

The Definition of the Field of Instructional Technology

In an attempt to define the field of instructional technology, one strategy is to explore the roots of the terms “instruction” and “technology.” Using the Latin and Greek roots – *instruo* and *technologia*, we can most accurately begin to define the field. “Instruo” is translated “construct, build; prepare, draw up; fit out; instruct, teach”(Whitaker, 2007). The word “technology,” from the Greek *technologia*, meaning “the systematic treatment of an art, craft, or technique” came to mean “science of mechanical and industrial arts” only in about 1859 (Barnhart, 1988). Putting the definitions of these two words together, one may define “instructional technology” as the “systematic treatment of constructing or building” or “systematically training or teaching.”

The definition of the field of instructional technology is a debatable topic, fueled by a variety of research, trends and innovations in educational psychology, learning theory and an influx of tools and ideas over the past century. Thus, another strategy for defining the field is to analyze the trends surrounding past changes in the definition of the field in order to understand its current state and identify future changes in educational theory, industry trends and instructional tools.



Roots in Psychology and Learning Theory

Since Aristotle and Plato, human interest in cognition has inspired significant research in the areas of teaching and learning. However, throughout the mid-late 1800's, behavioral psychology and behavioral learning theories were the primary theoretical foundation for the field and had dominated all instructional design and development efforts (Saettler, 1990). As early as the 1920's people began to find limitations in the behaviorist approach to understanding learning. The emergence of cognitive science in the 1920's and the shift in thinking about human learning resulted in major changes in teaching and designing instruction (Saettler, 1990). Focusing on mental processes of the mind, cognitive theories influenced the instructional design processes by emphasizing internal as well as external conditions for learning. Thus, one may claim that instructional technology, as a field has been born out of learning theories while other disciplines and theories also influenced the field. The following paragraphs explain the historical and theoretical progression of the field in an attempt to explore the field and its definition.

The Early Years of Instructional Technology

Much of the foundation of the field of instructional design was laid in World War II, when the military faced the need to rapidly train large numbers of people to perform complex technical

tasks. Influenced by behavioral learning theories particularly programmed instruction (Skinner, 1953) and armed with knowledge and the experience of creating standardized methods of instructional delivery using “teaching machines,” military researchers developed an array of training films and other mediated materials for instructional purposes.

The ability to widely distribute training materials proved to be quite attractive to military agencies since a great deal of training was needed. Instructional media was developed using still photographs, audio recordings, transparencies, slides and films to support the training effort (Schrock, 1995). In addition to developing training films and other audiovisual instructional materials, military researchers focused on identifying principles of learning that could be used in the design of audiovisual materials. For example, psychologists such as Robert Gagne (1962, 1965), Leslie Briggs and John Flanagan (1967) influenced instructional theories and principles that facilitated the design and development of instruction materials (Reiser, 2001, Saettler, 1990).

The focus on using learning and instructional theories for design and development of audiovisual materials continued after World War II. The post-World War II era saw psychologists and communication engineers working together to solve training problems (Saettler, 1990). Aided by a number of federal grants and the creation of the DAVI (Division of Audio and Visual Instruction), the years of the 1950's and 60's were marked with the design of programmed instruction and the establishment of instructional systems that emphasized heavily the use of instructional media (AECT, 2001).

Beginning to Define the Field

In 1963, a division of DAVI published the first definition for instructional technology. DAVI defined “audiovisual communication,” which later was termed instructional technology. The definition stated that instructional technology was the practice of designing, planning, producing and using pictorial messages which control the learning process and contribute to the development of the learner’s full potential” (Seels and Richey, 1994, pp. 15-16). This definition identified a number of areas within the field including utilization and management. Identification of these new domains resulted in viewing instructional technology as process-oriented, rather than a product-oriented field (Seels and Richey, 1994).

Becoming uncomfortable with the term “audiovisual communication” and defining the field as both process and product, stakeholders renamed and reorganized DAVI, creating AECT (Association for Educational Communication and Technology) and, in 1970, published the first revision to the definition of instructional technology. The definition described the field as “a systematic way of designing, carrying out, and evaluating the total process of learning and teaching . . .” (Commission on Instructional Technology, 1970).

The Growth of the Field

The new definition of the field and its focus on process as well as the product resulted in maturation of the field throughout the 1970's although much of the design still utilized a behaviorist approach to learning as B.F. Skinner had researched decades before (McNeil, 2003). This focus was evident in the military adoption of instructional design models. Many instructional improvement centers were created with the intent of helping faculty use media and instructional design procedures to improve the quality of their instruction. The AECT (1977) re-defined instructional technology as a “complex, integrated process involving people, procedures, ideas, devices, and organization, for analyzing problems and devising,

implementing, evaluating, and managing solutions to those problems, involved in all aspects of human learning” (Seels and Richey, 1994). This definition recognized the growth and change that had occurred within the field and prepared for a major transition throughout the 1980’s.

The rise of the microcomputer in the 1980’s, adoption of cognitive approaches to learning and the emergence of human performance technology once again affected the field and its definition by adding new environments, instructional theory and expanded roles for instructional technologists. Researchers turned their attention to the use of the personal computer for instruction and the rapid adoption of instructional systems (Schrock, 1995).

Using a model of programmed instruction and self-instructional modules helped to accelerate the field’s utilization of behavioral and newly emerged cognitive approaches in the development and use of computer-based instruction (CBI) for training initiatives, focusing on the learning of skills within specific domains. As these programs saw much success, business researchers began to envision an even greater role for the processes of instructional technology. Businesses began seeking the expertise of the instructional technologist to analyze and design interventions to solve performance problems (Reiser, 2001).

At the end of the 1980’s, the performance technology movement emerged with an emphasis on front-end analysis, on-the-job performance, business results and the use of non-instructional solutions, thus broadening the field of instructional technology to include the design of interventions, instructional or not (Reiser, 2001). Although the official definition of instructional technology did not change in the 1980’s, the field came to include the use of performance improvement strategies and emerging tools, broadening the scope of qualifications for the instructional technologist.

Changes in the Scope of Instructional Technology

The performance improvement movement significantly impacted the 1990’s much more than the 1980’s. In seeking solutions to performance problems, instructional technologists began to identify causes and solutions not directly related to gaps in knowledge, recommending non-instructional solutions to problems (Dean, 1995). Increasingly, businesses utilized instructional technologists for activities beyond the traditional instructional design process, solving problems outside the realm of instruction.

The nature of instructional theory also changed dramatically throughout the 1980’s in response to these developments (Reigeluth, 1999). “In the industrial age, education needed to focus primarily on (domain-dependent) cognitive learning,” but as organizations have realized the need for solutions to ill-structured domains and information has become more readily available, a paradigm change has occurred (Reigeluth, 1999, p. 21). As technologists began working with performance problems in a variety of systems, designing for an array of environments, a new paradigm in learning theories began to gain popularity throughout the decade (Reiser, 2001).

Constructivism, with its emphasis on problem solving, collaboration and ownership of learning in the construction of knowledge had a major impact on theory and practice of the field (Reiser, 2001). In addition, expanding use of the microcomputer increased the need for electronic performance support systems (EPSS). Many of these systems utilize a constructivist approach, providing the user with the necessary resources and instruction as they desire or need it, using approaches and scenarios that can easily be transferred to the workplace.

In the 1990's, with the advancements in connectivity and communication, researchers began to see increased effectiveness in learner's ability to construct his meaning through collaboration and collective thought. As a culmination of the developments in the 1980's and early 1990's, the AECT adopted a new definition for the field. According to this definition, instructional technology is "the theory and practice of design, development, utilization, management, and evaluation of processes and instructional technology resources for learning" (Seels and Richey, 1994). This definition provided a foundation for the use of instructional technology processes in a world where the processes of business and communication were rapidly changing.

Instructional Technology and the New Learner

The application of instructional technology processes have been applied throughout the 1990's and into the new millennium on a much larger scope due to improvements in communication technology. Using the Internet for instructional purposes dramatically affected the area of instructional technology; and since 1995, there has been a great increase in its use to deliver instruction at a distance (Reiser, 2001). The need for high quality distance learning and systems to identify, document and disseminate knowledge within an organization have expanded the tasks instructional designers have been expected to undertake. The increased speed and power of the Internet have offered users an environment where they are not only consumers of instruction, but also creators of instruction and instructional environments.

Oblinger (2003) observed that the new learners, the millennials, are focused on the availability, customization, authenticity and interactivity of the learning process. Since 2003, Web 2.0 (a term coined by O'Reilly Media in 2004) has become an Internet trend focusing on new technology and web design. A second generation of web-based communities and services such as social-networking sites, wikis, blogs, virtual worlds and folksonomies aim to facilitate creativity, collaboration, and sharing among users ("Web 2.0," 2008). The nature of these tools and this new environment truly relies on the social nature of the Internet and seems to relate very well to constructivist ideals, an assertion that has been made in research studies and countless instructional musings. Research in the use of these tools, constructivist learning environments and performance improvement and their impact on instructional technology has and will continue to define the field.

The newest definition published by AECT in 2008 states that instructional technology is "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" (Callary, 2008). It is evident that the performance improvement movement has now been included within the definition of instructional technology. The newest definition also seems to allude to a constructivist approach using the word "creating" to describe the domains of design and development. It also seems to recognize the "object-process" battle over the word "technology" by stating that the management and utilization of processes and resources (tools) are within the sphere of instructional technology.

Constructing a Definition of the Field and Its Domains

As the above review indicates, we cannot separate the process of learning from technology and the tools that facilitate this process. Learning must occur in the most appropriate environment using the most relevant tools for the intended outcomes. Thus, by combining current definitions and ideas, instructional technology can be defined as the process of utilizing relevant and appropriate resources to design, develop, manage and evaluate solutions to systemic problems in order to facilitate individual and organizational performance improvement.

Domains of the Field

Since the most current definition of the field is still in its infancy, in the subsequent sections of this portfolio, I will deconstruct the field of Instructional Technology by closely analyzing the domains as expressed by Seels and Richey (1994): Design, Development, Utilization/Implementation, Management and Evaluation. Each domain will include a definition and description of the domain processes that industry leaders have identified. Each domain will also include a number of basic guiding questions that, I feel, align with an appropriate thought process.



An Akan proverb teaches: “The one who asks questions doesn’t lose his way” (Camara, 2006). Questions guide the processes of the field as they will establish the structure for defining the domains of instructional technology. In my opinion, effective questions are the key to careful analysis and design, effective development, perceptive implementation, intuitive management and useful, efficient evaluation. The addition of this line of questioning will help to develop a functional definition of each domain to accompany theoretical review.