

# Accessibility of Technology in Higher Education

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## INTRODUCTION

In systems thinking divisions apparent in science specializations are seen “as arbitrary and man made” (Checkland, 1981, p. 4). A key idea embedded in systems theory is that it can assist us in understanding of phenomena and that its holistic emphasis will promote orderly thinking. According to Checkland (1981), there are natural systems, designed systems, abstract systems, and human activity systems (p. 112). Human activity systems can be broken down into examples of open systems that are relationship dependent. Change is inherent in human systems, as the intricacy of the relationships in these kinds of systems require continuous adaptations if the system is to remain stable. Checkland viewed human activity systems as wholes that are emphasized by the existence of other systems.

Checkland (1981) called systems theory a metadiscipline because of its emphasis on holistic thinking. While “Descartes taught the Western world to break things apart,” systems thinking required one to look at things from the opposite end. Thus, “systems thinking is about the framework itself,” and it is an apt theory and manner of thinking to use when looking at a variety of kinds of systems (Checkland, 1981, p. 12). Two themes flow through systems thinking: (a) emergence and hierarchy, and (b) communication and control (Checkland, 1981, p. 75).

Kuhn (1974) declared that there are just two kinds of controlled systems “all living things, and controlled systems made by living things” (p. 69). Business, industry, government, and education systems are human creations; such social systems are created in direct response to meet their own needs and requirements, and the system created must meet, satisfy, and determine how it will attain its goals. System components then carry out, transform, and integrate the goal relationships into patterns of interaction and interdependence, and the process and interaction of the system created becomes whole and evolves into something that cannot

be divided (Banathy, 1973). Churchman and Ackoff (1949 in Emery, 1973) alleged that when something has value in a social system, one can look across periods of time, see an increase in the pursuit of the system value, and observe an increased desire to achieve the system value (p. 20).

## SHIFTS IN THINKING

Over the past 30-some years in the United States, shifts in thought regarding the use and value of information technology and new perspectives in relation to persons with disabilities and their ability to participate in key areas of human social interaction—such as work, citizenship, education, and independent living—have taken place. This article will explore changes to the education system brought about by the changes in viewpoint connected to the use of information technologies in education and educating persons with disabilities.

Technology has been a constant in the change process for education systems. Assimov (1991) outlined how technology has driven history and pointed to increases in literacy, advances made during the scientific and industrial revolutions, and the advances in 21st century information technology as evidence of technology as a change agent in history. Information technology’s place in history as a change agent is well documented, as is its impact on society, change, and is evident in the increased use, acceptance, and integration in today’s education system.

Research connected to the use of technology has flooded literature connected to teaching and learning. There are numerous professional organizations such as the Association for Educational Communications and Technology (AECT), American Library Association (ALA), American Society for Training and Development (ASTD), International Interactive Communications Society (IICS), International Society for Performance Improvement (ISPI), International

Society for Technology in Education (ISTE), Media Communications Association International (MCAI), International Visual Literacy Association (ILVA), and the United States Distance Learning Association (USDLA) dedicated to the advancement of education technology. Increasingly, computer and Internet technologies focused on its use in education have found a home in specialty journals such as *Electronic Learning*, *Technology and Learning*, and the *Journal of Educational Multimedia and Hypermedia*, to name a few (Heinich, Molenda, Russell, & Smalldino, 2002, pp. 320-322). According to Roblyer and Edwards (2000), “Technology is us—our tool, our methods, and our own creative attempts to solve problems in our environment” (p. v).

## **EDUCATION AS A SOCIAL SYSTEM**

The history of agricultural and industrialized-based education systems of the 20<sup>th</sup> century depicts many system changes, and our 21<sup>st</sup> century education system is undergoing another metamorphosis. Bandura (1995) stated that the current technological era has “profound implications for educational systems” (p. 17). Along with the technological changes occurring in education systems, Bandura pointed to a social system of change and declared, “As countries become more ethnically diverse, educational systems face the difficult challenge of fulfilling their mission with students of diverse backgrounds and inadequacy of academic preparation” (p. 21). Ongoing battles will be fought over whether educators should adopt assimilationist or multicultural approaches...” in the American educational systems operating within what he termed “sociopolitical contexts” (Bandura, 1995, p. 22).

Education is an activity of social systems that processes people and affects their mental state (Luhmann, in Vanderstraeten, 2000). It is an “intentional system” that exists to move people through organized learning based on context of grade level, ability, and prior learning experiences of the individuals moving through the system (p. 7). Education systems create opportunities for learners that are dependent on social interaction “between the possibility and reality” (Vanderstraeten, 2000, p. 7). Bandura’s (1995) belief that social initiatives can build people’s sense of collective efficacy as well as “influence conditions” and “shape” the lives of “future generations” is evident in his statement

that “societies that fail to develop the capabilities of all their youth jeopardize their social and economic progress” (p. 25).

## **SOCIAL CHANGE AND SYSTEMS VALUES**

Crewe and Zola (1983) stated: “Social movements eventually find expression in both public and professional practice” (p. 21). In view of that, one can look back over the past 30 years and observe a society that has become increasingly inclusive and accepting of differences. Evidence of this can be seen in federal law connected to civil rights and disabilities-focused legislation such as the Civil Rights Act (1964), Rehabilitation Act (Section 504, 1973), Americans with Disabilities Act (ADA, 1990), Section 508 (2000), as well as the Individuals with Disabilities Education Act (IDEA, (1983), Carl D. Perkins (1984, 1990), and the

Technology-Related Assistance Act for Individuals with Disabilities (TechAct, 1991, 1994). Through some 30 years of legislated change, societal thought and overt action have been altered, and persons with disabilities now have more opportunities in the education system and society at large.

The policies and laws set by the government dictated numerous changes to policy and practice in schools and other areas of public life that previously excluded and discriminated against people of color, women, and persons with disabilities. American citizens advocating for themselves and others during the past 30 eventful years directly influenced legislation, attitudes, values, and practice in society with their demands for equality in the 20<sup>th</sup> century (Smith, 2001, p. 181). Despite the gains, Smith (2001) stated that issues related to special education practice still exist and have not “addressed exclusions and discrimination at individual or institutional levels,” nor has society truly addressed the “disability rights movement” (p. 182).

Man-made social systems such as education are created in response to a need (Bathany, 1973). Schools exist to meet a variety of educational and societal needs. The improbability of building an education system with practices that make some students more worthy of education than others is outlined by Smith (2001), as is the need to recognize that the current system of education has harmed “children, disproportionately limiting and constraining the opportunities for children

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