PREFACE

Not so many years ago, instruction was typically created by professors or trainers who simply developed and delivered lectures based on their research, experience, and expertise. Since the early 1970s, instructional emphasis has shifted dramatically from expert lectures to interactive instruction. This instruction focuses on the main purposes for and anticipated outcomes of the learning, the nature of the environment where acquired knowledge and skills would be used, and the particular characteristics of the learners in relation to the discipline and environment. Effective instruction today requires careful and systematic analysis as well as description of the intertwined elements that affect successful learning, and requires integral evaluation and refinement throughout the creative process.

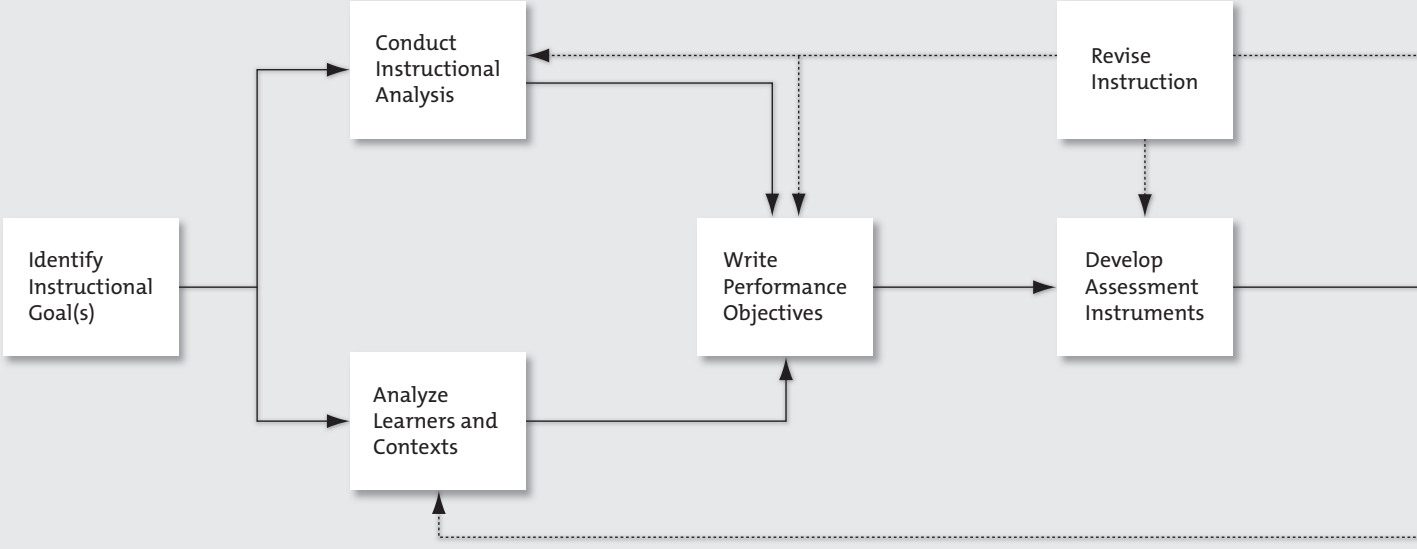
The elegance of a generic systematic instructional design (ID) process is its inherent ability to remain current by accommodating emerging technologies, theories, discoveries, or procedures. For example, performance analysis and needs assessment reveal new institutional needs and new performance requirements that must now be accommodated in the instruction; analysis and description of the performance context uncover novel constraints and new technologies. Likewise, thoughtful analysis of present learners discloses characteristics not previously observed, and analysis of new instructional delivery options enables more efficient and cost-effective combinations of media and teaching/learning methods. The inquiry and analysis phases inherent in each step of a systematic ID model help ensure the resulting decisions and designs are current, practical, and effective.

The Systematic Design of Instruction, 8th ed., introduces you simply and clearly to the fundamentals of ID, namely the concepts and procedures for analyzing, designing, developing, and formatively evaluating instruction. The text is designed to aid your learning in several ways. The intuitive chapter organization explains each step in the design process through easily understandable sections, including (1) Objectives, (2) Background, (3) Concepts, (4) Examples, (5) Case Study, (6) Summary, (7) Practice, and (8) Feedback. Every chapter leads you through a step of the model, presenting background research carefully illustrated with a wide range of academic and business applications. The contemporary design examples also help you link current theoretical concepts to practical applications. Sample rubrics and exercises provide tools you can use when designing instruction to connect theory to your own real-life applications. Finally, annotated references direct you to resources that help amplify and reinforce each concept in the ID process.

Acquiring the ID ideas and skills presented here will undoubtedly change the way you approach creating instruction. This is not a textbook to be read and memorized, but is meant to be used for you to create effective instruction. You learn a systematic, thoughtful, inquiry-based approach to creation that helps ensure the success of those who use your instruction. For learning ID most effectively, we suggest that you choose a relatively small instructional goal in your own discipline and context, and then as you study each chapter, apply the steps in the model to designing instruction for your personal goal—in other words, this can be a learning-by-doing textbook. This helps ensure that you can take the ID model from this learning experience and make it an integral part of your own ID practices.

In this new edition, we retain the features that seem most important to readers of previous editions as well as adding new perspectives and features that keep the text current within the discipline, including the following:

- Updated references and recommended readings with annotations
- Additional attention to learning and portable digital devices
- Additional attention to the relationship between transfer of learning and the performance context
- Additional attention to the theoretical bases of learning in designing and developing instruction
- Additional tables that help summarize and organize concepts
- Application of ID concepts through a serial case study example for adult learners in a university setting. The case study is carried through the steps of the design model in each chapter of the book
- A complete case study in the Appendices (in addition to the one contained in the text) that details the products of design and development activities for each step in the model for a school curriculum goal on writing composition
- A plan with case study examples for using constructivist learning environments in cognitive ID.

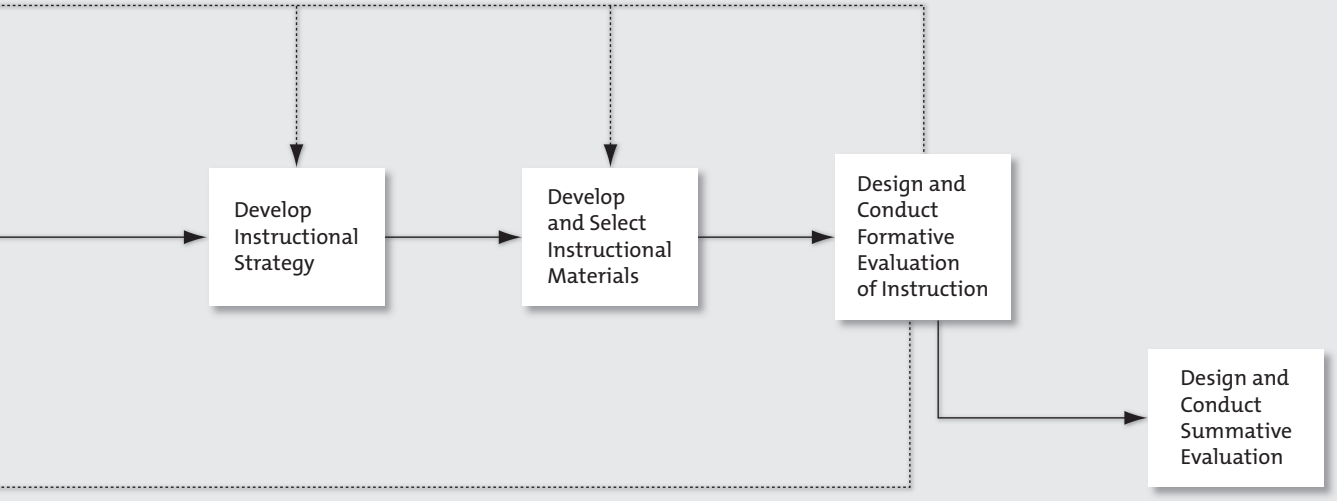


The Dick and Carey Systems Approach Model for Designing Instruction

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 on the web e-learning portal or, believing 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—

Introduction to Instructional Design



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 each other to bring about desired student learning outcomes. Changes in one component can affect other components as well as the eventual learning outcomes; failure to account adequately for conditions within a single component can doom the entire instructional process. Israelite (2004, 2006) characterizes e-learning shortfalls in corporate training as a failure to use *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 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 reaches 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 parts are in working order, the system keeps the temperature in a comfortable range. An automobile's braking system, however, 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, for example, the management of type 1 (juvenile onset) diabetes. There is a complex and 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 might 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 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 is 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 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 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 shows 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 avatar characters in a computer-generated virtual world. 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's *The Conditions of Learning* (1965), which incorporated cognitive information-processing views of learning that 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 occurs when students incorporate 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 influenced 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 and experiences with existing knowledge. 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 predominately a cognitivist view of teaching and learning, but will also see elements of constructivist thinking 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 major theoretical positions since the late 1930s and is an effective design framework for guiding pedagogical practices within all foundational orientations. Although some instructional theorists may question the model as forcing practices counter to their philosophical foundations, the authors counsel an open-minded view and believe that most instructional design practices advocated in the model, when used by expert professionals, are 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 (2001a, 2001b) articles 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 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 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 never master the discipline and are, at best, good technicians.

As you begin designing instruction, trust the model—it has worked for countless students and professionals since the early 1970s. 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 linear process flow, but any experienced instructional designer will attest

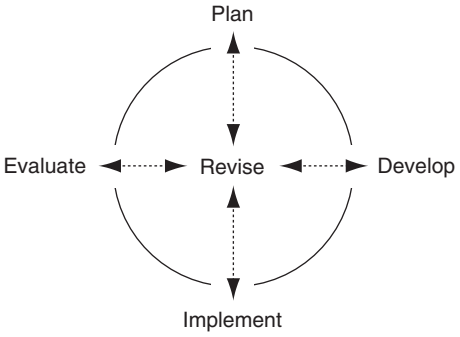


figure 1.1 Continuous Improvement Cycle

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; but mastering a discipline requires that we "see the forest for the trees." In his book *The Fifth Discipline: The Art and Practice of the Learning*

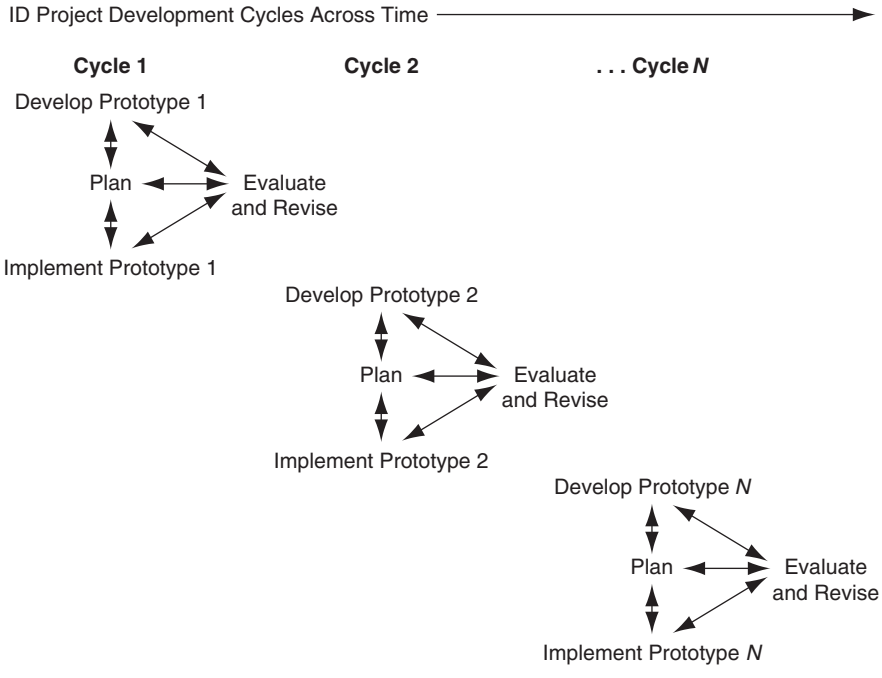


figure 1.2 Concurrent ID Process in Rapid Prototype Development

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)

The model 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 used 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 represents steps that are described briefly 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 as well as look at subskills 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 are 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 learn the skills, and the context in which they 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 that measure the learners' ability to perform what you describe 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, a designer identifies a theoretically based strategy to use in the instruction to achieve the goal that emphasizes components to foster student learning, including

- preinstructional activities, such as stimulating motivation and focusing attention
- presentation of new content with examples and demonstrations
- active learner participation and practice with feedback on how they are doing
- follow-through activities that assess students' learning and relate the newly learned skills to real-world applications

The strategy is based on current theories of learning and results of learning research, the characteristics of the media used to engage learners, content to be taught, and the characteristics of the learners who participate in the instruction. These features are used to plan necessary logistics and management, develop or select materials, and plan instructional activities.

Develop and Select Instructional Materials

In this step, the instructional strategy is used to produce the instruction, and 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 depends 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, 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 of which 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 formative 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. Because 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 because of increased interest in the transfer of knowledge and skills from training settings to the workplace. This type of evaluation answers questions related to whether the instruction provided solved the problems it was designed to solve. There is also increased interest in the effectiveness of e-learning across organizations, states, and countries. For example, will e-learning 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, 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 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, followed by the National Governors Association Common Core Standards initiative in 2009. These programs mandate 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 using the systems approach is the 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 using the systems approach is that it is an empirical and replicable process. Instruction can be designed for a single 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, nonprofits, nongovernmental organizations (NGOs), and the military, where 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 used. In every instance, the systems approach is an invaluable tool for identifying what is to be taught, determining how to teach it, 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 is not necessarily 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 the next time it is used with 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 select the right pieces of the instructional design process properly according to specific instructional needs. What you 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 helps 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 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, and human resource development specialist. (In 2002, a task force was convened within the *International Society for Performance Improvement* [ISPI] to develop 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, corporate trainers, 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 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 adult learners. 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, 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 text also appear in these referenced texts, which vary in depth and breadth of coverage of topics, but should help expand your knowledge and understanding of the instructional design field.

Banathy, B. H. (1968). *Instructional systems.* Palo Alto, CA: Fearon Publishers. A classic text placing instruction in a systems context.

Blanchard, P. N., & Thacker, J. W. (Eds.). (2007). *Effective training: Systems, strategies, and practices* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall. Presents useful combination of theory and practical examples.

Briggs, L. J., Gustafson, K. L., & Tillman, M. H. (Eds.). (1991). *Instructional design: Principles and applications.* Englewood Cliffs, NJ: Educational Technology Publications. Updates an older classic. *Many of our chapters parallel chapters in this text.*

Dills, C. R., & Romiszowski, A. J. (Eds.). (1997). *Instructional development paradigms.* Englewood Cliffs, NJ: Educational Technology Publications. Presents various models and approaches to instructional design.

Driscoll, M. P. (2005). *Psychology of learning for instruction* (3rd ed.). Boston, MA: Allyn & Bacon. Describes contemporary approaches to learning that focus on instruction.

Duffy, T. M., & Jonassen, D. H. (Eds.). (1992). *Constructivism and the technology of instruction.* Hillsdale, NJ: Lawrence Erlbaum Associates. Provides a comprehensive review of varying perspectives on constructivism.

Ely, D. P. (1996). *Classic writings on instructional technology.* Englewood, CO: Libraries Unlimited. Describes the people and writings that shaped instructional technology.

Ertmer, P. A., & Newby, T. J. (1993). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly, 6*(4), 50–72. Compares three theoretical bases with guidelines for instructional designers.

Ertmer, P. A., & Quinn, J. (2013). *The ID casebook: Case studies in instructional design* (4th ed.). Upper Saddle River, NJ: Pearson. Provides a wide array of examples of the application of instructional design processes to real-world problems.

Fleming, M. L., & Levie, W. H. (1993). *Instructional message design: Principles from the cognitive and behavioral sciences* (2nd ed.). Englewood Cliffs, NJ: Educational Technology Publications. A classic text still used in designing displays and interfaces for contemporary media technologies.

Gagné, R. M. (1965). *The conditions of learning*. New York, NY: Holt, Rinehart and Winston.

Gagné, R. M. (1970). *The conditions of learning* (2nd ed.). New York, NY: Holt, Rinehart and Winston.

Gagné, R. M. (1977). *The conditions of learning* (3rd ed.). New York, NY: Holt, Rinehart and Winston.

Gagné, R. M. (1985). *The conditions of learning* (4th ed.). New York, NY: Holt, Rinehart and Winston. Details the linkage between cognitive learning theory and instructional practices in the final edition of this classic book.

Gagné, R. M., & Medsker, K. L. (1996). *The conditions of learning: Training applications.* Fort Worth, TX: Harcourt Brace College Publishers. Presents same model as Gagné's original text by this name, but with the addition of examples from business and industry.

Gagné, R. M., Wager, W. W., Golas, K. C., & Keller, J. M. (2004). *Principles of instructional design* (5th ed.). Belmont, CA: Wadsworth/Thomson Learning. Includes two new chapters on technology and online learning. This is the first new edition of this classic book since 1992.

Gredler, M. E. (2005). *Learning and instruction: Theory into practice* (5th ed.). Upper Saddle River, NJ: Merrill/Prentice Hall. Provides a survey of learning theories that includes behaviorist, cognitivist, and constructivist views with applications for instruction.

Hannafin, M. J., Hannafin, K. M., Land, S. M., & Oliver, K. (1997). Grounded practice and the design of constructivist learning environments. *Educational Technology Research and Development, 45*(3), 101–117. Presents a carefully reasoned argument for grounding instructional practice in theoretical foundations—regardless of the particular practice that one espouses.

Hannum, W. (2005). Instructional systems development: A 30 year retrospective. *Educational Technology Magazine, 45*(4), 5–21.

Israelite, L. (2004). We thought we could, we think we can, and lessons along the way. In E. Masie (Ed.), *Learning: Rants, raves, and reflections.* San Francisco, CA: Jossey-Bass Pfeiffer. Presents a human resource development executive's systems-based view of the importance of maintaining instructional design integrity within the technology decisions and subsequent materials development performed by professional and technical trainers.

Israelite, L. (Ed.). (2006). *Lies about learning.* Alexandria, VA: ASTD Press. Chapter 13 focuses on identifying goals before choosing solutions.

Medsker, K. L., & Holdsworth, K. M. (Eds.) (2007). *Models and strategies for training design.* Hoboken, NJ: John Wiley & Sons. Focuses on ID models in training settings. This is a print-on-demand book.

Merrill, M. D. (2013). *First principles of instruction.* San Francisco, CA: Pfeiffer. Argues that wide-ranging instructional design theories all include five fundamentally similar principles.

Morrison, G. R., Ross, S. M., & Kemp, J. E. (2013). *Designing effective instruction* (7th ed.). Hoboken, NJ: Wiley. Covers many current instructional design concepts as well as planning for project management and instructional implementation.

Newby, T. J., Stepich, D. A., Lehman, J. D., Russell, J. D., & Todd. A. (2010). *Instructional technology for teaching and learning* (4th ed.). Englewood Cliffs, NJ: Pearson. Focuses on integrating instruction and technology for the classroom, including planning and developing instruction, grouping learners, selecting delivery formats (including distance learning), managing, and evaluating instruction.

Orey, M., Jones, S. A., & Branch, R. M. (2013). *Educational media and technology yearbook:* Volume 37. New York, NY: Springer. Describes current information on educational programs in the field of instructional design.

Partnership for 21st Century Skills. (2003). *Learning for the 21st century.* Washington, DC: Partnership for 21st Century Skills. This partnership—composed of AOL, Apple, Cable in the Classroom, Cisco Systems, Dell Computer Corporation, Microsoft Corporation, National Educational Association, and SAP—focuses on Pre-K–12 schools, and describes skills and dispositions necessary for improving learning and education. The group has a website and can be located at their current address through a search engine.

Piskurich, G. M. (2006). *Rapid instructional design: Learning ID fast and right.* San Francisco, CA: Pfeiffer. Describes an instructional design process "how to" with lots of tips and examples rather than a book about rapid-prototyping methods in instructional design.

Reiser, R. A. (2001a). A history of instructional design and technology: Part I: A history of instructional media. *Educational Technology Research and Development 49*(1), 53–64.

Reiser, R. A. (2001b). A history of instructional design and technology: Part II: A history of instructional design. *Educational Technology Research and Development 49*(2), 57–67.

Reiser, R. A., & Dempsey, J. V. (Eds.). (2012). *Trends and issues in instructional design and technology* (3rd ed.). Boston, MA: Allyn & Bacon.

Richey, R. C. (Ed.). (2000). *The legacy of Robert M. Gagné.* Syracuse, NY: ERIC Clearinghouse on Information and Technology. Presents a biographical and historical retrospective that includes five of Gagné's key research papers.

Richey, R. C. (2002). *Instructional design competencies: The standards* (3rd ed.). Syracuse, NY: ERIC Clearing House on Information and Technology: International Board of Standards for Training, Performance, and Instruction.

Richey, R. C., & Klein, J. D. (2007). *Design and development research: Methods, strategies, and issues.* New York, NY: Routledge. Describes methods and strategies for conducting design and development research, including product and tool research and model research.

Rothwell, W. J., & Kazanas, H. C. (2008). *Mastering the instructional design process: A systematic approach* (4th ed.). San Francisco, CA: Pfeiffer. Describes the instructional design process and focuses on professional and technical training.

Seels, B., & Glasgow, Z. (1998). *Making instructional design decisions* (2nd ed.). Upper Saddle River, NJ: Merrill/Prentice Hall. Presents an instructional design model for novices and for practitioners.

Senge, P. (1990*). The fifth discipline: The art and practice of the learning organization.* New York, NY: Currency Doubleday. Identifies systems thinking as the fifth in a set of five disciplines required for growth and development of learning organizations. A modern management classic.

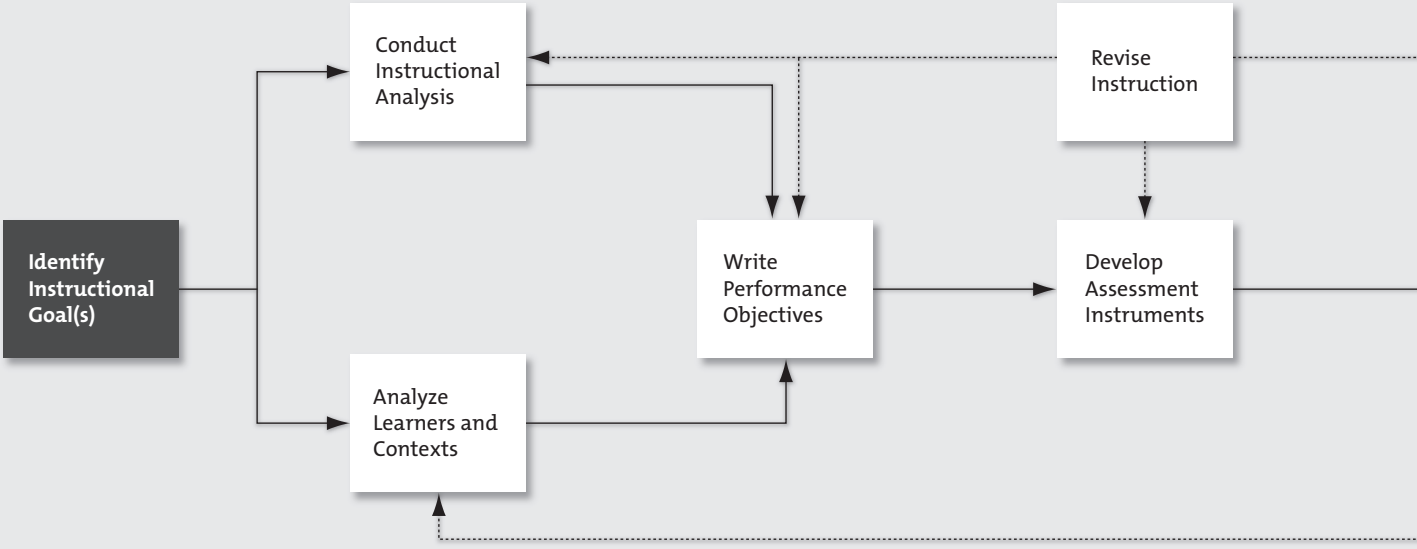
Silber, K. H., & Foshay, W. R. (2010). *Handbook of improving performance in the workplace. Instructional design and training delivery.* San Francisco, CA: Pfeiffer. Describes standard principles and evidence-based practices for designing instruction and delivering training.

Smith, P. L., & Ragan, T. J. (2005). *Instructional design* (3rd ed.). New York, NY: Wiley. Describes instructional strategies for various learning outcomes.

Spector, J. M., Merrill, M. D., Elen, J., & Bishop, M. J. (2013). *Handbook of research on educational communications and technology* (4th ed.). New York, NY: Springer. Describes new and emerging educational technologies.

Spector, J. M., Merrill, M. D., van Merrienboer, J., & Driscoll, M. P. (2008). *Handbook of research on educational communications and technology* (3rd ed.). New York, NY: Routledge. Provides summaries of recent research in information and communication technologies.

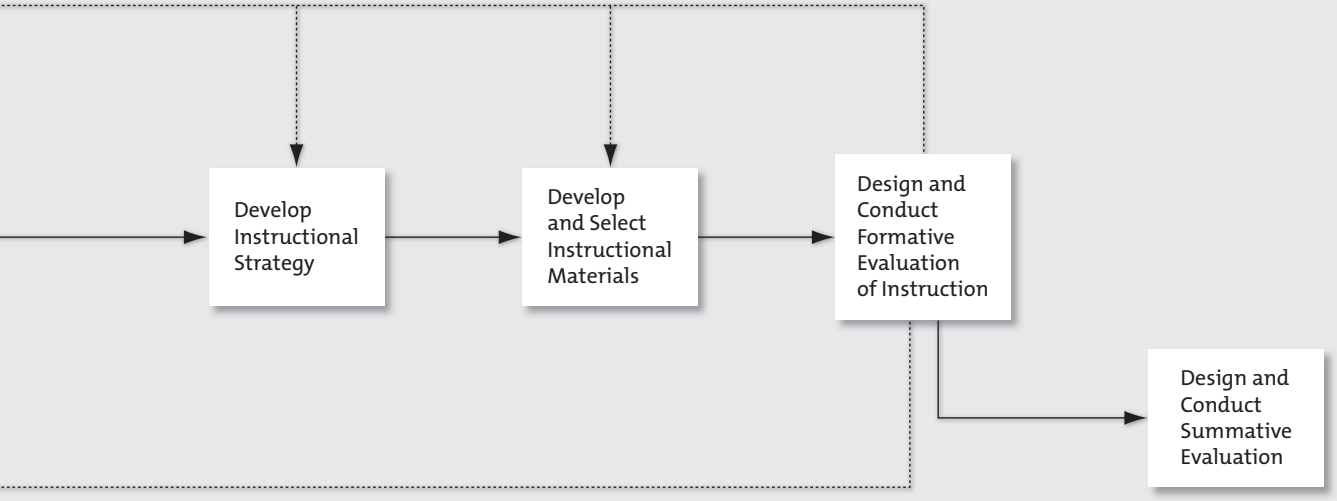
Visscher-Voerman, I., & Gustafson, K. L. (2004). Paradigms in the theory and practice of education and training design. *Educational Technology, Research, and Development, 52*(2), 69–89.



Objectives

- Define performance analysis, needs assessment, needs statements, and instructional goals.
- Identify an instructional goal that meets the criteria for initiating the design of effective instruction.
- Write an instructional goal that meets the criteria for initiating the development of instructional materials.
- Evaluate instructional goals for congruence with learner characteristics, learning and performance contexts, and tools available for learners.

Identifying Instructional Goals Using Front-End Analysis



Background

Perhaps the most critical event in the instructional design process is identifying the instructional goal. If done improperly, even elegant instruction may not serve the organization's or the intended learners' real needs. Without accurate goals designers run the risk of planning instructional solutions for which needs do not really exist. There are many ways to identify instructional goals, but four common methods that come to mind are the subject-matter expert approach, the content outline approach, the administrative mandate approach, and the performance technology approach.

Every reader of this book could be considered a **subject-matter expert** (SME, pronounced S-M-E or *smee*) in some area. You have completed, or will complete, an undergraduate degree in some field. Your knowledge of that field now greatly exceeds that of the general public, so you would be considered an SME. When SMEs are asked to develop instruction in their areas of expertise, they most likely consider their own learning on the subject. Depending on their evaluation of their own knowledge, they try either to replicate it for students or

to improve it. The instructional goals established by SMEs often contain words such as *know* and *understand* with regard to content information. This approach to the teaching–learning process assumes that students need to learn what the SME knows, and emphasizes the communication of information from instructor to student in the instructional process.

A second way to identify instructional goals is the *content outline approach,* in which convincing evidence that a performance problem exists is assumed to be caused by students not having learned the right type or amount of content. This approach often occurs when the "right type and amount of content" are outlined in predefined curriculum standards and frameworks, corporate policies, equipment manuals, training manuals, and so forth. One danger with this method is being locked into content standards that may no longer be relevant or that never were adequate solutions for organizational or social needs. Another danger is assuming that new instruction or more instruction will solve the problem when, in fact, the problem may be because of lack of accountability, lack of incentives, outdated tools, organizational culture, or some other factor.

It often happens that goals are identified for initiating the ID process simply because a person, a panel, a board, an agency, a work team, a supervisor, a program manager, or some other administrative authority issues a mandate that training for the selected goals occur—the *administrative mandate approach.* Goals selected by mandate can be valid if appropriate planning and insight were exercised by the administrator on whose authority the training is based, or if an instructional designer can exercise political savvy and negotiating skills to confirm or redirect goals after the fact. Unfortunately, there often is little latitude for negotiation, and this "ready-fire-aim" approach frequently misses the mark. Note that some goals selected through mandate can be valid by definition when required by federal or state law, by union contract, by safety requirements for new employee hires, and so forth. Such goals are true mandates and usually go straight to the training department. The student performance standards enacted by state legislatures are also examples of true mandates in public education and are passed down to school districts and schools for implementation.

Instructional designers favor a fourth approach, *performance technology*, in which instructional goals are set in response to problems or opportunities within an organization. This is also referred to as *human performance* technology and *performance improvement.* Dessinger, Moseley, and Van Tiem (2012) provide an informative overview of the current model of performance technology endorsed by the International Society for Performance Improvement (ISPI). There are no preconceived notions of what must be learned, of what will be included in an instructional package, or that, in fact, there is any need for instruction at all. Designers attempt to work with those responsible for ensuring that an organization is meeting its quality and productivity goals. These concerns apply to any organization, private or public. Private organizations are motivated to meet productivity goals, stockholders' expectations, and their clients' and customers' needs. Public agencies, including public schools, share this motivation and also strive to meet the needs for which taxpayers have mandated the expenditure of public funds. To the extent they are not doing so, changes must be made, and the crucial issue becomes determining the correct modifications.

Designers engage in performance analysis and needs assessment processes to identify the problem precisely, which is not always an easy task. The real problem may be different than it initially appears. After the problem is identified, the designer attempts to discover the causes of the problem, and then enumerates an array of solutions that could be implemented to solve the problem. One step toward a solution could be identifying a set of instructional goals for initiating the ID process,

but seldom is instruction the single answer to a problem. Usually a combination of changes is required to solve the problem effectively.

Concepts

The model we use throughout this text is to guide the design, development, and revision of instruction. It has long been accepted that careful analysis is absolutely critical prior to initiating the design of instruction. This analytical work is sometimes referred to as *front-end analysis,* and typically includes performance analysis, needs assessment, and in some cases job analysis. We provide an overview of these three planning processes in this concepts section. Figure 2.1 helps clarify how the skills that you are learning in this text fit into more complex, larger-scale training and curriculum development projects. For most instructional design efforts in school and university settings and for many professional and technical training projects, the overview and examples of front-end analysis in this chapter serve the novice designer well.

Those readers using this book as part of a graduate degree program in instructional systems design or instructional technology may find that coursework in evaluation, performance analysis, and needs assessment is part of their programs of study. Others wanting in-depth preparation in front-end analysis are referred to the following resources by Brown and Seidner (2012), Kirkpatrick and Kirkpatrick (2006), and Russ-Eft and Preskill (2009) for evaluation; Brethower (2007), Mager and Pipe (1997), Robinson and Robinson (2008), Rossett (2009), Van Tiem, Moseley, and Dessinger (2012), and Wedman (2010) for performance analysis; Barksdale and Lund (2001), Gupta, Sleezer, and Russ-Eft, (2007), Kaufman and Guerra-Lopez (2013), and Tobey (2005) for needs assessment; and Brannick (2007), and Jonassen, Tessmer, and Hannum, (1999) for job analysis. If you are a student using this book, you may be designing and developing a unit or lesson of instruction as one of the requirements for your class. If that is the case, you might start your project at the "Conduct Needs Assessment as Required" step in Figure 2.1

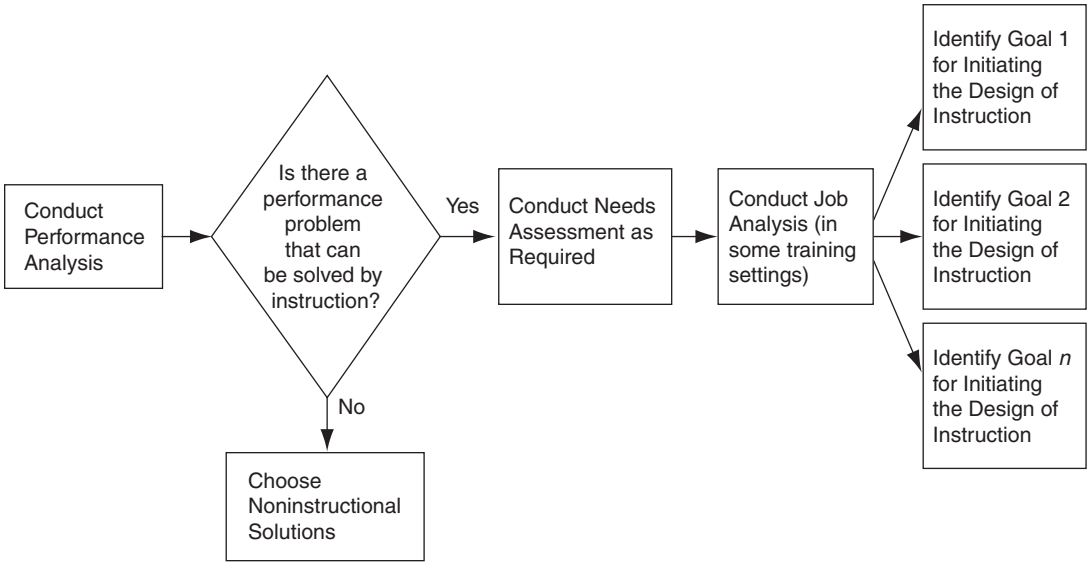


figure 2.1 Front-End Analysis for Complex Training and Curriculum Development Contexts

and go straight to "Identify Goal 1 for Initiating the Design of Instruction." To provide a broader context for instructional design, the discussion that follows includes an overview of performance analysis with examples from business and public schools.

Performance Analysis

Performance Analysis in a Business Setting Public and private organizations are continually faced with problems that senior officers and managers must identify and solve. Problems reflect a failure to achieve certain organizational goals or to take advantage of opportunities. Those failures are often seen as resulting from a lack of or improper use of skills; thus, it is not unusual for an officer to identify a problem and assume that training is the solution. Such problems are often presented to the training department with the request that they develop training to solve the problem.

Even when a direct request for training has not been made, the response to someone saying, "I've got a problem!" has often been, "OK, let's do a needs assessment and find out what training we can provide." Needs assessment is an indispensable tool for solving problems, but a performance technologist would take a different mind-set into the problem situation and do some analysis before deciding that training should be provided. In common terminology, this mind-set is called *critical thinking.* Being a critical thinker is both attitude and intellectual skill—that is, one must choose to act like and master the analytical techniques used by a critical thinker. Some of these attitudes and techniques include being open-minded, being objective, seeking causes, viewing a problem from multiple perspectives, giving a fair hearing to evidence on multiple perspectives, suspending judgment until all pertinent information has been heard, listening to contrary views, and changing a conclusion in the face of compelling information. Applying critical-thinking attitudes and skills is more difficult from within an organization than from outside. That is why outside consultants are often hired to conduct strategic planning and performance analysis activities. Instructional designers, however, are most often part of the organization in which they practice their profession, so must cultivate this critical thinking mind-set to be effective performance analysts.

To explain performance analysis further, let's consider an example from professional and technical training. In our example, the head of a large information systems (IS) division came to the training manager and said, "The customer service call center has grown so fast that we can't keep up with all of the service orders on their computer workstations. Instead of hiring more service technicians, corporate personnel wants me to accept six transfers from other divisions who are scheduled for termination due to downsizing. I'm going to start screening candidates for transfer, but I know they won't have the skills we need. I want you to decide whether we should train them ourselves in desktop troubleshooting and repair, or send them outside for training." The training manager replied, "Thanks for the heads-up. I'll check with the customer service manager and get back to you tomorrow morning." The training manager did some homework that night, and the next morning she diplomatically proposed a performance analysis rather than a quick jump into a training program. The director of information systems agreed to hold up the screening process, but only for a week and a half, saying, "Go ahead and see what you can do." Some of the steps she took and information she learned over the next ten days are as follows:

- The computer breakdown problem was in the customer service call center, which had expanded rapidly with many new customer representatives and computer purchases. Current staffing in IS was not sufficient to keep up with the workstation troubleshooting and repair needs.

- One of the business goals for the customer service unit was to improve customer relations.
- One operational target for improved customer relations was customer satisfaction with 96 percent of telephone contact opportunities.
- To reach the satisfaction target, the customer service division had set performance standards of "maximum of three automated call menu selections before reaching a live representative" and "maximum average wait time of 90 seconds before reaching a live representative." (There were other performance standards, but these are the only ones we consider here.)
- When the training manager checked the most recent customer follow-up data, she found that satisfaction with telephone contact was running at 76 percent, and when she checked telephone log tracking reports, she found that average wait time was just over two and a half minutes and wait time for 17 percent of calls was over five minutes. Clearly, a business goal of the customer service unit and a target performance standard were not being met.
- The training manager checked computer workstation problem reports, downtime, and repair logs in IS and found that hiring and training new computer techs to get workstations repaired and back online sooner would, indeed, decrease service interruptions in the call center and thereby lower average caller wait time.

But were there other solutions? Here is what the training manager found when she suspended judgment pending additional information, began to analyze the system of components and relationships among components that could be contributing to the performance problem, and entertained the possibility of alternatives to a training solution.

- She took another look at the telephone logs and checked a sample of transaction records and discovered that fully a quarter of all calls going to the experienced customer service representatives with specialized training were simple information requests that could be handled by a receptionist-level person without a computer workstation.
- She looked again at the workstation problem reports and repair logs and found that 16 percent of downtime was due to simple configuration fixes and crash reboots, with which inexperienced customer service representatives were not familiar.
- She found that computer purchases had barely kept up with the growth of the customer service call center, and that IS did not have much shelf inventory to swap a working computer for a broken computer.

At the end of her ten days of performance analysis, the training manager, the head of information systems, and the customer service manager had a meeting and decided to try the following strategies for solving the performance problem and helping the customer service unit achieve its business goal:

- The training manager agreed to work with the telephone systems person in IS to improve call screening by clarifying the contents of the menu choices in the automated answering scripts and by adding another choice in two of the three menu levels. These changes would route a greater percentage of simple information requests to a pool of the newer, less-experienced customer service representatives.
- The training manager agreed to work with IS on a job aid for each workstation, a small laminated card with a decision tree of simple "If this happened, then do that" suggestions for computer "first aid." She also agreed to do a brief interactive training piece that would be available on the company's intranet to step the customer service representatives through the terminology and the process in the decision tree.

- IS decided to accelerate its computer purchase schedule to create some shelf inventory of machines that could be configured and available for service while broken units were being repaired.
- All agreed that it would be a good idea to allow some time for implementing and evaluating the proposed solutions and, in the meantime, to hire temporary computer technicians as needed from an outside employment services agency.

table 2.1 Application of the Robinson and Robinson (2008) Performance Relationship Map

Performance Analysis Question	Performance Analysis Answer
1. What is the problem that was originally voiced?	1. A training program for six new computer techs for desktop troubleshooting and repair in the customer service call center.
2. Is the voiced problem related to a core organizational outcome?	2. Yes: Improve customer relations.
3. Are there established operational goals for this outcome?	3. Yes: 96 percent customer satisfaction with service contacts by telephone (desired status).
4. Is the operational goal being met?	4. No: 76 percent customer satisfaction with service contacts by telephone (actual status).
5. Is there an operational need?	5. Yes: Eliminate the 20 percentage point gap between the desired status and the actual status.
6. Have job performance standards been set for achieving the operational goal?	6. Yes: Maximum of three automated call menu selections and maximum average wait time of ninety seconds before reaching a live service representative (desired status).
7. Are job performance standards being met?	7. No: Average wait time more than two and a half minutes and wait time for 17 percent of calls more than five minutes (actual status).
8. Is there a job performance need?	8. Yes: Eliminate the sixty-second gap between the desired status and the actual status.
9. Are there external factors outside the control of local management that are contributing to operational and job performance needs (e.g., government regulations, corporate hiring freeze, labor contract, corporation's national contract with telephone service provider)?	9. No: Operational and job performance needs appear to be within the control of local management.
10. Are there internal factors within the control of local management that are contributing to job performance needs?	10. Yes: Work flow, logistics, employee skills, man hours.
11. Are there solutions for the performance needs?	11. Yes: Work flow—redesign call routing. Logistics—accelerate computer acquisitions. Employee skills—create job aid with training. Person hours—hire technicians from temp agency.

In solving the performance problem described in our example, the training director followed a *performance relationship map* formulated by Robinson and Robinson (2008) for organizing performance analysis efforts. The strategy of the relationship map is to relate a problem that has been voiced to a core organizational or business outcome and then check operational goals and performance standards related to that outcome. Table 2.1 is a summary in question and answer form of the relationship map process for performance analysis.

The purpose of a performance analysis study as depicted in Table 2.1 is to acquire information in order to verify problems and identify solutions. The outcome of a performance analysis study is a clear description of a problem in terms of failure to achieve desired organizational results and the corresponding desired and actual employee performance, evidence of the causes of the problem, and suggested cost-effective solutions. Note that although an instructional designer may guide or participate in a performance analysis study, there is no assumption that instruction will be a component of the solution. These studies are often team efforts, and the results reflect what is possible given a wide range of organizational resources. An important consideration in selecting a solution is cost, and instruction is often one of the more expensive alternative solutions. Experience has shown that under careful analysis, many organizational problems that previously were addressed by training are now solved via multicomponent solutions that may or may not include training. If part of the solution is training on new skills or rejuvenating existing skills, then plans for a needs assessment and an instructional design project are made.

Performance Analysis in a Public School Setting The term *performance analysis* is seldom used in public schools, but the same kind of critical thinking is applied routinely to solve problems involving administrator, teacher, and student performance. For an example focusing on student performance, assume the principal of an elementary school was reviewing results from the state standards test and saw that fifth-grade students were well below the state average for finding and using information resources, and low performance on this section of the test was pulling down the overall fifth-grade performance profile. The principal explained the student performance problem to the assistant principal (AP) for curriculum and said, "We need in-service training for the fifth-grade teachers and the media specialist in information literacy skills. Will you please arrange it?" The AP said she would take care of it, but before she looked into scheduling in-service training, she did some investigating. Here are some of the steps she took and information that she found:

- She checked the state standards and found that an *information-literate person* recognizes when information will help solve a problem, chooses the best sources for valid and timely information, organizes and synthesizes the new information, and writes and displays the information appropriately for the problem. (*Information literacy* is the current term for library skills or research skills.)
- She compared the state benchmarks and skills in information literacy with sample test items and old exams that had been released to the public. The benchmarks and test items required both recall of information and application of information and concepts to solve problem scenarios. The test items seemed to be valid measures of the skills.
- She looked at scheduling and found that each class rotated through the media center once a week for forty minutes of contact time. She observed several fifth-grade classes during their media center visits and noted that the students had only fifteen to twenty minutes for learning information skills after getting organized and settled down, checking books in, browsing for new books,

checking new books out, and taking Accelerated Reader quizzes. The fifteen to twenty minutes of instructional time did seem to be relevant, focused, and on task, but she didn't observe much follow-up when the students went back to their classrooms.

After her investigation, the AP briefed the principal on some tentative conclusions and decided to meet with the fifth-grade teachers and the media specialist. In the meeting, she became convinced they all had a good grasp of information literacy skills, but none were very pleased with how they were teaching the content. They all believed they did not have time to go beyond a simple descriptive level and work with the students on applying the skills. The teachers admitted they did not spend much time in the classroom following up on the instruction in the media center because of pressure to keep test scores up in reading, writing, and arithmetic, confirming the AP's observations of what was happening in the media center and the classrooms. The group concurred on the need for raising students' state test performance on using information resources and, agreeing they had to change their instructional practices, decided on the following action plan:

- Free the media specialist to attend the fifth-grade teachers' group meetings for collaboratively planning a strategy for embedding information skills within classroom language arts instruction.
- Free the media specialist for team teaching time in the fifth-grade classrooms.
- Upgrade from the desktop to the networked version of Accelerated Reader software so students could take AR tests and monitor progress in their own classrooms, thus freeing up instructional time during class visits to the media center.
- Implement an intensive learning improvement program with instruction containing embedded assessments, remediation, and enrichment.

The AP reported to the principal that she and the teachers believed they had a plan for solving the state test performance problem, but it would require some resources. The principal concurred and said the money was available for the software upgrade. Freeing the media specialist would be more difficult, but money for a part-time media center clerk might be available from the PTA, the School Improvement Team's discretionary funds, a district budget for performance improvement projects, or from a combination of those sources.

Although the AP would not have described her investigation as performance analysis, she was using good, solid, problem-solving methods to look for the causes of the students' poor test performance. In-service training would not have improved student test scores, because the media specialist and teachers knew the content and how to teach it; the constraints in their school schedule prevented them from doing so. The need was for changes freeing sufficient time for students to learn application of the information literacy skills.

The examples from business and education both illustrate instances where instruction was not the primary solution for a problem. *Analyzing Performance Problems,* by Mager and Pipe (1997), describes a useful decision process for identifying performance problems caused by circumstances other than instruction. Their process is distilled into a straightforward flowchart that is easy to understand and apply. Lundberg, Elderman, Ferrell, and Harper (2010) describe a case study of performance analysis in a retail customer service setting wherein training proved to be a small part of an overall performance solution. When instruction is indeed the solution or part of the solution, then needs assessment is an important tool for getting the instructional design process on track for effective results.

Needs Assessment

The logic of needs assessment can be summarized as a simple equation:

Desired status – Actual status = Need

Needs assessment is sometimes called *discrepancy analysis.* The discrepancy is the observed difference between the desired status and the actual status. The processes involved in conducting a large-scale needs assessment can be very sophisticated, but the logic of needs assessment is simple. Needs assessment logic is used as a tool in the performance analysis in Table 2.1. For example, look at steps 3 through 5, and then at steps 6 through 8. There are three components of needs assessment logic. The first is establishing a standard or goal referred to as the *desired status*—for example, ten fiction books in the school library for each student enrolled, 90 percent on-time arrivals for city busses, a 40 percent gross profit margin on hardware sales, or 95 percent pass rate for students in the school district taking the functional literacy examination. The second component is determining the actual status or existing level of performance on the standard or goal—for example, eight fiction books per student, 77 percent on-time arrivals, 43 percent gross profit margin, and 81 percent of students passing. The third component is identifying the gap between desired status and actual status, thereby describing a need. This gap is referred to as the *discrepancy.* The discrepancies in our examples are the school library needs two more fiction books per student; the city bus system needs 13 percent more on-time arrivals; gross profit margin is fine because actual status exceeds desired status; and the school district needs to increase the percentage of students passing the functional literacy examination by 14 percent.

It has been noted that managers or executives often describe problems in terms of *actual status,* or the way things are now. Examples are "Our deliveries are late," "Not enough of our students got to the district spelling bee," "Our sales are down," and "Too many of our students are failing the basic skills test." For actual status and performance to have meaning in needs assessment, the investigator must establish standards for a desired status and then further identify exactly how late the deliveries are, how many students made the district spelling bee, how far sales are down, and what percentage of the students are failing the basic skills test.

Careful descriptions of both desired and actual status are required, because a *gap* or *need* is defined as a comparison between the two. The gap of greatest consequence is in organizational results. If it turns out that there is no gap, then there is no need and no change is required, and obviously there is no requirement for new instruction or training. This is the situation whenever any organizational officer (including a school board member) surveys a situation and indicates that it is satisfactory—the desired and actual are the same, and there is no need for change.

We have seen that needs assessment logic is one of the tools used in performance analysis. If performance analysis indicates that training is one of the best solutions for a performance problem, then needs assessment is used again, and is called *training needs assessment* or *learning needs assessment,* and results in instructional goals for beginning an instructional design project. Recall that in the example of the customer service performance analysis, the training director noted that 16 percent of computer downtime was due to simple configuration fixes and crash reboots with which inexperienced customer service representatives were not familiar. She decided that this was a training problem and volunteered to develop a job aid and training for workstation "first aid." At this point, she would probably turn the task over to an ID project manager, whose

first thought would be, "What is the real scope and nature of the performance problem that I want to solve through training?" Training needs assessment could help him answer his question. He could apply the three components of needs assessment logic: (1) working with subject-matter experts in IS to develop realistic standards for workstation first aid performance by customer service representatives (desired status); (2) studying work orders and maintenance logs and observing, interviewing, and perhaps testing customer service representatives (actual status); and (3) describing the gaps between standards for performance and actual performance levels (needs). Through this needs assessment work, the project manager could state a job performance standard for use by management in tracking the success of training and an instructional goal for beginning an ID project. The job performance standard could be, "Customer service representatives will solve 95 percent of simple desktop configuration and crash reboot problems," and the instructional goal could be, "Using a decision tree job aid, customer service representatives will diagnose simple desktop configuration and crash reboot problems and fix the problems without help from coworkers, supervisors, or IS technicians." Chevalier (2010) provides a cautionary note about stating instructional goals, suggesting that there are instances when interim goals are appropriate that do not address the entire gap between actual and desired levels of performance.

Kaufman and Guerra-Lopez (2013), Kaufman, Herman, and Watters (2002), and Gupta et al. (2007) provide many insights into the needs assessment process, including the distinction between *means* and *ends* in terms of what organizations do and areas in which organizations have problems. Consider the following example from the public schools.

It is not unusual to hear principals say their teachers *need* to know more about mobile computing. As a result, a workshop is provided so teachers can all become more competent. In this situation, teacher skills should be viewed as a means to an end, to turn out more competent students. If the real needs assessment issue is, "What are the desired computer skill levels and the actual computer skill levels of the students?" and, "If there is a gap and a need here, then what are the various solutions to upgrade those skills?" a workshop for all teachers may or may not be the best solution. Kaufman (1998) urges us to examine gaps in organizational results rather than internal processes when we begin to identify needs and make plans for spending organizational resources to meet these needs.

Needs assessment is a critical component of the total design process. Trainers and educators must be aware that the creation of unnecessary instruction has a tremendous cost in dollars and encourages detrimental attitudes in students involved in pointless learning activities and managers paying for training that does not solve problems. Therefore, more emphasis is being placed on front-end analysis, performance analysis, and other approaches for identifying needs more accurately. In the past, it was common for survey instruments to be the major means of identifying and documenting training needs. Today, surveys are being supplemented or supplanted with more insightful interviews and direct observations of performers.

Job Analysis

An important component of front-end analysis is *job analysis,* or the process of gathering, analyzing, and synthesizing descriptions of what people do in their jobs. Job analysis is a managerial activity that gained popularity in the late 1800s and early 1900s with time-and-motion studies and has evolved to serve many roles within the human resource development function, including (1) human resource forecasting and planning; (2) selecting and recruiting personnel;

(3) ensuring equality of employment opportunity; (4) designing performance reviews; (5) developing compensation plans; (6) designing and redesigning jobs; and (7) planning training, job aids, performance support systems, and employee development. Current descriptions of what people do in their jobs are particularly useful in an era of constant, rapid, technological change and job dislocation, because descriptions of what people do provide a baseline for making decisions about redesigning jobs for organizational effectiveness, personal productivity, and job satisfaction. A typical process used to perform job analysis includes

- Creating an initial list of job tasks
- Surveying experts and job incumbents about the accuracy of the task named
- Summarizing those tasks reported as critical
- Naming high priority tasks for further review
- Performing a task analysis for tasks judged as high priority

In creating an initial list of job tasks for a particular job, the job is first characterized in general terms according to the people who work in the job and the environment surrounding the job. Following this description, there are typically two ways one can begin to establish the characteristics of a job: one way is to have experts actually observe workers performing the job and list the tasks they see performed; another way is to have those performing the job list all the steps they take as they perform the tasks. Regardless of the method used to derive the initial list of tasks, they are grouped according to common characteristics into categories called *duties* and then used to create an inventory.

After the task inventory is assembled, it is screened by asking subject-matter experts and job incumbents whether the tasks really are a part of the job, and the list is revised based on their judgments. The refined list of tasks is formatted as a survey, response scales and directions are added, and the survey is pilot tested. Response scales include such questions as: "Is this a task that you perform as part of your job?" "How frequently do you perform this task?" "What percentage of your workday do you spend on this task?" "How critical is this task to the success of your job?" and, "How difficult is this task to perform?" Following a final review and revision, the survey is duplicated and distributed to a sample of job incumbents. After return of the surveys, responses are summarized on a task-by-task basis, and high-priority tasks are chosen for further review. All of the processes described thus far in this general sequence are called *job analysis.*

The process of task analysis begins when the tasks chosen for further review are broken down into component elements, the relationships among elements are detailed, the tools and conditions involved in performing each element are described, and standards for successful performance are written. Task analysis work is complex, very labor intensive, and time consuming; therefore, it is usually done only when specifically required for job design and redesign and for the design and development of critical training. When job analysis is conducted in professional and technical training contexts, it is usually to answer questions about what job performance really is and to focus training resources on tasks that offer a high probability of gains in job efficiency, effectiveness, and satisfaction.

In summary, instructional goals are ideally derived through a process of performance analysis that establishes rather broad indications of a problem that can be solved by providing instruction. Then a needs assessment is conducted to determine more specifically what performance deficiencies will be addressed, and an instructional goal is stated. Sometimes further examination of that goal is undertaken, either in the context of a curriculum or a job analysis. As a result, more refined specific statements of instructional goals emerge that focus on what learners are able to do and the context in which they are able to

do it. Regardless of the procedure used to generate a goal, it is almost always necessary for the designer to clarify and sometimes amplify the goal in order for it to serve as a firm starting point for the instructional design process. Many goals are abstract or fuzzy, and designers must learn how to cope effectively with them.

Clarity in Instructional Goals

Mager (1997) described a procedure that the designer can use when a vague, nonspecific goal is encountered. A *fuzzy goal* is generally some abstract statement about an internal state of the learner, such as *appreciating, having an awareness of,* and *sensing.* These kinds of terms often appear in goal statements, but the designer does not know what they mean because there is no indication of what learners would be doing if they achieved this goal. Designers assume that at the successful completion of their instruction, students should be able to demonstrate that they have achieved the goal; but if the goal is so unclear that it is not apparent what successful performance would be, then further analysis must be undertaken.

To analyze a vague goal, first write it down. Then indicate the things people could do to demonstrate that they had achieved that goal or what they would be doing if they were performing the goal. Do not be too critical at first; just write everything down that occurs to you. Next, sort through the statements for those that best represent what is meant by your unclear goal. Now incorporate each of these indicators (there may be one or quite a few) into a statement that tells what the learner will do. As a last step, examine the goal statement and ask yourself this: If learners achieved or demonstrated each of the performances, would you agree that they had achieved your goal? If the answer is yes, then you have clarified the goal; you have developed one or more goal statements that collectively represent the achievement of an important goal. In the Examples section of this chapter, we demonstrate how this process can be used with vague goals.

The designer should be aware of this type of goal analysis procedure because many critical educational and training goals are not initially stated as clear and concise descriptions of performances of learners. They often are stated in terms that are quite meaningful (in general) to the originator, but have no specifics that the designer can use for developing instruction. Such goals should not be discarded as being useless. An analysis should be undertaken to identify specific performance outcomes that are implied by the goal. Often, it is helpful to use a number of knowledgeable people in the process so that you see the range of ideas that can emerge from the goal and the need for consensus on specific behaviors if truly successful instruction is to be developed.

Learners, Context, and Tools

Whereas the most important aspect of an instructional goal is the description of what learners will be able to do, that description is not complete without an indication of (1) who the learners are, (2) the context in which they will use the skills, and (3) the tools that will be available. A preliminary description of these aspects is important for two reasons. First, they require the designer to be clear about exactly who the learners will be rather than making vague statements or allusions to groups of learners. It is not unheard of for a design project to come to a halt when it is discovered that there are no learners available to receive the instruction. In essence, the instruction has no market.

Likewise, from the very beginning, a project designer must be clear about the context in which the skills will be used and whether any aids or tools will be available. We refer to this as the *performance context.* For example, if learners are going

to be using computational skills, will they have access to calculators or computers? In the performance context, will they be working at a desk, or will they be on their feet talking to a customer? Must information be available from memory, or can a computer-based performance support system be used? Information about the performance context and the characteristics of the people who will be receiving the instruction is extremely important as the designer begins to analyze exactly what skills must be included in the instruction. Eventually, the information will be used to select instructional strategies to promote the use of the skills, not only in the learning context but also in the context in which they are eventually intended for application.

A complete goal statement should describe the following:

- The learners
- What learners will be able to do in the performance context
- The performance context in which the skills will be applied
- The tools that will be available to the learners in the performance context

An example of a complete goal statement would be the following: "The Acme call center operators will be able to use the Client Helper Support System to provide information to customers who contact the call center." All four components of a goal statement are included in this statement.

Criteria for Establishing Instructional Goals

Sometimes the goal-setting process is not totally rational; that is, it does not follow a systematic needs assessment process. The instructional designer must be aware that instructional design takes place in a specific context that includes a number of political and economic considerations as well as technical or academic ones. Stated in another way, powerful people often determine priorities, and finances almost always determine the limitations of what can be done on an instructional design project. Any selection of instructional goals must be done in terms of the following three concerns:

1. Will the development of this instruction solve the problem that led to the need for it?
2. Are these goals acceptable to those who must approve this instructional development effort?
3. Are there sufficient resources to complete the development of instruction for this goal?

These questions are of great importance to the institution or organization that will undertake the development.

We cannot overemphasize the importance of being able to relate logically and persuasively the goals of instruction to documented performance gaps within an organization. When instruction is developed for a client, the client must be convinced that if learners achieve the instructional goals, then a significant organizational problem will be solved or an opportunity will be realized through the use of the new skills. This kind of reasoning is as applicable to the development of instruction in public schools as it is to business, military, and public agencies.

The rationale for an instructional goal may help garner support from decision makers, but the designer and managers must be assured that there is sufficient time and resources for both the development of the instruction and its delivery. Most designers would agree that there seldom is sufficient time for either. One reason is that predicting the amount of time required to carry out a project is difficult. Another is that organizations often want something "yesterday!"

Not only is it difficult to predict how long it will take to develop instruction, but it is also difficult to predict how long learners will take to master the instructional goals (i.e., how long the instruction will last). No readily accepted rules of thumb relate instructional (or learning) time to skills mastered. So many factors are involved that time estimates are difficult to make.

The most likely scenario is that the designer is told, "You have three weeks to develop a four-hour workshop." Until an organization has experience in making these decisions, they are based on immediate conditions in the work setting. Certainly, the designer can shorten or lengthen instruction to fit the time available, but the primary instructional concern is to select the best possible instructional strategies for teaching the skills that must be mastered and then determine how much time is required. Obviously, we can make more accurate learning-time estimates after several tryouts of the instruction.

The designer should examine additional questions when contemplating an individual project. Assuming that a need has been established and that time and resources are available, then the designer should determine whether the content is stable enough to warrant the cost of developing it. If it will be out of date in six months, then extensive instructional development is probably not warranted.

In addition, the instructional design process depends heavily on the availability of learners to try out the instruction. Without access to appropriate learners, the designer will be unable to implement the total design process. A few learners are needed to try out rough draft versions of the instruction. If they are not available, then the designer will have to alter the ID process and may want to reconsider the validity of the need.

The final concern is the designer's own expertise in the subject matter of the instruction that will be developed. Experienced professional designers often work in teams involved in a content area that is, at least initially, totally foreign to them. The ability and willingness to work in teams is one of the most important characteristics of a successful designer. A great deal of content learning must take place before the designer can work effectively. For those just learning the design process, it is preferable to begin with a content area in which they already have subject-matter expertise. It is a lot easier to learn one new set of skills, namely instructional design skills, than it is to learn two new sets of skills—both content and process—at the same time.

If you have chosen (or are required) to design an instructional package as you work through the chapters of this book, the process will consume many hours of your time. Before you select or identify an instructional goal, review the criteria listed in this chapter. It is particularly important (1) that you have the expertise to deal with the subject matter, (2) that learners are available to you to help evaluate and revise the instructional materials, and (3) that you have selected a goal that can be taught in a reasonable amount of time.

Examples

Three examples of the procedures used to develop instructional goals may help you formulate or evaluate your own goals. All three examples are based on an identified problem, needs assessment activities, and a prescribed solution to a problem. Each example has its own scenario to help clarify the context of the problem and the process used to identify the goals. The first example concerns providing friendly customer service in a banking context. The second example on group leadership training is the Case Study for this chapter. For a third example from a school learning context, see the School Learning Case Study: Sentence Variety in Appendix A.

Providing Customer Service

For this example, a local bank noticed a problem with low customer satisfaction ratings in its branch offices, primarily from customers completing lobby transactions with tellers and with customer service representatives. Informal performance analysis indicated that a satisfaction problem did indeed exist, stemming from customers' perceptions that bank personnel were often impersonal and sometimes short in their dealings. Unable to determine immediately whether bank personnel did not know how or did not take the time to interact in a polite, friendly, and businesslike manner, further investigation revealed a common feeling of needing to hurry through a transaction so that other customers would not be kept waiting. However, an even more significant factor was that many employees did not know simple routines for courteous business interactions and did not have strategies for maintaining personalized contact with customers during high-volume times in the lobby. Training would certainly be part of an effective solution and the following instructional goal was identified:

Personnel will know the value of courteous, friendly service.

Although we can all agree that the intentions of this goal are sound, it can be classified as fuzzy and should be clarified. Simply because a goal is fuzzy does not mean it is not worthwhile. Just the opposite—it may be very worthwhile, as in this particular case of a goal that is common to many banks, even though it may still need some work.

First, the phrase *will know the value of* can be changed to *will demonstrate* in order to communicate better what is expected of personnel. Second, we must determine exactly what personnel are expected to demonstrate. We can begin this task by dividing the comprehensive term *service* into more interpretable main parts. We chose to define service as (1) a greeting to the customer, (2) a business transaction, and (3) a conclusion. Even with these two relatively minor changes, the goal is much clearer.

Original Goal	**Restated Goal**
Personnel will know the value of friendly service.	Personnel will demonstrate courteous, friendly behavior while greeting customers, transacting business, and concluding transactions.

Although the goal is much better in the new form, there are still two terms, *courteous* and *friendly*, that remain to be clarified. By relating these two concepts to each of the three stages of service that have been identified, we can further clarify the goal. Before continuing, remember the five steps included in making a fuzzy goal clearer:

1. Write the goal on paper.
2. Brainstorm to identify the behaviors learners would demonstrate to reflect their achievement of the goal.
3. Sort through the stated behaviors and select those that best represent the goal.
4. Incorporate the behaviors into a statement that describes what the learner will be able to do.
5. Evaluate the resulting statement for its clarity and relationship to the original fuzzy notion.

To help with the brainstorming process of identifying behaviors implied by courteous and friendly, we described behaviors specific to each of the three stages of service. We also decided to consider behaviors that could be classified as discourteous and unfriendly in a bank setting. The behaviors bank personnel *could* demonstrate and *should not* demonstrate to be considered courteous and friendly are listed in Table 2.2. The descriptions of courteous and discourteous

table 2.2 Friendly and Courteous Behaviors during Business Transactions with Customers

DO	DON'T
Greeting the Customer	
1. Initiate greeting to customer (e.g., "Hello," "Good morning").	1. Wait for customer to speak first.
2. Say something to customer to make service appear personal: (a) use customer's name whenever possible; (b) say, "It's good to see you again," or "We haven't seen you for a while."	2. Treat customer like a stranger or someone you have never seen before.
3. If you must complete a prior transaction before beginning work, smile, verbally excuse yourself, and say you will only need a moment to finish your current task.	3. Simply continue working on a task and fail to look up or acknowledge a customer until you are ready.
4. Inquire, "How may I help you today?"	4. Wait for customer to initiate conversation about service needed.
Transacting Business	
1. Attend to the customers currently waiting in your line. If you must leave your station, simply inform newly arriving customers that your line is closing and invite them to begin waiting in an alternate line.	1. Shuffle customers to another line after they have waited in yours for a while.
2. Listen attentively to customer as he or she explains problem or service desired.	2. Interrupt customers, even though you believe you know what they are going to say and can see by the paperwork the type of transaction they wish.
3. Keep customer's business as the primary focus of attention during transaction.	3. Chat with employees or other customers, thereby delaying current customer.
4. Complete any missing information on the form yourself, explaining to the customer what you have added and why.	4. Simply inform customers they have incorrectly or incompletely filled out a form, thereby making it their problem.
5. Give complete, clear instructions for additional forms that the customer should complete.	5. Simply say, "Complete these other forms and then come back."
Concluding Transaction	
1. Inquire whether they need any additional services today.	1. Dismiss a customer by focusing your eyes on the next customer in line.
2. Thank the customer for his or her business.	2. Act like you have done him or her a favor by completing the transaction.
3. Verbally respond to any comments that the customer may have initiated (e.g., the weather, a holiday or upcoming vacation, your outfit or haircut, new decorations).	3. Let customer-initiated comments drop as though unnoticed.
4. Conclude with a wish for their well-being (e.g., "Take care," "Have a nice trip," "Have a nice day," "Hurry back.").	4. Allow customers to walk away without a final comment or wish for their well-being.

behaviors can be given to bank administrators for additions, deletions, and further clarification.

When the list of representative behaviors is as complete as you can make it, review it at each stage of service to identify key behaviors that best represent the instructional goal. Based on the sample list, we restate the instructional goal as follows. All three forms of the goal are included to enable comparisons for completeness and clarity.

Original Goal Personnel will know the value of courteous, friendly service.

Revised Version Personnel will demonstrate courteous, friendly behavior while greeting customers, transacting business, and concluding transactions.

Final Goal

- Personnel will demonstrate courteous, friendly behavior while greeting customers, transacting business, and concluding transactions by initiating conversation, personalizing comments, focusing attention, assisting with forms, and concluding with a "thanks" and a wish for the customer's well-being.
- *Learners, contexts, and tools:* The learners (personnel) are all bank employees who work directly with customers either in person, by telephone, or through written correspondence. The context is most typically the bank facility and spontaneous, interactive work with customers. Personnel will have no communication aids available to assist them in interacting with customers.

Although the final goal reflects only a subset of the behaviors generated during the brainstorming process, those selected convey the basic intention of the instructional goal. The complete list of courteous and discourteous behaviors that was generated should be saved as input for subsequent instructional analysis activities.

This example, related to clarifying a fuzzy goal, demonstrates that although taking a first step toward goal clarification can result in a clearer instructional goal, it may still be open to interpretation by instructional designers or instructors. Sometimes the goal must be clarified further by defining the actual behaviors to be demonstrated within each of the general categories included in the instructional goal.

A final concern when identifying instructional goals is the context in which the behavior will be performed. The instructional goal for bank personnel implies that the ultimate performance will be with customers in a bank. The performance context in which the goal is accomplished will have important implications for the instructional strategy.

Case Study: Group Leadership Training

This case study on group leadership training will serve as a running example to help the reader put the ID process together and will be included toward the end of every chapter between the Examples section and the Summary. Training effective group leaders is a common need in organizations ranging from education to business, industry, military, government, and community groups. Regardless of the context, any course of action dependent on productive group process requires effective group leadership. The setting for our case study is a master's degree program within a leadership department on a college campus.

The following paragraphs describe planning decisions based on needs assessment, the instructional goal, information for clarifying the instructional goal, and criteria for establishing instructional goals.

Leading Group Discussions

Performance Analysis The department chair noted that data summaries from exit interviews and surveys of graduating students indicate that students do not feel confident or comfortable leading group discussions aimed at solving an organization's problems. Although they believe it is a critical professional skill for them, they do not believe it was included in their coursework or addressed as a part of their internships or projects during the program. The chair of the program, realizing this was one of the department's primary goals, thought surely it was included somewhere in the program. Not wanting to replicate coursework or proliferate courses, she examined syllabi on record for the courses and studied the nature of students' self-selected internships for the past two semesters. She interviewed faculty in the department regarding areas where this skill is currently taught and learned that the department previously required a semester-long communications course in the College of Arts and Sciences. This course was eliminated four years ago in an effort to streamline the curriculum. At that time, faculty agreed to include a unit on communication within several of the leadership department's remaining courses.

She then attended an annual meeting of the department's curriculum advisory board made up of professionals from education, business, and government throughout the state. This group reviews the department's current goals and recommends others related to trends and needs within their organizations. Prior to this meeting, she asked them to investigate the importance of the skill, "Leading group discussions aimed at identifying and solving the organization's problems," for their employees. In addition, she wanted their perceptions of their employees' abilities in performing this skill within their organizations. The advisory board reported the skill was critical for their employees and that new hires were often deficient in this area.

Needs Assessment The department's curriculum committee was provided with data from graduates' exit interviews and surveys and the department's advisory board recommendations. Committee members were charged with analyzing data from these groups, surveying current students, and discussing the issue with faculty from the communications department. They concluded that (1) the leader was the key person in determining the effectiveness of problem-solving groups, (2) leaders of the most effective groups had well-developed group discussion leadership skills, and (3) there was a chronic deficit of effective group leaders among their current students. They set about determining where within the existing curriculum and courses a unit on leading group problem-solving meetings could be added. They concluded that the goal did not merit a semester-long course, and they recommended instead a one hour mini-course that could be offered in conjunction with internships, between regular terms, or as a short summer course.

The department, on the recommendation of the curriculum committee, requested funds to develop a blended, web-based and classroom instructional mini-course of about 4 weeks duration. The instruction was to focus on group discussion leadership skills. Support for development was requested from the college's technology support unit and the college's computer-based learning center. Development stipends were requested for one faculty member and four graduate assistants in the areas of instructional design, communications, educational technology, and leadership. The funds were granted.

Clarifying the Instructional Goal The instructional goal is (1) a clear, general statement of learner outcomes that is (2) related to an identified problem and needs assessment and (3) achievable through instruction rather than some more efficient means such as enhancing motivation of employees.

What is the instructional goal? In this instance, the instructional goal is for masters students in the leadership department to demonstrate effective discussion group leadership skills in problem-solving meetings. These discussions should be focused on encouraging colleagues to attend meetings, helping them identify problems on campus and in the community, and planning programs to help reduce identified problems.

What is the relationship between the goal and the needs assessment study? The instructional goal is directly linked to the needs assessment study and to the curriculum committee's recommendations about effective leadership at the campus and community levels. It is also directly related to evidence that effective discussion group leadership was highly correlated with effective groups within organizations.

Does instruction appear to be the most effective way to achieve the goal? Developing effective discussion group leadership skills is directly related to instruction and practice, and these competencies are not likely to be developed through cursory coursework or activities within internships.

Who are the learners? The learners are masters level students enrolled in a course in the leadership department. They have various undergraduate degree areas of study, they are at varying places within the department's coursework sequence, and they have developed varying group leadership skills through community organizations, membership in quality teams at work, or formal employment as managers, or supervisors. Some will have had instruction in small-group leadership at the undergraduate level. They have selected leadership as a major area of study, so they are motivated to acquire or refine their skills as a leader among their colleagues.

In what context will the skills be used? Leaders will use their group discussion skills in planning for meetings on campus and in the community and in providing leadership for the discussions that occur during the meetings. These meetings may occur on campus or in a variety of education, business, or government organizations.

What tools are available to aid learners' performance in the actual context? There is no formal support for further developing and refining discussion group leadership skills other than practice, practice, practice. Some organizations may have staff development personnel to aid group leaders; others will not have them.

Criteria for Establishing Instructional Goals Instructional designers can use certain criteria to help ensure that instructional goals warrant the cost and effort of designing, developing, and field-testing instruction. The group leadership instructional goal is examined in the following paragraphs using these criteria.

Is the instructional goal acceptable to administrators? In this instance, the leadership department chair requested the course as a requirement for students in the program and requested funds to support team members who will do the work. Prior to this, graduating students and curriculum advisory board members indicated a need for these skills, and the curriculum team endorsed the project.

Are there sufficient resources (time, money, and personnel) to develop instruction? The department requested funds to support a faculty member and four graduate students to complete the work. These individuals will be supported technologically by the college's educational technology and computer laboratory groups.

Is the content stable? The content and skills underlying effective group discussion leadership are very stable. In fact, traces of John Dewey's 1910 book, *How We Think,* can be seen interwoven in modern texts on problem-solving discussions and productive teamwork in business, education, government, service, and recreation organizations.

Are learners available? Learners are available for participating in both the development and implementation of the instruction, because this will be a required course in the department. It is predicted that it will enroll 20 to 25 students each time it is offered. During the developmental term, the course will be limited to 20 students.

This case study example demonstrates that instructional goal definition and refinement can be a lengthy and complex process that incorporates many people in the identification of problems, performance analysis, needs assessment, and statements of clear instructional goals. However, if instruction is to address real problems faced by an organization and reflect actual goals, then this process is necessary.

Readers are reminded that a case study focused on school learning is available in the Appendixes. These materials are beneficial in part because they are collected together rather than spread through the chapters of the text. Readers can easily progress from one design document to the next and see the progress of the design. Appendix A provides examples of front-end analysis and determination of instructional goals relevant to this chapter. It is important to remind you that our purpose in using these particular case studies is not to teach how to lead meetings or to write sentences. These examples were chosen to be completely transparent so that you can "look through" the familiar content to the design concepts and skills. It is extremely difficult to learn unfamiliar content using other unfamiliar content. For additional case studies in instructional design, readers are referred to Ertmer, Quinn, and Glazewski's *ID Casebook* (2013).

Summary

Instructional goals are clear statements of behaviors that learners are to demonstrate as a result of instruction. Typically derived through a front-end analysis process and intended to address problems that can be resolved most efficiently through instruction, instructional goals provide the foundation for all subsequent instructional design activities.

Instructional goals are selected and refined through a rational process that requires answering questions about a particular problem and need, about the clarity of the goal statement, and about the availability of resources to design and develop the instruction.

You should answer several questions about the problem and need:

1. Is the need clearly described and verified?
2. Is the need foreseeable in the future as well as currently?
3. Is the most effective solution to the problem instruction?
4. Is there logical agreement between the solution to the problem and the proposed instructional goals?
5. Are the instructional goals acceptable to administrators and managers?

Questions you should answer related to the clarity of the instructional goal include the following:

1. Do the behaviors reflect clearly demonstrable and measurable behaviors?
2. Is the topic area clearly delineated?
3. Is the content relatively stable over time?

Questions to be answered related to resources include the following:

1. Do you have expertise in the instructional goal area, or reliable access to those who do?
2. Are the time and resources required to complete the project available to you?
3. Is a group of learners available during the development process in order for you to evaluate and refine your instruction?

Frequently, the instructional goal is a very general statement of behaviors and content that must be clarified before some of the preceding questions can be answered. The procedure recommended for clarifying instructional goals includes the following steps:

1. Write down the instructional goal.
2. Generate a list of all the behaviors the learners should perform to demonstrate that they have achieved the goal.
3. Analyze the expanded list of behaviors and select those that best reflect achievement of the goal.
4. Incorporate the selected behaviors into a statement or statements that describe what the learners will demonstrate.
5. Examine the revised goal statement and judge whether learners who demonstrate the behaviors will have accomplished the initial broad goal.

Rubric for Evaluating Instructional Goals

The rubric that follows contains a summary of the criteria you can use to evaluate and refine your instructional goals. It includes the main areas of congruence with the organization's needs, the feasibility of the goal, and its clarity.

Designer note: If an element is not relevant for your project, mark NA for not applicable in the No column.

No	Some	Yes	
			A. Congruence with Organization Needs Is/are the instructional goal statement(s):
___	___	___	1. Linked clearly to an identified problem in the organization?
___	___	___	2. Linked clearly to documented performance gaps?
___	___	___	3. Clearly a solution to the problem?
___	___	___	4. Acceptable to those who approve the instructional effort?
			B. Feasibility Does the plan include:
___	___	___	1. Stable content/skills over time to warrant investment/resources?
___	___	___	2. Sufficient designer expertise in instructional goal area?
___	___	___	3. Sufficient people to design/develop/deliver instruction?
___	___	___	4. Sufficient time to design/develop/deliver instruction?
___	___	___	5. An adequate number of learners for development/delivery?
			C. Clarity Do the instructional goal statement(s) describe the:
___	___	___	1. Actions of the learners (what they will do)?
___	___	___	2. Content clearly?
___	___	___	3. Intended learners?
___	___	___	4. Performance context?
___	___	___	5. Tools available to learners in performance context?
			D. Other
___	___	___	1.
___	___	___	2.

An appropriate, feasible, and clearly stated instructional goal should be the product of these activities. Using this clarified statement of learner outcomes, you are ready to conduct a goal analysis, which is described in Chapter Three.

PRACTICE

The following list contains several instructional goals that may or may not be appropriate based on the criteria for writing acceptable instructional goals stated in this chapter. Read each goal and determine whether it is correct as written or should be revised. If you believe it can be revised given the information available, revise it and compare your work with the revisions provided in the Feedback section that follows.

1. The district will provide in-service training for teachers prior to the administration and interpretation of standardized tests.
2. Students will understand how to punctuate a variety of simple sentences.
3. Salespersons will learn to use time management forms.
4. Teachers will assign one theme each week.
5. Customers will understand how to balance a checkbook.

The first step in developing a unit of instruction is to state the instructional goal. Several criteria can be used to help you select a suitable goal statement. From the following list of possible considerations for selection, identify all those that are relevant to a designer's selection of an instructional goal.

_____ 6. Personal knowledge and skills in content area

_____ 7. Stable content area

_____ 8. Time required for writing instruction versus the importance of students possessing that knowledge or skill

_____ 9. Students available to try out materials for clarity and revision purposes

_____ 10. Areas in which students have difficulty learning

_____ 11. Few materials available on the topic though instruction is considered important

_____ 12. Content area is fairly logical

An instructional goal must be stated as clearly as possible. From the following lists of considerations, select all those within each section that are important for writing instructional goals.

13. Clear statement of behavior
    a. Behavior required of the student is obvious in the goal.
    b. Behavior in the goal can be observed.
    c. Behavior in the goal can be measured to determine whether students have reached the goal.
14. Clear versus fuzzy goals
    a. Instructional goal includes a clearly stated behavior.
    b. Any limitations that will be imposed on the behavior are stated clearly.
15. Time
    a. Approximate instructional time required for students to reach goal.
    b. Approximate time you can devote to developing and revising instruction.
16. Following a district-wide needs assessment on middle school students' writing skills, teachers decided to design special instruction that focused students on:
    - Writing a variety of sentence types based on sentence purpose.
    - Using a variety of sentence structures that vary in complexity.
    - Using a variety of punctuation to match sentence type and complexity.

    Through instruction focused directly on the problems identified in the needs assessment, they hoped to change the current pattern of simplistic similarity found in students' compositions. Write an instructional goal for the instruction that can be used in the special unit on writing composition.
17. Write an instructional goal for which you would like to develop a unit of instruction.

FEEDBACK

1. The instructional goal should be revised because it describes what the district is expected to accomplish rather than the teachers. The goal could be rewritten in the following way to reflect two units of instruction commonly provided by school districts. Notice the behavior to be exhibited by teachers has been clarified.
    - Teachers will administer selected standardized tests according to the procedures described in the test manual.

- Teachers will interpret student performance on both individual and class profile sheets that are provided by the test maker.

2. The goal should be revised because the words *will understand* are too general. The goal could be rewritten to clarify exactly the behavior students will use to demonstrate that they understand how to punctuate sentences. In addition, the specific punctuation marks to be included in the lesson and used by students are included in the goal.
   - Students will punctuate a variety of simple sentences using periods, question marks, and exclamation points.
3. *Learn to use* states the intended outcome of instruction, but behavior used to describe what sales personnel will actually do might be clarified as follows:
   - Sales personnel will complete time management forms using daily, weekly, and monthly schedules.
4. This is not an instructional goal, but a description of the process teachers will use to enable students to practice composition skills; it totally ignores the nature of the skills students are expected to acquire during practice. Not enough information is included in the statement to enable the instructional goal to be rewritten.
5. The phrase *will understand* in the goal is imprecise. The instructional goal could be clarified as follows:
   - Customers will balance a checkbook using check stubs or a check register and a monthly bank statement.

6–12. If you selected all of the criteria, you are correct. Each criterion is an important consideration in developing an instructional goal. With regard to personal knowledge of the topic, experienced instructional designers often work with SMEs from a variety of context areas in which the designer has no expertise.

13–15. All considerations listed are important.

16. Compare your instructional goal for writing composition with this one: In written composition, students will: (1) use a variety of sentence types and accompanying punctuation based on the purpose and mood of the sentence and (2) use a variety of sentence types and accompanying punctuation based on the complexity or structure of the sentence. You should examine all the information related to the front-end analysis for the school curriculum case study located in Appendix A, which reflects the beginning point for a complete instructional design case study in a school context. Readers currently working in schools or planning to work in schools should benefit from this school-based example.
17. Refer to the criteria for evaluating instructional goals listed in the rubric for evaluating instructional goals shown earlier. Evaluate your topic using each of the following criteria statements:
    - Does your goal meet each criterion?
    - If it does not meet a particular criterion, can it be revised to do so?
    - If it does not meet a particular criterion and cannot be revised to do so, you may wish to write another instructional goal and try again.

    You may need help in determining whether your goal meets some of the criteria for topic selection, such as need or interest, possibly by discussing these issues with colleagues and students. Libraries and the Internet are good sources for determining whether materials on your topic are available and the nature of the available materials. Revise and rewrite your instructional goal as needed to meet the above criteria.

    You may check the clarity of your goal by asking colleagues and intended learners to interpret verbally the instructional goal you have written. Do they interpret the goal and the required behavior exactly as you intended? You may need to revise.

    If your goal is too big for the instructional time available (thirty minutes, one hour, two hours, etc.), consider dividing the goal into its logical major parts, reword each part as an instructional goal, and then select the part most suited to your needs and time constraints.

    If your goal is too small for the amount of time you desire, consider the skills the student will need to enter your instruction and the skills the student will be ready to learn as a result of completing it. By considering skills related to your goal in this fashion, you can identify the appropriate instruction to include for a specific period of time. Of course, you should revise your instructional goal to include more skills or information as required.

    Rewrite your instructional goal if necessary and begin Chapter Three after you have developed a clear, behaviorally stated instructional goal that you estimate will fit the desired amount of instructional time.

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