教育部高等教育司推荐
国外优秀信息科学与技术系列教学用书

教学技术与媒体

（第八版　影印版）

INSTRUCTIONAL TECHNOLOGY AND MEDIA FOR LEARNING

(Eighth Edition)

■ Sharon E. Smaldino
James D. Russell
Robert Heinich
Michael Molenda

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前　言

20世纪末，以计算机和通信技术为代表的信息科学和技术对世界经济、科技、军事、教育和文化等产生了深刻影响。信息科学技术的迅速普及和应用，带动了世界范围信息产业的蓬勃发展，为许多国家带来了丰厚的回报。

进入21世纪，尤其随着我国加入WTO，信息产业的国际竞争将更加激烈。我国信息产业虽然在20世纪末取得了迅猛发展，但与发达国家相比，甚至与印度、爱尔兰等国家相比，还有很大差距。国家信息化的发展速度和信息产业的国际竞争能力，最终都将取决于信息科学技术人才的质量和数量。引进国外信息科学和技术优秀教材，在有条件的学校推动开展英语授课或双语教学，是教育部为加快培养大批高质量的信息技术人才采取的一项重要举措。

为此，教育部要求由高等教育出版社首先开展信息科学和技术教材的引进试点工作。同时提出了两点要求，一是要高水平，二是要低价格。在高等教育出版社和信息科学技术引进教材专家组的努力下，经过比较短的时间，第一批引进的20多种教材已经陆续出版。这套教材出版后受到了广泛的好评，其中有不少是世界信息科学技术领域著名专家、教授的经典之作和反映信息科学技术最新进展的优秀作品，代表了目前世界信息科学技术教育的一流水平，而且价格也是最优惠的，与国内同类自编教材相当。

这项教材引进工作是在教育部高等教育司和高教社的共同组织下，由国内信息科学技术领域的专家、教授广泛参与，在对大量国外教材进行多次遴选的基础上，参考了国内和国外著名大学相关专业的课程设置进行系统引进的。其中，John Wiley公司出版的贝尔实验室信息科学研究中心副总裁Silberschatz教授的经典著作《操作系统概念》，是我们经过反复谈判，做了很多努力才得以引进的。William Stallings先生曾编写了在美国深受欢迎的信息科学技术系列教材，其中有多种教材获得过美国教材和学术著作者协会颁发的计算机科学与工程教材奖，这批引进教材中就有他的两本著作。留美中国学者Jiawei Han先生的《数据挖掘》是该领域中具有里程碑意义的著作。由达特茅斯学院Thomas Cormen和麻省理工学院、哥伦比亚大学的几

位学者共同编著的经典著作《算法导论》，在经历了11年的锤炼之后于2001年出版了第二版。目前任教于美国Massachusetts大学的James Kurose教授，曾在美国三所高校先后10次获得杰出教师或杰出教学奖，由他主编的《计算机网络》出版后，以其体系新颖、内容先进而倍受欢迎。在努力降低引进教材售价方面，高等教育出版社做了大量和细致的工作。这套引进的教材体现了权威性、系统性、先进性和经济性等特点。

教育部也希望国内和国外的出版商积极参与此项工作，共同促进中国信息技术教育和信息产业的发展。我们在与外商的谈判工作中，不仅要坚定不移地引进国外最优秀的教材，而且还要千方百计地将版权转让费降下来，要让引进教材的价格与国内自编教材相当，让广大教师和学生负担得起。中国的教育市场巨大，外国出版公司和国内出版社要通过扩大发行数量取得效益。

在引进教材的同时，我们还应做好消化吸收，注意学习国外先进的教学思想和教学方法，提高自编教材的水平，使我们的教学和教材在内容体系上，在理论与实践的结合上，在培养学生的动手能力上能有较大的突破和创新。

目前，教育部正在全国35所高校推动示范性软件学院的建设和实施，这也是加快培养信息科学技术人才的重要举措之一。示范性软件学院要立足于培养具有国际竞争力的实用性软件人才，与国外知名高校或著名企业合作办学，以国内外著名IT企业为实践教学基地，聘请国内外知名教授和软件专家授课，还要率先使用引进教材开展教学。

我们希望通过这些举措，能在较短的时间，为我国培养一大批高质量的信息技术人才，提高我国软件人才的国际竞争力，促进我国信息产业的快速发展，加快推动国家信息化进程，进而带动整个国民经济的跨越式发展。

教育部高等教育司

二〇〇二年三月

Preface

Instructional Technology and Media for Learning, Eighth Edition, presents a complete range of technology and media formats in terms of how they can be integrated into classroom instruction using the ASSURE model of lesson planning. Written from the viewpoint of the teacher, the text shows specifically and realistically how technology and media fit into the daily life of the classroom. This book is intended for educators at all levels who place a high value on successful learning. Its purpose is to help them incorporate technology and media into their repertoire—to use them as teaching tools and to guide students in using them as learning tools. We draw examples from elementary, secondary, and post-secondary education, as well as corporate training and development, because we know that instructors in these different settings have found previous editions of this book useful in their work.

This new edition is necessitated by the amazing pace of innovation in all aspects of technology, particularly in those related to computers and computer networks, and especially the Internet. In the few years since the seventh edition, the digitization of information has accelerated rapidly and so has school use of new telecommunications resources, such as the Web.

Our Approach

We share a number of convictions that underlie every edition of this textbook. First, we believe in an *eclectic* approach to the design of instruction. Advocates cite an abundance of theories and philosophies in support of different approaches to instruction—behaviorist, cognitivist, constructivist, and so on. We view these contending theoretical positions as differing *perspectives*— different vantage points—from which to examine the complex world of teaching and learning. We value each of them and feel that each is reflected in the guidance we offer.

Second, we have a balanced posture regarding the role of technology in instruction. Because of this perspective we consider each technology in light of its advantages, limitations, and range of applications. No technology can be described solely as being either "good" or "bad," so we strive to give a balanced treatment to the hard and soft technologies, as well as to the simpler and more sophisticated media.

Third, we believe in the possibility of a rapprochement between the humanistic and technological traditions in education. We contend that technology and humanism are two separable dimensions. We demonstrate in Chapter 1 that it's easy to describe instructional arrangements that are high on both dimensions or low on both dimensions, as well as high on one and low on the other. We view them as complementary concepts.

Fourth, we believe that technology can best be integrated into instruction when viewed from the perspective of the teacher rather than that of the technologist. Therefore, throughout the book we attempt to approach technology and media solutions in terms of the day-to-day challenges of teachers and to avoid technical jargon as much as possible. Our examples deal with real, everyday teaching issues, in real content areas, involving real technology and media.

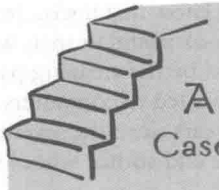
New Conceptual Framework

The first edition of this text introduced the ASSURE model—a procedural guide for incorporating technology and media into instruction. Now, in the eighth edition, in order to fully and clearly illustrate how the ASSURE model can be used in instructional practice, we introduce the **ASSURE Case Framework.** This framework, in

Chapters 4 through 12, shows how technology looks when effectively integrated into instruction; explains chapter content in light of the ASSURE model and effective instructional practice; illustrates how to integrate technology into lessons according to principles of effective instruction; provides clear examples of effective lessons using the ASSURE model; and offers opportunities for you to learn how to create effective lessons using the ASSURE model.

This ASSURE Case Framework consists of the four following key elements:

ASSURE Case Challenge. The Blueprints from the seventh edition have been reorganized to reflect a case-study approach for each of the media chapters. Engaging case scenarios are introduced at the beginning of Chapters 4–12 to illustrate how technology and media can be integrated into learning activities.

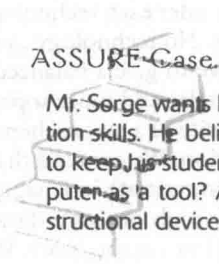


ASSURE
Case Challenge

We have developed a case study for this chapter to help you see how computers can be integrated into learning activities. At the end of the chapter you will be challenged to develop your own ASSURE lesson for a case study of your choice using the ASSURE model and incorporating the technology and media described in this chapter. To help you in preparing your lesson, we have included hints (called "ASSURE Case Connections") throughout the chapter as they relate to the ASSURE Case Challenge.

Dennis Sorge teaches pre-algebra to seventh- and eighth-grade middle school students. They are an average class with a range of abilities in math and reading. They have basic computation skills. Mr. Sorge wants to have his students practice their computation skills while applying them to concepts such as budgeting and making predictions. He wants to engage his students in learning within a real-world situation to make their math experiences more meaningful.

ASSURE Case Connection. This feature provides questions throughout the chapter to encourage readers to connect the chapter content to the ASSURE Case Challenge and classroom practice.



ASSURE Case Connection

Mr. Sorge wants his students to practice their computation skills. He believes he would like to use a computer to keep his students motivated. Would he use the computer as a tool? As an object of instruction? As an instructional device?

ASSURE Case in Practice. An expanded ASSURE Case Challenge, this end-of-chapter feature provides readers with a complete classroom example of technology integration using the ASSURE model.

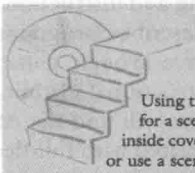
ASSURE Case in Practice: Mathematics

All of the ASSURE Cases in Practice in this text and an electronic template for creating your own ASSURE Lesson can be found on the enclosed "Classroom Link Portfolio" CD-ROM.

Dennis Sorge's middle school pre-algebra students enjoy competing with classmates while simulating the operation of a hotdog stand. The students practice their math skills while cooperating with one group of peers and competing against other groups.

3. Budget expenses using a budget planning sheet and be able to justify their decisions during a simulation.
4. Make predictions of sales based on previous sales and the weather forecast. The prediction will be within 20 percent of actual sales.
5. Deal with random events that influence outcomes. Students will be able to justify planning for random events before they happen and to justify their strategy for dealing with them after they happen during a simulation.
6. Plan and predict how they should stock a concession

Create Your Own ASSURE Lesson. After experiencing a full ASSURE Case in Practice, you can create your own lesson plan using the ASSURE model and scenarios provided on the Companion Website at www. prenhall.com/smaldino or your own available classroom situation.



Create Your Own ASSURE Lesson

Using the ASSURE model, design a lesson for a scenario from the table on this book's inside cover or from the Companion Website, or use a scenario of your own design. Use one of the methods described in Chapter 1 and information from this chapter related to incorporating computers and software into your instructional setting. Be sure to include information about the audience, the objectives, and all other elements of the ASSURE model. When completed, reflect on the process you used and what you have learned about matching audience, content, method, and materials.

Also New to This Edition

Not only have we updated the technological information and methodological perspectives, but we have made a number of other changes.

- *New organization.* The text has been reorganized into sections to facilitate understanding of chapter content. The chapters have been clustered, acknowledging the relationship of their themes. Computer-based technology chapters have been moved to an earlier location in the text based on suggestions by a number of users.
- *Skill Builder Exercises/Tutorials.* Located on this text's Companion Website (http://www.prenhall. com/smaldino), these practical tutorial and skill building activities give students a hands-on experience that build students' skills using popular software and hardware applications such as word processing, presentation software, spreadsheets, database applications, desktop publishing, Web page development and design, and bulletin board construction. Activities for these applications allow you to develop actual samples to use in P–12 classrooms.
- *New color photographs and drawings.* More than 300 photographs and drawings are now presented in full color.
- *Updated Classroom Link.* Building on the ASSURE Case Framework in the text, the "Classroom Link Portfolio" CD-ROM that accompanies the text has been significantly updated and expanded with a new, user-friendly design interface with the goal to develop artifacts for an on-going professional portfolio. You have the opportunity to build lesson plans using the ASSURE model, evaluate technology resources using Selection Rubrics that are available on the CD-ROM, and create records of activities as they complete the end-of-chapter portfolio projects. All of these CD-ROM activities are aligned with ISTE/NETS Standards. This CD-ROM is packaged in the back of this book.
- *Classroom examples.* We provide more examples of specific classroom applications of media and technologies across grade levels and subjects.
- *Media specialists' role.* We have made a special effort to draw the connections between the roles of teachers and school media specialists, portraying them as highly complementary and interdependent.
- *Expanded Companion Website.* The Companion Website (CW), at www.prenhall.com/smaldino, has been expanded and is integrated with the text and the CD-ROM to create a complete learning package. Additions include portfolio activities, Web-based activities, and skill builder exercises/tutorials, among other features. See the section titled "CW Resources for the Student" on page x for detailed CW content.

Text Organization

The book begins with a visual introduction—a series of vignettes that depict the many applications of technology and media in enhancing learning—and is divided into five parts organized by themes.

Part 1: Learning Foundations. This first section contains four chapters devoted to discussion of learning and the design of instruction to enhance learning. Chapter 1 discusses instructional technology, media, and learning. It identifies the purposes served by technology and media and provides theoretical grounding in communications and in the psychology of learning and instruction. Chapter 2 introduces the concept of instructional systems and describes programmed instruction, programmed tutoring, learning centers, cooperative groups, games, and simulations. Chapter 3 presents the ASSURE model for instructional planning. Readers who are already familiar with lesson planning procedures will find the ASSURE model more congenial than the more technical models associated with full-fledged instructional design. This chapter also presents general procedures for appraising, selecting, and using technology and media. Chapter 4 examines principles and procedures of visual design, an important foundation for use of visual media discussed in other chapters.

Part 2: Digital Environments. The four chapters in this section explore the use of digital environments for learning. Chapters 5 and 6 focus on computer-based technologies, including computer-assisted instruction, integrated learning systems, computers as student tools, multimedia, and hypermedia. Distance education is the focus of Chapter 7, with particular attention paid to online technologies, distance learning issues, broadcast radio and television, as well as audio and video teleconferencing. Chapter 8 focuses on online learning and the use of computer networks, including the Internet, the World Wide Web, intranets, wide area networks (WANs), and local area networks (LANs), to facilitate electronic learning.

Part 3: Traditional Media. The four chapters in this section focus on those media that have been used in learning settings for many years. Instructional materials and displays are described in Chapter 9. Topics include manipulatives, multimedia kits, field trips, printed materials, free and inexpensive materials, and display surfaces. Chapters 10 through 12 treat the common formats of media. Chapter 10 deals with visual media. Chapter 11 features audio media and the listening process. Video is examined in Chapter 12.

Part 4: Trends in Technology and Media. In Chapter 13 we consider the possible impacts of current trends in technology, training, and education. We discuss the emerging influences of computer-based media, telecommunications technologies, schools of the future, and workplaces of the future.

Part 5: Classroom Resources. Section A: "Photography and Visuals" includes information on photography, the parts of a camera, preserving visuals, multi-image presentations, and planning audiovisual presentations. Section B: "Equipment and Setups" provides nuts-and-bolts advice on setting up and handling media hardware, including setups for audio, visual projection, video, and computers. In Section C: "How To . . . Step-by-Step Guides," 30 media production and operation procedures are spelled out with illustrated step-by-step procedures, from "Developing Media Portfolios" and "Creating a *HyperStudio* Stack" to "Developing an Audiovisual Presentation," among others. Troubleshooting suggestions are included as part of these how-to discussions.

Glossary. The text concludes with a glossary of more than 400 technical terms used in this book and in general discussions of instructional technology and media, followed by a thorough index.

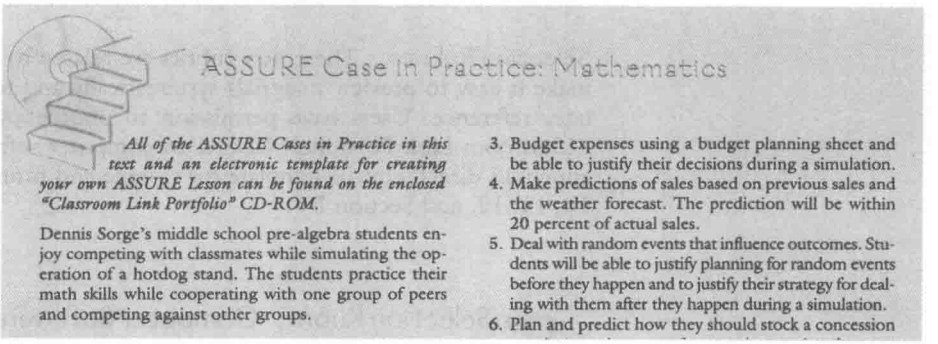
Special Features

See the index of Special Features on p. xxiii, following the Contents.

Advance Organizers. Each chapter begins with a brief outline and a set of knowledge objectives to provide a more concrete notion of what knowledge and skills are

featured in that chapter. Following the objectives is the "Professional Vocabulary," a list of technical terms or terms used in a specialized sense in that chapter. All of these features are intended to give you a strong set of advance organizers, scaffolds for the main content of the chapter.

ASSURE Case in Practice. As mentioned in preceding paragraphs, this end-of-chapter feature provides readers with a complete classroom example of technology integration using the ASSURE model. (Chapters 3–12)



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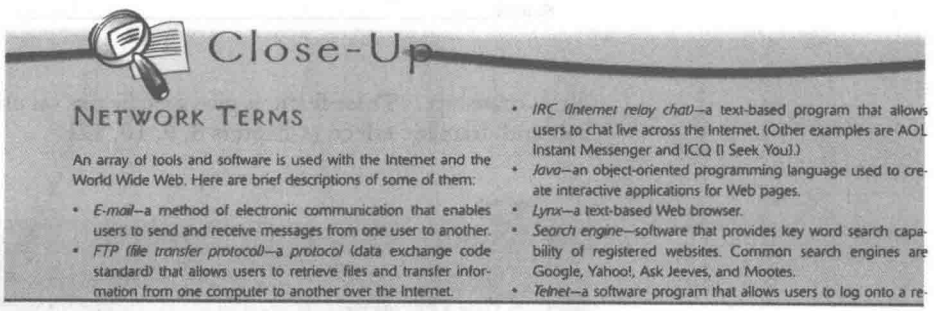
Close-Ups. These serve as miniature case studies of technology and media applications in a variety of settings. Like the ASSURE Cases in Practice, they show technology and media use *in context*. (All chapters)



Close-Up

NETWORK TERMS

An array of tools and software is used with the Internet and the World Wide Web. Here are brief descriptions of some of them:

- *E-mail*—a method of electronic communication that enables users to send and receive messages from one user to another.
- *FTP (file transfer protocol)*—a *protocol* (data exchange code standard) that allows users to retrieve files and transfer information from one computer to another over the Internet.
- *IRC (Internet relay chat)*—a text-based program that allows users to chat live across the Internet. (Other examples are AOL Instant Messenger and ICQ (I Seek You).)
- *Java*—an object-oriented programming language used to create interactive applications for Web pages.
- *Lynx*—a text-based Web browser.
- *Search engine*—software that provides key word search capability of registered websites. Common search engines are Google, Yahoo!, Ask Jeeves, and Mootes.
- *Telnet*—a software program that allows users to log onto a re-

Copyright Concerns. This feature provides students with an integrated discussion of copyright issues linked to specific chapter content. (Chapters 1, 5, 6, 7, 8, 9, 11, 12, 13)

Copyright Concerns

COMPUTER SOFTWARE

Congress amended the Copyright Act to clear up questions of fair use of copyrighted computer programs. The changes defined the term *computer program* for copyright purposes and set forth permissible and nonpermissible use of copyrighted computer software programs. According to the amended law, with a single copy of a program, you may do the following:

- Make multiple copies of a copyrighted program.
- Make additional copies from an archival or backup copy.
- Make copies of copyrighted programs to be sold, leased, loaned, transmitted, or given away.
- Sell a locally produced adaptation of a copyrighted program.
- Make multiple copies of an adaptation of a copyrighted program even for use within a school or school district.
- Put a single copy of a program onto a network without permission or a special site license.

Media Files. Actual materials in various media formats are highlighted as examples of materials that are commercially available. The materials referred to are meant to be *typical* of a given format, not necessarily as exemplary. No endorsement is implied. (Chapters 2, 5, 6, 9, 11, 12)

Media Files: Computer Software 2

Decisions, Decisions

Tom Snyder Productions

Simulation

Decisions, Decisions is a series of role-playing software packages designed specifically to generate informed discussion and decision making in the classroom using only one computer. The program has a mode for whole-class discussion with the teacher leading the lines to create geometric products. "Build It" allows learners to actually construct the products. During "Research It" they refine existing assembly lines to find more efficient ways to create given products. "Ship It" requires students to build their knowledge of geometric attributes as they pack boxes to fill orders. Finally, in "Deliver It" students compete against each other or one of two computer components in a mathematical race to deliver their products.

Selection Rubrics. These new rubrics are related to each of the media formats and make it easy to preview materials systematically and to preserve the information for later reference. Users have permission to photocopy these for personal use. The "Classroom Link Portfolio" CD-ROM computer software allows you to enter your appraisals directly into a template for storage and future use. (Chapters 2, 5, 6, 8, 9, 10, 11, 12, and Section B)

Selection Rubric: Computer Software

Complete an interactive evaluation and add it to your NETS-T portfolio using the Selection Rubric for Computer Software available on the "Classroom Link Portfolio" CD-ROM. A downloadable version of this rubric is available in the Selection Rubrics module of the Companion Website at http://www.prenhall.com/smaldino.

Title _____

Series Title (if applicable) _____

Source _____

Key Words

_____

_____

_____

Format

☐ **Drill-and-practice**

☐ **Game**

Showmanship. These features give specific tips on using technology and media with flair and dramatic effect. (Chapters 3, 9, 10, 12)

Showmanship

Chalkboard and Whiteboard

- Put extensive drawing or writing on the board before class. Taking too much time to write or draw creates restlessness and may lead to discipline problems.
- Organize in advance what you plan to write on the board and where you plan to write it.
- Check the visibility of the board from several positions around the room to be sure there is no glare on the surface. In case of glare, move the board (if portable) or pull down the window shades.
- If your printing normally runs "uphill" or "downhill," use water-soluble felt-tip pen markings as temporary guidelines for straighter printing. The guidelines will not be wiped off by a chalk eraser but will wash off when no longer needed.
- Hold the chalk or marker at an angle so that it does not make scratching or squeaking noises.

Technology for Diverse Learners. These new features describe technology that can be used in classrooms for diverse learners. (Chapters 1, 5, 9, 10, 11, 12)

Technology for Diverse Learners

Screen Readers

Visually impaired students need to be able to use computer software, e-mail, and the Internet. Adaptive software programs, called screen readers, help these students use computers and to surf the Internet. Using speech synthesizers, the software reads aloud the text and names of icons. Visually impaired learners can navigate using the keyboard, hitting the tab button to move from icon to icon. Nontextual items such as graphics and photos are labeled with alternative textual descriptions, called *alt-tags*, which allow visually impaired learners to hear descriptions of these items. Among the common screen readers for Windows operating systems is *JAWS* (Job Access With Speech) from Henter Joyce, Inc. (http://www.hj.com).

There are also devices that convert computer screen content into Braille characteristics for students who are both deaf and blind. These tools translate text to a single line of continually changing Braille. This technique allows these students to use a screen reader system. They don't hear what is on the screen, but they can feel it.

Classroom Link Portfolio Activities. These activities tie together the book, the "Classroom Link Portfolio" CD-ROM, the Companion Website, and the ISTE NETS-T standards. These activities and projects can be found at the end of each chapter and are indicated by an icon combining a CW and a CD-ROM. Students have the opportunity to build lesson plans using the ASSURE model, to evaluate technology resources using the Selection Rubrics, and to create records of activities as they complete the end-of-chapter portfolio activities.

Classroom Link Portfolio Activities

Use the "Classroom Link Portfolio" CD-ROM and the Companion Website as resources in completing these activities. To complete the following activities online go to the Portfolio Activities module in Chapter 5 of the Companion Website (http://www.prenhall.com/smaldino).

1. *Instructional Software Critique.* Select an instructional computer program, load it, and take a brief tour. Record your initial reactions. Critique this program using the "Selection Rubric: Computer Software" in this chapter (also found on the "Classroom Link Portfolio" CD-ROM), citing sources. Compare and contrast the findings from your initial tour and the Selection Rubric. What will you do the next time you find a new instructional computer program? (ISTE NETS-T 2.B & C; 6.A)
2. *Written Reflection.* Name three ways computers have enhanced your learning. Why were these effective? How might these strategies be used to help students learn in a technology-enhanced environment? (ISTE NETS-T 2.E; 5.B).

Integration Assessments. Each chapter concludes with a set of activities that address real-life skills typically cultivated in courses using this textbook. Activities that can be completed on the Companion Website are indicated with a CW icon. These activities are matched to ISTE NETS-T standards.

Integration Assessments

To complete the specified activities online go to the Integration Assessments module in Chapter 9 of the Companion Website (http://www.prenhall.com/smaldino).

1. Generate two ideas for using learning centers in your own teaching. (ISTE NETS-T 2.A; 3.B)
2. Develop an instructional module for a topic and audience of your choice. (ISTE NETS-T 2.A; 3.B)
6. Demonstrate techniques (showmanship tips) for improving your utilization of chalkboards and multipurpose boards. (ISTE NETS-T 2.D; 5.B)
7. Prepare a bulletin board, cloth board, magnetic board, flip chart, or exhibit. Submit the material (or a photograph of the display), a description describe the types of resources that are available to you. (ISTE NETS-T 2.C)

Flashbacks. Brief historical vignettes that lend a sense of perspective to today's technologies can be found on the Companion Website.

Supplements for Instructors

Instructor's Guide. Ask your Merrill/Prentice Hall representative or contact the publisher directly for a copy of this comprehensive teaching guide, available to adopters without cost.

Test Bank. Questions for each chapter are available in electronic format. The PC and Macintosh-compatible electronic test bank is available upon request. It allows instructors to create customized exams on a personal computer.

PowerPoint® Presentations. Designed as an instructional tool, the presentations can be used to present and elaborate on chapter material. They are also available on the Companion Website.

Supplements for Students

"Classroom Link Portfolio" CD-ROM. The companion CD-ROM, "Classroom Link Portfolio," will help you create, maintain, and print lesson plans and evaluations of materials based on the ASSURE model. It also helps you develop ISTE standards-aligned

artifacts for professional portfolios. The resulting database can be the basis for a teaching portfolio that can grow throughout your career. The portfolio components are connected to the ISTE NETS-T standards. The CD-ROM is fully integrated into the text and the Companion Website with performance-based and reflection-based activities and projects. These activities and projects, found at the end of each chapter, are indicated with a CW/CD-ROM icon. The guide for using the "Classroom Link Portfolio" CD-ROM is located on the Companion Website; the instructions for using this software have been completely revised and simplified.

The Prentice Hall Companion Website

The Companion Website (CW) for this text is located at **http://www.prenhall.com/smaldino**. A truly integrated Web-based technology resource, the Companion Website for this text builds on and enhances what the textbook already offers. The content is organized by chapter and provides the instructor and student with a variety of meaningful resources. It includes study materials such as knowledge objectives for each chapter, chapter overviews and summaries, interactive practice quizzes with answers, portfolio activities, integration assessments, links to related Web sites, "Flashbacks," a message board to encourage discussion, a chat feature, a library of *PowerPoint* slides, and a detailed guide for using the "Classroom Link Portfolio" CD-ROM.

CW Resources for the Instructor

Syllabus Manager™ provides you, the instructor, with a step-by-step process to create and revise syllabi, with direct links into the Companion Website and other online content without having to learn HTML.

- Your completed syllabus is hosted on our servers, allowing convenient updates from any computer on the Internet. Changes you make to your syllabus are immediately available to your students at their next logon.
- Students may log on to your syllabus at any time. All they need to know is the Web address for the Companion Website and the password you've assigned to your syllabus.
- Clicking on a date, the student is shown the list of activities for that day's assignment. The activities for each assignment are linked directly to text content, saving time for students.
- Adding assignments consists of clicking on the desired due date, then filling in the details of the assignment.
- Links to other activities can be created easily. If the activity is online, a URL can be entered in the space provided, and it will be linked automatically in the final syllabus.
- *PowerPoint*® slides. Designed as an instructional tool, the *PowerPoint* presentations for each chapter can be used to present and elaborate on chapter content.

CW Resources for the Student

The Companion Website provides students with resources and immediate feedback on exercises and other activities linked to the text. In addition, these activities, projects, and resources enhance and extend chapter content to real-world issues and concepts. Each chapter on the CW contains the following modules or sections:

- ***Knowledge Objectives***—outlines key concepts
- ***True/False Questions***—self-quizzes with automatic grading that provides immediate feedback for students
- ***Multiple Choice Questions***— self-quizzes with automatic grading that provides immediate feedback for students
- ***Web Links***—links to Internet sites that relate to and enhance chapter content
- ***Skill Builder Tutorials***—practical tutorial and skill building activities give students hands-on experiences that build students' skills using popular software

and hardware applications such as word processing, presentation software, spreadsheets, database applications, desktop publishing, Web page development and design, and bulletin board construction. Activities for the above applications allow students to develop actual samples to use in P–12 classrooms.

- ***Professional Development Resources***—annotated links to sites that provide resources useful to preservice and in-service teachers, including organizations and standards
- ***Portfolio Activities***—performance-based and reflection-based activities and projects that are connected to the ISTE NETS-T standards
- ***Integration Assessments***—projects and activities that enhance students' understanding of chapter content as it relates to technology and media
- ***Web-based Activities***—meaningful activities that are connected to chapter content and provide Web-based resources for students to use when completing the activities
- ***Message Board***—serves as a virtual bulletin board to post—or respond to—questions or comments to and from a national audience
- ***Chat***—allows anyone who is using the text anywhere in the country to communicate in a real-time environment—ideal for discussion and study groups, class projects, and so on
- ***Other Resources:*** In addition, users have access to *PowerPoint* Transparencies, Flashbacks, downloadable classroom resources, and links to dozens of information sources.

Additional Resources for Instructors

Authors' Services. The authors are eager to assist you in putting together an outstanding course. We offer the following services to instructors who have adopted this book:

- *Telelecture.* Call either of us in advance to arrange a guest lecture in your class via telephone. The only cost to you is for the toll charges. Some instructors use this telelecture as a demonstration of the techniques described in Chapter 7. Our phone numbers, fax numbers, and e-mail addresses are listed in the Instructor's Guide.
- *Workshops.* We have conducted workshops annually since 1982 at the national convention of the Association for Educational Communications and Technology (AECT). This is a forum for exchange of ideas and networking among instructors of courses on technology and media.

If you are an instructor using this text and wish to share your comments, send your name and address to Sharon Smaldino, Northern Illinois University, Gabel Hall 155, College of Education, DeKalb, IL 60115.

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Sharon E. Smaldino
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About the Authors

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Dr. Smaldino is the L. D. and Ruth Morgridge Endowed Chair for Teacher Education in the College of Education at Northern Illinois University. She was a professor of Educational Technology at the University of Northern Iowa for many years prior to moving to NIU. Sharon received her Ph.D. in 1987 from Southern Illinois University, Carbondale. Prior to that she received an M.A. in Elementary Education and served for more than a dozen years as teacher, speech therapist, and special educator in school districts from Florida to Minnesota. At Northern Iowa she taught an introductory educational media course for undergraduates and graduate majors and served as coordinator of the Educational Technology program. Dr. Smaldino also taught graduate courses in Instructional Development, Instructional Computing Design, Desktop Publishing, and Selection and Integration. She has received several awards for her outstanding teaching. In her current role, she is focused in working with faculty and teachers to integrate technology into the learning process. Presenting at state, national, and international conferences, Sharon has become an important voice on applications of technology in the classroom and in distance education. In addition to her teaching and consulting, Dr. Smaldino serves as president of AECT, served on the board of directors of IVLA, and has written articles for state and national journals on her primary research interest, effective technology integration in learning. She worked on a Preparing Tomorrow's Teachers to use Technology (PT3) grant using the Web to deliver information and case studies of teachers using technology in schools. She has also worked on a Teacher Quality Enhancement grant which identified technology as an important aspect of ensuring quality learning environments.

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Dr. Russell is Professor Emeritus of Educational Technology at Purdue University. He still teaches at Purdue during the summer and fall semesters. Jim works part-time for Purdue's Center for Instructional Excellence, where he conducts workshops on teaching techniques and consults on instructional improvement. During spring semesters he is visiting professor of Educational Psychology and Learning Systems at Florida State University. There he also works part-time for the Office of Distributed and Distance Learning. A former high school mathematics and physics teacher, Jim has taught for more than forty years. He has won numerous honors for his teaching at Purdue, including his department's Outstanding Teacher Award and the School of Education's Best Teacher Award. He was also selected as a member of Purdue's teaching academy and inducted into Purdue's Book of Great Teachers. His specialty areas, in which he has achieved national prominence through his writings and presentations, are presentation skills and using media and technology in classrooms. Through his teaching, workshops, consulting, and this textbook, Jim continues to make a significant impact on classroom teaching practice.