that influence growth, educators should be adept at capitalising on the environment to extract the best result for the sake of progressive education (Dewey, 1938).

Interaction is an important aspect of education in interpreting objective and internal conditions during the experience. Objective conditions are the social settings of the experience. Interaction and continuity are two aspects of experience. Aiming at the future in every aspect of the educational process is embedded in the principles of continuity. In essence, “every experience should do something to prepare a person for later experiences of deeper and more expansive quality” for progressive education (Dewey, 1938).

Nursing education is progressive, life-long learning that enhances clinical effectiveness. This type of continuity in education should take place within the institutions where the graduate nurse is practicing. Adult education takes place in conjunction with institutions, and development
of individuals in their territory is important for the institutions. This goal is primarily based on the premise that individual development enhances institutional operations. In this context, the role of adult educators is complex; they are change agents engaged in helping adults in the multifaceted role of a “helper, guide, encourager, consultant and resource”.

Senge’s (1990) systems thinking can be applied in nursing education because it “integrates the disciplines, fusing them into coherent body of theory and practice”. The pursuit of personal mastery is the key concept of Senge’s system thinking that can be applied to the nursing student’s personal system and also to a nursing educational organisation as a learning organisation. A personal vision that comes from within, a commitment to truth, an ability to integrate reason and intuition, an understanding of our connectedness to the world, a spirit of compassion and a commitment to something above self-interest can foster personal mastery.

Social System
The social system is the “organised boundary system of social roles, behaviours and practices developed to maintain values and the mechanisms to regulate the practices and rules” (King, 1981). Individuals spend most of their hours of the day in social systems called organisations. In the systems approach, the organisational structure comes second to designs of interactions and communication. It allows entry level practising nurses to be actively involved in patient care decisions. In addition, such environment enhances and motivates continuity in learning.

Systems thinking is the cornerstone of how learning organisations think. Reinforcing and balancing are two types of feedback process in systems thinking (Senge, 1990). A balanced system looks for stability and a self-correction mechanism. Terminal exam score report can be utilised by individual schools as a tool for self-correction. The strengths and weaknesses of the curriculum can be identified to some extent using standardised exams. Leadership needs to develop skills to attain control in organisations without controlling; “localness or unleashing people’s commitment by giving them freedom to act or try out their own ideas” is the key to having control (Senge, 1990).

Senge emphasised that the leader of a organisational system should be a designer, a teacher, and a steward.

Conclusion
Output in nursing education programme success and effective clinical practice can be continuously influenced by the throughput process of communication and interaction. Output process does not end in graduation, creating a life-long learner is a vital part of effective clinical practice. Enhancing personal mastery through throughput process leads to continuity in learning and increased productivity. Ongoing feedback mechanisms provide an opportunity for the educators to employ self-correction measures and be open to the demands of the society. Society demands productive nursing practitioners who can sense the societal health needs, adapt to the environment, modify clinical practice based on evidence, and elevate professional practice standards. To meet these need, educators should focus on a throughput process based on effective communication, interaction and systems thinking.

References