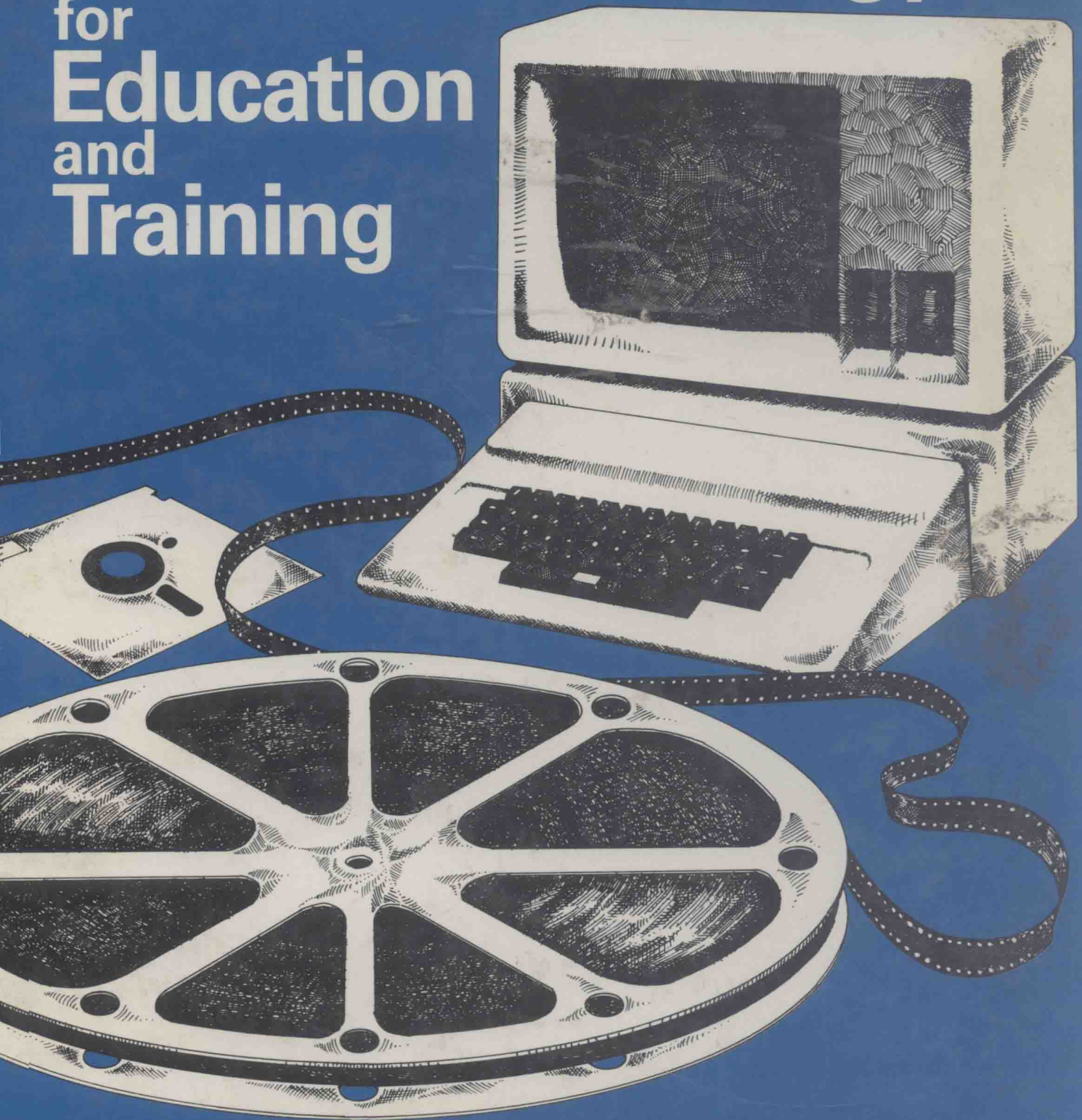


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Media and Technology for Education and Training



MEDIA AND TECHNOLOGY FOR EDUCATION AND TRAINING

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Charles E. Merrill Publishing Company
A Bell & Howell Company
Columbus Toronto London Sydney

Published by
Charles E. Merrill Publishing Company
A Bell & Howell Company
Columbus, Ohio 43216

This book was set in Univers
Text Design: Cynthia Brunk
Cover Drawing: Steve Botts

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Library of Congress Catalog Card Number: 83-63220
International Standard Book Number: 0-675-20112-8
Printed in the United States of America
1 2 3 4 5 6 7—90 89 88 87 86 85 84

MEDIA AND TECHNOLOGY FOR EDUCATION AND TRAINING

To Our Families

PREFACE

This text stresses the application and use of media for instruction. It is different from others, however, in many respects. First, an attempt has been made to illustrate how media-technology concepts relate not only to public schools, but to life-long learning, adult education, and training in varied contexts. This is reflected in the title of the text, the use of examples both from school and nonschool settings, in an application chapter, and in profiles that describe media use in various places. Second, the application process is emphasized as much as the media. Whereas many texts devote one or a few chapters to this process, six chapters in this text concern procedures for planning, selecting, designing, using, and evaluating all media. Third, those chapters concerning different specific media not only explain how each medium can be applied, but also describe the medium's inherent capabilities. The authors feel that media literacy is essential in an increasingly technical world. Finally, the book includes media often excluded from other texts and is organized consistently to facilitate both initial learning and later reference.

The ideas and concepts expressed in this text are the result of the authors' years of study and experience applying media and technology—years profoundly influenced by interactions with teachers, trainers, students, colleagues, clients, and others with whom they have worked. The authors are grateful to these people and to the reviewers who suggested helpful improvements to drafts of the text. The authors would like to acknowledge Dr. Jay C. Smith, Professor of Education and Director of Instructional Services and Televised Instruction, University of Oklahoma at Norman for bringing the need for a new textbook to the attention of the publisher. We would also like to acknowledge Alex Harris and Kathy Wyland and her company, K & S Associates, Inc., for their formidable word processing skills that greatly facilitated writing and revision. Finally, the authors want to thank the organizations and individuals listed below for their assistance in developing profiles of media and technology applications portrayed throughout the text.

The transformation of Western societies from mechanical to information based, the infusion of high technology, and the revitalization of basic industries in different countries make these exciting times for persons undertaking the study of media and technology for education and training. The opportunities are substantial and the risks are high. The authors have written this text in the belief that understanding can guide action and that a sensitivity to human needs driven by a thoughtful combination of knowledge and common sense will ensure that media and technology are appropriately applied. The authors welcome comments and suggestions from those using this text.

PROFILE ASSISTANCE

| | |
|-------------------|--|
| Dorothy Baird | Los Alamitos Unified School District |
| Nancy Beckman | The Source |
| Tom Clogston | Boeing Aerospace Corporation |
| Marvin Davis | Heartland Area Education Agency |
| Robert Diamond | Syracuse University Center for Instructional Development |
| Tamas Dosckocs | National Library of Medicine |
| Barbara Garris | Educational Products Information Exchange Institute |
| Joan Harmon | University of California Center for the Study of Evaluation |
| William Hider | USA Today |
| Barbara Kendrick | American College of Cardiology |
| Trina Lumins | West Orange High School |
| Jan MacDonald | Genigraphic Corporation |
| John Mackay | Discovery Place |
| Carolyn Markuson | Brookline Public Schools |
| Evah Belle Newton | Edgelea Elementary School |
| Patti Prendergast | American Film Institute |
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| Garry Shirts | Simile II |
| Robert Stake | University of Illinois Center for Instructional Research and Curriculum Evaluation |
| Edward Tully | FBI Academy |
| Kevin Welsh | Martin Marietta Corporation |
| Marcy Young | Highland Park Middle School |

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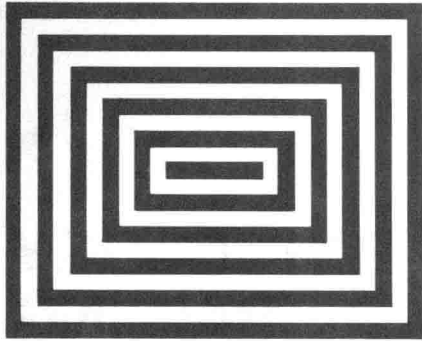
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MEDIA AND TECHNOLOGY FOR EDUCATION AND TRAINING



OBJECTIVES

After studying this chapter, you should be able to:

- ☐ define media and instructional technology.

Questions of how, when, where, why, and by whom this text can be used are ultimately best answered by consumers themselves as they apply their specific needs and creativity to a teaching/learning task. However, we as authors still bear responsibility to communicate clearly our purpose and the audience for whom we are writing. To this task Chapter 1 addresses itself.

This text may be used by any educator desiring an introduction to the selection and use of media and instructional technology. By "educator" we mean anyone who is, or intends to be, a teacher, trainer, or media specialist. This text will most often be used by college or university students enrolled in educational media or instructional technology courses at the undergraduate or graduate level.

We believe that learning activities are most successful when they are learner-centered, regardless of the age of the students. As adults, college and university students assume a great deal of responsibility for their own learning. Perhaps one of the most important goals of an educator is to encourage this self-direction, and the text assumes that those who use it share this goal. We hope that our readers will accept the opportunities that this text offers to

become more self-directed by constantly searching for ways to apply the concepts and principles they learn in their professional setting.

The overall purpose of this text is to improve the teaching/learning process through the use of media and instructional technology. It accomplishes this purpose, first, by providing basic information about instructional media and what it can or cannot do, then by examining media and its use within the context of the overall teaching/learning process. We believe that media should be used only when it enhances learning; it should be considered one of many components in the educational process. We do not promote media use as an end in itself.

INTRODUCTION

MEDIA AND INSTRUCTIONAL TECHNOLOGY

Media are the means (usually audiovisual or electronic) for transmitting or delivering messages. Media include such things as print, graphics, photography, audio communication, television, simulations and games, and computers (Table 1.1). Media have two components: *hardware* and *software*. *Hardware* is the machinery or devices used to produce or present a message (Figure 1.1). Some examples of hardware are film projectors, tape recorders, overhead transparency projectors, record players, television monitors, and computer terminals. *Software* are the materials that are transmitted through the hardware (Figure 1.2). Software includes such items as films, audio tapes, transparencies, records, videotapes, and computer programs.

Instructional technology refers to the processes by which instructional problems are analyzed and solutions sought through the application of knowledge about learning, learners, and media resources. Instructional technology procedures often result in the creation of a new instructional product or strategy. Its goal is to improve instruction by increasing effectiveness and efficiency. Since the application of instructional technology very often results in the creation or use of media or both, all educators should have the knowledge and skills necessary to use it as a means of solving instructional problems. Some educators, known as media specialists, do this on a full-time basis. This book is written to provide educators with the knowledge and skill required to

apply the principles of media and instructional technology to meet their instructional needs, whether in the schoolroom, private industry, nonprofit organizations, or universities.

ORGANIZATION OF THE BOOK

This text is divided into three distinct parts: The Context, The Media, and The Process.

PART I, THE CONTEXT

These three chapters establish the role of media and technology within the overall context of instruction and training. They follow Chapter 1, which introduces the book and the field of media and instructional technology. Questions of how, when, where, and why to use media are examined in "Media Applications," Chapter 2. Chapter 2 also

4 INTRODUCTION

TABLE 1.1 Types of instructional media

| | |
|-----------------------|--|
| PRINT MEDIA | <input type="checkbox"/> Hard copy (paper) |
| | <input type="checkbox"/> Microfilm |
| | <input type="checkbox"/> Microfiche |
| GRAPHIC MEDIA | <input type="checkbox"/> Overhead transparencies |
| | <input type="checkbox"/> Charts/graphs |
| | <input type="checkbox"/> Models/dioramas |
| | <input type="checkbox"/> Maps/globes |
| | <input type="checkbox"/> Drawings |
| PHOTOGRAPHIC MEDIA | <input type="checkbox"/> Prints |
| | <input type="checkbox"/> Slides |
| | <input type="checkbox"/> Filmstrips |
| | <input type="checkbox"/> Motion pictures |
| | <input type="checkbox"/> Multi-image |
| AUDIO MEDIA | <input type="checkbox"/> Audiotape |
| | <input type="checkbox"/> Audiocassettes |
| | <input type="checkbox"/> Records |
| | <input type="checkbox"/> Radio |
| | <input type="checkbox"/> Telecommunications |
| TELEVISION/VIDEO | <input type="checkbox"/> Broadcast television |
| | <input type="checkbox"/> Cable television |
| | <input type="checkbox"/> Microwave (2500 megahertz) television |
| | <input type="checkbox"/> Videotape |
| | <input type="checkbox"/> Videocassettes |
| | <input type="checkbox"/> Videodiscs |
| | <input type="checkbox"/> Teletext |
| | <input type="checkbox"/> Videotex |
| COMPUTERS | <input type="checkbox"/> Maxicomputer |
| | <input type="checkbox"/> Minicomputer |
| | <input type="checkbox"/> Microcomputer |
| SIMULATIONS AND GAMES | <input type="checkbox"/> Board |
| | <input type="checkbox"/> Written |
| | <input type="checkbox"/> Human interaction |
| | <input type="checkbox"/> Machine |

Each of these kinds of media is described in greater detail in the media chapters in Part II.

covers the wide variety of media services and personnel available to assist teachers and trainers. Chapter 3, "Instructional Development," recommends procedures for developing instructional activities in order to demonstrate the appropriate placement of media in the context of planning effective teaching/learning activities. The final chapter in Part I surveys the criteria and strategies for selecting the most appropriate instructional media.

PART II, THE MEDIA

Each of these seven chapters describes a particular type or form of instructional media: print, graphics, photography or films, audio media, television and video, computers, and simulations and games. After explaining the importance of the particular form of media being discussed, the chapter describes the medium and its characteristics. It then discusses the forms and formats in which the medium is available (for example, the differences between open reel and cassette audio tape).

A major component of each media chapter is the section that explores circumstances under which this medium would be most appropriate, including a discussion of its advantages and limitations. The utilization techniques section includes suggestions for learners as well as educators, for example, how a learner could plan and produce a photographic report. Then the chapter describes the production and use of a medium and the skills required to manage that use and production. Closely tied to selection, use, and production of each medium is evaluation, the process of determining how successfully the medium has attained its stated objectives.

A medium can be either a means to achieve effective instruction or an object of instruction itself. For example, a 16 mm film may be used to enhance a unit on the social customs of Eskimos, or the film and its production can become the unit's topic of study.

Following a brief summary, each chapter concludes with lists of questions, application and follow-up activities, and selected sources. The questions allow readers, either individually or in a group, to demonstrate that they have attained the objectives for which the chapter was written. The application and follow-up activities present ways in which the reader can use what has been learned. The selected sources indicate where additional information about concepts presented in the chapter may be found.

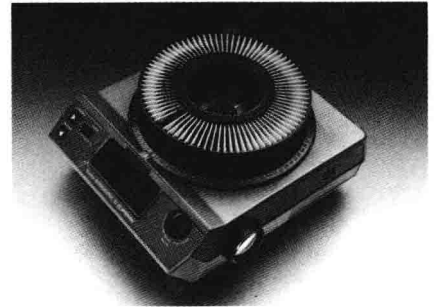
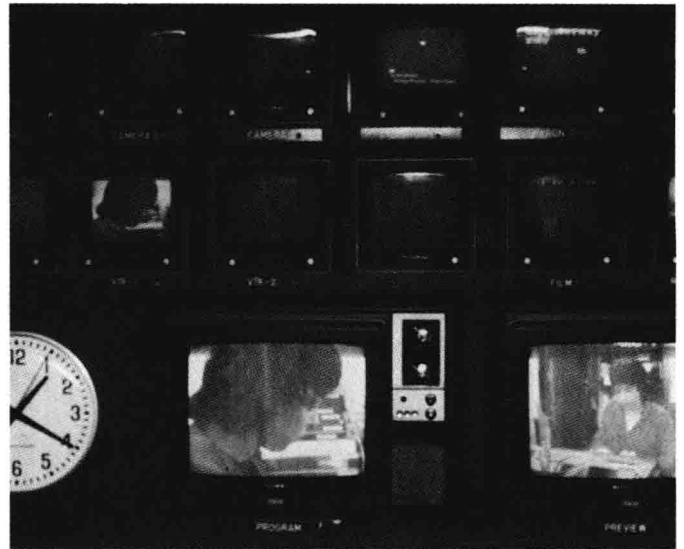
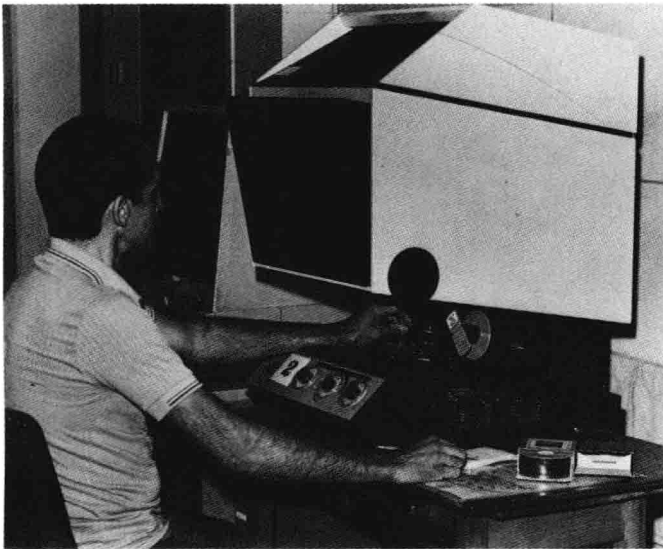


FIGURE 1.1 One component of media is hardware—the equipment needed to produce or present information

Source of photographs: Ben Chandler; Bell & Howell Company; Eastman Kodak Company; courtesy of Apple Computer, Inc.; Linda Ammons.

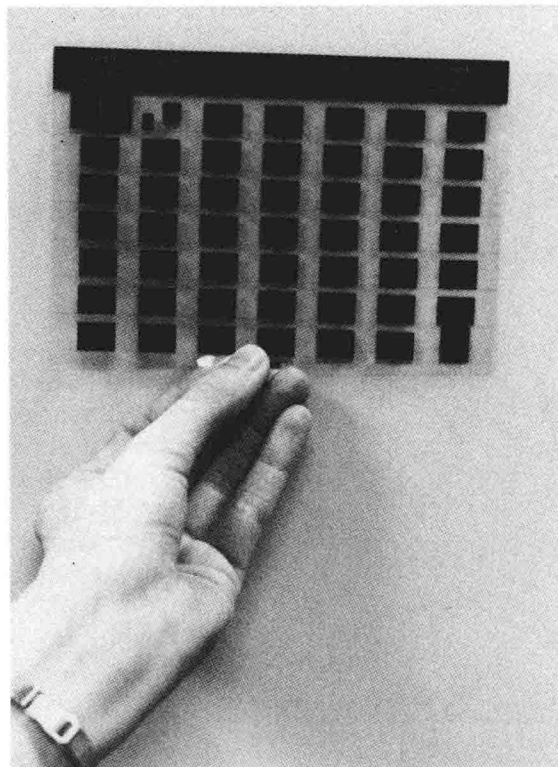
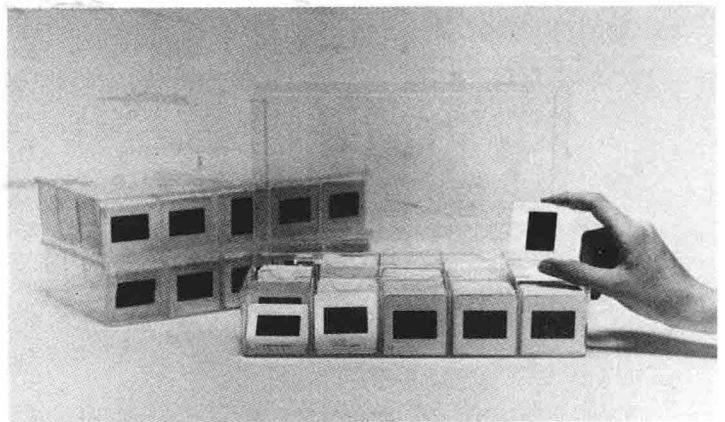
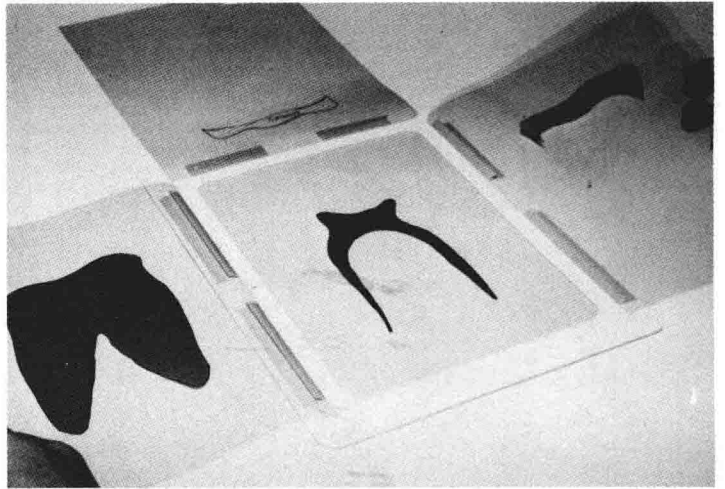


FIGURE 1.2 The second component of media is software—the materials upon which information is placed

Source of photographs: Ben Chandler; Mary Shorey.

PART III, THE PROCESS

These chapters will help the reader synthesize and extend the skills and knowledge from the two previous parts in order to design, use, and evaluate instructional media most effectively. Chapter 12, "Instructional Design," amplifies the concepts introduced in Chapter 3, "Instructional Development," by emphasizing the need to view the design of instructional media as a systematic process. This chapter includes specific suggestions on how media can be designed to promote learning. Generally, this is done by providing motivation, reinforcement, feedback, remembering, transfer of learning, prompts, cues, and active participation. The chapter also includes principles of designing instruction for developing attitudes and teaching cognitive and psychomotor skills.

The direct relationship between utilization techniques and the success of a media program is emphasized in Chapter 13. Specific utilization tasks that must be performed before, during, and after an instructional activity are identified, along with procedures and criteria for making decisions on the use of media.

Chapter 14 explores the evaluation of instructional media: Key decisions in the process are identified. Specific methods and measurements are described, including techniques for evaluating media products while they are being designed.

The final chapter considers ways in which educators can best prepare for the future of media and instructional technology.

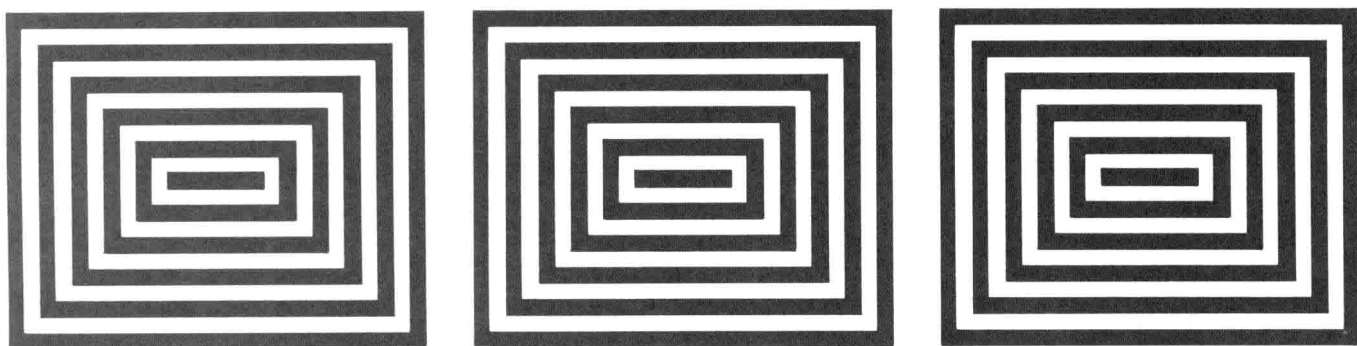
HOW TO USE THE TEXT

The learner and the educator will determine precisely how this book is used and will adapt it to best suit their purposes. Each chapter has been written as a self-contained unit. Thus, it is possible to read them in any order that is compatible with individual needs and interests. However, if this is your first exposure to the area of media and instructional technology, we recommend that the chapters in Part I be read first. Then those individuals with greater interest in the media aspects of the field would want to continue the chapters in chronological order. Those with a greater interest in instructional technology might prefer to read Part III, "The Process," before Part II, "The Media."

The questions and applications sections at the end of each chapter are designed so that learners can determine for themselves the extent to which they have accomplished the chapter's objectives. They also provide an opportunity to determine how well you can successfully use the newly acquired knowledge and skills in your profession. The sources section should be consulted when you need more information on the chapter's topic.

SUMMARY

This text is written primarily for college and university students in media or instructional technology courses. The secondary audience consists of practicing educators interested in learning more about the field. The purpose of the text is to improve teaching and learning through the appropriate use of media and instructional technology. The book is divided into three major parts: Part I, "The Context"; Part II, "The Media"; and Part III, "The Process."



ONE

THE CONTEXT