

Evolutionary Nature of the Definition of Educational Technology

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Abstract

Due to flexibility and vitality nature of the field of educational technology, many attempts have being made by professionals of the field to define educational technology prior to 1960 to date for the purpose of providing a well comprehensive definition of the field which is suitable to the particular period of time. But, in recent years many literatures of the field (especially in Nigeria) outdated definitions are being used to define the field which do not comprehensively cover the scope of the field nowadays. Thus, this paper elaborates the evolutionary nature of the definition of educational technology, and analyses the differences between each of the definitions. This might be helpful for the professionals of the field to be fully aware of the changing nature of the field, and be able to produce another definition by themselves in the future.

1. Introduction

The definition of Educational Technology is dynamic and flexible in nature due to constant technological development and innovations that in one way or the other affect the processes of teaching and learning. For example, earlier definitions of the field may not be suitable for recent years, because the availability of technological gadgets we operate for teaching (like internet, smart board, etc.) were not available at that time. Thus, Association of Education and Communication Technology becomes highly committed for making new definitions of the field since its recognition as a field of study in 1963 to date. This paper focuses on 1963, 1970, 1972, 1977, 1994 and 2008 definitions of Educational Technology. Moreover, the paper analyses the differences between the definitions. The paper also clarifies some terms used in the definitions.

Definition of Educational Technology before 1963 to 1963

Reiser (2012) stated that before 1963, educational technology was viewed as instructional media- the physical means in which instruction is presented to learners. He also explained that the root of Educational Technology can be traced back to the first decade of twentieth century, when educational field was first being produced. From that period to 1920s, there was a dramatic increase in the use of visual materials (such as films and pictures) in the public schools in America.

1963 serves as fateful year of the field of Educational Technology, because in the year first definition to be approved by the major professionals of Educational Technology was established, and it indicates that the field was not simply about media, but it is beyond that as the definition was defines as follows:

“Audio Visual Communication is that branch of educational theory and practice primarily concerned with the design and use of messages which control the learning processes. It undertakes: a) the study of unique and relative strengths and weaknesses of both pictorial and non-representational messages which may be employed in the learning process for any purpose; and b) the structuring and systematizing of messages by men and instruments in educational environment. These undertakings include the planning, production, selection, management, and utilization of both components and entire instructional system. Its practical goal is the efficient utilization of every method and

medium of communication which can contribute to the development of the learners' full potentials" (Ely, 1963).

From the above definition it could be observed that Educational Technology was named "Audio Visual Communication" in 1963. However, the definition proves that rather than focusing on media only, the definition focuses on "the design and messages which control the learning process. Moreover, the definition identifies a series of steps that individuals should undertake in designing and using such messages. These steps include planning, production, selection utilization and management of instructional materials. In addition to that, the definition places more emphasis on learning rather than instruction (Rieser & Dempsy, 2012).

The 1970 definition of Educational Technology

The changing nature of the field of Educational Technology was even more apparent by examining the next major definition produced in 1970 by the Commission on Instructional Technology. The commission's report highlighted that the field could be define in two ways:

"In its more familiar sense, it (Instructional Technology) means that media is born of communication revolution which can be used for instructional purposes alongside of the teacher, text book and black board the process that make up instructional technology; television, film, overhead projectors, computers, and other items of hardware and software....."

In contrast to the above definition the commission offered a second definition that describes instructional technology as a process, stating

"Instructional technology ... is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication and employing a combination of human and non-human resources to bring about more effective instruction" (Commission on Instructional Technology, 1970).

Seels and Ruchey (1994) mentioned that the later definition of 1970 has several features that indicated its comprehensiveness compared to former one. The features include:

- i- There is the idea that instructional technology must include specific objectives
- ii- Methods and techniques used to teach specific objectives should be based on research
- iii- There is the phrase "more effective instruction" which is also a key feature of technology.

However, it is important to note that the second definition mentions a "systematic process" which includes the specification of objectives and design, implementation, and evaluation of instruction (Reiser, 2012).

However, Silber (1970) established another definition of the field of instructional technology which was also very important due to its difference from the 1963 definition. Silber defined the field as:

"Instructional Technology is the Development (Research, Design, Production, Evaluation, Support-Supply, Utilization) of Instructional Systems Components (Messages, Men, Materials, Devices, Techniques, Settings) and the Management of that development Organization, Personnel) in a systematic manner with the goal of solving educational problems" (Silber, 1970).

The main differences of Silber's definition from the previous one are:

- i- The Silber's definition encompasses design, production, utilization, and evaluation of technology; whereas previous definitions referred mainly to individuals' role as developers of a product (Seels & Richey, 1994).

- ii- Silber's definition also changed the scope of field by adding new components to the definition which in turn made the roles of educational technologists broaden (Seels & Richey, 1994).
- iii- Lastly, in the definition Silber introduced the term „problems“ and stated that instructional technologists' goals are to systematically solve educational problems (Seels & Richey, 1994).

1972 Definition of Educational Technology

After the 1970 revisions to the definition of the field, the AECT attempted to define the field again in 1972. AECT defined the field as:

“Educational technology is a field involved in the facilitation of human learning through systematic identification, development, organization and utilization of a full-range of learning resources and through the management of these processes” (AECT,1972, p. 36).

The definition states that educational technology is a systematic process for developing and using instructional resources (Seels & Richey, 1994). These two ideas were carried over from the previous definitions and the ideas are incorporated in 1994 definition. For instance, some of the roles identified in the previous definitions are repeated in the definition such as the role of development, organization, management and utilization.

On the other hand, Ely, (1972) pointed out that the 1972 definition identified educational technology as a field in one hand and the ideas of “control” and “specific objectives” are replaced by the ideas of “process” and “facilitation of human learning” in the definition on the other hand.

1977 Definition of Educational Technology

In 1977, the Association of Educational Communication and Technology (AECT) adopted a new definition of the field. The definition is also different from previous definitions in many ways which are:

- i- The definition is length in the sense that it consisted of sixteen statement spread over seven pages of text
- ii- The definition was followed by nine pages of tables elaborating in some concepts mentioned in the statement as well as other nine chapters that provide further elaboration.

Nevertheless, the first sentence of the definition statement provides a sense of its breadth

“Educational technology is 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” (p. 1).

Riser and Dempsey (2012) identify five features of the 1977 definition which make it different from the previous ones:

- i- The 1977definition placed a good deal of emphasis on a systematic (complex and integrated) design process; the various parts of the definition mentioned many of the steps in most current systematic design process (such as design, production, implementation and evaluation).
- ii- The definition was the first kind of such definition to mention the analysis phase of the planning process, which at that time was the beginning to attract attention among the professional of the field.
- iii- Finally, the definition broke new ground by incorporating other terminologies that within short period was becoming common place in the profession. For instance, the definition included the term “human learning problems and solutions” foreshadowing the frequent current use of these terms, especially in the context of performance improvement.

1994 Definition: Beyond viewing Instructional Technology as a process

During the period of 1990 to the mid of 1994s, many developments affected the field of instructional technology (Rieser, 2012). Whereas behavioral learning theory had previously served as the basis for

many instructional technology practices employed by those in the field, cognitive and constructivist learning theories began to have major influence on design practice (Rieser, 2012). However, the field was also greatly influenced by technological devices such as micro-computer, interactive video, CD ROM, and internet. Furthermore, the drastic expansion of Information and Communication Technology led burgeoning interest in distance learning and new instructional strategies such as collaborative learning gained in popularity. As a result of these and many other influences led to 1994 definition. The 1994 AECT definition of the field has been the most commonly used definition to define the field of instructional technology. This definition defined the field as:

“Instructional technology is the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning”. (Seels& Richey, 1994).

Seels and Richey (1994) stated that the 1994 definition of the field switched from using term “Educational Technology” to “Instructional Technology”, the switch in terminology is a result numerous factors which are:

- i- Instructional Technology is more commonly used today in US.
- ii- The new term encompasses many practice settings
- iii- The term also describes more precisely the function of technology in education and
- iv- Allows for emphasis on both instruction and learning.

However, the 1994 definition describes the field in terms of five domains (design, development, utilization, management and evaluation) five areas of study and practice within the field. Seels and Richey (1994) explained that there is synergistic relationship between the domain as they are virtually represented by a wheel-like-virtual, with each domain on the perimeter is connected to a theory and practice hub. This representation scheme was designed to prevent readers from erroneous conclusion that these domains are linearly related (Seels and Richey, 1994).

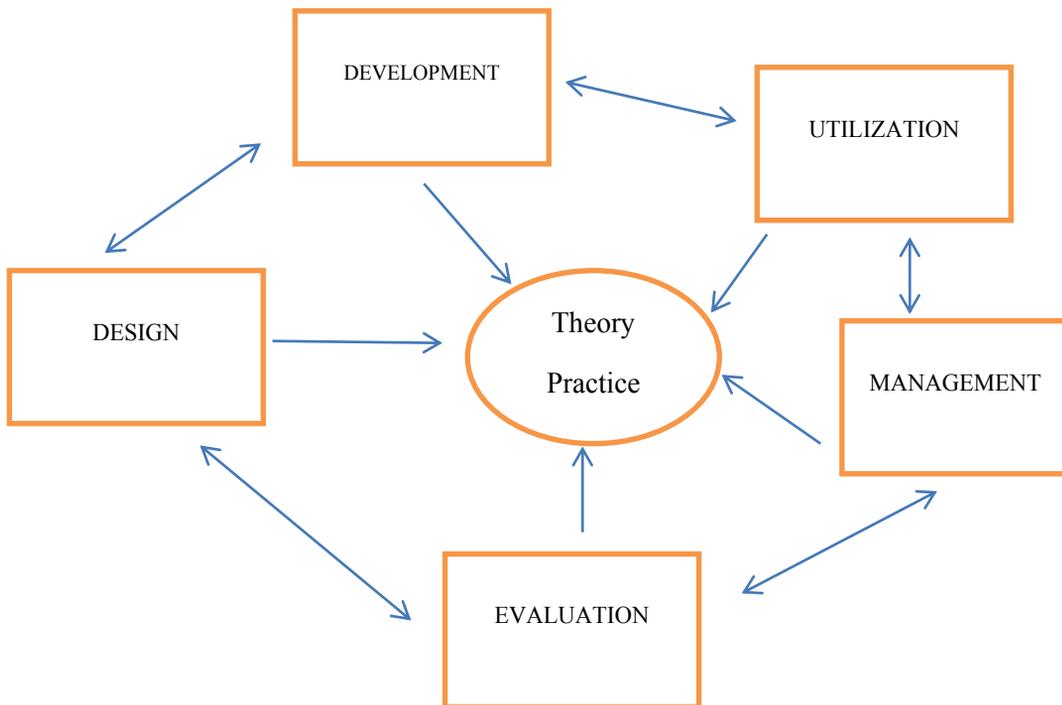


Figure 1: The 1994 Domains within the Field of Instructional Technology and the Relationship between Domains (adapted from Seels& Richey, 1994) – Adopted by AECT

The 1994 definition is not like 1970 and 1977 definition, because the 1994 definition does not describe the field as process oriented. In fact, the authors of 1994 definition stated that they purposely excluded the word “systematic” in their definition so as to reflect present interest in alternative design methodologies such as constructivist approaches (Seels&Richery, 1994). Nevertheless, Reiser, (2012) states that the five domains that are identified in the definition are very similar to the steps that compromise the “systematic” process identified in the previous two definitions. He also clarified that each of the five domains (design, development, utilization, management, and evaluation) or a synonyms is used directly or indirectly in one or both of the previous definition.

Moreover, 1994 definition moves in some other new directions and revisit some old ones. For instance, much like the 1963 definition, the 1994 definition describes the field in terms of theory and practice, emphasizing the notion that the field of instructional technology is not only an area of practice, but also an area of research and study. The document in which the 1970 and 1977 also discussed theory and research, but the 1994 definition does not mention these terms (Reiser, 2012).

2008 Definition of Educational Technology

In 2008, an AECT committee produced a book that presented a new definition of the field of Education Technology which defines the field as:

“Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (AECT, 2008).

It is observed from the 2008 definition that the term “Educational Technology” was used instead of “Instructional Technology”. This shows the dynamic nature of the field and its potential growth in the upcoming years. According to terminology committee of the Association for Educational Communication and Technology is that education is more general than instruction.

However, 2008 definition involves some key terms (elements) which were not mentioned in the previous definitions of the field. Thus, these terms need to be clarified precisely as follows:

Ethical practice: this term focuses on the fact that the professionals of the field must maintain the high level of professional conduct (Rieser, 2012). The AECT code of ethics includes principles intended to help members individually and collectively in maintaining a high level of professional conduct (Welliver, 2001). AECT’s code of ethic is divided into three categories:

- i- Commitment to the individual such as protection of rights of access to materials and effort to protect health and safety of professionals
- ii- Commitment to society: such as truthful public statement regarding educational matters or fair and equitable practices with those rendering service to the profession, and
- iii- Commitment to the profession: such as improving professional knowledge, skills and giving accurate credit to and ideas published

Each of the three principle areas has several listed commitment which help inform Educational Technology professionals regarding their appropriate actions, regardless of their educational context or role. However, consideration is given to researchers, professors, consultants, designers, and learning resources directors, to help in shaping their own professional behaviors and ethical conduct.

Facilitate learning: this indicate that there is shift in views of learning and instruction reflected in cognitive and constructivist theories which caused a dramatic change in assumption and connection between instruction and learning. Earlier definitions of the field implied a more direct cause-effect

relationship between instructional interventions and learning. For instance, the 1963 AECT definition refers to “design and use of messages which control the learning process”. Later definitions were less implicit, but continued to imply a relatively direct connection between well-design, well delivered instruction and effective learning. But, with the recent paradigm shift toward greater learner ownership and responsibility has come a role for technology that is more facilitating than controlling (AECT, 2007).

Facilitation of learning includes the designing of environment, the organizing of resources and the providing of tools. It also entails the use of direct instruction within the pre-specified framework in some cases, or the use of open-ended enquiry methods to guide further learning in other cases (AECT, 2008).

Improve performance: performance simply means learners ability to use and apply the new capabilities they gained (AECT, 2008). Rieser (2012) stated that the authors of the 2008 definition emphasized that it is not just enough to help learners acquire inert knowledge. Instead, the instructional goal should be to help learners apply the new skills and knowledge they have gained.

However, the 2008 definition of the field uses the term *creating; using and managing* to identify major functions perform by educational technology professionals. The *creation* function includes all the procedures involved in the generating instructional interventions and learning environment which include analysis, design, development, implementation and evaluation. The *utilization* function includes the selection, diffusion and institutionalization of instructional methods and materials. Moreover, the *management* functions are delivery system, personnel and information management. However, the authors described that these three terms are used to describe the major functions of educational technology (Rieser, 2012).

Technological processes are the processes involved in the systematic application of scientific and other organized knowledge to accomplished practical task.

Technological resources: are referred to hardware and software that are really associated with the field, such as still picture, video, computer program, DVD player and so on.

In conclusion, definition of educational technology is flexible and dynamic; as the field of educational technology constantly undergoes changes from time to time due to technological innovations we experience in the globe which subsequently affect the field. Thus, the definition of educational technology is still open for the professionals of the field.

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