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The Systematic Design of Instruction

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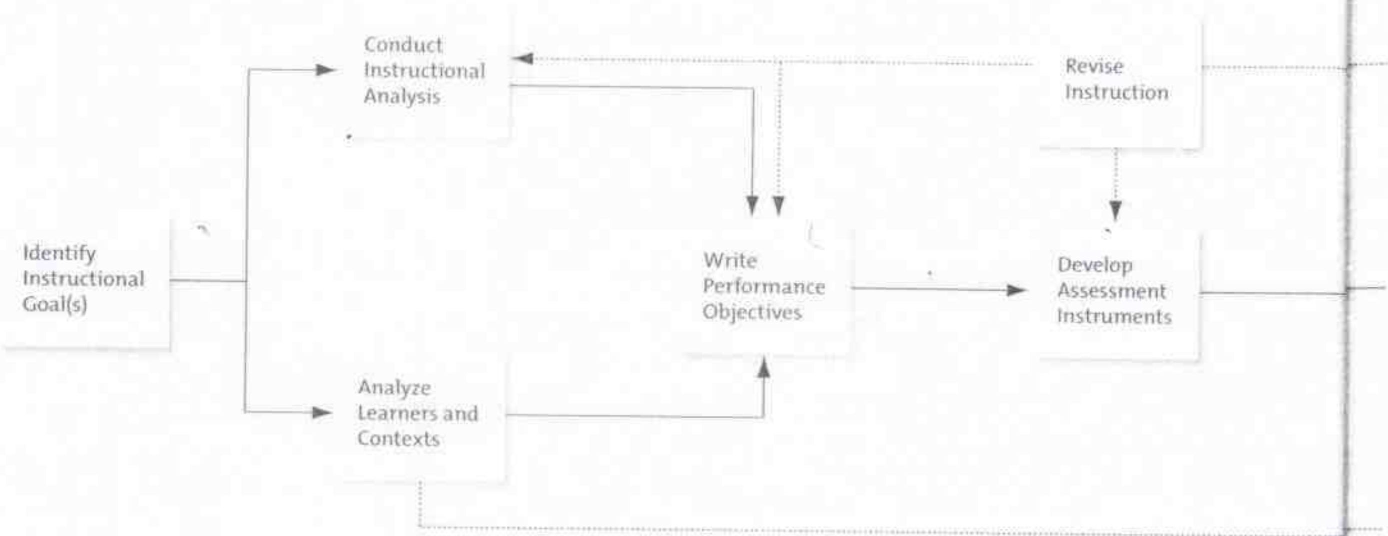

The Dick and Carey Systems Approach Model for Designing Instruction

In a contemporary e-learning or distance education course, students are brought together with an instructor (perhaps) and are guided through textbook or online content by class activities such as online exercises, question/answer/discussion boards, projects, and interaction with classmates. If student attitudes, achievement, and completion rates are not up to desired levels, such variations as substituting a more interesting textbook, requiring student work groups, or enhancing real-time interaction with the instructor may be tried. If those or other solutions fail to improve outcomes, the instructor or course manager may reorganize the content of the web e-learning portal or, feeling that "E-learning isn't for everyone," may simply make no changes at all.

Attempts to improve student achievement by tinkering with this or that component of a course can be frustrating, often leading an instructor or course manager to explain low performance as a student problem—the students lack the necessary background, aren't smart enough, aren't motivated, or don't have the study habits and perseverance to succeed. However, rather than piecemeal fixes or frustrated rationalizations, a more productive approach is to view e-learning and indeed all purposeful teaching and learning as systematic processes in which every component is crucial to successful learning. The instructor, learners, materials, instructional activities, delivery system, and learning and performance environments interact and work with

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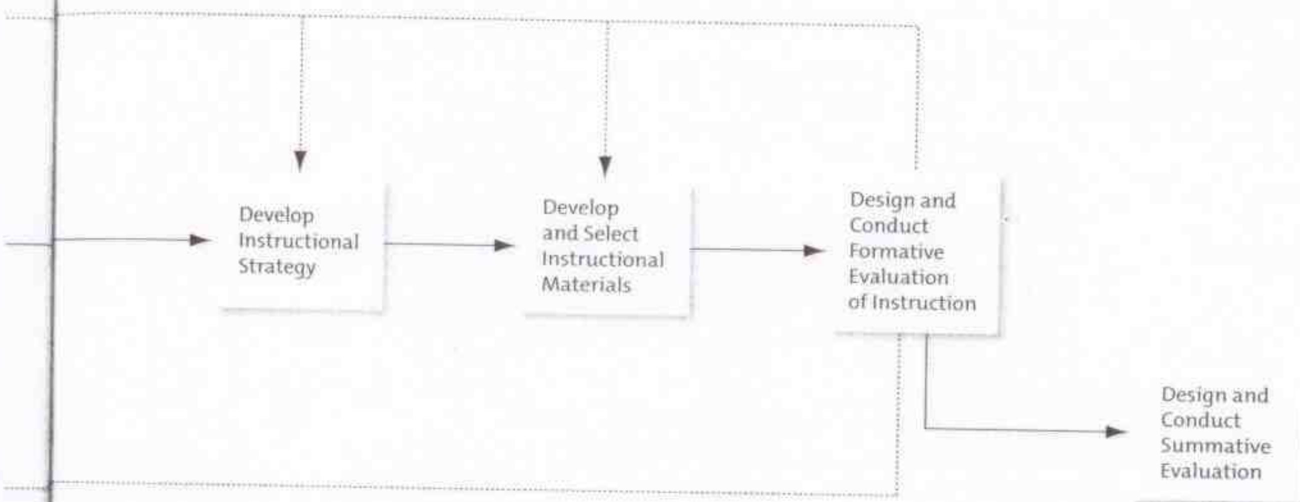

each other to bring about desired student learning outcomes. Changes in one component can affect other components and the eventual learning outcomes; failure to account adequately for conditions within a single component can doom the entire instructional process. Israelite (2004) characterizes e-learning shortfalls in corporate training as a failure to employ systems thinking; for example, the investment in high-tech web portals and delivery technologies frequently has not been accompanied by thorough consideration of other instructional components such as the design of effective learning experiences. Israelite's perspective is usually referred to as the *systems point of view,* and advocates typically use systems thinking to analyze performance problems and design instruction.

Let's first consider what is meant by a system, and then we will provide an overview of the systems approach to instructional design. The term *system* has become very popular as what we do becomes increasingly interrelated with what other people do. A system is technically a set of interrelated parts, all of which work together toward a defined goal. The parts of the system depend on each other for input and output, and the entire system uses feedback to determine if its desired goal has been reached. If it has not, then the system is modified until it does reach the goal. The most easily understood systems are those we create and can control rather than those that occur naturally. For example, you probably have a heating and cooling system in your home in which various components work together to produce a desired temperature. The thermostat is the feedback mechanism through which the system constantly checks the temperature and signals when more heat or cold is needed. At the desired temperature, the system shuts itself off. As long as the thermostat is set and all of the parts are in working order, the system will keep the temperature in a comfortable range. An automobile's braking system, on the other hand, by using a more fallible feedback system—the driver—is a less reliable system. Mechanical failure is seldom the cause of braking-related accidents; rather, it is human failure to recognize and compensate for system components such as slippery road conditions, impaired vision, or distracted attention to a cell phone or a radio while driving in heavy traffic. When human physiological and psychological characteristics are key components of a system, the system becomes less predictable and more difficult to manage for the desired results.

Consider as an example the management of Type 1 (juvenile onset) diabetes. There is a complex, finely balanced set of system components that work together for maintenance of healthy blood sugar levels, particularly (1) diet (what, how much, and when food is eaten), (2) physical exertion, (3) emotional exertion, (4) insulin (when and how much is taken), and (5) each individual's unique metabolic processing of these components. The goal of this system is a stable blood sugar level and the feedback mechanism is periodic blood sugar readings. When the system is out of balance, readings go outside the acceptable range and one or more system components must be adjusted to bring readings up or down as needed. Controlling this system would seem to be a daunting task in the presence of human individual differences. The systems approach, however, enables professionals to identify interacting components of diabetes care, establish normal human ranges for each component as starting points for care, and then adjust and fine-tune a care regimen as needed to accommodate individual differences. An accepted perspective for professionals in diabetes care is that the system is dynamic rather than static, requiring continuous monitoring as individuals grow, age, and change their lifestyles.

In the same way, the instructional process itself can be viewed as a system whose purpose is to bring about learning. The components of the system are the learners, the instructor, the instructional materials, and the learning environment, all interacting to achieve the goal. For example, in a traditional classroom the instructor might guide students through sample problems in the textbook or student manual. To determine whether learning is taking place, a quiz is administered at the end of the class. In the instructional system, the quiz is equivalent to the blood sugar readings in diabetes care. If student achievement is not satisfactory, then components must be modified to make the system more effective and bring about the desired learning outcomes.

The systems view of instruction sees the important roles of all the components in the process. They must all interact effectively, just as the parts in a system of diabetes care must interact effectively to bring about desired outcomes. Success depends not on any one component in the system but rather a determination of the exact contribution of each one to the desired outcome. There must be a clear assessment of the effectiveness of the system in bringing about learning and a mechanism to make changes if learning fails to occur. As in the example of diabetes care, instructional systems include the human component and are therefore complex and dynamic, requiring constant monitoring and adjustment.

Thus far, our discussion of the instructional process has focused only on the "learning moment" when teachers, instructional materials, and learners come together in a classroom with the goal that learning will occur. What about the preparation for the instructional process? How does the instructor decide what to do and when? It is not surprising that someone with a systems view sees the preparation, implementation, evaluation, and revision of instruction as one integrated process. In the broadest systems sense, a variety of sources provide input to the preparation of the instruction. The output is some product or combination of products and procedures that are implemented. The results are used to determine whether the system should be changed, and, if so, how.

The purpose of this book is to describe a systems approach for the design, development, implementation, and evaluation of instruction. This is not a physical system such as home heating and air conditioning but a procedural system. We describe a series of steps, all of which receive input from preceding steps and provide output for the next steps. All of the components work together to either produce effective instruction or, if the system evaluation component signals a failure, determine how instruction can be improved.

Although our model of instructional design will be referred to as a systems approach model, we must emphasize that there is no single systems approach model for designing instruction. A number of models bear the label *systems approach,* and all of them share most of the same basic components. The systems approach model presented in this book is less complex than some but incorporates the major components common to all models including analysis, design, development, implementation, and evaluation. Collectively, these design models and the processes they represent are referred to as *instructional systems development* (ISD). *Instructional design* (ID) is used as an umbrella term that includes all phases of the ISD process. These terms will all become clear as you begin to use the instructional design process.

Instructional design models are based, in part, on many years of research on the learning process. Each component of the model is based on theory and, in most instances, on research demonstrating the effectiveness of that component. The model brings together in one coherent whole many concepts that you may have already encountered in a variety of educational situations. For example, you undoubtedly have heard of *performance objectives* and may have already written some yourself. Such terms as *criterion-referenced testing* and *instructional strategy* may also be familiar. The model will show how these terms, and the processes associated with them, are interrelated and how these procedures can be used to produce effective instruction.

The instructional strategy component of our model describes how the designer uses information from analyzing what is to be taught to formulate a plan for connecting learners with the "instruction" being developed with the ID model. Throughout this text we define the term *instruction* quite broadly as purposeful activity intended to cause, guide, or support learning. As such, instruction encompasses such activities as traditional group lecture/discussion, computer-based drill and practice, moderated small-group online case study analysis, individualized discovery learning, or group problem solving mediated through a network of PDAs. The range of activities that can serve as instruction is limited only by the imagination of teachers, designers, and students.

Our original approach to this component of the model was heavily influenced by the work of Robert Gagné in *The Conditions of Learning,* first published in 1965. *The Conditions of Learning* incorporated cognitive information-processing views of learning, which assume most human behavior to be very complex and controlled primarily by a person's internal mental processes rather than external stimuli and reinforcements. Instruction is seen as organizing and providing sets of information, examples, experiences, and activities that guide, support, and augment students' internal mental processes. Learning has occurred when students have incorporated new information and schemes into their memories that enable new capabilities. Gagné further developed cognitive views of learning and instruction in later editions of *The Conditions of Learning* (1970, 1977, 1985). His influence as one of the founders of the instructional systems development discipline is described in Richey's (2000) book, *The Legacy of Robert M. Gagné.*

Constructivism is a relatively recent branch of cognitive psychology that has had a major impact on the thinking of many instructional designers. Although constructivist thinking varies broadly on many issues, the central point is the view of learning as a unique product "constructed" by each individual learner combining new information with existing knowledge and experiences. Individuals learn by constructing new mental representations of the social, cultural, physical, and intellectual environments in which they live. Because learning in the constructivist view is so entwined with personal experiences, a primary role of the teacher is creating appropriate learning environments—that is, social or technological contexts in which student learning is based on interactions with authentic representations of real practices.

Throughout this text, readers will find elements of behaviorist, cognitivist, and constructivist views adapted as appropriate for the varieties of learners, learning outcomes, learning contexts, and performance contexts that are discussed. The Dick and Carey Model incorporates an eclectic set of tools drawn from each of these three major theoretical positions of the past fifty years and is an effective design framework for guiding pedagogical practices within all three foundational orientations. Although some constructivists may reject the model as forcing practices that are counter to their philosophical foundations, the authors counsel an open-minded view and believe the model, when used by expert professionals, is essentially neutral. Master teachers and instructional designers can translate their own views of learning theory into pedagogical practices based on their own decisions about goals, students, and learning environments. Because the model depicts a set of generic ID practices, it has been adapted successfully by teachers, instructional designers, educational technologists, military trainers, and performance technologists in all kinds of settings. For those interested in historical context, Reiser's (2001) article on the history of instructional design and technology provides a good review of the origins and development of the field.

The model as presented here is based not only on theory and research but also on a considerable amount of practical experience in its application. In the section that follows, we present the general systems approach model in much the same way as a practical cookbook recipe—you do this and then you do that. When you begin to use a recipe in your own kitchen, however, it takes on greater meaning. In essence, your use of your own kitchen, your own ingredients, and your own personal touch will result in a unique product. You may change the recipe, take shortcuts, substitute ingredients, and perform steps out of sequence. So it is with instructional designers. In the beginning they use a model such as the one presented in this book as a scaffold to support their analysis, design, development, implementation, and evaluation work. As students and practitioners of instructional design become more experienced and proficient, they will replace the scaffold with their own unique solution strategies for the multidimensional problems they encounter in designing instruction. As in any complex endeavor those who fail to make the jump from dependence to independence will never master the discipline and will, at best, be good technicians.

As you begin designing instruction, *trust the model*—it has worked for countless students and professionals for more than thirty years. As you grow in knowledge and experience, *trust yourself!* The flexibility, insight, and creativity required for original solutions reside in experienced users and professionals—not in models. The Dick and Carey Model is only a representation of practices in the discipline of instructional design. The purpose for the model is to help you learn, understand, analyze, and improve your practice of the discipline, but all models are oversimplified representations. As you grow in understanding, don't confuse the representation with the reality. The graphical arrangement of boxes and arrows, for example, implies a strict linear process flow, but any experienced instructional designer will attest that in practice the process can sometimes look more like the circular, continuous improvement model in Figure 1.1 or the concurrent processes model in Figure 1.2 that is useful when planning, development, implementation, and revision all occur at the same time or in multiple cycles of simultaneous activities. If you are new to the field of instructional design, these figures may not make a lot of sense now but will come into focus later in the book.

In reading this book you are beginning to study the discipline of instructional design. The Dick and Carey Model gives us a way to distinguish the practices within the broader discipline, similar to distinguishing the individual trees within a forest; mastering a discipline requires that we "see the forest for the trees." In his book *The*

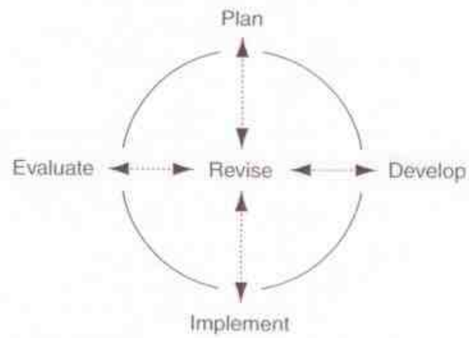

figure 1.1 Continuous Improvement Cycle

Fifth Discipline: The Art and Practice of the Learning Organization, Peter Senge (1990) accurately defines and depicts what it means to practice a discipline:

> By "discipline" I mean . . . a body of theory and technique that must be studied and mastered to be put into practice. A discipline is a developmental path for acquiring certain skills or competencies. As with any discipline, from playing the piano to electrical engineering, some people have an innate "gift," but anyone can develop proficiency through practice. To practice a discipline is to be a lifelong learner. You "never arrive"; you spend your life mastering disciplines. . . . Practicing a discipline is different from emulating a model. (pp. 10–11)

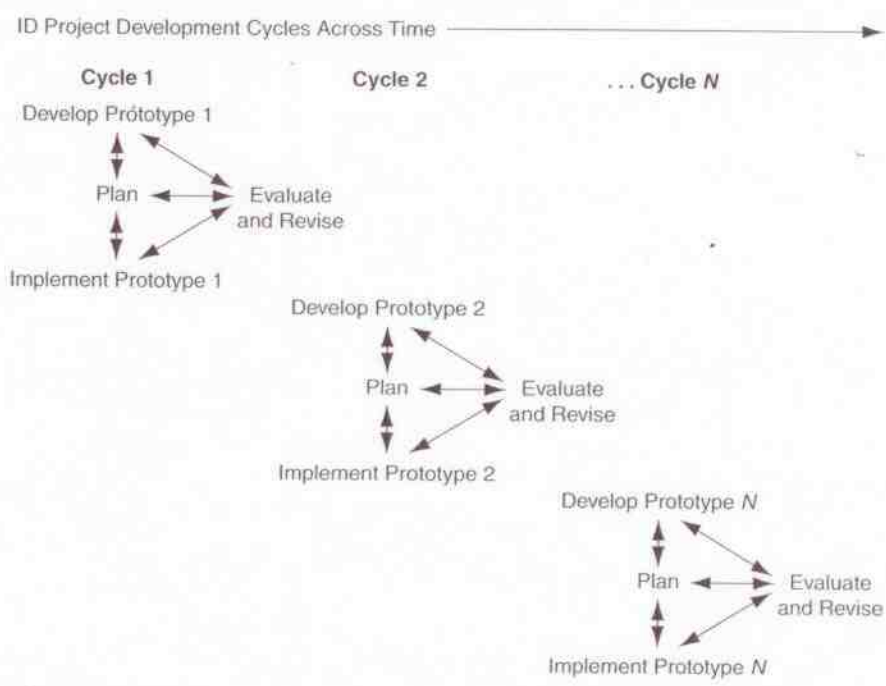

figure 1.2 Concurrent ID Process in Rapid Prototype Development

The model that will be described in detail in succeeding chapters is presented on the first two pages of this chapter. Ten interconnected boxes represent sets of theories, procedures, and techniques employed by the instructional designer to design, develop, evaluate, and revise instruction. A broken or dotted line shows feedback from the next-to-last box to the earlier boxes. The sequence of boxes represent steps that will be briefly described in the next section and in much greater detail in subsequent chapters.

Components of the Systems Approach Model

Identify Instructional Goal(s)

The first step in the model is to determine what new information and skills you want learners to have mastered when they have completed your instruction, expressed as goals. The instructional goals may be derived from a list of goals, from a performance analysis, from a needs assessment, from practical experience with learning difficulties of students, from the analysis of people who are doing a job, or from some other requirement for new instruction.

Conduct Instructional Analysis

After you have identified the instructional goal, you determine step by step what people are doing when they perform that goal and also look at subskills that are needed for complete mastery of the goal. The final step in the instructional analysis process is to determine what skills, knowledge, and attitudes, known as *entry skills,* are needed by learners to be successful in the new instruction. For example, students need to know the concepts of radius and diameter in order to compute the area and the circumference of a circle, so those concepts would be entry skills for instruction on computing area and circumference.

Analyze Learners and Contexts

In addition to analyzing the instructional goal, there is a parallel analysis of the learners, the context in which they will learn the skills, and the context in which they will use them. Learners' current skills, preferences, and attitudes are determined along with the characteristics of the instructional setting and the setting in which the skills will eventually be used. This crucial information shapes a number of the succeeding steps in the model, especially the instructional strategy.

Write Performance Objectives

Based on the instructional analysis and the description of entry skills, you write specific statements of what learners will be able to do when they complete the instruction. These statements, derived from the skills identified in the instructional analysis, identify the skills to be learned, the conditions under which the skills will be demonstrated, and the criteria for successful performance.

Develop Assessment Instruments

Based on the objectives you have written, you develop assessments that are parallel to and measure the learners' ability to perform what you described in the objectives. Major emphasis is placed on relating the kind of skills described in the objectives to the assessment requirements. The range of possible assessments for judging learners' achievement of critical skills across time includes objective tests, live performances, measures of attitude formation, and portfolios that are collections of objective and alternative assessments.

Develop Instructional Strategy

Based on information from the five preceding steps, you then identify the strategy to use in your instruction to achieve the goal. The strategy will emphasize components to foster student learning including such preinstructional activities as stimulating motivation and focusing attention, presentation of new content with examples and demonstrations, active learner participation and assessment, and follow-through activities that relate the newly learned skills to real-world applications. The strategy will be based on current theories of learning and results of learning research, the characteristics of the media that will be used to engage learners, content to be taught, and the characteristics of the learners who will participate in the instruction. These features are used to develop or select materials and plan instructional activities.

Develop and Select Instructional Materials

In this step you use your instructional strategy to produce the instruction. This typically includes guidance for learners, instructional materials, and assessments. (In using the term *instructional materials* we include all forms of instruction such as instructor's guides, student reading lists, PowerPoint presentations, case studies, videos, podcasts, computer-based multimedia formats, and web pages for distance learning.) The decision to develop original materials will depend on the types of learning outcomes, the availability of existing relevant materials, and developmental resources available to you. Criteria for selecting from among existing materials are also provided.

Design and Conduct Formative Evaluation of Instruction

Following completion of a draft of the instruction, a series of evaluations is conducted to collect data used to identify problems with the instruction or opportunities to make the instruction better. This type of evaluation is called *formative* because its purpose is to help create and improve instructional processes and products. The three types of formative evaluation are referred to as *one-to-one evaluation*, *small-group evaluation*, and *field trial evaluation*. Each type of evaluation provides the designer with a different set of information that can be used to improve instruction. Similar techniques can be applied to the formative evaluation of existing materials or classroom instruction.

Revise Instruction

The final step in the design and development process (and the first step in a repeat cycle) is revising the instruction. Data from the formative evaluation are summarized and interpreted to identify difficulties experienced by learners in achieving the objectives and to relate these difficulties to specific deficiencies in the instruction. The dotted line in the figure at the beginning of this chapter labeled "Revise Instruction" indicates that the data from a formative evaluation are not simply used to revise the instruction itself, but are used to reexamine the validity of the instructional analysis and the assumptions about the entry skills and characteristics of learners. It may be necessary to reexamine statements of performance objectives and test items in light of collected data. The instructional strategy is reviewed and finally all of these considerations are incorporated into revisions of the instruction to make it a more effective learning experience. In actual practice a designer does not wait to begin revising until all analysis, design, development, and evaluation work is completed; rather, the designer is constantly making revisions in previous steps based on what has been learned in subsequent steps. Revision is not a discrete event that occurs at the end of the ID process, but an ongoing process of using information to reassess assumptions and decisions.

Design and Conduct Summative Evaluation

Although summative evaluation is the culminating evaluation of the effectiveness of instruction, it generally is not a part of the design process. It is an evaluation of the absolute or relative value of the instruction and occurs only after the instruction has been formatively evaluated and sufficiently revised to meet the standards of the designer. Since the summative evaluation is usually not conducted by the designer of the instruction but instead by an independent evaluator, this component is not considered an integral part of the instructional design process per se.

Procedures used for summative evaluation are receiving more attention today than in previous years. This increased attention is due to interest in the effectiveness of web-based instruction across organizations, states, and countries. For example, will web-based instruction developed for learners in Utah, which is very transportable electronically, be effective for students in the Caribbean or China? What would experts in learning conclude about the instructional strategies within very attractive materials that were developed "a world away"? Terms such as *learner verification of materials effectiveness* and *assurances of materials effectiveness* are resurfacing now that materials transportability is much more economical and effortless.

The nine basic steps represent the procedures employed when using the systems approach to design instruction. This set of procedures is referred to as a *systems approach* because it is made up of interacting components that together produce instruction to satisfy needs expressed in a goal. Data are collected about the system's effectiveness so that the final product can be improved until it reaches the desired quality level.

Using the Systems Approach Model

Now that you have read about this model, you should consider several very important questions about its use, discussed in the sections that follow.

Why Use the Systems Approach?

Among the reasons that systematic approaches to instructional design are effective is the required focus, at the outset, on what learners are to know or be able to do when the instruction is concluded. Without this precise statement, subsequent planning and implementation steps can become unclear and ineffective. This focus on outcomes is pertinent for all who are involved in public schools because of the contemporary political climate in education. The most recent standards/accountability movement began with a number of states passing laws establishing tests and performance standards for judging student, school, and school district performance and was cemented when Congress passed the No Child Left Behind Act of 2001. The act mandated state-level development and implementation of assessments of basic skills at selected grade levels. A systems approach to instruction is a powerful tool for planning successful standards-based education because of the tight alignment among learning outcomes, student characteristics, instructional activities, and assessments.

A second reason for the success of the systems approach is this interlocking connection between each component, especially the relationship between instructional strategy and desired learning outcomes. Instruction specifically targeted on the skills and knowledge to be learned helps supply the appropriate conditions for these learning outcomes. Stated another way, the instructional range of activities cannot be loosely related or unrelated to what is to be learned.

The third and perhaps most important reason for the success of the systems approach is that it is an empirical and replicable process. Instruction can be designed for one delivery or for use on multiple occasions with multiple learners. Because it can be reused with similar and scalable student audiences, it is worth the time and effort to evaluate and revise it. In the process of systematically designing instruction, data are collected to determine what part of the instruction is not working, and it is revised until it does work.

The systems approach is an outcomes-based approach to instruction because it begins with a clear understanding of the new knowledge and skills that students will learn. Although widely adopted among educators at all levels, the systems approach finds even more numerous applications in business and industry, government, social services, and the military. In these environments there is a premium on both efficiency of instruction and quality of student performance, with high payoffs for both.

For Which Instructional Types and Student Groupings Is the Systems Approach Appropriate?

The systems approach to designing instruction includes the planning, development, implementation, and evaluation of instruction. Part of this process is choosing the type of instruction. In some instances, it is most appropriate to have an instructor deliver the instruction; in other situations, a variety of media may be employed. In every instance, the systems approach is an invaluable tool for identifying what is to be taught, determining how it will be taught, and evaluating the instruction to find out whether it is effective.

The procedure described in this text for developing an instructional strategy is a generic one. Although systematically designed instruction will not necessarily be individualized, a primary application of the systems approach to instructional design is for the individual learner. Useful for developing simple, tutorial print instruction for individual students, the systems approach is equally applicable to problem solving assignments for small groups of students or complex digital multimedia for distance delivery to a mass audience over the web. The procedure easily fits the requirements of any preferred medium of instruction, noting that most research suggests that it is the analysis process and the instructional strategies, rather than the delivery mode, that determine instructional success. The systems approach is a generic planning process that ensures that materials developed for any type of instruction or student grouping are responsive to the needs of learners and effective in achieving the desired learning outcomes. The reader should be careful to distinguish between the process of designing instruction and the delivery of that instruction. The systems approach is basically a design process, whereas types of instruction, instructional media, and individualized versus group activity are all decisions made within the design process. Ideally, there are no predetermined assumptions about these decisions because a major part of the design process is to determine how the instruction can be delivered most effectively.

Careful attention is paid to determining what must be learned and what learners must already know in order to begin the instruction. The instruction is focused on the skills to be learned and is presented under the best conditions for learning. The learner is evaluated fairly with instruments that measure the skills and knowledge described in the objectives, and the results are used to revise the instruction so that it will be even more effective with succeeding learners. Following this process causes the designer to focus on the needs and skills of the learners and results in the creation of effective instruction.

Who Should Use the Systems Approach?

Teachers As you study the instructional design model and perhaps use it to design specific instruction, you will find that it takes both time and effort. If you are a teacher, you may find yourself saying, "I could never use this process to prepare all my instruction," and you would probably be correct. The individual instructor with day-to-day instructional responsibilities can use the complete process to develop only small amounts of instruction at any given time because of the level of detail included in each step. However, even such limited use can expand any teacher's instructional repertoire. Also, teachers can select and apply some of the steps or even pieces of a single step as appropriate for different instructional planning needs. As you work through the book, however, your goal should be to master the level of detail contained in each step, because mastery of the full model establishes the experience and insight to properly select the right pieces of the instructional design process according to specific instructional needs. What you will learn in this book is a theory-based, systematic way of viewing the teaching–learning process. The ID model provides tools that you can tuck away in a mental toolbox along with all of the other tools that you have picked up through your academic training and your experience. Using these tools will help you sharpen your focus on instructional practices that tend to predict successful learning in students.

We have found that almost every teacher who has studied the process has come away with two reactions. The first is that they will certainly begin immediately to use some of the components in the model, if not all of them. The second reaction is that their approach to instruction will never be the same because of the insights they have gained from using the process. (The reader may be somewhat skeptical at this point; be sure to consider your own reactions *after* you have used this approach.)

ID Professionals The ISD approach can also benefit a diverse range of professionals whose full- or part-time activity is to create instruction that is effective for a given learning outcome with a particular learner population. The instruction is often designed and packaged for use with many learners over a period of time, whether in business, industry, government, social services, the military, or personnel divisions, as well as in instructional support service centers in junior colleges, universities, and some public school districts. Professional titles used by ID professionals include instructional designer, instructional technologist, human performance technologist, educational technologist, trainer or training specialist, human resource development specialist, and others. (In 2002 a task force was convened within the International Society for Performance Improvement—ISPI—for the purpose of developing a process and performance standards for certifying ID professionals. The certification program is in place and awards the designation "Certified Performance Technologist"—CPT—to successful applicants.)

In contrast to the teacher who may be working alone, the ID professional sometimes works with a team of specialists to develop the instruction, often including a content specialist, an instructional technologist, an evaluation specialist, and a manager (who is often the instructional designer). The team approach draws on the expertise of specialists to produce a product that none could produce alone. In these settings there is a premium placed on interpersonal skills because seemingly everyone has ideas on how best to do what needs to be done.

Professors and Instructors This book is suitable for university professors, military instructors, and instructors in any other setting who are interested in improving the effectiveness of their instruction. We are convinced that the model and procedures are equally applicable in both school and nonschool settings. Instructional design skills are critical for those designing instruction for web delivery.

Our examples of various aspects of the application of the systematic design process include instructional contexts for all age groups, from young children to mature adults. We will use the terms *teacher, instructor,* and *designer* interchangeably throughout the book because we truly believe they are interchangeable.

As you read through the chapters that follow, you will find an instructional design case study on group leadership skills for Neighborhood Crime Watch leaders. The example is carried through each step of the design model. You should also note that the appendixes at the end of this text contain a second complete instructional design case study also carried through each step of the model for a school subject (using a variety of sentence types in writing paragraphs). These two case studies were chosen because leading group discussion and writing paragraphs are skills with which all of us are familiar, and group leadership skills are taught in many professional/technical training settings whereas paragraph writing skills are taught at all levels of public and private education.

References and Recommended Readings

At the end of each chapter, several carefully selected references are listed. The books and articles supplement the description in the chapter or focus in more detail on an important concept that has been presented.

The references listed for this first chapter are somewhat different. These are a mixture of current books in the field of instructional design or works that have direct implications for the practice of instructional design along with a selection of classic texts and articles. Many of the topics in this book also appear in these referenced texts, which vary in depth and breadth of coverage of topics but should all help to expand your knowledge and understanding of the instructional design field.

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