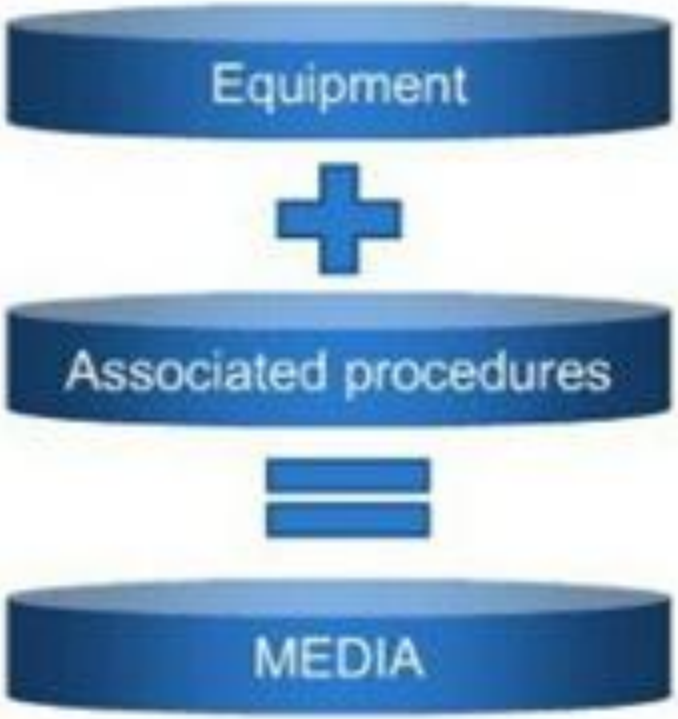
It is hoped that the preceding discussion has managed to disclose and explicate the forces, issues, and prevailing views that characterize instructional technology. I have pointed out that the field may be viewed, first, as a set of professional people concerned with the development and use of instructional techniques having the purpose of promoting human learning.

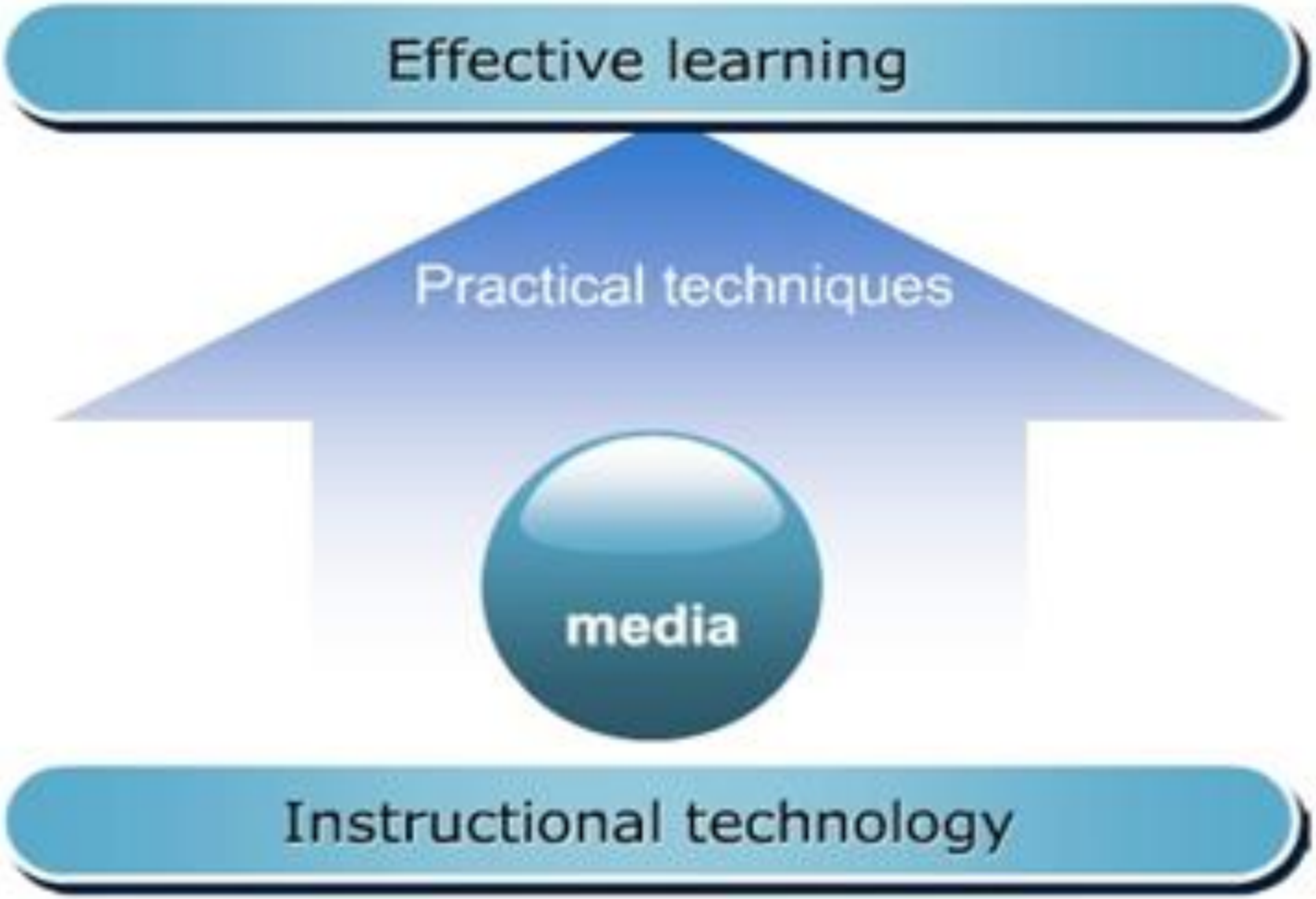
The learning with which these people are concerned may occur in the school, in the industrial classroom, in the specialized learning center, or in the home.

Learning is often initiated and brought about by communications to the learner, and these communications are frequently delivered by equipment and its associated procedures, commonly referred to as media. Currently, these media include such "high-tech" items as television and computer systems in their various forms.



The technical knowledge that constitutes instructional technology includes practical procedures for using existing media to deliver instruction, and also to deliver portions of instruction that supplement the communications of an instructor.

Instructional technology includes practical techniques of instructional delivery that systematically aim for effective learning, whether or not they involve the use of media.



It is a basic purpose of the field of instructional technology to promote and aid the application of these known and validated procedures in the design and delivery of instruction.

Aim:

While instructional technology has its own set of concerns and accepted techniques of application to instruction, the field also draws upon systematic knowledge investigated and developed in other scholar

Of course, one source of background knowledge comes from technology of hardware systems themselves, and from the new inventions and modifications that continue to appear.

Another source of fundamental systematic knowledge derives from the research of cognitive psychologists who apply the methods of science to the investigation of human learning and the conditions of instruction.

The findings of research on human learning provide a basis for the formulation of techniques of instruction that focus of learners and their characteristics.

Computer science and in particular that branch of research called artificial intelligence, contributes fundamental knowledge of human cognition and problem solving.

And research in the field of communication continues to provide a basis for the development and evaluation of instructional techniques.

The dedicated professionals who ally themselves with instructional technology appear to share a set of general beliefs, agreed to with individual degrees of fervor and misgivings.

In general, these ideas incorporate attitudes regarding the promise of new developments in equipment technology coupled with understanding of processes of learning in bringing about improvements in ways of delivering instruction.

In line with this view, research efforts in instructional technology seek to investigate and verify the features of communications to human learners that optimize learning, and to discover how these features may best be planned and executed with the use of the various communication media and their combinations.

What is instructional technology? Over the years, many definitions have been offered, but no single definition has been universally accepted. The term instructional technology has meant and will continue to mean different things to different people.

Yet most definitions of instructional technology can be classified as one of two types. One type of definition equates instructional technology with a particular set of instructional media, often referred to as audiovisual devices. The other type of definition describes instructional technology as a process, often labeled the systems approach process.

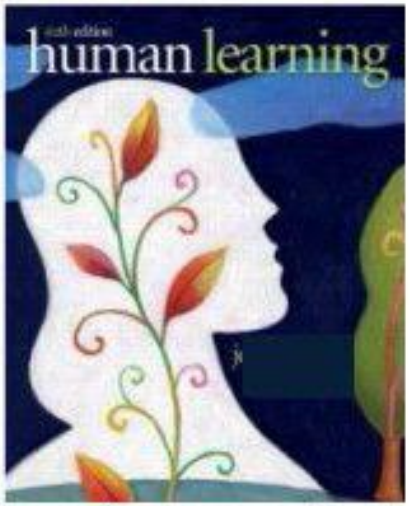
Audiovisual devices

System approach

Perhaps the best example of these two types of definitions is contained in a statement issued by the issued by the Commission on Instructional Technology (1970):

Instructional technology can be defined in two ways. In its more familiar sense, it means the media born of the communications revolution which can be used for instructional purposes alongside the teacher, textbook, and black board [italics added].... The pieced that make up instructional technology [include]: television, films, overhead projectors, computers, and other items of "hardware" and "software" (to use the convenient jargon that distinguishes machines from programs)....

The second and less familiar definition of instructional technology goes beyond and particular medium or device. In this sense, instructional technology is more than the sum of its parts. It is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching [italics added] in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction.



Today, many professionals in the field think of instructional technology as a systems approach process, "a systematic way of designing, carrying out, and evaluating the total process of learning and teaching." However, it is important to realize that most of those outside the field, as well as some of those who consider themselves to be part of it, still think of instructional technology as audiovisual devices. Thus, the two types of definitions still persist; instructional technology is thought of both in terms of the systems approach and audiovisual devices.

A third major concept associated with the field of instructional technology is the notion of individualized instruction. As the Definition and terminology Committee of the Association for Educational Communications and Technology (1972) has indicated:

Audiovisual devices

System approach

Individual instruction

The educational technology approach has been directed toward expanding the range of resources used for learning, emphasizing the individual learner and his unique needs [italics added], and using a systematic approach to the development of learning resources.

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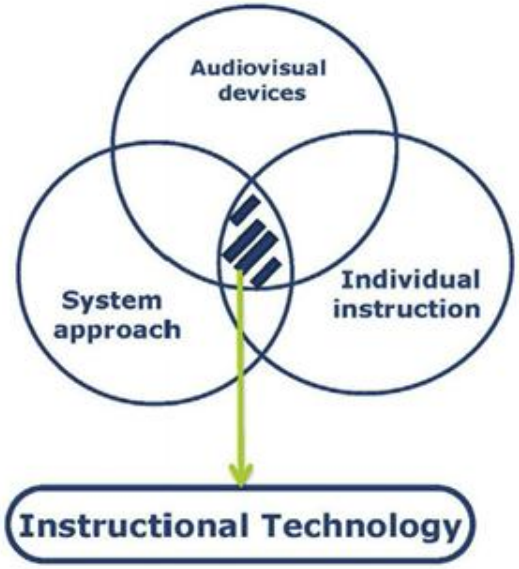
Audiovisual devices, individualized instruction, and the system approach have helped shape the field of instructional technology.



Since its establishment in 1923, the Association for Educational Communications and Technology (AECT) has been the leader in the field of Instructional technology. As the leading organization, the AECT has defined and redefined the field over the years to respond to the changes in emerging technologies, theories and functions of Instructional Technology professionals in the field.

The most recent definition of Instructional Technology published by the AECT in the book "Instructional Technology: the definition and domains of the field" by Seels & Richey (1994). According to this definition "Instructional Technology is the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning" (Seels & Richie, 1994, p.1). This definition was officially adopted as the organization's and the field's political stance until recently when, technology, theory, and practice has once again changed the field and the way professionals in the field function in the workplace.

AECT has been working on redefining the field to reflect recent changes in the field. In January 2008, the AECT's efforts resulted in approval of a new definition for the field. The new definition indicates that "Educational Technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Januszewski & Molenda, 2008, p.2). While the new definition builds on the definition proposed in 1994, several changes can be observed. Analyzing these changes in the definition of the field will help understand how the field is now perceived by professionals.

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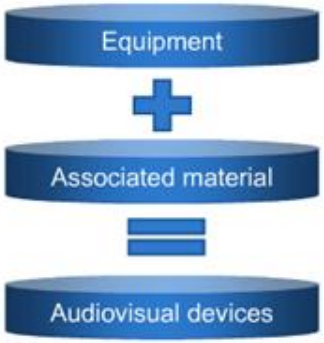
Before beginning to describe the history of the use of audiovisual devices in education, a definition is in order. Audiovisual device means any piece of electronic means, the presentation of visual or auditory communication for instruction.



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Thus, overhead projectors, television monitors, and computers would be a few of the many examples of audiovisual devices. The instructor and the printed text are media that would not be considered under the rubric "audiovisual".

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Early Forerunners

The beginnings of the audiovisual movement have been traced as far back as the 1600s, to the work of Johann Comenius, who proposed that we initially learn about things through our senses and therefore real objects and illustrations should be used to supplement oral and written instruction.

Comenius

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In the early 1800s, however, the field of education was greatly influenced by another educator who advocated learning via the senses, Johann Pestalozzi.

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Pestalozzi posited that words have meaning in relation to concrete objects, and therefore learning should proceed from the concrete to the abstract. He advocated an instructional approach known as object teaching, which became popular in Europe, particularly in Germany, in the early 1800s; in the United States, the method reached the height of its popularity during the 1860s.

Instructional approach

Object teaching **Illustration**

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The Birth of the Audiovisual Movement

While the work and ideas of Comenius, Pestalozzi, and others may have foreshadowed the beginnings of the audiovisual instruction movement, it may be more accurate to place the birth of the movement somewhere in the early twentieth century.

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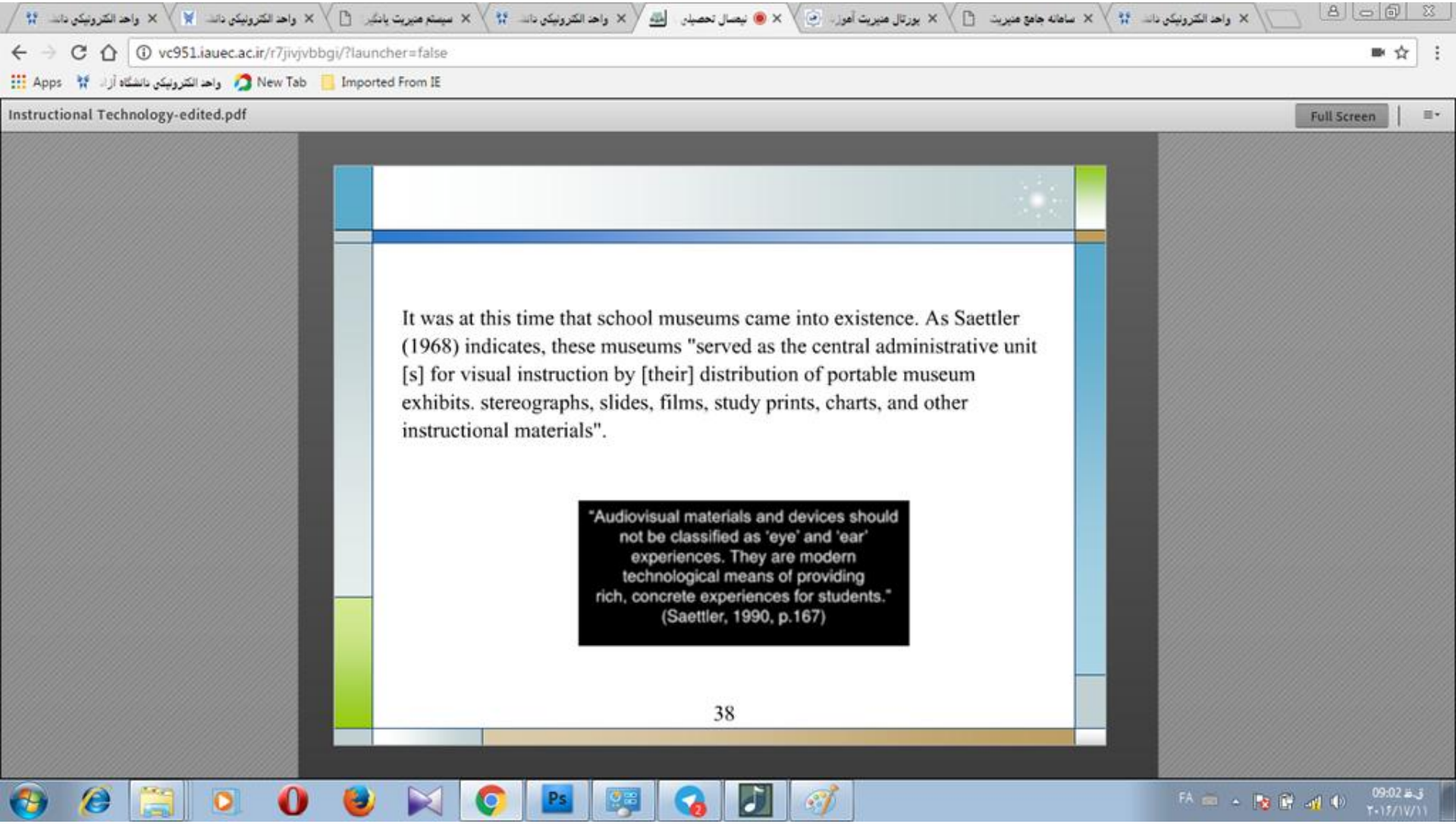
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It was at this time that school museums came into existence. As Saettler (1968) indicates, these museums "served as the central administrative unit [s] for visual instruction by [their] distribution of portable museum exhibits. stereographs, slides, films, study prints, charts, and other instructional materials".
"Audiovisual materials and devices should not be classified as 'eye' and 'ear' experiences. They are modern technological means of providing rich, concrete experiences for students." (Saettler, 1990, p.167)
38

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The first school museum was opened in St. Louis in 1905, and shortly thereafter school museums were opened in Reading, Pennsylvania and Cleveland, Ohio. Although few such museums have been established since the early 1900s, the district-wide media center may be considered a modern-day equivalent.

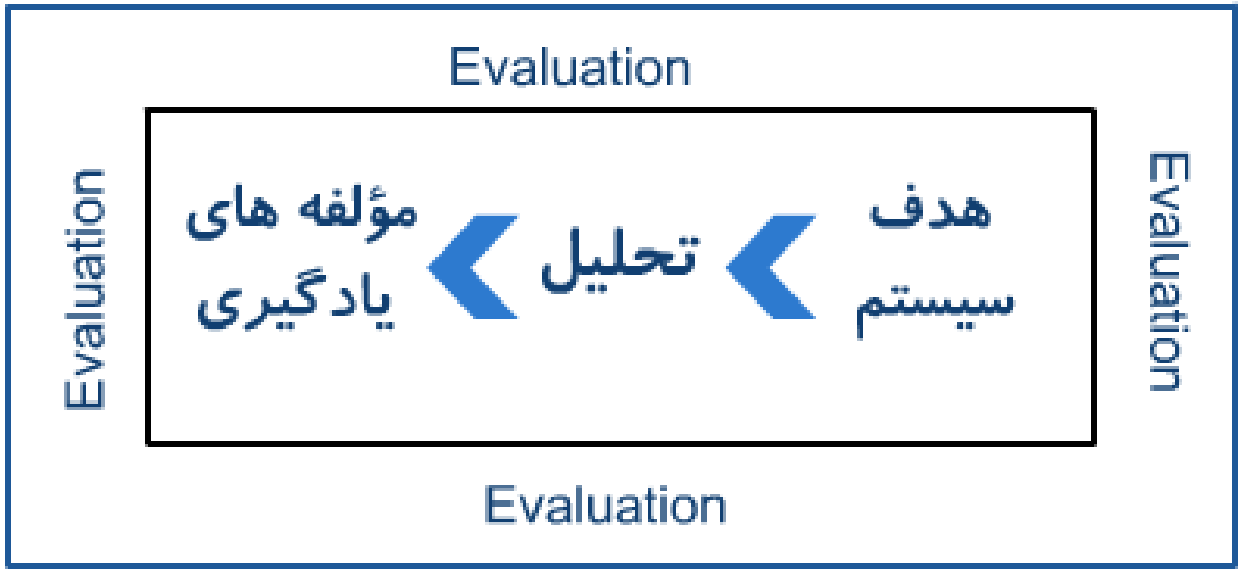
What is the systems approach for designing instruction? Banathy (1968) describes it as:

a self-correcting logical process for the planning, development, and implementation to instruction. It provides a procedural framework within which the purpose of the system is first specified and then analysed in order to find the best way to achieve it. On the basis of this analysis, the components that are most suitable to the successful performance of the system can be selected.... Finally, continuous evaluation of the system... provides a basis for planned change in improving economy and performance.

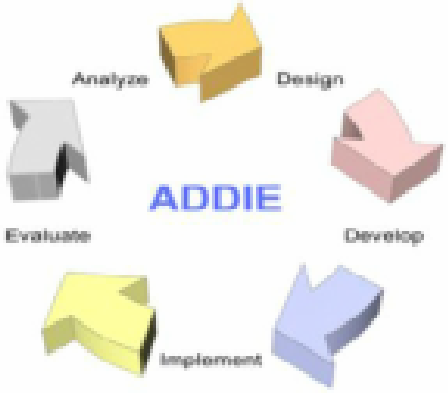
System approach = self-correcting , logical process

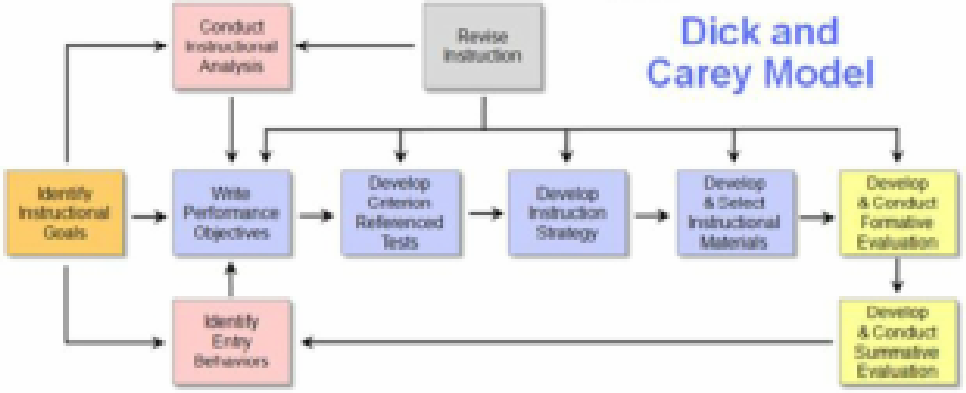
planning + development + implementation

Instruction



While Banathy's statement provides a good general definition of the systems approach for designing instruction, it should be noted that, as Dick and Carey (1985) have indicated, there is no single systems-approach model. There are many models for the design of instruction that could be properly characterized as systems-approach models. Many of these models have been reviewed by Andrews and Goodson (1980).





Where did the notion of a systems approach to the design of instruction originate? What are its roots? How did it develop? The answers to these questions will be discussed in this section.

Early Forerunners

In order to examine the roots of the systems approach in education, it is important to recognize that it is basically an empirical approach to the design and improvement of instruction. This reliance on empirical evidence can be traced to the 1600s, and to Comenius, who proposed that inductive methods should be used to analyze and improve the instructional process (Saettler, 1968).

Comenius