

S E V E N T H E D I T I O N

The Systematic Design of Instruction

WALTER DICK | LOU CAREY | JAMES O. CAREY



The Systematic Design of Instruction

seventh edition

The Systematic Design of Instruction

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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. Over the past thirty-five years, 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 and description of the intertwined elements that affect successful learning; it requires integral evaluation and refinement throughout the creative process.

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

The Systematic Design of Instruction simply and clearly introduces you to the fundamentals of instructional design, 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 design model, presenting background research that is 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 instructional design process.

Acquiring the instructional design ideas and skills presented here will undoubtedly change the way you approach creating instruction. This is not a textbook to be read and memorized. It is a textbook to be used in order for you to be able to create effective instruction. You will learn a systematic, thoughtful, inquiry-based approach to creation that helps ensure the success of those who use your instruction. For your learning to be most effective, however, 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 is a learn-by-doing textbook. This will help ensure that you can make the instructional design model from this learning experience an integral part of your own instructional design practices.

In this new edition we have retained the features that seem most important to readers of the previous editions and we have added new perspectives and features that keep the text current within the discipline, including:

- 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 context in which new skills will be used
- Application of instructional design concepts through a serial case study example carried through the steps of the design model in each chapter of the book
- A complete case study in the Appendixes (in addition to the one contained in the chapters) 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 instructional design
- An online Instructors' Manual that contains:
 - Course management plans for ten-week and fifteen-week terms
 - Goals and objectives for each step in the model
 - Illustrations of preinstructional materials
 - Goal analyses for each step in the model
 - Rubrics for evaluating instructional design and development products for each step in the model
 - An additional case study
 - Concept quizzes and application quizzes for each chapter of the text
 - An annotated listing of important web resources in the field of instructional design that support each chapter of the text
 - A listing of important organizations and journals in the field of instructional design

For reviewing the seventh edition of *The Systematic Design of Instruction*, we would like to thank Brian Beatty, San Francisco State University; Celina Byers, Bloomsburg University; Kendall Hartley, University of Nevada, Las Vegas; Jane B. Hutchison, William Paterson University; Catherine McCartney, Bemidji State University; and Virginia McGinnis, Edinboro University of Pennsylvania. In the spirit of constructive feedback, always an important component of the systematic design process, the authors welcome reactions from readers about ways in which the text may be strengthened to better meet their needs. Please send comments to the authors at the following e-mail addresses.

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TO THE INSTRUCTOR

We would like to share some of our experiences in teaching with this text. The fundamental decision that must be made by the instructor is to identify the instructional goal for the course. As in any instructional design effort, the nature of the goal will drive the instructional strategy and the evaluation.

The instructional goal can be expressed either as verbal information (i.e., list, describe, or recall various aspects of the instructional design process) or as an intellectual skill (i.e., apply the instructional design process in the creation of instruction). We refer to the first approach as the *knowledge approach* and the latter as the *product approach*.

When knowledge is the course goal, the text serves as a source of information. The role of the instructor is to amplify the principles presented in the materials, to provide examples, and to evaluate students' acquisition of the knowledge. *The Systematic Design of Instruction* is well suited to this type of instruction. It provides students with an instructional design model they can use to understand major concepts in the field of education. Ideas such as performance objectives and formative evaluation can be presented and understood in terms of the overall design, delivery, and evaluation of instruction.

The product approach to teaching instructional design requires that students not only know about designing instruction but also develop instructional materials. It is this approach that we personally have found to be most successful in teaching instructional design. From our experience, students learn more through actually developing instruction. Concepts that appear to be academic in the text become very real to students as they grapple with such decisions as how many test items they need or what kind of practice exercises to use. The personal motivation and involvement of students also tend to increase with each succeeding assignment as they begin to produce instruction in their own content areas. When students reach the one-to-one formative evaluation stage, they often become quite enthusiastic about observing learners as they interact with, and learn from, the materials the students have created. We believe that the product approach to teaching instructional design provides the greatest long-term return for students.

Instructional Strategy

The second major decision you, the instructor, must make in teaching instructional design is the instructional strategy you will use. First is the issue of the sequence of topics. The text presents the model components in the sequence typically followed when designing instruction. If the knowledge approach to the course is used, then it is likely that the components in the model will be presented as they appear in the text. If the product approach is used, then the component sequence and resulting instructional strategy may be different.

One possibility is to have students learn about a component in the model and then complete the developmental assignment related to that component. For example, after students read the chapter on instructional goals, they develop a goal for the instruction they plan to write. Then, after reading about instructional analysis procedures, they do an instructional analysis for their selected goal. This read-develop,

read-develop process continues until they complete the model. Even though this approach seems quite rational, students have commented that they would have done things very differently in the beginning of the development of their instructional materials if they had been knowledgeable about the components at the end of the model. Many students also have indicated that they needed more knowledge about the design process before making a significant commitment to developing instruction for a particular topic.

An alternative strategy for the product approach to teaching the class is best described as a cluster approach. In a semester course the students read several chapters in sequence each week. After several weeks, they identify their instructional goal and complete the first stage of analysis, the goal analysis. This demonstrates that they understand what they are going to teach, and the instructor can quickly work with students who are having trouble.

The first report submitted by the students includes their goal statement, goal analysis, subordinate skills analysis, and learner and context analysis. (Our evaluation sheets are shown in Table 1.) While the reports are being graded, students continue with their study of objectives, assessments, and instructional strategies. These then become the major contents of the second report. The students in our courses typically use illustrated text or simple media for the delivery mechanism for their instruction. They learn about developing materials and begin to write their instruction according to their instructional strategy. We have also taught instructional design in conjunction with a second course in computer-based and/or web-based instruction. The students who take both courses convert and present their instruction via computer and/or web.

While the students are writing their instruction, class time is spent learning about formative evaluation, and they begin as soon as possible to conduct their one-to-one evaluations. We require students to do three one-to-ones and use a small group with

table

1

Report Rating Scales

Report 1	Points	Score
1. Goal statement	5	_____
2. Goal analysis	10	_____
3. Subskills analysis	10	_____
4. Identification of entry behaviors	3	_____
5. Description of learner interview	3	_____
6. General description of learners	2	_____
7. Description of performance context, implications for instruction	3	_____
Total	36	_____
Report 2	Points	Score
1. Comments on revisions made since Report 1	0	_____
2. Attach copy of revised instructional analysis and goal statement	0	_____
3. Performance objectives	10	_____
4. Sample assessments for each objective	8	_____
5. Describe instructional sequence	2	_____
6. Describe preinstructional activities	2	_____
7. Information/example for each objective	10	_____
8. Practice/feedback for each objective	10	_____
9. Describe strategy for teaching terminal objective	2	_____
10. Describe student groupings and media selections	2	_____
11. Attach copies of pre- and posttests that will be used with the instruction	4	_____
Total	50	_____

table

Continued

1

Report 3	Points	Score
1. Comments on revisions made since Report 2	0	_____
2. Attach copy of instructional analysis and Report 2	0	_____
3. Describe learners, materials, and procedures used in one to ones	5	_____
4. Describe results of one to ones, revisions	10	_____
5. Enclose copy of instructional materials and assessments used in small-group evaluation	20	_____
6. Describe characteristics of small-group learners	3	_____
7. Describe all the materials and instruments used in the small-group evaluation	3	_____
8. Describe the procedures in small-group evaluation	5	_____
9. Present the data from small-group evaluation	12	_____
10. Discuss the small-group data	10	_____
11. Describe revisions to instruction and assessment	12	_____
Total	80	_____

table

Sample Semester Schedule

2

Class Session	Class Topic	Assignments Due
1	Course introduction	
2	Needs assessment and goal analysis	Chapters 1-3
3	Subskills analysis and entry skills	Chapter 4
4	Learner and context analyses	Chapter 5
5	Objectives and assessments	Chapters 6-7 Report 1 due
6	Developing an instructional strategy	Chapter 8
7	Developing instructional materials	Chapter 9
8	Formative evaluation procedures	Chapter 10
9	Consulting session with students	Begin writing instruction Report 2 due
10	Revising instruction	Chapter 11 Finish writing instruction
11	Discussion of projects	One-to-one formative evaluation
12	Consulting session with students	Small-group evaluation
13	Optional consulting session	Write report 3
14	Summative evaluation	Chapter 12
	Students' reflections on ID project	Report 3 due
15	Course summary	
	Report 3 returned	

at least eight learners. We do not require them to conduct the field trial phase—there just is not enough time in the semester. (See Table 2 for our semester schedule for the course.) We are insistent that students complete the first two phases of the formative evaluation process. Their third and final report consists of their instruction and their formative evaluation.

Classroom Activities

The selection of the knowledge or product approach to instruction has significant implications for course management strategies and, particularly, for the use of class time. If the knowledge approach is chosen, then the course will focus primarily on the knowledge objectives that are stated at the beginning of each chapter in the text. The pace of classroom activities can be slow enough to allow for discussion time and the

opportunity to talk about various examples and practice and feedback exercises. Students may learn the concepts best when they are required to provide their own examples.

If the product approach is used, the instructor must carefully monitor the weekly progress of the course to ensure that students have sufficient time to conduct the formative evaluation. In our experience talking with students who have used the text at other institutions, their greatest problem is moving through the course at a pace that allows time for the formative evaluation.

In our product approach to instruction, we provide some lectures to highlight important ideas, but we also use numerous class participation activities. Several sessions during the semester are considered workshops—students work in teams of three or four to review and critique the work of the other students in their group. This is excellent preparation for the group contexts in which many designers will work after graduation.

Evaluation of Student Products

We require that students prepare several reports that document their use of the systematic design process. We base our evaluation of students on these reports and on the instruction that the students create. Table 1 outlines the major components of these reports and shows the points allotted to each component. (The assignment of points is arbitrary; however, the points for the third report are approximately equivalent to the combined points for the first two.) This distribution is proportional to the amount of work represented by the reports and it keeps students motivated throughout the course (i.e., they can make up for early poor performance, or possibly detract from good performance, based on their performance on the final report).

For the instructor, the rating scales for Reports 1, 2, and 3 provide a convenient outline of the content that should be included in the documentation reports and the relative weighting of sections of the reports for evaluation purposes. If a component of a student's report fully meets a stated criterion, then the total points for the component should be assigned to the student. If some of the criteria are not met, then points should be deducted from the component accordingly. If the component is not included in the student's report, then no points should be given for it.

Using the Instructors' Manual

With this edition of the book we have introduced a powerful new feature to support the teaching/learning process for students and teachers. A complete online Instructors' Manual is available. The course models ID practice by providing chapter-by-chapter learning component support for each step in the Dick and Carey Model.

Preinstructional Activities

- Graphic depiction of where the design/development step fits into the model
- Statements of objectives for the design/development step
- Comments on why the design/development step is relevant for ID practitioners
- Descriptions of what is required in order to begin the design/development step

Content Presentation with Examples

- A goal analysis with selected subskills that serves as a "spatial outline" of the skills to be learned in each of the design/development steps
- A complete case study on banking
- A rubric that can be used by students and instructors for evaluating the products of each design/development step

Learner Participation

- A brief quiz with feedback for practicing new information and concepts learned in each design/development step
- A brief quiz with feedback for practicing new applications of knowledge and skills learned in each design/development step

To introduce ID students into the culture of the profession, the Instructors' Manual also includes links to important organizations and journals in the field, as well as annotated links to important web resources in the field. These annotated links are organized in a chapter-by-chapter structure so that they can be used conveniently to supplement assigned readings during a course or workshop.

It is the authors' intent that the Instructors' Manual will provide instructors with new tools that can be woven into the teaching/learning process. It should be particularly valuable in facilitating those teaching instructional design by distance learning because it can be used to provide some of the learning guidance that students normally expect in face-to-face instruction. The authors welcome your comments and suggestions on the Instructors' Manual and, more generally, on your use of *The Systematic Design of Instruction* for teaching ID concepts and practices.