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Teaching Health Occupations for a Networked World

Catherine M. Sleezer Ph.D.
Oklahoma State University

Deane B. Gradous Ph.D.
University of St. Paul

Jill R. Hough

Jenny Auger-Maw

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Catherine M. Sleezer[1]

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Abstract: This paper discusses the problems with traditionally managed hierarchies and observes that networking among units is becoming more prevalent. Given the interdependence inherent in fully networked organizations, systems thinking is introduced as a useful tool for understanding and managing change. Health Occupations Educators can use systems thinking skills to help students comprehend (a) how and why systems interrelate to help patients, (b) how to build and maintain relationships, (c) how to synthesize information across content areas, and (d) how to learn.

[1]Catherine M. Sleezer, Ph. D., Assistant Professor, Oklahoma State University, Stillwater, OK; Deane B. Gradous, Ph. D., Adjunct Faculty Member, University of St Thomas, St. Paul, MN; Jill R. Hough, Principal of Alternative Environments, Stillwater, OK; Jenny Auger-Maw, Vice President, Organizational Development, Hillcrest HealthCare System, Tulsa, OK.

Just as the agricultural era gave way to the industrial era, so now the industrial era is yielding to new ways of managing, working, and living. Many healthcare organizations have already begun to dismantle their hierarchical structures. As Savage pointed out, "Finely tuned bureaucracies with carefully defined policies, procedures, and job descriptions are no match for the next decade... They are too confiig and rigid and are always out of alignment with the market" (Savage, 1990, p. 65). Instead, managers today are using networks to structure work. The implications of this change for educators of healthcare professionals are major! The changes will affect both course content and classroom teaching strategies. This paper compares traditionally managed bureaucracies to networks; overviews the subject area of systems ***thinking,*** a useful tool for helping students understand this changing world; and discusses the implications of systems thinking for health occupations education.

Comparison of Traditional Bureaucracies and Networks

In traditionally managed healthcare organizations, patients get their needs met by interacting with one hierarchically managed unit after another. Sometimes these units are in the same organization. For example, a patient may work with a receptionist for appointments, a hygienist for teeth cleaning, and a dentist for fillings. Sometimes patients encounter units in different organizations. For example, a patient may move from a primary care clinic to a hospital, to a skilled nursing facility, to home where he or she may require the services of a homecare organization.

In the hierarchical model, work is fragmented both within and among organizations. Although the output of one unit serves as a critical input for another unit, each bureaucracy

or unit has its particular specializations, its own view of healthcare, and a unique culture and language. Unit managers divide work into pieces and assign them to employees who specialize in small work areas. Every specialist has clearly defined purposes and reporting relationships and may become expert at one or more small work areas. Examples of work areas in a hospital setting include radiology, pathology, intensive care, food and nutrition, and respiratory therapy. The specialists assigned to each work area interact with patients to provide their unique services. Managers assume responsibility for generalized thinking and planning within and across work areas; the employees work on the tasks assigned to them. In hierarchical organizations, careful planning, scheduling, and standardization of work is critical to achieving success.

Problems are inherent in hierarchies. One major problem is that the whole entity functions as a collection of units (Savage, 1990). Each unit may try to control and protect its turf. Another problem arises when managers and employees focus on what happens within the units and ignore the interfaces among them (Rummier & Brache, 1990). In a traditionally managed hierarchy, there are often few rewards for managing the interfaces among units of work. As a result, employees may have limited understanding of the work or information needs of employees in other units and, additionally, have little incentive to change their own ways to accommodate others. For example, doctors sometimes use terminology for diagnoses and treatment programs that is not understood by employees in the insurance system.

Two issues that most healthcare organizations currently face, consumerism and cost containment, emphasize the inherent problems of hierarchies. The consumers of healthcare

services in today's market include both purchasers of the services and individual patients. The major purchasers of healthcare services are large insurance groups and employers who make decisions to use each provider based on cost and aggregate quaMy of care. Consequently, many providers are trying to remain competitive in the market by using strategies designed to provide quality care at" ever lower costs. In response to managed care and cavitation, for example, healthcare organizations agree to provide services to a given population for a set price. Services are often customized to meet specific consumer needs, both at the organizational and individual levels. At the organizational level, cardiology services may be packaged to include certain procedures. At the individual level, healthcare organizations are meeting the ever increasing expectations of informed patients whose out-of-pocket costs are rapidly rising by using strategies such as improved customer service.

Considering the problems of hierarchies along with the issues of consumerism and cost containment, it is little wonder that predominantly hierarchically structured heakhcare organizations, no matter how well they are managed, are not well-aligned with the current healthcare market. They are simply too rigid and costly to meet the needs of today's consumers.

Many healthcare organizations are adapting to the changing market by using a networking strategy. In a networking environment, employees accomplish tasks by linking their work with the work of others. This linking can cross organizational boundaries. Decisions are made by those who are doing the work and are context specific. Cross-training is essential as professionals actively seek information and broaden their knowledge by communicating across unit boundaries. One characteristic of networked ***organizations is***

that they require professionals with more generalized skills and fewer specialist skills. Networking within healthcare facilities involves multiskilled jobs, such as maternity units which have implemented multi-focused perinatal care by cross-training nurses with labor and delivery, postpartum and nursery skills (Nichols & Palmer, 1994).

Organizations, too, are networking and aligning their missions. Examples of networking across organizations include mergers and alliances. Increasingly, hospitals are recognizing the need to become part of larger healthcare systems (Healthcare Advisory Board, 1994). Physicians are becoming hospital employees or joint venturing with hospitals in shared endeavors. The healthcare field is moving from one that consists mostly of individual, fragmented providers, to one increasingly comprised of fully integrated healthcare systems (Auger Maw & Sleezer, 1995). Given the interdependence inherent in fully integrated systems, professionals who work in networks would benefit by understanding systems thinking.

Systems Thinking

Systems thinking is an essential skill in an interdependent, dynamic world. A system can be defined as a collection of parts that interact with each other to function as a whole. Systems thinkers recognize whole systems rather than focusing on parts. Further, they recognize multiple, interactive relationships among the parts. Systems thinkers also recognize that' the whole system is greater than the sum of the properties of all the parts. For example, an operating room is a system that includes the following parts: personnel, equipment, instruments, and supplies. However, a space can have all the parts of an

operating room and still not be functioning as a system. It is the structured interaction among the parts that creates an operating room system.

Beyond the basic definition of a system, three concepts that are useful to healthcare professionals are: (a) systems are composed of purposes, inputs, outputs, and processes, (b) everything is connected to everything else, and (c) systems are influenced by forces for change and forces for stability. Systems are composed of purposes, inputs, outputs, and processes. That is, a purposeful system requires inputs to transform, utilizes a process for transforming the inputs, and produces a specified output or result (Figure I). Information from the process and the outputs is fed back to the input side of the system. Information used in this way is called feedback (Kauffman, 1980). To illustrate these concepts, consider a same day surgery system. In this system, parts such as healthcare professionals, technologies, physical facilities, and standard protocols regularly interact to accomplish surgical procedures. On a given day, a patient needing orthoscopic knee surgery enters the system. The patient becomes the major input to the system. Other inputs include patient information from pre-operative, the supplies to be used during the surgery, a skilled physician, and a support team. The process occurs when all parts of the system interact to accomplish the surgery. The major output is the patient with a sore, but healing, knee. Other outputs consist of patient information and waste products from the process. Everything is connected to everything else. That is, any given system is a subsystem of a larger system and is interdependent with many other systems. Also systems are nested, or parts of other systems (Gradous, 1989). For example, the same-day surgery system is part of a much larger healthcare system. Prior to entering same-day surgery, the patient may

have seen a primary care physician who in turn made a referral to an orthopedic surgeon. Assuming surgery was indicated by the surgeon's evaluation and the patient agreed to the procedure, the surgeon's office staff coordinated the surgeon's schedule with the hospital's operating-room schedule. The hospital ensured coordination with other surgeries, the availability of surgical supplies (delivered to the hospital via a distribution system), and the availability of anesthesiologists, surgical nurses, and other needed staff. Other indirectly connected systems are the insurance provider or, if the patient's knee was injured while working, the employer and the worker's compensation system.

Systems are influenced by forces for change and for stability. Change is inevitable, yet systems resist change. The computerization of patient information provides an example of technological advancement that is simultaneously creating change and stability in many systems. Introducing computerized patient-information systems will require such changes as training, cross-disciplinary communication, and acceptance of standardized protocols by healthcare professionals, insurance providers, and regulatory agencies. Concurrently, system stability is enhanced as standardized protocols lead to greater consistence y and lower costs in patient care. Understanding these basic systems concepts better prepares health care professionals to contribute effectively in networked systems where the parts are connected to create a whole healthcare system capable of more efficient and effective patient care.

Implications for Health Occupations Education

Today's leaner, networked organizations are demanding much more of their employees: broader skills, wider knowledge, and the ability to flex and adapt to continually changing

situations and systems. These demands have important implications for health occupations education.

Students need to learn how and why systems interrelate to help the patient. After a knee surgery, for example, the patient works with a physical therapist who knows more about applied rehabilitation and therapy tools than the orthopedic surgeon. To work together to benefit the patient, both the physician and the therapist must understand their tasks in the system and be willing and able to communicate. The therapist is not qualified to order medical interventions; this is the responsibility y of the physician. However, having general knowledge of medical interventions helps the therapist develop appropriate therapy programs and communicate relevant patient treatment progress to the physician. Likewise, the physician communicates general medical information that helps the therapist to make decisions about patient rehabilitation.

Students need to learn how to build and maintain relationships. Relationships provide the glue that holds systems together. Hierarchies tend to promote one-way communication systems. **HealthCare educators need to emphasize relationships between the service provider and** the **patient. In a networked system, communication between parts must** be two-way and professionals must be able to build and maintain relationships with other parts of the system to ensure efficient and effective patient care. For example, a computerized patient information system allows for more consistent information flow across disciplines. In fact, the interfaces between disciplines may become transparent to many of the people involved with a particular patient. This transparency allows for an easier shift to the healthcare generalized role. Paradoxically, this same transparency may hamper problem solving if

healthcare professionals lack a clear understanding about how subsystems really interconnect. **Thus, it is** imperative that close working relationships be nurtured among all units within a healthcare system. Finally, instructors **can stress** communication skills, both person-to-person and **via** computer technology.

Students need to learn how to synthesize information across content areas. One traditional teaching strategy involves breaking the content area into components, focusing on each component separately, and using linear step-by-step thinking to teach students how to fired the best solutions for fixing problems. For example, one traditional medical-surgical nursing **curriculum is structured around the introduction of 15 different applications of a general nursing process, ranging from care of the integumentary system, to care of the musculosketal system, to care of patients with vision disorders, and finally to care of patients with ear disorders.**

While systematic teaching of specialist skills is useful and important, systems thinking provides healthcare professionals with an additional powerful strategy for understanding and working effectively in today's complex world. The teaching of systems thinking emphasizes the relationships among the system parts and how a change in any part influences the others. It also explores the forces for change and stability inherent in systems. Because a system is affected by multiple influences among the parts and forces for change. there is no one right answer to a systems problem. Instead, multiple leverage points are available and the key is to identify those that will be most useful or appropriate.

Students need to learn how to learn. Schein (1993) described anxieties one and two. Anxiety one is the fear of learning, and anxiety two is the fear of not learning. To promote

learning and suitable change in students' assumptions about how to work in a networked environment, anxiety two must be stronger than anxiety one. Instructors can facilitate student learning by making the learning easier and less confusing (thus weakening anxiety one) and by simultaneously pointing out the consequences of not being open to new experiences, resources, and skill-building (thus strengthening anxiety two). Instructors can also encourage students to reflect on their experiences and integrate small pieces of knowledge into new wholes.

Summary

To contribute most effectively in today's dynamic organizations, healthcare professionals must be constantly ready to learn new skills and techniques. Healthcare educators can greatly facilitate this effort. They can help students understand that healthcare organizations are changing from bureaucracies to networks and that contributing to today's organizations requires different types of skills. Systems thinking can enhance student understanding of the complex forces that are changing the healthcare industry. While this article highlights three systems concepts, the subject area is far broader. For more information on systems thinking for organizations, the following references are recommended: Kauffman (1980), Rechtin (1990), Savage (1990), Senge (1990), and Wheatley (1994).

The many changes in today's healthcare industry argue for equivalent changes in health occupations education. By changing their course content and teaching methods to incorporate systems thinking, healthcare educators can help their students effectively prepare for the networked world.

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