FOURTH EDITION

TRENDS AND ISSUES IN INSTRUCTIONAL DESIGN AND TECHNOLOGY

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Fourth Edition

Edited by

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Preface

This book provides readers with a clear picture of the field of instructional design and technology (IDT). Many textbooks in the IDT field focus on the skills needed by instructional designers and technologists. However, we believe that professionals in the field should be able to do more than just perform the skills associated with it. They should also be able to clearly describe the nature of the field, be familiar with the field's history and its current status, and be able to describe the trends and issues that have affected it and those that are likely to do so in the future. This book will help readers attain these goals.

Organization of the Book

This book is organized into ten sections. The first section of the book focuses on definitions and the history of the field. Key terms in the field are defined, and a history of the field is presented.

The second section reviews **instructional design models**, including traditional models and several examples of models that are emerging in the field.

The **theories and models of learning and instruction** that serve as the basis for the field are the subjects of Section III. Wide arrays of viewpoints are discussed, ranging from cognitive and behavioral perspectives to some of the views of teaching and learning associated with constructivism, motivation, and the learning sciences.

Section IV focuses on two of the often overlooked phases of the instructional design process, namely **evaluating and managing instructional programs and projects**. Particular emphasis is placed on current methods of evaluation, including return on investment, as well as the use of learning analytics.

The fifth section of the book focuses on **performance improvement**. The key ideas and practices associated with performance improvement are discussed, and a variety of noninstructional solutions to performance problems, such as performance support and informal learning, are described.

Section VI describes **what IDT professionals do in a variety of work settings**. These settings include business and industry, the military, health care, K–12 schools, and higher education in the United States. The work that IDT professionals do in Europe and Asia is also discussed. This section should be particularly useful to new designers considering career options and others not familiar with the wide variety of professional areas supported by instructional design and technology professionals.

Section VII focuses on **how to get an IDT position and succeed at it**. In addition to offering suggestions to job seekers and providing advice to those seeking to serve as consultants in the field, the section describes some of the organizations and publications that will foster the growth of IDT professionals.

The eighth section of the text is concerned with **technology and learning**. Emerging technologies and recent trends are covered from the perspective of their effects on learning and instructional systems.

Increasingly, the importance of **instructional strategies** in our educational processes and institutions is being acknowledged by all stakeholders. Section IX reviews some of the models, strategies, and tactics that are driving improved teaching and learning environments.

The final section of the book addresses some of the **current issues in the field of instructional design and technology**. Topics such as diversity, accessibility, professional ethics, open educational resources, and the changing conceptions of high-quality design are among the important issues that are addressed.

What's New in This Edition?

This edition of this book includes **seventeen new chapters**. These chapters provide an in-depth look at many topics that were either not covered in the previous edition or were addressed by different authors. The subjects of these chapters include:

- Alternatives to the ADDIE model (Chapter 4)
- The Successive Approximation Model (Chapter 5)
- Measuring the return on investment in technology-based learning (Chapter 11)
- Learning analytics (Chapter 12)
- Performance support (Chapter 15)
- Informal learning (Chapter 16)
- Integrating technology into K–12 education (Chapter 20)
- Instructional design in higher education (Chapter 21)
- Instructional design trends in Europe (Chapter 22)
- Performance consulting (Chapter 25)
- Social media (Chapter 28)
- Mobile learning (Chapter 29)
- MOOCs (Chapter 30)
- Social interdependence and small group learning (Chapter 32)
- Problem-based learning (Chapter 34)
- Authentic learning (Chapter 35)
- Open educational resources (Chapter 38)

In addition to these new chapters, **many of the other chapters have been extensively revised** so as to describe how recent developments inside and outside of the field have affected the trend or issue that is the focus of that chapter. Oftentimes these developments center around technological advances or new ideas regarding learning theories or instructional strategies.

As was the case with the previous edition of this book, **each chapter includes an end-of-chapter summary of the key principles and practices discussed in that chapter**. These summaries are designed to help students recall the key ideas expressed throughout each chapter.

The **case-based application questions** that appear at the end of each chapter should also be mentioned. While a few questions of this type appeared in the first three editions of this book, in this edition the majority of application questions present students with authentic ("real world") problems and require them to solve those problems. We have used these sorts of application questions in our classes for quite a few years, and our students have indicated that trying to solve them has really helped them to learn how to apply the key principles and practices associated with the various trends they are studying.

Acknowledgments

This book would not have been possible if it were not for all the hard work done by the many individuals who have written chapters for it. As a group, they voluntarily spent many hundreds of hours putting together a series of chapters that provides readers with what we consider to be a thoughtful overview of the field of instructional design and technology, and the trends and issues that are affecting it. We would like to express our deepest thanks and sincere appreciation to all of these authors for their outstanding efforts. We really believe they did an excellent job, and we are confident that after you read the chapters they wrote, you will feel the same way.

We would also like to express our sincere appreciation to Meredith Fossel, our former editor at Pearson Teacher Education, and Miryam Chandler, our content producer at Pearson. Their help in putting together this manuscript proved to be invaluable. And we would like to give special recognition to Jason Hammond, the vendor project manager at SPi Gobal. Jason's work in coordinating and managing the entire production process, as well as his very careful proofreading, was simply outstanding.

Thank you, Jason!

Introduction

Robert A. Reiser
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and

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Many of us who have been in this field for a while have had the experience of facing our parents and trying to explain our profession to them. Long explanations, short explanations—the end result is always the same. Our parents go cross-eyed and mumble something like, "That's nice, dear."

How about your parents? How much do they know about the field you are now studying, the field this book is about? They probably can't describe it very well; perhaps they can't even name it. But that puts them in some pretty good company. Many professionals in this field have trouble describing it. Indeed, many of them aren't sure exactly what to call it—instructional technology, educational technology, instructional design, instructional development, instructional systems, or *instructional design and technology* (IDT), the name we, the editors of this book, have decided to use. Just what is the nature of the field that practitioners call by so many names? This is the basic question that the authors of the chapters in this book have attempted to answer.

This volume grew from each of our experiences in teaching a "Trends and Issues" course at our respective universities (together, we have a total of more than fifty years of experience teaching a course of this nature!). For many years, we used an ever-changing collection of readings from a variety of sources. For all the differences between our two courses, there were greater similarities. (Dempsey was, after all, a student in Reiser's Trends and Issues course shortly after movable type was invented.) So, it was natural that we spoke together on several occasions about the kind of text we would like to have, if we had our druthers.

When the folks at Pearson Education encouraged us in our delusions, our first idea was to produce a book of reprints from germane periodicals. As our discussions continued, however, we decided to invite a number of the most talented individuals we know in the field to contribute original manuscripts. The result is this book, *Trends and Issues in Instructional Design and Technology*.

The many talented authors and leaders in the field who have contributed to this book join with us in the hope that by the time you finish reading it, you will have a clearer picture of the nature of the field of instructional design and technology, and the trends and issues that have affected it in the past, today, and in the future. If we succeed in our efforts, then you may be able to clearly describe our field to your parents, or anyone who will take the time to listen.

Chapter 1

What Field Did You Say You Were In?

Defining and Naming Our Field[1]

Robert A. Reiser

Florida State University

What are the boundaries of the field we are in? How shall we define it? Indeed, what shall we call it? These are important questions that professionals in our field should be able to answer or, because there is no generally accepted "correct" answer, at least be able to discuss intelligently. This chapter is intended to provide you with information that should help you formulate some tentative answers to these questions. In this chapter, we will examine how the definition of the field has changed over the years, present two new definitions, and discuss the term that we will use in this book as the label for our field.

Before beginning to examine the definitions of our field, it is important to point out that not only have the definitions changed, but the actual name of the field itself has often varied. Over the years, a variety of different labels have been used, including, among others, such terms as audiovisual instruction, audiovisual communications, and educational technology. However, in the United States the term that has been used most frequently has been *instructional technology*. This is the term that will be used in the next few sections of this chapter. However, the issue of the proper name for the field will be revisited near the end of the chapter.

What is the field of instructional technology? This is a difficult question to answer because the field is constantly changing. New ideas and innovations affect the practices of individuals in the field, changing, often broadening, the scope of their work. Moreover, as is the case with many professions, different individuals in the field focus their attention on different aspects of it, oftentimes thinking that the work they do is at the heart of the field, that their work is what instructional technology is "really all about."

Over the years, there have been many attempts to define the field. Several such efforts have resulted in definitions accepted by a large number of professionals in the field, or at least by the professional organizations to which they belonged. However, even when a leading organization in the field has endorsed a particular definition, professionals in the field have operated from a wide variety of different personal, as well as institutional, perspectives. This has held true among intellectual leaders as well as practitioners. Thus, throughout the history of the field, the thinking and actions of a substantial number of professionals in the field have not been, and likely never will be, captured by a single definition.

Early Definitions: Instructional Technology Viewed As Media

Early definitions of the field of instructional technology focused on instructional media—the physical means via which instruction is presented to learners. The roots of the field have been traced back at least as far as the first decade of the twentieth century, when one of these media—educational film—was first being produced (Saettler, 1990). Beginning with this period, and extending through the 1920s, there was a marked

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increase in the use of visual materials (such as films, pictures, and lantern slides) in the public schools. These activities were all part of what has become known as the visual instruction movement. Formal definitions of visual instruction focused on the media that were used to present that instruction. For example, one of the first textbooks on visual instruction defined it as "the enrichment of education through the 'seeing experience' [involving] the use of all types of visual aids such as the excursion, flat pictures, models, exhibits, charts, maps, graphs, stereographs, stereopticon slides, and motion pictures" (Dorris, 1928, p. 6).

From the late 1920s through the 1940s, as a result of advances in such media as sound recordings, radio broadcasting, and motion pictures with sound, the focus of the field shifted from visual instruction to audiovisual instruction. This interest in media continued through the 1950s with the growth of television. Thus, during the first half of the twentieth century, most of those individuals involved in the field that we now call instructional technology were focusing their attention on instructional media.

Today, many individuals who view themselves as members of the instructional technology profession still focus much, if not all, of their attention on the design, production, and use of instructional media. Moreover, many individuals both within and outside of the field of instructional technology equate the field with instructional media. Yet, although the view of instructional technology as media has persisted over the years, during the past fifty years other views of instructional technology have emerged and have been subscribed to by many professionals in the field.

The 1960s and 1970s: Instructional Technology Viewed As a Process

Beginning in the 1950s and particularly during the 1960s and 1970s, a number of leaders in the field of education began discussing instructional technology in a different way—that is, rather than equating it with media, they discussed it as being a process. For example, Finn (1960) indicated that instructional technology should be viewed as a way of looking at instructional problems and examining feasible solutions to those problems; and Lumsdaine (1964) indicated that educational technology could be thought of as the application of science to instructional practices. As you will see, most of the definitions of the 1960s and 1970s reflect this view of instructional technology as a process.

The 1963 Definition

In 1963, the first definition to be approved by the major professional organization within the field of educational technology was published, and it, too, indicated that the field was not simply about media. This definition (Ely, 1963), produced by a commission established by the Department of Audiovisual Instruction (now known as the Association for Educational Communications and Technology), was a departure from the "traditional" view of the field in several important respects.

First, rather than focusing on media, the definition focused on "the design and use of messages which control the learning process" (p. 38). Moreover, the definition statement identified a series of steps that individuals should undertake in designing and using such messages. These steps, which included planning, production, selection, utilization, and management, are similar to several of the major steps often associated with what has become known as systematic instructional design (more often simply referred to as instructional design). In addition, the definition statement placed an emphasis on learning, rather than instruction. The differences identified here reflect how, at that time, some of the leaders in the field saw the nature of the field changing.

The 1970 Definitions

The changing nature of the field of instructional technology is even more apparent when you examine the next major definition statement, produced in 1970 by the Commission on Instructional Technology. The commission was established and funded by the United States government in order to examine the potential benefits and problems associated with increased use of instructional technology in schools. The commission's report, entitled *To Improve Learning* (Commission on Instructional Technology, 1970), provided *two* definitions of instructional technology. The first definition reflected the older view of instructional technology, stating:

> In its more familiar sense, it [instructional technology] means the media born of the communications revolution which can be used for instructional purposes alongside the teacher, textbook, and blackboard . . . The pieces that make up instructional technology [include]: television, films, overhead projectors, computers, and other items of "hardware" and "software" . . . (p. 21)

In contrast to this definition, the Commission on Instructional Technology offered a second definition that described instructional technology as a process, stating:

> The second and less familiar definition of instructional technology goes beyond any 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 whole process of learning and teaching in terms of specific objectives, based on research on human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction. (p. 21)

Whereas the commission's first definition seems to reinforce old notions about the field of instructional technology, its second definition clearly defines the field differently, introducing a variety of concepts that had not appeared in previous "official" definitions of the field. It is particularly important to note that this definition mentions a "systematic" process that includes the specification of objectives, and the design, implementation, and evaluation of instruction, each term representing one of the steps in the systematic instructional design procedures that were beginning to be discussed in the professional literature of the field (e.g., Finn, 1960; Gagné, 1965; Hoban, 1977; Lumsdaine, 1964; Scriven, 1967). The definition also indicates that the field is based on research

and that the goal of the field is to bring about more effective learning (echoing the 1963 emphasis on this concept). Finally, the definition discusses the use of both nonhuman and human resources for instructional purposes, seemingly downplaying the role of media.

The 1977 Definition

In 1977, the Association for Educational Communication and Technology (AECT) adopted a new definition of the field. This definition differed from the previous definitions in several ways. Perhaps most noteworthy was its length—it consisted of sixteen statements spread over seven pages of text, followed by nine pages of tables elaborating on some of the concepts mentioned in the statements, as well as nine more chapters (more than 120 pages) that provided further elaboration. Although the authors clearly indicated that no one portion of the definition was adequate by itself, and that the sixteen parts were to be taken as a whole, 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)

Much like the second 1970 definition put forth by the commission, the 1977 definition placed a good deal of emphasis on a systematic ("complex, integrated") design process; the various parts of the definition mentioned many of the steps in most current-day systematic design processes (e.g., design, production, implementation, and evaluation). It is particularly interesting to note that the 1977 definition statement was the first such statement to mention the analysis phase of the planning process, which at that time was beginning to receive increasing attention among professionals in the field.

The 1977 definition also broke new ground by incorporating other terminology that, within a period of a few years, was to become commonplace in the profession. For example, the definition included the terms *human learning problems* and *solutions,* foreshadowing the frequent current-day use of these terms, especially in the context of performance improvement.

The 1977 definition also included detailed tables describing the various learning resources associated with the field. This list gave equal emphasis to people, materials, and devices, thus reinforcing the notion that the work of instructional technologists was not limited to the development and use of media.

The 1994 Definition: Beyond Viewing Instructional Technology As a Process

During the period from 1977 to the mid-1990s, many developments affected the field of instructional technology.[2] Whereas behavioral learning theory had previously served as the basis for many of the instructional design practices employed by those in the field, cognitive and constructivist learning theories began to have a major influence on design practices. The profession was also greatly influenced by technological advances such as the microcomputer, interactive video, CD-ROM, and the Internet. The vast expansion of communications technologies led to 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, by the mid-1990s the field of instructional technology was immensely different from what it was in 1977, when the previous definition of the field had been published. Thus, it was time to redefine the field.

Work on a new definition of the field officially commenced in 1990 and continued until 1994, when AECT published *Instructional Technology: The Definitions and Domains of the Field* (Seels & Richey, 1994). This book contains a detailed description of the field, as well as the following concise definition statement:

> Instructional Technology is the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning. (p. 1)

As is evident in the definition, the field is described in terms of five domains—design, development, utilization, management, and evaluation—or five areas of study and practice within the field. The interrelationship between these domains is visually represented by a wheel-like visual, with each domain on the perimeter and connected to a "theory and practice" hub. This representation scheme was designed, in part, to prevent readers from coming to the erroneous conclusion that these domains are linearly related (Richey & Seels, 1994).

Unlike the second 1970 definition and the 1977 AECT definition, the 1994 definition does not describe the field as process oriented. In fact, the authors of the 1994 definition state they purposely excluded the word *systematic* in their definition so as to reflect current interests in alternative design methodologies such as constructivist approaches (Richey & Seels, 1994). Nonetheless, the five domains that are identified in the definition are similar to the steps that comprise the "systematic" processes described in the previous two definitions. Indeed, each of the five terms (design, development, utilization, management, and evaluation) or a synonym is used directly or indirectly in one or both of the previous two definitions.

The 1994 definition statement moves in some other new directions and revisits some old ones. For example, much like the 1963 definition statement, the 1994 statement 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 documents in which the 1970 and 1977 definition statements appear also discuss theory and practice, but the definition statements themselves do not mention these terms.

In at least two respects the 1994 definition is similar to its two most recent predecessors. First, it does not separate teachers from media, incorporating both into the phrase "resources for learning." Second, it focuses on the improvement of learning as the goal of the field, with instruction being viewed as a means to that end.

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[2]Many of these developments are discussed in detail in Chapter 2 of this book.

Although the 1994 definition discusses instruction as a means to an end, a good deal of attention is devoted to instructional processes. The authors indicate that the "processes . . . for learning" (Seels & Richey, 1994, p. 1) mentioned in their definition refer to both design and delivery processes. Their discussion of the latter revolves around a variety of instructional strategies and reflects the profession's current interest in a wide variety of instructional techniques, ranging from traditional lecture/discussion approaches to open-ended learning environments.

Two More Recent Definitions

In the past few years, there have been several definitions published. In this section of the chapter, we will focus on two of these: one that an AECT committee has recently produced and one that we, the authors of this textbook, have developed.

The Latest AECT Definition

In 2008, an AECT committee produced a book that presented a new definition of the field of educational technology (AECT Definition and Terminology Committee, 2008). The definition statement that appears in the book is as follows:

> Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources. (p. 1)

One of the many useful features of the book is a series of chapters devoted to explaining each of the key terms in the definition statement and discussing how the new definition differs from previous ones. Some of the key terms that the authors discuss in the chapter are described next.

One key term in the new definition is the word *ethical*. This term focuses attention on the fact that those in the profession must maintain a high level of professional conduct. Many of the ethical standards professionals in the field are expected to adhere to are described in the AECT Code of Ethics (Association for Educational Communications and Technology, 2007).

The new definition also focuses on the notion that the instructional interventions created by professionals in the field are intended to *facilitate* learning. The authors contrast this viewpoint with those expressed in earlier definitions, in which it was stated or implied that the instructional solutions that were produced would cause or control learning. The new perspective recognizes the important role that learners play in determining what they will learn, regardless of the instructional intervention they are exposed to.

The new definition also indicates that one of the goals of professionals in the field is to *improve performance*. The authors indicate this term emphasizes that it is not sufficient to simply help learners acquire inert knowledge. Instead, the goal should be to help learners *apply* the new skills and knowledge they have acquired.

Unlike previous definitions, in which terms such as *design, development,* and *evaluation* were often used to denote major processes or domains within the field, the new definition uses the words *creating, using*, and *managing* to describe the major functions performed by educational technology professionals. The *creation* function includes all of the steps involved in the generation of instructional interventions and learning environments, including analysis, design, development, implementation, and evaluation. The *utilization* function includes the selection, diffusion, and institutionalization of instructional methods and materials; and the *management* function incorporates project, delivery system, personnel, and information management. The authors point out that these three less technical terms are used to describe the major functions so as to convey a broader view of the processes used within the field.

The definition also uses the adjective *technological* to describe the types of processes professionals in the field engage in, and the type of resources they often produce. The authors, drawing on the work of Galbraith (1967), indicate that technological processes are those that involve "the systematic application of scientific or other organized knowledge to accomplish practical tasks" (AECT Definition and Terminology Committee, 2008, p. 12). The authors also indicate that technological resources refer to the hardware and software that is typically associated with the field, including such items as still pictures, videos, computer programs, DVD players, among others.

The Definition Used Here

One of the many strengths of the new AECT definition of educational technology is that the definition clearly indicates that *a focus on systematic design processes* and *the use of technological resources* are both integral parts of the field. The definition that we will use in this textbook emphasizes these two aspects of the field as well as the recent influence the human performance technology movement has had on the profession.

As will be pointed out in later chapters in this textbook, in recent years, many professionals in the field of instructional design and technology (ID&T), particularly those who have been primarily trained to design instruction, have been focusing their efforts on improving human performance in the workplace. Although such improvements may be brought about by employing *instructional interventions,* which are often delivered either via training courses and/or training materials, careful analysis of the nature of performance problems often leads to the development and use of *noninstructional solutions* (i.e., solutions other than training courses and/or training materials). Numerous examples of noninstructional solutions to performance problems are described in other chapters in this book, including, but not limited to, the chapters on human performance improvement (Chapter 14), performance support (Chapter 15), informal learning (Chapter 16), social media (Chapter 28), and mobile learning (Chapter 29). This new emphasis on improving human performance in the workplace via noninstructional, as well as instructional, methods has been dubbed the performance improvement movement. We believe that any definition of the field of instructional design and technology should reflect this new emphasis. The definition that we have developed, and that we will use in this book, clearly does so. The definition is as follows:

> The field of instructional design and technology (also known as instructional technology) encompasses the analysis of learning