DOCUMENT RESUME

ED 208 858 IR 009 768

AUTHOR Crawley, Emmett L., Ed.; And Others
TITLE A Guide for the Developer of Basic Skills Products. The Product Developer's Manual.
INSTITUTION LINC Resources, Inc., Columbus, Ohio.; Network of Innovative Schools, Inc., Andover, Mass.
SPONS AGENCY Department of Education, Washington, D.C.
PUB DATE Jun 81
CONTRACT 300-80-0957
NOTE 120p.
AVAILABLE FROM Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (1981-701-495/69).

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Audiovisual Aids; *Basic Skills; Educational Technology; Formative Evaluation; Information Dissemination; *Instructional Development; Instructional Improvement; *Material Development; *Production Techniques; Records (Forms)
IDENTIFIERS *Basic Skills Improvement Program; ERIC

ABSTRACT

This manual is designed to provide the developer with information which, when considered during the developmental phase of a project, will help ensure that the product will be in an appropriate form for effective dissemination or market distribution. The initial phase involves defining the purpose of the project, conducting market research, specifying the audience, and identifying competitive products. The steps involved in the development of a draft version of the product are discussed in the second phase, including selection of a development team, development of objectives, choosing a medium, outlining section parts, planning the development schedule, developing the draft, insuring social fairness, producing and protecting a usable prototype, and developing an instructor's or user's manual. The draft critique process requires the identification of product critique factors, a review of the product, testing the product, analysis of the data, validation, making revisions, and development of a master copy. Once the format is chosen and print and nonprint materials are developed, legal issues must be considered. The final phase is concerned with the dissemination of the product. A 55-item bibliography and samples of forms used at different stages of the development process are included. (CHC)

THE PRODUCT DEVELOPER'S MANUAL

A GUIDE FOR THE DEVELOPER OF BASIC SKILLS PRODUCTS

Editors
Emmett L. Crawley
John J. Ford III
Thomas D. Scheid

A Publication of

LINC Resources, Inc.
1875 Morse Road, Suite 225
Columbus, Ohio 43229

and

The NETWORK, Inc.
290 South Main Street
Andover, Massachusetts 01810

Produced through the Basic Skills Validation and Marketing Program
Funded by the Basic Skills Improvement Program, the U.S. Department of Education

The development of this manual was wholly supported by funds made available through Contract Number 300-80-0957 from the U.S. Department of Education. However, opinions expressed herein do not necessarily reflect the position or policy of the United States Department of Education and no official endorsement of the United States Department of Education should be inferred.

ACKNOWLEDGEMENTS

Final editing and revision of the manual was done by Emmett L. Crawley and John J. Ford III. Cover design, layout, technical production, and printing management were the work of Paula J. McCarron of The NETWORK's Communication and Product Development Division.

Administration of the Basic Skills Validation and Marketing Program (BSVMP)

Project Director
Victor E. Fuchs

LINC RESOURCES, Inc.
BSVMP Staff

Associate Project Director
Thomas D. Scheid

Publications and Marketing Specialist
Emmett L. Crawley

Consulting Attorney
Dick Hill

Administrative Assistant
Judy Bielanski

The NETWORK, Inc.
BSVMP Staff

Subcontract Project Director
Susan Loucks

Validation Specialist
Jon Kaiser

Exemplary Program Specialist
David Zacchei

Administrative Assistant
Susan Kurland

TABLE OF CONTENTS

PREFACE

This booklet has its roots in four previous publications. In 1973, The National Center on Educational Media and Materials for the Handicapped (NCEMMH) issued a booklet, Developing Instructional Materials for the Handicapped: Guidelines for Preparing Materials Suitable for Wide Distribution, to assist developers in readying their materials for widespread independent use. The guide was revised in 1976 and directed toward those developers, funded by the Bureau of Education for the Handicapped (BEH), whose materials were distributed through NCEMMH. The revision was entitled Developers' Guide: Preparing Materials for Distribution Through The National Center on Educational Media and Materials for the Handicapped.

In 1979, LINC Services, Inc., under its contract for the Market Linkage Project for Special Education, published Toward Successful Distribution (Sally Bulford, editor) that included many of the points made in the Developers' Guide, but focused primarily on areas related to the commercial production and distribution of BEH-developed products.

In 1978, The NETWORK, Inc., under contract activities for BEH, prepared and published A Guide to Developing Educational Products, by John J. Ford III, a booklet designed to provide an overview of the ste involved in developing educational products.

This publication, The Product Developer's Manual, was developed jointly by LINC Resources, Inc., and The NETWORK, Inc., under contract to the U.S. Department of Education, Basic Skills Improvement Program. This publication is a blend of ideas presented in the publications mentioned above, with additional information on product validation and product distribution alternatives.

Many people helped create The Product Developer's Manual. The general outline was formed from the efforts of those who were involved in the creation of the above publications. Therefore, acknowledgements are due to several groups of professionals whose efforts preceded the efforts on this publication. These professionals represented the U.S. Department of Education, Office of Special Education, the publishing industry, and special educators.

It is a pleasure to continue the collaborative efforts of those professional groups, and we wish to further express our appreciation to the U.S. Department of Education, Basic Skills Improvement Program, through which funding for this manual is possible. In particular, I wish to acknowledge the substantial contributions of the following Educational Program Specialists in the Basic Skills Office who reviewed the draft of this manual—Thomas Keyes, Barbara Little, and Lorraine Mercier. Support and encouragement were given throughout the preparation of this manual by Sherwood R. Simons, Project Officer.

Several other persons made gnificant contributions in skillfully writing, abstracting, editing, rewriting, and balancing information from all of the previous publications to provide a consistent yet refreshingly new publication. Drafts in preparation of the final manuscript were prepared by Thomas D. Scheid, Emmett L. Crawley, and Carol B. Daniels of LINC Resources, Inc.; John J. Ford III, The NETWORK, Inc.; Richard C. Hill, consulting attorney; and William Wooten, Copyright Administrator, U.S. Department of Education. Final editing was the responsibility of Emmett L. Crawley and John J. Ford III. The NETWORK, Inc., designed the book. The many contributions of these colleagues are most gratefully acknowledged.

Victor E. Fuchs, Director
Basic Skills Validation and
Marketing Program
LINC Resources, Inc.
June, 1981

FOREWORD

The overall purpose of the Basic Skills Improvement Program is to help public and private agencies coordinate and develop resources to improve basic skills efforts for children, youth, and adults.

The Basic Skills Improvement Program (Title II, Public Law 95-561) enacted on November 1, 1978, authorizes the use of funds to support the dissemination of successful basic skills products to state and local educational agencies and other interested public and private agencies, organizations, and institutions.

In the awarding of grants for the development of instructional materials, the U.S. Secretary of Education encourages federally assisted grantees to develop instructional materials that can be readily disseminated through commercial, federal, state and local vehicles.

Many dissemination strategies and vehicles have been conceived and implemented as an attempt to reduce and close the gap between theory and practice. However, the provision of mechanisms for achieving successful dissemination and replication does not necessarily ensure that a given product will reach its target audience. While the availability of an appropriate strategy is important, so are the quality and use of the basic skills product. Each developer needs to determine whether the material does what it was intended to do and is in a form that can be adopted and implemented by others.

The purpose of The Product Developer's Manual is to provide you, the developer, with information that, when considered during the developmental phase of your project, will help ensure that your product will be in an appropriate form for effective dissemination or market distribution.

Shirley A. Jackson
Director
Basic Skills Improvement Program

INTRODUCTION

The U.S. Department of Education (ED) awards hundreds of grants and contracts each year to local education agencies, colleges and universities, nonprofit organizations, and individuals. Many of these grants and contracts result in the development of educational materials and products that can benefit learners in the basic skills. In awarding these grants and contracts, Program Officers within ED encourage grantees and contractors to develop educational materials and products in a manner conducive to widespread dissemination. These product developers are encouraged to consult with publishers and other individuals experienced in dissemination of educational products.

The development of educational products suitable for national dissemination or commmercial marketing is not a simple activity. Product development is a complex process of transforming an initial idea into a usable product. During this process, the initial needs and purposes of the developer must be transformed into a final, high-quality product that meets technical and educational standards of excellence. In addition, the final product must be usable by practitioners, usually, without direction or assistance from the developer. In this sense, a product suitable for national dissemination or commercial marketing represents a "stand alone" set of materials that can be easily understood and used by practitioners who do not have access to the developer or to any supplemental training in the use of the product.

During the product development process, attention must be given to the intended means of distributing the product once it is completed. The developer has a variety of alternatives available for either noncommercial or commercial distribution. This guide is designed to help you, the developer, consider the alternatives available and to select a distribution alternative that best meets your needs.

One alternative for distribution of your product is through the commercial marketplace. As part of its responsibility for collection and dissemination of information on effective practices and products in the basic skills, the Basic Skills Improvement Program (U.S. Department of Education) has arranged for ED-funded products to be distributed by the commercial sector. Through the services of the Basic Skills Validation and Marketing Program, you, as an ED-funded developer, have the option of seeing your materials sold in the commercial marketplace. Exercising this option can result in widespread distribution of your materials with a maximum exposure to potential users.

The need for high-quality educational materials applies equally to materials distributed noncommercially and commercially. This book will make you aware of these standards and help you meet them, so that your product can, indeed, "go to market."

This booklet assumes your expertise in the content area of your materials; it is concerned only with the technical, developmental, and legal standards that affect the possibilities of national dissemination or commercial distribution. It is a set of guidelines and a means of acquainting you with dissemination and publishing standards, and the resources that you can use to meet these standards. If you are or will be developing commercially marketable materials, the guidelines in this book are essential. They will save you time and money and will help you produce a finished product that is in a form acceptable to commercial distributors, publishers, and producers.

DETERMINE THE PURPOSE

Why develop a product? The product development process usually begins when you, the developer, think of a product that seems like a good idea or when you perceive a need for a specific product. Your awareness of this need may range from vague instinct to firm conviction.

Before investing time and other resources in the product development process, it is important, however, to clarify whether or not there is actually a need for your proposed product. Ask yourself what need(s) it will fulfill. Once you have answered this question, it might be helpful to describe your ideas in the form of a problem statement and to ask other professionals if they agree with your statement. As you proceed with the development process, this problem statement will help you maintain your focus on the original need by providing a standard against which you can periodically check your efforts as they evolve into a product. For example, the following problem statement was used in the development of this manual:

> There is a need for a manual that clearly describes each step in the development of educational products for distribution in the commercial market. The manual must be practical and "how-to" in its approach, and must reflect the most currently reliable information on U.S. Department of Education regulations that affect development of products through ED grants or contract funding. The primary audience for the manual is the product developer who has had minimal experience in developing commercially approprite materials and needs explicit guidance in identifying the major activities and decisions necessary in producing a high-quality product.

If you are working under a grant or contract, the products that you will produce probably are specified in your contract or grant. The need for your product has already been identified and perhaps even documented. If your need is not identified or if you have not already determined products to develop, you may find that these evolve out of problems that your project faces or materials that you use in your project work. Supplemental workshop materials designed for elementary teachers in Ohio might, with early anticipation of a wider use, be valuable as independent tools for both elementary and secondary teachers nationwide. Developing the materials with a future independent use and a larger audience in mind from the beginning and, therefore, omitting regional references to Ohio, is more economical in dollars and time than is revising them at the end of the project. In fact, such a revision might be too costly and time-consuming for the developer, the funding agency, or a publisher to undertake; valuable educational tools would then be lost.

Conduct Market Research

Early market research is important to you for two reasons. First, it is the key factor in your decision as to whether or not your product may have marketing or dissemination potential. If the product you plan to develop is already commercially available, the marketing potential is limited. Second, it will help you direct your development activities and shape your materials as you begin product development.

The specific results of your early market research should include:

1. Number of potential primary users;
2. Settings where primary users will be found;
3. People other than primary users who will use the materials (e.g. teachers);
4. People other than primary users who will make the buying decision (e.g. principals); and
5. Alternate or secondary audiences.

The results of your findings about the size and location of the market should be documented and retained for future reference. You will appreciate data such as this as you develop your materials. You can target your materials specifically to the primary audience, you can recommend packaging that will attract and benefit the potential buyer, and you can accommodate the alternative audience as you are developing the product (so long as you do not jeopardize tne product in terms of the primary audience).

Probably your most valuable source of market data will come from your own experience. You are already aware of many markets for your materials, and you know other professionals and organizations who can help you in pinpointing audience size and location.

In addition to personal knowledge and professional contacts, there are several agencies and organizations that publish information you will find helpful. The National Center for Education Statistics is the major source of education statistics. They report full and complete statistics on the condition of education in the United States. The Center also conducts and publishes reports on specialized analyses of the meaning and significance of such statistics. You will find these statistics quoted in government, private, and commercial publications and newsletters. Also, you can be put on the Center's mailing list to receive notification of reports and analyses that become available.

The Association of American Publishers (One Park Ave., New York, NY 10016); the Association of Media Producers (1707 L St., N.W., Washington, DC 20036); and the National Audio-Visual Association (3150 Spring St., Fairfax, VA 22031) publish market information. This information will be useful in helping you determine what is selling through commercial publishers and producers. Other sources for this type of information are published by such organizations such as Knowledge Industry, and in publications such as Educational Marketer newsletter.

Organizations such as the National Council of Teachers of Mathematics, National Council of Teachers of English, International Reading Association, Educational Products Information Exchange Institute, and others publish valuable information on current products, areas where products are needed and current research in the content area. It is in your best interest to access all available information that will help you better define your potential audience, identify products your audience is using now and determine whether monies are available to buy the type of product that you propose to develop.

Specify the Audience

The people for whom the product is intended are referred to as a target audience. Your product may be intended for an audience composed of one or more of the following groups: students, teachers, administrators, teacher trainers, tutors, and/or parents. Characteristics of the audience or audiences you identify will have an influence on your final product. Such audience characteristics as age, learning style, learning difficulties, skill and knowledge levels, will all influence the final design of your product. The closer your product design meets the needs of the intended audience, the higher its probability of success.

This information will serve as a guideline for the development of your product.

Identify Competitive Products

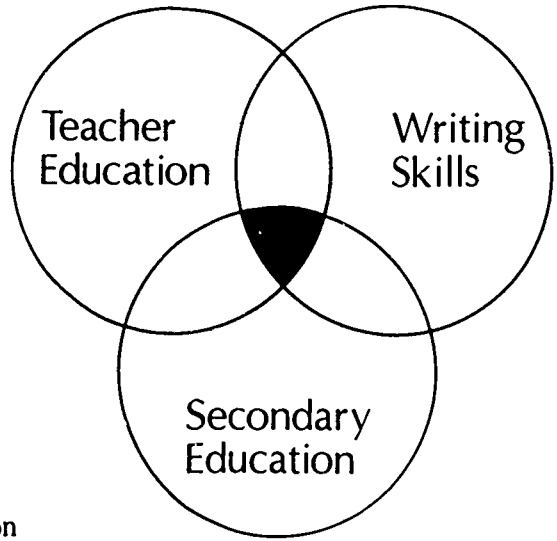
Are similar products available? Before beginning the time-consuming business of developing your concept into a product, investigate whether similar products are currently available from either commercial or noncommercial sources. This aspect of your market research is called a competitive product search.

When publishers and producers review a prospective new product, questions frequently asked about the product include: 1) How is the product different? 2) Why is it better? 3) Does it matter? A thorough competitive product search will indicate what products are available which are similar to the product that you are contemplating; thus, you can plan your product to be different and of more benefit to the ultimate users than existing, similar products. Likewise, you will also be able to positively explain and defend the need for your product.

A number of resources are at your disposal for conducting a competitive product search. First is your own expertise—what you are aware of from experience. Second, you can scan catalogs of commercial companies who publish or produce products in your field. Third, consult print reference sources and computerized information databanks for comprehensive listings of products that are, in some manner, similar to yours.

When initiating a search from a computerized database, ask to speak with an information specialist. Be prepared to explain your search topic in your own words, pointing out the kind of information that you do and do not want. Consider ways in which you can narrow your topic or, if your topic is very specific, consider how it can be broadened to pick up related citations. For example, in a computer search on the subject of preparing teachers for teaching writing skills at the secondary level, we can picture three sets of documents—one dealing with teacher education, one with writing skills, and one with secondary education. The user is interested in citations that discuss all three of these sets, as illustrated in Figure 1.

FIGURE 1. COMPUTER SEARCH



Teacher Education
Writing Skills
Secondary Education

The information specialist or search analyst will first choose those descriptors (words or short phrases related to topic) which index writing skills and teacher education, and by "crossing" them, will select out of the computer files materials pertaining to both of these concepts. By limiting the resulting group with secondary education descriptors, a smaller set of documents will be retrieved which deals with only these three groups.

The result of the computer search will be a printout containing citations. Each citation will include title, author, publication data, source, number of pages, and an abstract or annotation.

The following sources of information may be useful in conducting your search. The list is not all inclusive, and the specific resources that you decide to use should depend on the type of material that you intend to develop, e.g., instructional material, training packet, monograph, test, or print versus nonprint.

Educational Resources Information Center (ERIC)

Central ERIC
National Institute of Education
Washington, DC 20208
(202) 254-7934

Many universities and school districts can provide assistance in searching both the print and computerized versions of the ERIC database. ERIC does not provide information on educational products available commercially. It does, however, provide you with the number of noncommercially available reports, documents, conference proceedings, and other publications that address the topic or content of your product; this can be especially helpful in identifying other researchers and gauging the interest level and demand for your product.

Each of the ERIC Clearinghouses specializes in a particular area of education, and personnel are available to assist you in your search. In many cases, personnel can provide appropriate referrals, and some of the Clearinghouses have developed related databases that cover products available commercially. In addition to Central ERIC, the other 15 ERIC clearinghouses are:

ERIC Clearinghouse on Adult, Career, and Vocational Education
The Ohio State University
Center for Vocational Education
1960 Kenny Road
Columbus, OH 43210
(614) 486-3655

ERIC Clearinghouse on Counseling and Personnel Services
University of Michigan
School of Education Building, Room 2108
Ann Arbor, MI 48109
(313) 764-9492

ERIC Clearinghouse on Educational Management
University of Oregon
Eugene, OR 97403
(503) 686-5043

ERIC Clearinghouse on Elementary and Early Childhood Education
University of Illinois
College of Education
Urbana, IL 61801
(217) 333-1386

ERIC Clearinghouse on Handicapped and Gifted Children
Council for Exceptional Children
1920 Association Drive
Reston, VA 22091
(703) 620-3660

ERIC Clearinghouse on Higher Education
George Washington University
One Dupont Circle, Suite 630
Washington, DC 20036
(202) 296-2597

ERIC Clearinghouse on Information Resources
Syracuse University
School of Education
Syracuse, NY 13210
(315) 423-3640

ERIC Clearinghouse for Junior Colleges
University of California at Los Angeles
Powell Library, Room 96
Los Angeles, CA 90024
(213) 825-3931

ERIC Clearinghouse on Language and Linguistics
Center for Applied Linguistics
1611 North Kent Street
Arlington, VA 22209
(703) 528-4312

ERIC Clearinghouse on Reading and Communication Skills
National Council of Teachers of English
1111 Kenyon Road
Urbana, IL 61801
(217) 328-3870

ERIC Clearinghouse on Rural Education and Small Schools
New Mexico State University
Box 3AP
Las Cruces, NM 88003
(505) 646-2623

ERIC Clearinghouse for Science, Mathematics, and Environmental Education
The Ohio State University
1200 Chambers Road, Third Floor
Columbus, OH 43212
(614) 422-6717

ERIC Clearinghouse for Social Studies/Social Science Education
855 Broadway
Boulder, CO 80302
(303) 492-8434

ERIC Clearinghouse on Teacher Education
American Association of Colleges for Teacher Education
One Dupont Circle, N.W., Suite 616
Washington, DC 20036
(202) 293-7280

ERIC Clearinghouse on Tests, Measurement, and Evaluation
Educational Testing Service
Princeton, NJ 08541
(609) 921-9000 Ext. 2176

14.

National Information Center for Educational Media (NICEM)

University of Southern California
University Park
Los Angeles, CA 90007
(800) 421-8711; in California (213) 741-5408

This database covers the entire spectrum of materials in education—pre-school to professional and graduate school. It includes all educational nonprint media—16mm films, 35mm filmstrips, transparencies, audio and videotapes, records, and slides. This database contains more than 500,000 citations and is available in microfiche and print indexes. Information contained on printout from this database includes subject area, type of media, audience level, length of media, description of contents, and producer. Additionally, NICEM has prepared three print reference sources for the Basic Skills Improvement Program; they are a custom catalog on nonprint audiovisual materials in written communication (K-12); a custom catalog in speech communicaton (K-12); and a catalog in oral communicaton (K-12). For information on obtaining these references, contact the Basic Skills Improvement Program, U.S. Dept. of Education, Donohoe Bldg., 400 Maryland Ave., S.W., Washington, DC 20202; (202) 245-8213.

National Information Center for Special Education Materials (NICSEM)

University of Southern California
University Park
Los Angeles, CA 90007
(800) 421-8711; in California (213) 741-5408

The NICSEM database contains more than 40,000 abstracts of commercially available child-use, assessment, professional, and training materials in both print and nonprint formats. This database is accessible via computer terminal, printed indexes, or microfiche. Although most of the citations on this database pertain to special education, your search can be refined (using appropriate descriptors) to exclude materials intended only for specific handicapping conditions.

Subject Guide to Books in Print

Published annually by Bowker, and available in most libraries, this comprehensive two-volume reference book is particularly useful for identifying professional reference materials. In this publication, Library of Congress subject headings are used, and no annotations are given.

EL-HI Textbooks in Print

This reference book, published annually by Bowker, provides access to textbooks and supplementary materials available commercially from more than 400 publishers. This publication also lists some kits with nonprint parts as well as professional materials for teachers.

Educational Testing Service (ETS)

Princeton, NJ 08541
(609) 921-9000

This clearinghouse provides reference services in all areas of educational and psychological testing. Topical bibliographies and custom-search services are available for identifying commercial and noncommercial test instruments.

Resource and Referral Service (RRS)

The Ohio State University
1960 Kenny Road
Columbus, OH 43210
(800) 848-4815, in Ohio (614) 486-3655

Part of a nationwide dissemination effort called the Research and Development Exchange, RRS provides referral information on research and development activities in education. RRS uses files on a large number of organizations, their staff, products, and services to help educators obtain national or regional resources for local problems, projects, or activities.

Finally, you should never assume that everything you may need to be aware of is within your personal experience, in a published catalog, or in a computerized database. Don't hesitate to do some checking around. Call institutions, school districts, or organizations that serve the primary audience you plan to reach to find out what they are using; ask if they know of other materials that may be of interest to you.

DEVELOP THE DRAFT VERSION OF THE PRODUCT

The well-developed instructional product addresses a specific target audience, specifies the content to be learned, provides clear and appropriate methods for transmitting the content, and provides the means to measure what is learned. An important factor in the development and use of an educational product is the increase in attention being given to its quality.

There are a number of considerations that have led to this increased attention to product quality. They include:

- An increase in the volume and variety of educational products available on the commercial market. — When there are more products to choose from, the user gives more attention to selecting the product that best fits his or her needs.

- An increase in teacher involvement in selection. — With the increase in power of teacher unions, administrators are no longer making product decisions alone. Teachers are more concerned and have a stronger voice in the selection of products that they use with their students.

- A decrease in money to spend on products. — As school budgets become smaller, educators are becoming more concerned with the quality of the products that they purchase. They can no longer take the risk of purchasing a product that is of poor quality.

- An increase in accountability. — More and more school boards, community groups and students are holding educators accountable for the quality of the products that they use and for the skill outcomes of these products.

This section will describe the steps that are involved in developing a high-quality and useful draft version of your educational product.

Select the Development Team

The roles of the people involved in planning, organizing, and developing your product should be identified early. There are at least three types of people who need to be involved. It may be that you or members of your staff can fill more than one of these roles, but each of these roles must be filled in order to have an effective result.

The first type of person involved in the development is the content specialist or the subject matter specialist. This person provides content expertise, guides the concept development of the product, suggests additional consultants, and is responsible for writing the overall concept papers that shape the product's approach. The content specialist insures the quality, appropriateness and correctness of your product.

The second type of person is the instructional developer. This person does the research, writes the instructional sections of the product and plans the pedagogy or training strategies. The instructional developer is a person who understands the instructional process, learning theory and the audience for whom the product is intended. He or she guides the overall development and insures the instructional quality of the product.

A third person is the editor. The editor has responsibility for doing rewrites and revisions which insure clarity, good organization, consistency, liveliness and age-group appropriateness. The editor also assumes responsibility for copy editing and proofreading.

There are a number of different ways that the team can work together. In one case, the subject matter expert may outline the content and suggest resource materials. The instructional developer may do most of the actual writing and the editor may revise and improve the actual copy. In another case, the subject matter expert may do most of the work, while the instructional developer serves as a consultant to insure the appropriateness of the instructional theory and training strategies. The editor provides copy editing; etc.

There is no absolutely right way to work as a development team. Your team may choose to work together or to work individually. However, your decision should be made in advance. This decision will insure that each member of the development team understands how the product will be developed and his or her responsibilities in the development process.

Develop the Objectives

The first phase of development is to write objectives for your product. Listing them at this point in the process serves to guide your thinking about the product itself. Although you may change or expand the product as it takes shape, initial statements of objectives will help keep you on target during the complex creative stage. Your objectives may be based on performance, behavior or achievement outcomes. They should include both skill and knowledge objectives.

In deciding what your objectives will be, you may want to ask yourself questions such as: What will the product do? What are the expected outcomes? What will the users be able to do after they have completed reading or using your product?

When developing your objectives, careful attention should be given to your intended audience. How much time can they really spend with your product? What are the realistic outcomes? What will they be able to do after they have finished using your product?

An example of an initial objective is the one chosen for this booklet: "To create a simple but comprehensive guide for educators engaging in the product development process for the first time."

Choose the Medium

Choosing the medium for your product is one of the most important decisions to be made. (See section on Production Considerations.) Your choices will include film, print, audio-cassettes, multimedia packages, videotapes, videodiscs, games, computers, etc. The decision should be based on a number of considerations. First, the audience: What are they most likely to learn from? What can they afford?

If you have selected an audiovisual medium, will the audience have access to the needed equipment? Why use film or videotape if a well illustrated book will do? The cost of producing print material and the skills needed are far less involved than those to produce a film or other audiovisual product.

Your choice of medium should be a realistic one for you and your colleagues to undertake. Do not choose to do a film simply because you've always wanted to do the film, and, now you have some money to do it. Choose a film because you're capable of doing it, you have experience with it, and it's the best medium for the audience. Multimedia kits are often seen as a panacea rather than merely as an aid. "AV is in." It's prestigious to do a film when a pamphlet would suffice.

Don't choose to do something that you're not in a position to do unless you have the ability to hire others to do the work in which you are not skilled. Once you've decided on the format of the medium, you should obtain the necessary official clearances to develop your product. This should include approval from your supervisors, federal clearances in the case of Federally funded projects, talent releases and copyright releases.

Outline the Section Parts

At this phase of the process, you should begin to conceive of the entire product by identifying the major sections and the sequences into which they ought to be presented. All information to be contained in the product should be outlined within the sections, keeping in mind the overall product objectives, as well as the objectives for each section.

Determining the organization of your product is very important. Good organization is more important than good writing. A poorly organized manual requires more time to edit than one that is poorly written but well organized. A sample outline may appear as follows:

1. Product description: General description of the product, including the chosen medium, the target audience, how sections were subdivided in the content overview.

2. Product objectives: Statement of the objectives for the product as a whole.

3. For each section, unit or module include:

   a) General content description.

   b) Specific objectives for this section. These objectives serve as a guide for the section in the same way that the overall objectives serve as a guide for the whole product.

c) Description of the section format, sequence of the section segments and a separate description for each proposed section including visuals, expository materials, teacher-pupil involvements, answers to questions, hands-on activities and games.

The more thorough your outline, the more thorough your organization — the easier it is to develop it.

Plan the Development Schedule

Using the outline of the component parts of the product, you should now create a schedule that identifies work to be done, people responsible and due dates. The schedule at this point can be limited to detailing the work to be done in developing the draft, but subsequent steps should be noted. The development steps, which should be included in this schedule, are "Determine the Purpose," "Develop the Draft Version of the Product," "Critique the Product," "Produce the Product," "Consider Legal Issues," and "Disseminate the Product." Appendix A is a sample form that can be used to record the schedule.

Develop the Draft

After the work has been organized into sections, drafts of each of the component parts should be prepared. There are basically two methods to developing the draft. One way is for your entire development team to work together developing each section. The second alternative, which is less time-consuming, is to divide the staff into small working teams by section. Each team should take responsibility for the development of one or more sections. Once the sections have been completed, they should be shared with the entire staff for making additional changes and insuring consistency between sections.

If the second alternative is chosen, a style sheet or guidelines for writing should be established. Often when materials are written by teams they look as if they were written by teams. The style of one section appears totally different from another section. Titles, organization and general writing styles may vary so greatly that they actually interfere with a reader's ability to learn from your product.

In developing your product, be certain that it reads as if it were written by one person. To maintain consistency, one staff person should act as the copy editor, assuming responsibility for bringing all of the separate parts together to form one product.

The most important means for getting your message across is language, but it is often used poorly. An important step to writing strong, interesting products is knowing before you start what your message is. Below are a series of suggestions that will help you in writing the copy for your product.

- Set an editorial style for your publications.
- Use titles that are specific and tell what the copy is about. Use simple language.
- Start writing guided by your content outline. Keep to the subject matter, the words will follow. Avoid gimmicks, even minor ones.
- Use short paragraphs. They look easier to read and they help the reader to follow important ideas.
- Don't spare details. Clarity is a predominant concern.
- Use space in writing. It makes reading the copy easier.
- Avoid repetition. Using the same word over and over again is boring. Find words that are used more than three times and see if you can change them without hurting the meaning, especially if they appear twice in the same sentence.

- Avoid jargon and unfamiliar words. Flowery style and obscure vocabulary may sound impressive but they render the material incomprehensible. Some words you may want to avoid are: conceptualize, commitment, feedback, networking, prioritize, interface, strategize, outreach.

A good hint in writing the draft is to think of it as recipe writing or writing assembly instructions. Good writing is a clearly organized, step-by-step process. If you leave out one ingredient, if you leave out the pacing instructions, you are not going to end up with the finished product. It is a recipe. If you include all the ingredients, all the steps, the time to spend on each task, the result is a well-prepared, a well-assembled product.

Insure Social Fairness

It is important in developing your product to insure that men and women and members of various ethnic and racial groups are treated fairly. Avoid job or sexual stereotype, don't typecast people in the text or visuals in your product.

The word sexism was coined by analogy to racism to denote discrimination based on gender. In the broader sense the term now indicates any arbitrary stereotyping of males and females on the basis of their gender.

In ensuring that your product is sex fair, there are a number of things you can do. One approach is to involve women or people from various races in the writing of the materials. The writing and viewpoints of women should be represented in quotations and references wherever appropriate and possible. Women as well as men should be referred to as leaders and heroes, as explorers and pioneers, as those who have made notable contributions to science, medicine, law, business, politics, civics, economics, literature, arts, sports and other areas of endeavor.

The fact that women's opportunities and accomplishments have been limited to the social customs and conditions of their time should be openly discussed whenever relevant to the topic at hand. Women and men should be treated primarily as people and not as members of the opposite sex. Their shared humanity and common attributes should be stressed, not their gender differences. Neither sex should be stereotyped or arbitrarily assigned to the leading or secondary role.

While women may continue to choose traditional occupations, they should not be typecast in these roles but should be seen in a variety of professions and trades: doctors and dentists, not always nurses; principals and professors, not always teachers; lawyers and judges, not always social workers; bank presidents, not always tellers; members of congress, not always as members of the League of Women Voters.

Similarly, men should not be shown as constantly subject to the masculinity mystique in their interests, attitudes and careers. They should not be conditioned to believe that man ought to run more quickly than woman or that he ought to be the sole support of a family.

Programs designed for children at the pre-school, elementary and secondary levels should show married women who work outside the home and should treat them favorably. Teaching material should not assume or imply that most women are wives and full time mothers. They should instead emphasize that women have choices about their marital status just as men do. Girls should be shown as having and exercising the same options as boys in their play and career choices.

This is not only important from a social fairness viewpoint, it is also an important marketing and distribution issue. Many school districts have committees that review products to determine if they treat members of both sexes and from ethnic and racial groups fairly. Only products approved by such committees can be purchased and used in the district.

Produce a Usable Prototype

After the draft has been written and edited, a prototype should be made that can be used to send out for review or to field test your product. Though not as polished as the final version, the prototype should be produced with some attention to design, layout, typeface and quality of reproduction.

Prototype print materials are generally produced in mimeograph or photocopy form; audiovisual materials may have to be produced in close to final form before they can be reviewed or tested. For example, a filmstrip should be presented as a slide tape. In the case of a film, an edited work print, with synchronized sound on a tape, should be presented. A final print, with optical soundstrip, should be produced only after all final review and field-test comments have been incorporated into the editing.

Cost is another important factor when considering the means of producing enough copies of the draft product and any accompanying instructor's manual for field testing and review. Given the amount of money available for production and the number of copies you need, you should try to produce a version as close to your anticipated final version.

Protect Your Prototype

Your products, produced for field testing and review, should be clearly marked as a "DRAFT VERSION" or "FIELD-TEST VERSION" and should have the copyright symbol affixed if you plan on copyrighting it later. It is perfectly legal to use the copyright symbol before applying for copyright. For further information on copyright see the section on Legal Considerations.

Develop the Instructor's or User's Manual

If you are developing student instructional or teacher training products, it is generally desirable to have an instructor's manual to accompany both the prototype and the final version of the product. This manual should contain clear and specific instructions for using the product, prerequisites and background material, suggestions for the instructor on leading discussions, sample questions to ask and sequence and pacing suggestions. Information concerning assumptions and objectives, on which the material is based, should be included, as well as any cautions or disclaimers.

The instructor's manual should provide step-by-step instructions on how to use your product. If you spent a great deal of time developing your product and you don't provide any instructions on how to use it, the material may not be used appropriately. If you are making assumptions about the trainer's or teacher's knowledge of the subject area, make certain that you tell him or her about it. Provide everything possible to insure that your product is used as you intended. Otherwise, it might fail, not because of the quality of your training program but because of the quality of the trainer's instructions.

CRITIQUE THE PRODUCT

Once you've developed a product, the next important step in the process is to determine its effectiveness. This is done in a number of ways. These include internal and external review and field testing.

This section will describe the factors involved in critiquing your product and some of the specific techniques that can be used to collect effectiveness data.

Identify the Product Critique Factors

One major problem in critiquing any product is to determine the characteristics that should be used to define quality. There are no universally accepted characteristics of good products. Some of the factors that are commonly considered when having a product critiqued are outlined below:

1. Content

    a. Appropriateness: Are the subject matter and related activities appropriate to the target audience? Is the manner of presentation appropriate?

    b. Correctness: Is the information presented in the product correct; if it is controversial, can it be documented by accepted authorities?

2. Objectives

   a. Clarity: Are the objectives stated clearly and simply?

   b. Appropriateness: Are the objectives appropriate for the intended audience of the product?

3. Scope

   a. Adequacy of Objectives: Is the scope of the information presented adequate to achieve the stated objectives of the product and appropriate for the learning levels of the intended audience?

   b. Content Relevance: Is the scope of the product an adequate and appropriate presentation of the subject matter? Is there so much information presented that the intended audience might become confused and lose sight of the main points outlined in the objectives? Is there so little information presented that it is unlikely that the intended audience could ever reach the product's objectives?

   c. Activities: Are activities suggested throughout that will reinforce and expand comprehension of the content?

4. Sequence

   a. Logic: Are the sections of your product, and the information in these sections, presented in a sequence that makes sense?

   b. Ease of Comprehension: Is the sequence of the information easy for the intended audience to follow? Will it facilitate understanding of the content?

5. Instructor's Manual

   a. Background: Is enough background content information provided to familiarize even an inexperienced instructor with the subject matter presented? Is it clearly presented? If the product assumes a certain level of background knowledge on the part of the instructor, is this clearly stated so that instructors, without sufficient knowledge, realize they cannot use it?

   b. Instructions. Are instructions for the product clearly stated and well organized? Will the instructor know how to use the material effectively step-by-step? Are there effective pacing suggestions; instruction on how and when to present sections and materials? Is the amount of time to spend on each section clearly stated? Does it provide suggestions on how to adjust the pacing for different types of learners? The instructor's manual, in a sense, is a technical manual, and should be written in technically specific language.

6. Technical Considerations

   a. Choice of Production Techniques: Given the size and composition of the target audience, the nature of the subject matter, and the need for the product services, have you chosen the best production technique available, while keeping within a realistic budget?

b. Quality: Is the overall quality of the product good? "Good" does not necessarily mean expensive. An expensively printed brochure, for example, may be less well designed and executed than a well thought out publication, which nas been produced on office printing equipment. The question really is, "Have you done the highest quality job possible given the choice of production techniques?" Some elements to look for are: overall format, page design, choice of type, color quality, sound quality, and visual rhythm. (See section on Production Considerations.)

c. Social Fairness: Does the language and content used in your product treat members of various ethnic, racial, and sex groups fairly? Sex role stereotyping in materials is not acceptable to publishers, and if it exists in your product, it must be removed before the product can be published commercially.

d. Language: Is the language clear, specific, and appropriate to the learning and reading level of the intended audience?

7. Consistency

a. Objectves: Are the content and activities consistent with the objectives?

b. Sections: Are the sections of your product organized in a consistent fashion? Is the structure of each section parallel to the structure of other sections?

c. Activities: Are the activities for each section consistent with each other and with the content of that section?

8. Additional Materials

   a. Are there additional sections or activities that would improve this product? Does your product depend on other materials that would not easily be accessible to normal users; does this material depend on additional materials whose expense would prohibit easy purchase by normal users?

Solicit Internal Review

The first step towards obtaining critique of your product is a personal review. A few weeks after you've finished the prototype, take another critical look at it. Given this time lapse, you will probably find parts that should be changed. As you look through the material a few weeks later, you'll probably say to yourself, "I can't believe I wrote that; I can't believe I did it in this way." Automatically, you will see opportunities for changing it. The expression that you're your own worst critic is sometimes very appropriate in product development. It's difficult to admit to yourself that you are not happy with your work — that you will need to make changes — but it is an important step. It not only helps you to improve your product, but it also helps to prepare you for critique by others.

After you've made your changes, show the product to some close colleagues, and ask them for suggested changes. They will probably identify changes that you missed or, perhaps, never even considered. Review by colleagues is a good step because they frequently understand what you're intending to do with your product, what your approach is, and what steps you've already been through in its development. Weigh their suggestions carefully before making any changes. Ask yourself, "Will these changes improve my product?" When you have gathered and analyzed the comments of your colleagues, make the necessary changes in your product.

Arrange for Expert Review

The purpose of expert or external review is to have your product critiqued by people who have a clear understanding of the content of your product and the audience for whom it is intended. This review provides you with revision suggestions from both content experts and prospective users of your product.

Before you send your product out for review, it is important to establish guidelines for the review. This usually means developing some type of a data collection instrument that explains the purposes of your product and identifies the aspects of your product on which you want the reviewer to provide direct comment. Such instruments are often in the form of a questionnaire. Such instruments not only insure that you are getting the kind of review that you want, but they also are easier to score, analyze, and use for revision purposes. By not using forms for critique, the review will be haphazard and will not address the key factors that impact on the effectiveness of your product. The appendices provide some samples of review instruments.

Once you've established your review guidelines, you will need to choose reviewers who can provide the kinds of critiques that you want. One recommendation is to have your product reviewed by content, technical, and instructional process experts.

1. Content Review

   Content experts provide comment on the scope of coverage, the correctness of the information, and its appropriateness for the intended audience. If the product is related to a field that is particularly controversial, you might want to get reviews from content experts who represent the different orientations in the field.

2. Technical Review

The technical reviewer provides reaction to design elements such as page design, graphics, type size, use of visuals, and format. Technical review also involves such things as language and editing review, social fairness review, etc. This type of review is particularly important for audiovisual products, in which sound, staging, lighting, and camera angle are so important.

3. Instructional Process Review

The instructional process reviewer provides information regarding such factors as the appropriate sequencing of sections, and the variety of techniques and activities used. The instructional process reviewer is a person who has a keen sense of how people learn and how to develop materials effectively to meet the learning needs of particular audiences.

Using content, technical, and instructional process reviewers is only one approach to obtaining a review. Another way is to have your product reviewed by different types of users (e.g., teachers, administrators, and university instructors). In choosing the reviewers for your product, you should first identify the kinds of critique that you would like, establish guidelines for the review, and then choose the reviewers. Other critical factors in this choice are budget and reputation. What can you afford to pay for the review? Do your reviewers come well recommended? Highly regarded reviewers, who provide positive review, can be used later to help establish credibility for your product and to help promote it. While these are factors that may or may not be helpful in the critique, they are important considerations in the dissemination of your product.

Test the Product Yourself

Another important step in critiquing a product is actually using the product with the intended audience. No matter how effectively your product has been reviewed, the only way to really tell whether or not it will work is to actually use it. In attempting to test the product, you should identify a small group of the intended audience and actually try it out with that group, collect data, and determine whether or not the product works effectively.

In many cases, you may have already done this; your product may have grown out of training or instruction that you have been doing over a period of time. These materials may have been developed based on teaching or training that you have already done, and you know that they work because you have used them previously.

Establish Field-Test Procedures

Field testing involves the formal trial and evaluation of your product. Field testing is done for a variety of reasons. First, it is done to examine the relevance, completeness, and the sequence of your product. It is done to examine the manageability of the format; it is done to examine the appropriateness for use with a variety of populations.

The amount of field testing needed is in proportion to the size, scope, cost, and complexity of your product. All products should have at least one tryout under field conditions. The old adage that "more is better" is not necessarily true in field testing. To equate a large field-test sample with a better product is not necessarily an accurate description.

Some of the considerations in field testing are the characteristics of the sites, the availability, interest and experience of supervisory and teaching personnel, and the amiability of the group to do field testing. Because field testing is an expensive and time-consuming process, it is important to establish as few field sites as are necessary and to have pre-established criteria to judge the effectiveness of your product in these test situations.

The first consideration for field testing is the site. How many and what type of sites will be used in the actual tryouts? The sites chosen should contain a representative sample of the audience for whom the product is intended. Some of the variables that you might consider when choosing your sites include the population area (urban, suburban or rural area), socioeconomic level, ability levels of the intended audience and the instructional styles of the users (deductive, inquiry, etc.). It is important to test the product and sites that represent the range of significant variables that might influence its success. You can only make claims about your product in areas that have been tested.

Once you have chosen the field-test sites, the next step is to determine the aspects of your product on which you want to collect evaluation data. This involves identifying the types of data you want to collect (content, scope, sequence, technical, etc.), designing the data collection instruments and methods (observations, check lists, interviews, criteria reference test, norm reference test, videotaping the testing, etc.), and developing the data collection and scoring procedures. Sample evaluation instruments and a sample scoring sheet are provided in the Appendices.

Make Field-Testing Arrangements

While you are choosing the field-test sites, you will need to make arrangements with administrators at the sites. The identification of roles in field testing is a crucial issue. One of the biggest problems in field testing is the lack of a consistency in the relationship between the developer and the field-test teachers or users. The first step in the process is to contact the identified sites and arrange meetings with the contact people.

At these meetings, the product and its objective should be identified, the purpose of the tryout explained, and the actual procedures described. These procedures should include:

- expectations about the field test;
- the length of time required;
- the actual dates of testing;
- the costs;
- the number of trials or uses;
- how data are going to be collected;
- any training that is going to be provided, and
- how the field test should actually be done.

These meetings should also touch on a number of other issues such as legal issues — the privacy of the participants, the problems of academic freedom of the teachers, and the need for school board and parent approval. Responsibility of the field-test teachers, the developers and the administrators must also be clearly defined.

Once these issues have been discussed and agreement reached, if the administrators at the site decide to participate, arrangements should be made with the personnel at each site, outlining the length of the field test, the actual dates of the trial, the cost to both parties, the number of trials or users requested, any required training, and what types of data will be needed as well as who will be responsible for collecting it. Once all of these factors have been discussed and agreed upon, you should get written approval from the decision makers at each field site, outlining the specific arrangements and responsibilities. The following field-test procedures check-list serves as a good guideline for negotiating field-test arrangements:

FIELD-TEST PROCEDURES CHECK-LIST

____ The types of field-test sites are identified.

____ The number of field-test sites are identified.

____ The product sections that you want evaluation data on are identified.

____ The methods of data collection are chosen.

____ The data collection instruments are designed.

____ The data analysis procedures for each step are identified:
- o scoring procedures;
- o tabulation method;
- o criteria for indication of revision.

____ The field-test sites are contacted.

____ The contact people at each site are identified.

____ The field-test arrangements are finalized:
- o dates;
- o costs;
- o number of users;
- o commitments on both parts.

____ Approval from the important decision makers is obtained in writing.

____ The data collection procedures and dates are agreed upon.

____ The users are trained or oriented to product.

____ The product delivery and procedure is set.

Analyze the Data from Field-Testing and Expert Review

After the field-test and review have been completed, the data from each of the data sources (i.e., observations, interviews, test, etc.) should be tabulated and scored to obtain suggestions for revision. When this is done, all data from the different sources should be combined to make definite decisions about revision. The critique analysis matrix below demonstrates one technique for compiling data from different sources to make revision decisions.

CRITIQUE ANALYSIS MATRIX

The following matrix was designed to compile results from several different evaluation sources for use in making decisions on revisions. The product developer fills out the form by recording scores from each review in the appropriate boxes, using the symbols indicated below:

\+ results on this instrument indicated no need for significant revision

±
—
results were mixed

__ results called for revision

DATA COLLECTION METHODS

COMPONENT PARTS	User Reaction Sheet	Expert Review Sheet	Interview with Selected Users	Criterion Referenced Test Results	Summary Score
Definitions					
Determining the Purpose					
Creating the Product					
Critiquing the Product					
Changing the Product					
Technical Aspects					

In analyzing field-test data, it is important to determine the way in which you are going to analyze the results in advance. Too many developers have spent a great deal of money field testing materials in many sites, collecting much data, and then not knowing how to analyze it. It is most important to decide in advance how to analyze the data and how to apply the resulting approach to the data when it is collected.

Validate Your Product

Field testing and review provides you with information about the reaction of experts and user regarding the product. However, it does not necessarily provide information about whether the product actually works. The process of determining whether materials work under field conditions is called "product validation."

Validation means using the finished product with members of the primary audience and demonstrating that the materials accomplish their objectives. This process is called "product validation;" it is also called "learner verification and revision." Several states have laws that require learner verification and revision information before materials can be purchased by the local school districts. California and Florida, for example, require publishers or developers to show evidence that their products meet requirements and claims before the products can be made available for sale to school districts.

Validation sometimes follows field testing, but it can also be done at the same time. When you are collecting reaction about the effectiveness of the program from users and reviewers, you can also test the intended audience on a pre-test and post-test basis to determine what their level of learning was when they first became involved with the product and how much they learned by the end. If you can demonstrate that there is some significant change in learning under controlled circumstances, then you have validated your product.

Standardized tests can be used to collect product validation data if your product addresses content for which valid and reliable tests already exist. If your product does not address such content areas, you may want to consider developing a criterion reference test to test pre and post attainment of your product's objectives.

Even though product validation is a rigorous and difficult process, and it is, it is important because it tells you that not only do you think your product works, not only do experts and colleagues believe that your product works, not only do the trainers and instructors, who have used your product, think it works, but there are pre and post impact data that suggest that the audience really learned from the product.

Decide on the Revisions Needed

Once you have tabulated and summarized all data from field testing and review, you are ready to begin the actual revision. The process and responsibilities for revision are essentially the same as described for developing the prototype version.

One of the biggest problems in making revisions is to admit that your product has failed in certain ways. There are many developers who have gone through extensive field testing, validation and data collection, and when the data suggested that certain revisions needed to be made, they said, "No, I won't do that. These revisions are not right." If you are going to go through the process, you must be willing to make the changes. It is very difficult to accept criticism and to grow from it, but it is an important part of the revision process.

Look at the revision suggestions, and decide what changes are needed in each section of your product to determine whether or not they will improve your product. The major factors in making revision decisions should be the cost of the change, the time involved in making the change, and whether the change will significantly improve the effectiveness of your product. Certain changes are too expensive, and although they would improve the product slightly, you may find that the product is easily usable as it is and meets objectives without making the changes. It is not necessary to make every change that is recommended. It is only necessary to make those changes that will significantly improve your product.

Develop the Master Copy of the Product

Once the revisions have been made, you should begin developing the final master copy of your product. All distribution copies of your product will be made from this master. The form of the master copy will depend upon the medium you have chosen and who will be responsible for making the distribution copies. The first question to answer is will the product be entirely created, produced and distributed "in-house" by your own staff or will some of the process be subcontracted to other professionals, such as a graphic designer or a film producer. You need to spend some time deciding who will be responsible for doing which parts of the production of your master copy. Your staff will generally not include all the people who have the skills necessary to execute many of the steps involved in production. It is important to assemble the necessary personnel to produce a fine master copy. The better the master copy, the better the final product.

The check-lists that follow show some of the options that you will have in deciding who will do what part of the master copy. (Also, see section on Production Considerations.) You will notice that sometimes a light "x" has been used in the "in-house staff" column to indicate that although it is improbable, appropriate personnel may possibly be available.

PRINT

MEDIUM	STEPS	WHO			
		IN HOUSE STAFF	DESIGNER/ ARTIST	TYPESETTER	PRINTER
MIMEO or XEROX	DESIGN LAYOUT	X	X		
	DO GRAPHICS CHARTS	X	X		
	TYPE COPY	X			
	DUPLICATE	X			
	STAPLING PERFORATING	X			
COMMERCIAL PRINTING	DESIGN LAYOUT	X	X		X
	SPECIFY TYPE	X	X	X	X
	SET TYPE			X	X
	DO GRAPHICS CHARTS	X	X		X
	PASTE UP TYPE and GRAPHICS	X	X		X
	SHOOT MASTER NEGATIVES				X
	MAKE PLATES				X
	PRINT				X
	BINDING				X

AUDIO-VISUAL

MEDIUM	STEPS	WHO			
		IN HOUSE STAFF	FREE LANCE PROFESSIONAL	PRODUCTION HOUSE	LABORATORY
AUDIO TAPE	LOCATION TAPING	X	X	X	
	STUDIO TAPING (voice, music)		X	X	
	EDITING	X	X	X	
	SOUND MASTER				X
	PACKAGING			X	X
SLIDE TAPE	SHOOT PHOTOS	X	X	X	
	DEVELOP SLIDES				X
	LOCATION TAPING	X	X	X	
	STUDIO TAPING (voice, music)		X	X	
	SELECT PHOTOS	X	X	X	
	EDIT SOUND		X	X	
	SYNCHRONIZE SOUND WITH TAPE (cue synchronizer)		X	X	
	SHOOT TITLES		X	X	X
	SOUND MIX AND MASTER AUDIO TAPE			X	X
	MASTER SLIDES WITH TITLES SUPERIMPOSED				X
	PACKAGING				X

AUDIO-VISUAL CONTINUED

MEDIUM	STEPS	WHO			
		IN HOUSE STAFF	FREE LANCE PROFESSIONAL	PRODUCTION HOUSE	LABORATORY
FILMSTRIP	SHOOT PHOTOS	X	X	X	
	DEVELOP PHOTOS				X
	LOCATION TAPING	X	X	X	
	STUDIO TAPING (voice music)		X	X	
	SELECT PHOTOS	X	X	X	
	EDIT SOUND		X	X	
	SYNCHRONIZE SOUND WITH TAPE (use synchronizer)		X	X	X
	SHOOT TITLES		X	X	X
	SOUND MIX and MASTER TAPE with AUDIBLE and INAUDIBLE BEEPS			X	X
	MASTER FILMSTRIP NEGATIVE WITH TITLES				X
	PACKAGING				X
VIDEO TAPE	SHOOT ON LOCATION	X	X	X	
	SHOOT IN STUDIO		X	X	
	ELECTRONIC EDITING			X	
	MASTER VIDEO TAPE				X
	PACKAGING				X

AUDIO-VISUAL CONTINUED

MEDIUM	STEPS	WHO			
		IN HOUSE STAFF	FREE LANCE PROFESSIONAL	PRODUCTION HOUSE	LABORATORY
FILM	SHOOT ON LOCATION	X	X	X	
	SHOOT IN STUDIO		X	X	
	DEVELOP WORKPRINT				X
	TAPE SYNCHRONIZED SOUND		X	X	
	TAPE "WILD" SOUND	X	X	X	
	STUDIO TAPING (narration, music)		X	X	
FILM	EDIT FILM		X	X	
	EDIT SOUND		X	X	
	SHOOT TITLES		X	X	X
	SYNCHRONIZE SOUND WITH FILM		X	X	X
	MIX SOUND TRACKS (music, voice, wild)				X
	CONVERT MAGNETIC SOUND TO OPTICAL SOUND				X
	MASTER NEGATIVE FILM WITH TITLES SUPERIMPOSED AND OPTICAL SOUND TRACK				X

PRODUCE THE PRODUCT

Certain aesthetic attributes of your product may influence commercial publishers/producers in deciding whether or not to accept your product for distribution. These attributes may determine how much time and money a commercial publisher/producer will need to spend to get your product ready for distribution. Lack of attention by product developers to commercial preproduction and production costs frequently results in otherwise sound products being too costly for commercial publishers to produce and sell at a reasonable price.

One way to avoid your product from being too costly to reproduce is to use consultants knowledgeable about the production of print and nonprint educational materials. However, you, the developer, should be the ultimate approver of your materials.

Choose the Format

Choosing a medium is one of the most important decisions to be made in the format and design of your materials. Your choices may include film, print, audio-cassette, multi-media packages, video tapes and games.

Fortunately, there is a wide variety of media from which you can choose. Figure 1 displays the range of media possibilities.

Figure 1. Media Options

Media	Examples
Printed Materials	- Manuals, handouts, programmed text materials
Audio Materials	- Cassette and reel-to-reel audiotape, discs, radio, "live" voice
Audio/Print Materials	- Tapes and/or other audio materials combined with printed materials
Projected Still, Visual Materials with Audio	- Filmstrips, slides, transparencies
Motion, Visual Materials with Audio	- Sound motion pictures, videotape, videodisc, television
Real Objects	- Actual objects, models, mock-ups, games
Human and Environmental Resources	- Role playing, simulations, field trips

Remember that no single medium is likely to have properties that make it best for all purposes. The chart in Figure 2 compares some media forms. For more information, consult professionals who have experience in the medium that you are contemplating.

The decision of the medium should be based on a number of considerations. First, the audience. What are they most likely to learn from? What can they afford? If you select an audio-visual medium, will the audience have access to the needed equipment? What are your own resources and capabilities?

Your choice of medium should be a realistic one for you and your colleagues to undertake, unless you are in a position to hire others to do work in which you are not skilled.

Once the media options have been indicated and some compared, this information suggests that for your product to be effective you must ask yourself these questions: 1) What will the learner do at the end of the instruction? 2) Will the activity involve the recall and application of information (cognitive), the expression of feelings or values (affective) or body movement (psychomotor)? 3) What procedures will be followed to present the information, attitude or skill and to apply it? 4) What means of presentation (medium or media) will offer the greatest potential for learning?

Figure 2. Comparison of Available Media

Media	Production Costs	Duplication Costs	Type of Audience	Senses Used
Printed Materials	very low	very low	individual	Sight
Audiotape	low	low	group or individual	Hearing
Slides	low	low	group or individual	Sight
Overhead transparency	low	low	group	Sight-Hearing
Slides/tapes	low	low	group or individual	Sight-Hearing
Television	high	low	group or individual	Sight-Hearing
Motion Pictures	very high	low	group or individual	Sight-Hearing
Simulation	very high	very high	individual	Sight-Hearing Smell-Touch Body movement

Develop Print Materials

Experience has shown that commercial publishers and the ultimate users of print materials respond favorably to materials that are: 1) attractive in appearance; 2) easy to understand; 3) handy to use; 4) easy to obtain; 5) designed for retention; and 6) economical to revise.

The most important factor in the impression conveyed by your materials is your writing style. Write in a way that is easy and natural for you, use common words and phrases, avoid jargon.

Revising is a part of creating good written materials. Most writers realize, on examining a completed work, that their manuscript can be improved. When this occurs, you can save yourself much time and labor by using scissors to cut your material to pieces and refit the pieces together in a better order. Remember, it is no sign of weakness or defeat if your manuscript ends up in need of major rewriting. This is a common occurrence in all writing, and among persons who make their living as writers.

Remember, rich ornate prose is hard to digest, unwholesome, and frequently confusing. Therefore, be as brief and concise as possible. There can be a danger in providing too much information; the potential user may be so deterred by the size and detail that he/she does not read your product at all.

Watch your language. Don't use words and phrases that have negative or undesirable connotations. Don't use words or phrases that could be construed as sexist, racist, or chauvinistic. (Let an external reviewer check your copy to delete words and phrases of this type.) Don't use jargon, and use acronyms only when absolutely necessary — when a compound term is used frequently throughout the copy; jargon and acronyms frequently confuse the reader.

Be consistent in your writing style. For example, don't write "well-developed materials" one place in your copy and "well developed materials" another place. Choose a good style guide or a commercial publisher's style sheet for consistency in spelling, hyphenation, capitalization, punctuation, abbreviations, and handling numbers and dates. Many writers use a respected book on writing style such as A Manual of Style published by the University of Chicago Press. Of course, you will need to choose a basic dictionary; there are many, but many writers prefer Webster's New World Dictionary. (See bibliography for other recommended resources.)

Layout Your Print Product

The comprehensive layout, or "dummy," is a rough, hand-drawn representation of your final printed product. You or your graphic artist or designer should prepare the dummy to insure that the copy will fit into the design, that your product is visually pleasing and that the design is appropriate for the message and the audience.

Your dummy layout should project exactly how your final printed product will appear. Therefore, it must contain schematic representations that include finished format and size, location of copy, illustrations and photographs, heads and subheads, margins and white space. Your dummy layout also serves as a guideline for pasteup; it can provide a basis for estimating printing and other production costs.

Develop or Select Illustrations or Graphics

Illustrations, whether drawings or photographs, are not essential, although they may provide a pleasing break in copy. If they are used, they should:

- Add to, not detract from, your product's attractiveness and usefulness;
- Serve a purpose;
- Conform to the limitations of the printing process;
- Be of high quality; and
- Be well produced.

Although an elaborate printing process is no longer required to obtain good results, you should seek professional guidance in the planning stages. With professional guidance, you will be able to better determine how many and what kind of drawings or photos are needed to convey your message properly, and how they should be presented and sized to complement the text.

The placement of text and illustrations affects both the attractiveness of a page and its ability to communicate at a glance. Related passages of text should be grouped together and separated, by plenty of white space, from unrelated material. Illustrative material should be placed in immediate proximity to the point it is intended to clarify.

Prepare Final Copy

The options for preparing the final copy for the printer's camera include typewritten, typeset, or a combination of these two. Remember that typewritten copy costs less to produce than typeset text, corrections can be made more readily, and total production time is usually reduced. But typewritten requires more pages than typeset text and, therefore, your final document will be bulkier. Also, unless you have a special make of typewriter, you won't be able to justify (align) right-hand margins.

Typewritten and typeset copy can be combined in a single publication. For example, heads and other highlighted copy may be typeset or pressure lettered, while text copy can be prepared with a typewriter. If you use this combination, make sure that the typewriter type style is from the same type style family or blends well with the typeface used.

If you prefer typeset copy for the printer's camera, the range of typefaces available today is vast. The style of typeface can give character to the page, and its selection should be given careful consideration.

Type must always be large enough for ease of reading; print that is too small can discourage the reader. Some publishers of educational materials use an age-appropriate rule of thumb for type sizes: for children under age 7, 18-point copy type; ages 8 to 10, 14-point copy type; and age 12 and over, 11-point copy type.

Type is always measured by points and picas. There are six picas to the inch and 12 points to a pica or 72 points to the inch. Use of a pica ruler can be of tremendous help when measuring type.

If at all possible, get professional help to arrive at the optimum relations of type, margins, and line spacing. Typesetters, graphic artists, and printers have reference books, catalogs, or specimen sheets illustrating the vast array of typeface styles.

If you have your final copy typeset, the typesetter may delay typesetting if your copy does not contain complete specifications (i.e., instructions about the size and typeface of headlines and text copy). When typesetters have incomplete specifications, there are two alternatives: 1) hold up the work and find out, or 2) use her or his imagination and furnish the missing specifications. Both of these could be detrimental to your project; one delays production, and the other will result in copy having to be retypeset at additional costs to you. Therefore, be sure to write instructions in full. Do not count on verbal or incomplete instructions. Never write specifications unless you know how to. If in doubt, by all means, consult with your typesetter before you prepare your specifications -- preferably, before you prepare your layout.

Now that you have determined your type specifications, your copy is ready for the typesetter. But, before rushing off to the typesetter, make sure that you take the original -- not a carbon copy -- to the typesetter. Also, if a lot of changes or corrections have been made on your original copy, retype it. The cost of retyping is a lot cheaper than paying a high hourly rate to the typesetter, who will be slowed down by hard-to-follow copy -- and you will end up with fewer errors in the galley proofs. It's a good idea to send your comprehensive layout along with your copy. This can aid the typesetter, but be sure the typesetter returns the layout because you or whoever prepares the paste-up will need it as a guide.

Proofing The Final Copy

When your copy is typeset, the typesetter will return strips of typeset copy to you. These are referred to as galley proofs or galleys. You should receive two galley sets but, if you don't, photocopy an extra copy. Along with the galleys, your original copy and layout (if sent) should be returned.

You must read galley proofs carefully, checking them against your original copy. Proof the galleys to detect poor spacing and alignment, imperfect letters, crooked lines, letters of wrong style or size, word or words omitted, word or words set twice, and wrong indentions. Also check for misspelled words, and verify carefully all names, tables, numerical calculations, formulas and the spelling and division of foreign words and phrases. At this point, make only corrections and changes that are absolutely essential -- not discretionary changes. If you add copy, try to make a compensating deletion; this may mean no additional expense or minimal expense.

Although your typesetter may employ a proofreader who may read galley proofs before they are sent to you, this in no way lessens your responsibility for proofing. As a matter of fact, with complex copy, you will find your proofing more accurate if you have someone help you proof -- one proofreader reads aloud from the original copy while the other proofreader silently reads the galley proofs.

As you proofread your galleys, all corrections, changes and deletions should be indicated in the margin. If there are marks on the galleys when you receive them, use a different color ink to indicate your marks.

As soon as you have proofed the galleys, they should be returned to the typesetter to make all corrections and changes. The typesetter will return corrected galleys to you. These should be read as carefully as the first galleys because new mistakes can occur while the original mistakes are being corrected. For example, sometimes a whole line or more must be reset for a change of a single letter, and in correcting one mistake another is sometimes made elsewhere in the line. Therefore, you should examine carefully all lines affected.

Paste-Up The Copy

When you are satisfied that your galleys are correct, you are ready for pasteup (preparation of type and illustrations in page layouts for photomechanical reproduction). In preparing the pasteup, you or a layout person will place in position and paste to a piece of cardboard the various elements required by the design as represented on your comprehensive layout. Pasting up copy requires expertise and time; unless you have both, you'll be wise to use the services of a graphic artist. (If you don't know a good graphic artist, consult Literary Market Place, published and revised yearly by R.R. Bowker.) All typeset copy and artwork (not photographs) must be pasted up. If your copy is typewritten, pasteup is needed only for covers, special divider pages, and pages containing artwork. Do not paste up photographs; placement and size of photographs should be indicated on the pasteup board, and they should be given to the printer along with your pasteup.

After you or the graphic artist has completed the pasteup, again check it to be certain that headlines are accurately placed, lines are straight, margins are even, graphics are properly sized and captioned, narrative copy is correctly sequenced and white space is sufficient; if photographs are involved, be sure to indicate on the pasteup and photographs which photograph goes where and in what size.

Work With The Printer

Your pasteup is ready for the printer. However, at this point, it is advisable to seek bids (estimates of printing cost) from at least three printers. Printers will need certain necessary, written information to give you a price quote. This information, called specifications or "specs," will later form the basis of a written agreement between you and the printer. This information usually includes the following:

- ink color(s), remember three and four colors are more expensive than one or two colors;
- paper color, weight, and texture;
- finished size;
- total number of impressions, including covers;
- number of copies to be printed, quotes are usually given for multiples of 500;
- whether the art is camera-ready or whether the printer will have to make it camera-ready;
- special needs, such as reduction, screening, reverse printing;
- folding required;
- binding method;
- packaging (how product is to be wrapped or boxed and in what quantity); and
- delivery dates for proofs and finished product.

If you aren't familiar with printers' specifications, consult someone who is, such as a graphic artist. Also, chances are great that the three printers you choose to bid on your product will have sales representatives; if they do, request that a sales representative from each visit you to review your layout and pasteup, and assist you in preparing the specs.

After you have chosen a printer who can meet all specifications at a cost satisfactory to you, request that the printer prepare a brownline or blueline. This is the last proof before your product goes to press. Although errors should not exist at this point — you have already reviewed final copy, galley and pasteup — recheck every item anyway to be sure that every item included in your design is correct before the actual presswork begins; although corrections at this stage are more costly than at other stages, make the required corrections.

Take Your Manuscript Directly to a Publisher

Some developers of educational print products may prefer to prepare their materials up to only the manuscript stage and, thus, not be bothered with the various tasks mentioned earlier. However, the same principles of planning, research, and writing still apply even if the product is completed only up to the manuscript stage.

Publishers expect to receive manuscripts that are neatly typed, double-spaced, numbered pages, with approximately one-inch margins.

One of the disadvantages of going directly to a publisher with your manuscript is a loss of control over further changes in your manuscript and a limited voice in how the final product will be formatted and designed should your manuscript be accepted. You can be certain that a manuscript sent to a publisher is read by several editors who critique it for content, appraising its value, detecting its weaknesses and its strong points, judging its literary style, and judging its skill or lack of it, shown in the assembling of the subject matter. The publisher's editors will also look at the prospective product to ascertain that sensibilities of the ultimate users of the product have been respected. The publisher will also consider the marketability of your product. Should your product be accepted, expansion of some parts and simplification of others may be deemed necessary by the publisher, as well as rewriting of large portions of your manuscript; depending on mutual contractual arrangements, you may or may not be involved in any revisions.

If your manuscript is not accepted by a publisher, don't be discouraged, especially if it's your first try. Rare is the person who gets her or his first manuscript accepted by a publisher. If your manuscript is refused with conditions (with suggested changes), evaluate the conditions and decide if you want to carry them out to make your manuscript acceptable for the publisher.

Remember that more than one company is publishing products in your field. Therefore, if your first choice turns down your manuscript, try other publishers in your field.

Develop Nonprint Materials

Audiovisual media have come to the forefront as basic communication tools. Audiovisuals can enable persons far removed from an experience by time or distance to share the experience in sight and sound; they can capture and hold the attention of an audience; and they can clarify information, as well as reinforce arguments.

As has been noted in Figure 1, there are several differences in the kinds of audiovisual materials. Like printed materials, audiovisuals should have accurate contents, be acceptable in technical terms and be aesthetically pleasing.

Remember that even though audiovisual materials have more impact than printed materials, they also cost more and require specialized skills and equipment to produce and present.

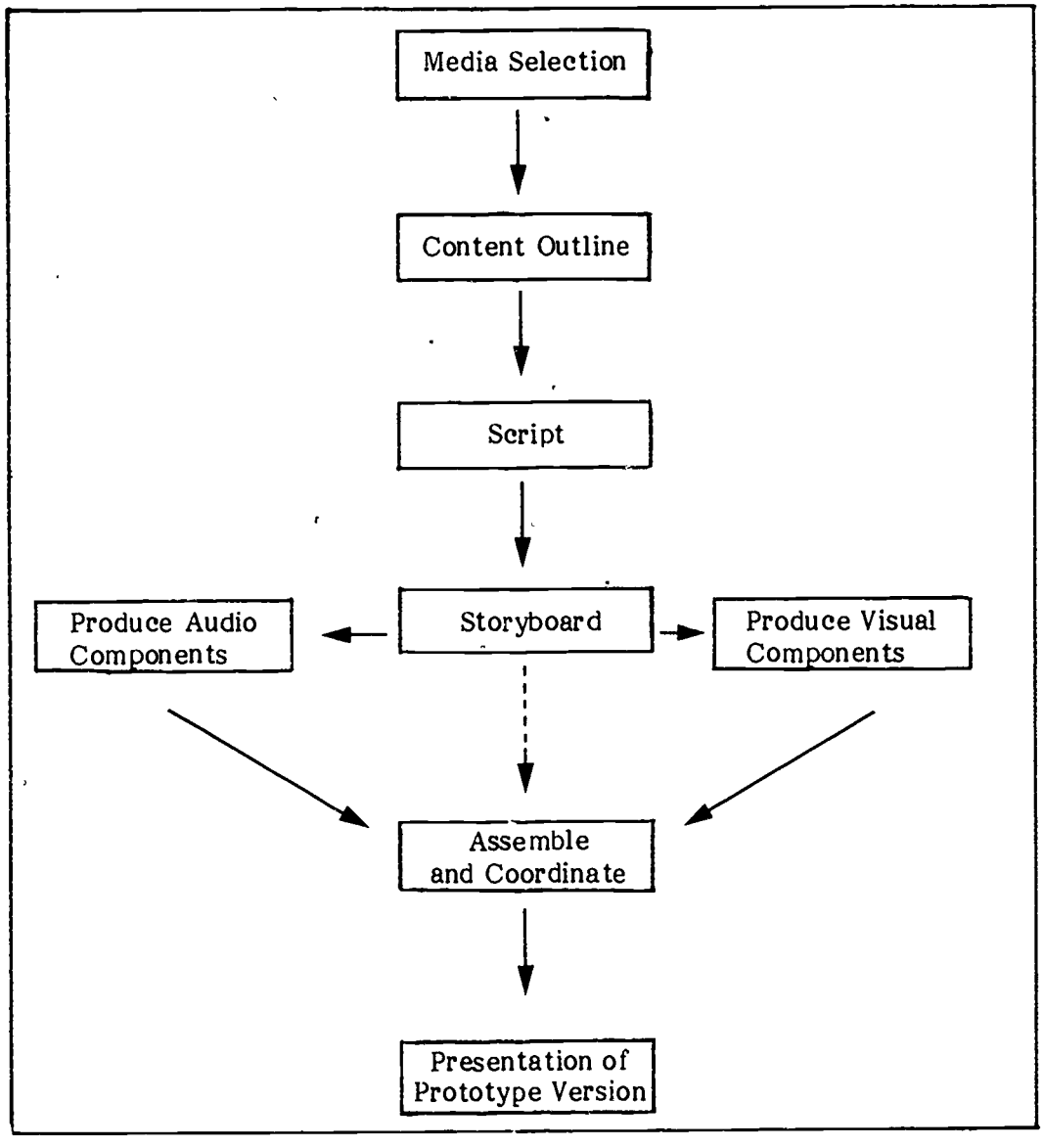
You must use the services of a professional (preferably someone with both technical and artistic skills) if you produce a film or videotape; even if you prepare relatively simple materials, such as transparencies and slides, you will probably need outside help. (Consult Audiovisual Market Place: A Multimedia Guide.) You may need the services of a graphic artist when preparing transparencies and of a photo lab for developing and copying slides. You will have to deal with a typesetter if you decide to use typeset titles and with a graphic artist if your product includes charts, graphs, or diagrams.

Although you will need the services of professionals in producing your audiovisual material, you must always be in charge — you know your program better than anyone else. You have to take the first steps in planning your audiovisual product.

In planning your audiovisual product, you will need to identify your audience, how much this audience already knows and what this audience needs to know. With this, you will be better able to decide if the needed information can be communicated in a single product or more, as well as in what context your product will be used — day-long session, one-hour session, etc.

Whether you attempt to produce an audiovisual presentation in-house or manage the services of outside professionals, it is essential that you have a thorough understanding of each step in the production process and how these steps interrelate. Figure 3 contains the basic building blocks for any audiovisual production and, consequently, can have a wide range of applications.

Figure 3. Steps in Producing Audiovisuals



Two axioms should guide your final choice and production of nonprint media: 1) Don't overmediate; 2) Produce high-quality, universally acceptable master materials. Overmediation is tempting. If one filmstrip is good, aren't two filmstrips better? No, unless they each contribute substantially to the worth of the product.

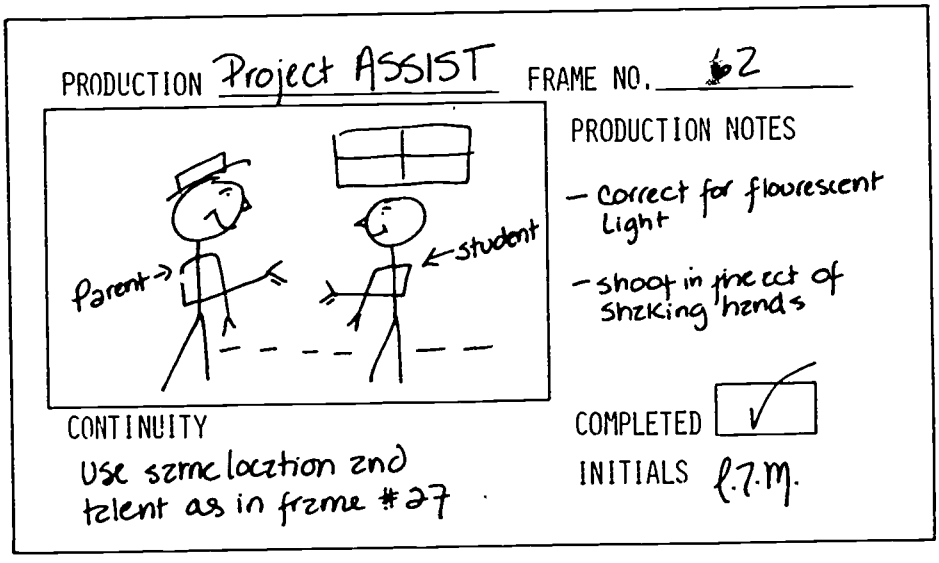
Generally, the unit cost of a product depends on the marketing potential, the reproduction cost, and the distribution cost. Reproduction and distribution cost influence the selling price of a product. The larger the product, the greater the unit cost for reproduction and distribution. If this cost becomes so great that producers are unlikely to be able to recover it from the buyer, they will not be interested in adding your product to their line. You need to safeguard against overproducing a product (including too many parts and pieces) and against "gold plating" a product (making it heavier, stronger, bigger or of more expensive material than is needed).

Prior to actual production of any audiovisual medium, however, there should be a treatment and a storyboard and/or script.

A treatment is a written narrative which describes the approach to the product being produced. It should communicate the purpose of the material, the intended audience, and the sequence of events. It is a summary of the content and approach which will be followed to attain the purpose for the defined audience.

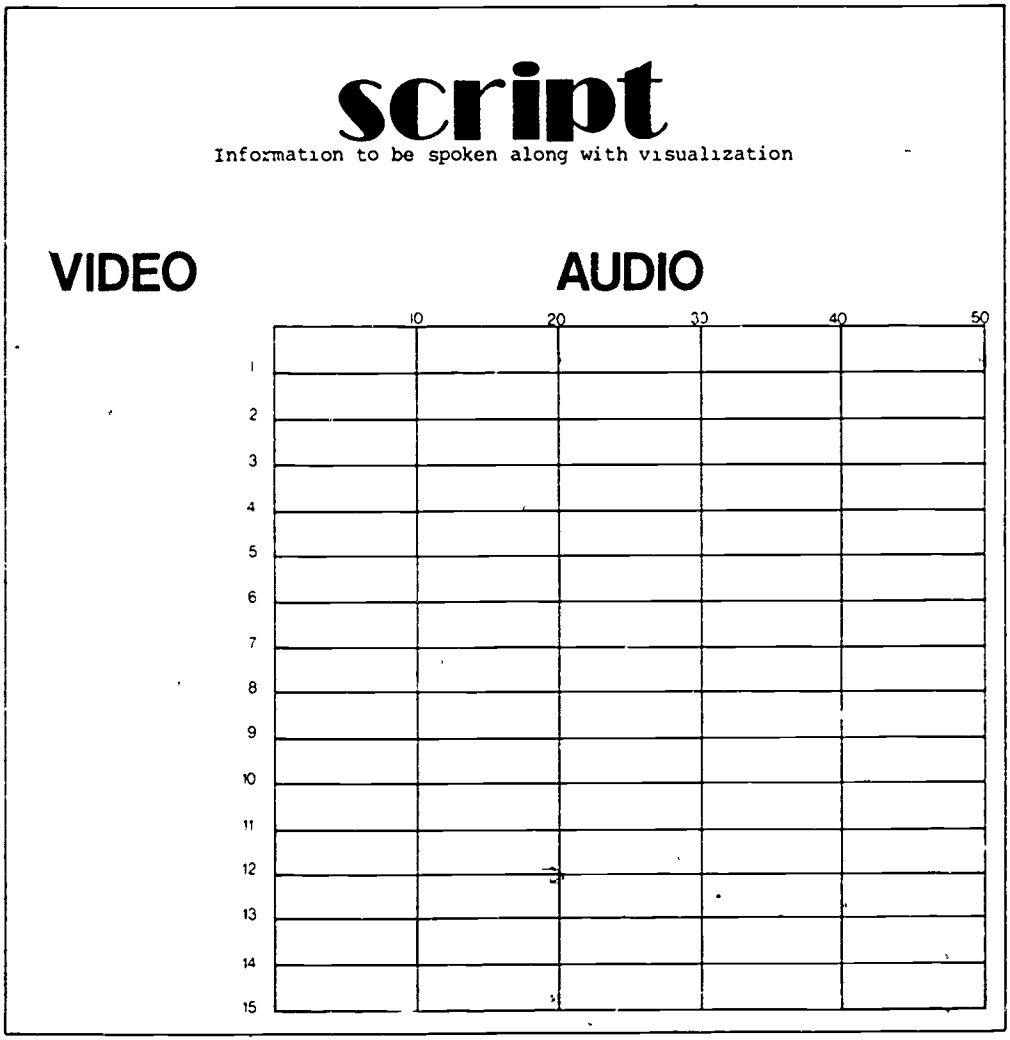
A storyboard is a visual display of illustrations and written narration arranged in appropriate sequence. Instructions to the photographer, artist, narrator, and/or audio engineer are usually included. One method for creating a storyboard is to use color-coded, 3" X 5" cards; see Figure 4.

Figure 4. Storyboard Card



A script is written manuscript which contains a description of visual images and the audio which is to be heard as the images are seen. Scripts usually number the frame or sequence and provide cumulative time information. Figure 5 is an example of an acceptable script format.

Figure 5. Format for Script



Content of scripts should contain the following elements where appropriate:

- An appropriate introduction with a statement of purpose;
- Clear transitional narrative and visual statements within the material;
- Arrangement and juxtaposition of each event in an effective manner;
- Adequate emphasis of important points;
- Vocabulary level which is appropriate to the comprehension level of the target audience;
- Explanation of technical terms and abbreviations when necessary to enable viewer understanding;
- Proper nomenclature for the tools and equipment used;
- Complete and accurate reference to related materials;
- Technically accurate information with no irrelevant and disruptive information;
- Rate of presentation (pacing) and length appropriate to the target audience and the complexity of the subject matter; and
- Generation and retention of viewer interest.

Most product developers are accustomed to writing materials that are intended to be read. Writing habits are usually developed on a basis of rules that produce an acceptable literary style.

Scripts, however, are meant to be heard. They require unique writing skills and have different measures of quality. Each line must be written so that it can be spoken naturally and clearly, and it should provide variety and a change of pace for your listeners. You will be more successful in holding their attention. This requires attention to characteristics such as:

- Rhythm;
- Combinations of words and sounds that can be articulated easily, clearly and smoothly;
- Placement of key words where the listener can be sure to hear them; and
- Short sentence structures.

Remember that the visual aspect of an audiovisual presentation is as important as the audio aspect and is the main justification for the added expense. For example, here are some guidelines that can aid you in preparing the visual, as well as the audio, portion of your media.

Produce Slides

Slides use a 35mm format (2" X 2" slide mounts; 22.9mm X 34.2mm aperture dimensions). All slide sets should use only this size throughout and follow a horizontal format. Other general guidelines for slide presentations are as follows:

- Use color film for all slides;
- Limit each slide to one main idea;
- Use progressive disclosure (building up an idea point-by-point using additional information in each successive slide until the visual is complete);
- Limit each slide to 15-20 words and include no more than will be discussed;
- Leave space between lines (at least the size of a capital letter);
- Use several simple slides rather than one complex slide; and
- Use duplicate slides to refer to the same idea at different points in the presentation.

Produce Filmstrips

Filmstrips are usually requested when a large quantity of prints is required. All artwork and photographs must use a horizontal format.

The general guidelines for slide presentation should be followed for filmstrips.

Guidelines for filmstrips are as follows:

- If captions are used, limit the number of words to two lines;
- Test the material in slide format prior to committing it to filmstrip format; and
- If sound is to be used, an audiocassette should be used with automatic advance cues (50Hz) on one track and audible cues on a second track.

Produce Motion Pictures and Television Products

1. These media are designed to show motion, not still pictures.
2. Regardless of audience size, the script should be aimed at the individual learner (viewer).
3. The sound track must be directly related to the visual elements and should be in the active voice.
4. The narration should not tell what is on the screen unless interpretation or clarification is necessary or a critical point must be stressed.
5. The script should offer a logical flow of visual information.
6. Artwork prepared for motion pictures needs to meet the same standards as for other media.

Your production of a universally acceptable, high quality original is crucial to a publisher/producer. Universally acceptable originals are easily reproducible by the distributor and do not require special equipment on the part of the user.

High quality originals are necessary in the publishing/producing world. Most publishers are prepared to create these originals for print products, but they are not prepared to do so for nonprint products. They rely on the quality of the original you produce to ensure that the product they reproduce and sell will meet the professional standards that they have set and that the user expects.

Two rules with regard to audiovisual products intended for quantity distribution are: 1) all other things being equal, the larger the size of the recording medium, the better the quality of the original recording; 2) duplicates are always inferior to the original. In order to maintain the quality of an original recording or negative, it should be stored under clean, temperature-and-humidity-controlled conditions. Originals must not be played or projected; doing so may result in damage and/or loss of quality.

Because the technical quality of your audiovisual materials can determine whether they will be commercially produced and marketed, it is important that you hire the expertise you need to ensure this high quality. Publishers and producers will not distribute home-movie type productions.

Produce Videodisc

The videodisc, a recent innovation in audiovisual technology, appears to be where the future of the video medium is headed. This promising tool can satisfy the requirements of interaction and individualized instruction. It offers the user such design features as electronic addressability for each frame, random access, freeze-frame mode and the capability to store the above media characteristics on a single inexpensive receiving source.

There are two basic types of systems currently being developed. One system is called the Video-Audio High-Density Disc System and uses a grooveless, capacitative pickup system. The system uses a 12", plastic disc with information pits instead of grooves to provide two hours of playback — one hour per side — of either video with two tracks of audio, or super high-fidelity audio.

The other system, developed by Magnavox, is an "optical" unit, which means the pickup system involves a low-power laser beam so that nothing actually touches the tracks on the disc.

Produce Games and Simulations

The use of simulation/gaming has been growing in education for the last fifteen years. Not only is simulation/gaming popular, it is effective. Games and simulations can motivate. The problems encountered in simulations approximate real-life situations. Games and simulations also have the ability to affect attitudes and can teach cognitive material as well.

Games/simulations are an instructional approach when a "real-life" type of involvement is desirable and when work with actual materials or equipment would be too costly, too unmanageable and/or too dangerous. This approach also offers the instructional advantage of being able to eliminate nonessential and distracting elements by simplifying a real life situation.

Creation of a game/simulation in-house can be a very rewarding experience albeit time consuming. Before starting production, spend time in using and testing commercially prepared materials. Also, explore the literature on games and simulations.

Produce Computer Products

Computers are used as media for self-instruction or for simulation. Since computers can store a great deal of information, interact rapidly with individual students and display a wide range of stimuli, they have the potential to become even more widely used in the near future.

Computers can be used to interact directly with a student in presentation of content and in testing progress. This type of assistance is known as computer assisted instruction. Because of the flexibility and capacity of the computer to provide branching instruction, it can assume the role of a patient tutor as well as provide the student with necessary reference materials or clerical services.

Computers are also used in instruction to help manage the educational process. They can be used to measure student characteristics, help in the design of diagnostic tests, control students' access to lesson materials and provide complete data on the progress of individual students or groups of students. This type of use is usually referred to as computer managed instruction.

CONSIDER LEGAL ISSUES

Any general statement about complying with legal requirements is subject to myriad exceptions and refinements. If any doubts exist, consult your U.S. Department of Education grant or contract officer.

Obtain Copyright

Authors create original works such as plays, motion pictures, sound recordings, and books. The term copyright describes the system of statutory protection that excludes anyone other than the owner of an original work from reproducing the work.

The U.S. Congress established the copyright law in Title 17 of the United States Code. The latest complete revision of U.S. copyright law was passed in 1976 and became effective January 1, 1978.

Under section 102, "Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression . . . from which they can be . . . reproduced . . . ." "Works of authorship" include: (1) literary works; (2) musical works; (3) dramatic works; (4) pantomimes and choreographic works; (5) pictorial, graphic and sculptural works; (6) motion picture and other audiovisual works; and (7) sound recordings.

The two fundamental criteria of copyright protection are originality (must not be copied from another) and fixation in tangible form (such as written or recorded). Copyright does not protect ideas or information revealed by the author's work. Copyright protects only the literary, musical, graphic or artistic tangible medium of expression (form) which can be reproduced or communicated.

The first copyright law of the United States was enacted by the First Congress in 1790, in exercise of the constitutional power "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries" (U.S. Constitution, Art. I, Section 8). Comprehensive revisions were enacted in 1831, 1870, 1909, and 1976.

In essence, "The owner of copyright . . . has the exclusive rights . . . to reproduce . . ., to prepare derivative works . . ., to distribute copies or phonorecords . . . of the copyrighted work." Section 106

Terms of Copyright

For a work created after January 1, 1978, and if it was "made for hire" by an employee, "Copyright endures for a term of seventy-five years after first publication, or a term of one hundred years from the year of its creation, whichever expires first." Section 302(c)

With a few exceptions, for a work created after January 1, 1978, and not made for hire, copyright "endures for a term consisting of the life of the author and fifty years after the author's death." Section 302(a)

The statute becomes complex if a work was created or copyrighted before January 1, 1978. Generally a term of twenty-eight to seventy-five years can be secured.

Notice and Registration

For you, the developer, this system of copyright has a dual application. On the one hand, it permits you to create your work knowing it has protection. On the other hand, it imposes responsibilities on the developer to avoid using works created by another. Avoiding misuse of such material should be the aim of every developer. However, the rules are complex and, for every rule, there is likely to be an exception. Seek the advice of an attorney whenever a doubt arises.

The statutory notice is required for every work before it is "publicly distributed." The notice consists of the word "Copyright," or the abbreviation "Copr." or the symbol ©, the year of first publication, and the name of the copyright owner. A sound recording notice will also use the symbol ℗.

If you create an original work of authorship that is not a work for hire, and place the required notice on it, then you are the owner of the copyright. Published or not, copyright exists.

The statute requires deposit of two copies of a work with the Library of Congress within three months after the work is published. As a separate but usually concurrent matter, the work may be registered with the Copyright Office of the Library of Congress at any time. You register it by adding an application form and paying a fee, along with the two deposit copies.

Assuming the copyright notice is properly used, copyright registration is filed with the Register of Copyrights, Library of Congress, Washington, DC 20559.

Developers should be aware that works developed with funds under contracts may not be disseminated with a copyright notice without first obtaining written authorization from the U.S. Department of Education (ED). Recently, under the Education Department General Administrative Regulations (EDGAR), developers need not seek prior ED authorization to claim copyright for a work in the name of the grantee entity receiving the grant.

It is the responsibility of the owner of the work to maintain a reasonable and responsible control of the work prior to copyright so that it does not enter the public domain. Failure to document and demonstrate such control can forfeit the ability to place the work, as intended, under copyright. In addition, the Copyright Office advises that to avoid publication of a work without the owner's consent and before copyright has been secured, the owner should "affix notices to any copies which leave his or her control."

Obtain Permissions

In compiling materials, you may wish to use works authored by persons other than yourself. If so, the first thing that must be decided is whether use of a particular work constitutes copying, in the copyright sense. It probably does unless the work to be used is in the public domain (not copyrighted or no longer copyrighted) or unless the use will be so minor as to constitute "fair use" of the work.

There are no precise standards by which "fair use" may be measured. Four criteria for "fair use" set forth in the statute are "(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work." Again, this is an area where legal assistance is advisable.

If the copying is necessary, and if that would constitute infringement, permission to include the material must be obtained. It is important that the permission be applicable to the final version to be published, not just to the developmental version.

Incorporating a protected work, in any manner into the development of a new work, may involve potential legal liability for copyright infringement. How serious is infringement? You be the judge. Section 504 of the statute allows a copyright owner to sue an infringer and to elect either (1) proven actual damages, plus additional profits of the infringer or (2) statutory damages. Where willful infringement is proven, statutory damages can go "to a sum of not more than $50,000."

Permission should be requested by means of a letter addressed to the copyright holder. The letter should contain information about the project and how you plan to alter, excerpt, adapt, or incorporate the protected work. Inclusion of a permission form for the copyright holder to return often brings a prompt response. The form should be in duplicate so that both the copyright holder and the person making the request have a signed copy for their files.

A letter to request permission should contain the following:

- developer's name, title, and agency affiliation;
- a description of your new work, including a title or working title;
- a specific statement requesting permission to use the protected work;
- a detailed statement as to how the developer intends to use the protected work (purpose and objective), as well as how the work will be duplicated, i.e., photocopy, slides, etc.;
- a description of the intended audience (age and number), stating scope of distribution (i.e., local, state, regional, national, international), and whether the distribution will be through commercial or noncommercial distributors;

- the proposed publication date and how long the publication will be available (duration of use of the protected work) if the period will be short;
- sample credit line;
- a statement regarding proposed royalties or fees; and
- permission form (two copies, both to be signed by the developer and the copyright holder and one returned by the copyright holder to the developer).

Obtain Talent Releases

In the production of instructional materials, developers often use students, parents, school personnel and other individuals — both professional and amateur -- as actors or actresses or, to use the more general term, as talent. It is important that anyone whose image appears in any sort of photographic reproduction, whether it is a still, motion picture, or video image (or whose voice appears on any variety of sound track), consent in writing to the release of the photograph or sound recording. Obtaining such a release is crucial. Using the photograph or tape without consent will often raise questions of possible right-to-privacy violations. The only way to avoid these problems is to obtain, in advance of the shooting or recording, a valid release or consent form.

The consent must be in writing and should be as specific as possible. Note that if the person whose picture is being used is a minor, the consent form must be signed by the parent or guardian, as well as by the minor. All signatures should be witnessed by third parties. A consent form should clearly state:

- the type of photographs or sound recordings involved;
- the uses to which they may be put;
- the projected distribution of the product (project as widely as possible);
- a statement of the intended type of distribution, commercial (for-profit), or noncommercial (not-for-profit);
- a waiver for personal injury claims;
- a recitation of any fees paid or to be paid, if any; and
- a granting of a right of final approval to the signer (optional).

The form must be dated and, whenever possible, copies of the dated photograph or recording involved should be affixed. It is recommended that a separate consent form or an additional section be prepared for photographs or audio recordings for publicity purposes. The signers should be informed of any changes in the intended use or distribution of the materials and should initial their approval of such changes on the original consent form. The forms should be signed before the pictures or tapes are made. A sample of the kind of information required appears in Appendix G.

Obtain Federal Clearances

Audiovisual materials developed or to be developed with the aid of ED funds (directly or indirectly) must be cleared prior to beginning work on the material.

To obtain an audiovisual product clearance, the ED project officer, upon request by the developer, must submit the original plus two signed copies of ED Form 524-A (Request for Audiovisual Production) and the grant/contract application to the ED Audiovisual Clearance Officer and to the Department of Education's Office of Public Affairs. Requests for audiovisual product clearance should be initiated by contacting your project officer.

The term audiovisual materials, as defined by the ED, refers not only to the completed product, but also to all steps and techniques leading to the realization of the completed product. The term covers motion pictures, videotapes, slide shows, filmstrips, audio recordings, exhibitry (or similar materials), design layout, preparation of scripts, filming or taping, sound recording, editing, fabricating or other activities leading to the acquisition or creation of audiovisual materials, regardless of intended use. The term applies to materials intended for commercial distribution as well as those to be disseminated through federally supported programs, such as the National Diffusion Network.

It should be noted that an audiovisual product clearance also may be needed for the field-test version of your work. Again, it is best to check with your project officer prior to beginning work on the material.

Developers involved in writing manuscripts, under an ED contract or grant for publication by the Government Printing Office (GPO), but not for commercial publication, must obtain a separate set of clearances before the manuscript can be published. Clearance should be obtained before the manuscript is started. The procedure to follow in obtaining the necessary clearances, as well as an outline of what information must be on file, is contained in a booklet entitled How to Prepare and Clear Manuscripts for ED Publications, Speeches, and Articles, available from:

Office of Public Affairs
U.S. Department of Education
Publication Branch
Editorial Services Division
400 Maryland Ave., S.W.
Washington, DC 20202

Requests for audiovisual and GPO clearances are initiated by contacting your project officer. Each time the same questionnaire (e.g., a pretest or posttest) is used with more than 10 people, you must obtain a forms clearance from the Office of Management and Budget. To obtain this clearance, start by contacting your project officer.

Negotiate Necessary Licenses

Once the decision has been made to commercially publish the material, it is necessary to draft a license between the parties to the agreement. A license agreement is a legal document in which the author or owner grants written authorization to the publisher to publish, sell and distribute the work for a limited period of time. In addition, the license specifies the rights and responsibilities of the parties to the license — the publisher and the copyright holder.

The terms of a license contain certain standard provisions but will vary according to the needs of the parties and the nature of the agreement. Generally, however, a license will specify the amount and distribution of royalties, the publication schedule, marketing approach for the work and a warranty or disclaimer by the copyright holder that the product represents an original work that the copyright holder created. In addition, a license agreement indicates who will bear the legal and financial liability for enforcing the copyright against infringement by others.

Include Disclaimer

You will need to put a disclaimer on the inside front cover or back of the title page for print materials, and at the beginning or end of nonprint products. The disclaimer statement reproduced below is based upon the disclaimer requirement stated within EDGAR (45 CFR section 100a.620(b)).

The contents of this (insert type of publication; e.g., book, report, film) were developed under a grant from the (insert name of agency in the Department of Education that provided the grant), United States Department of Education. However, the contents do not necessarily represent the policies of that agency, and you should not assume endorsement by the Federal Government.

DISSEMINATE THE PRODUCT

Once your product is completed, the next step is distribution. This requires knowing who and where the user is, choosing the best way to get your product there, and, sometimes, managing the whole effort.

There are basically three alternatives for distributing your product. These alternatives are: (1) using a commercial publisher; (2) publishing the product yourself; or (3) publishing through a public agency.

Decide on the Means of Distribution

1. Commercial Publishers:

The advantage of using a commercial publisher is that the publisher takes care of all details. Publishers manage the printing, maintain the inventory, handle all orders and do the marketing of the product. The disadvantages of using a commercial publisher are that you lose some control over your product and must settle for a royalty as the income from the product. Royalties usually range from 5% to 20% of the retail price of the product, depending on the specific agreement between the developer and the publisher.

2. Publishing Yourself:

If you decide to publish your product yourself, the advantages are that you maintain complete control of all aspects of distribution from printing to marketing, and you receive the net income from the sale of your product. The disadvantages are that it requires a financial investment on your part to publish your product as well as a substantial investment of time to manage the entire marketing and distribution process.

3. Publishing through a Public Agency:

Although publishers are usually only willing to publish products that have wide market appeal, public agencies will frequently publish products to only a limited market. These agencies will also handle most of the printing and distribution details. However, you should also consider the fact that public agencies often sell their products at cost, which means little or no income to the developers.

One way to evaluate all the variables that affect your decision on how to distribute your product is to create a simple matrix such as the one shown on Figure 1. When you have filled in all the boxes with the relevant information, you will be able to see at a glance just what factors are most important in making your choice. Once you have made your decision about which means of distribution to use, you should conclude a distribution agreement that outlines responsibilities for printing and production, handling orders, keeping the inventory, and marketing the product, as well as clarify any financial agreement, such as royalties.

Figure 1

	Cost of Printing	Cost of Advertising	Efficiency of Distribution	Projected Profits
Commercial Publisher				
Publish Yourself				
Public Agency				

Determine Your Involvement in the Distribution Process

The last phase of product development is to determine your own involvement in the eventual distribution of your product. Active involvement could include conducting workshops, doing training in the use of your product and making yourself available for consulting. If this kind of involvement does not appeal to you, you can allow the publisher or distributor to handle all distribution activities, or you can participate in only selected activities. Outlining your involvement in advance helps you to plan your own time and helps your publisher to know in which activities you will be involved.

Seek and Negotiate with a Commercial Publisher

If you decide that commercial publication is the route for you to take in distributing your product, there are a number of steps that you may choose to take to make certain that you have found the best possible publisher.

1. Identify Possible Publishers:

By examining catalogs of educational material, asking colleagues and through your own knowledge, make a list of publishers who you believe are appropriate or might be interested in distributing your product.

2. Develop a Request for Proposal:

After you have identified possible publishers, a next step you may want to choose is to develop a Request for Proposal (RFP) that describes your product, its possible audiences, how it compares with other products already on the market, and your or your colleagues' estimation of its market potential. It should also include any specific requirements that you have for its distribution. Once the RFP is developed, you should send it to the publishers, giving a specific deadline date to respond with a proposal.

3. Publisher Review:

Once publishers have received your RFP, you should either hold an open-house to allow publishers to come and view the materials or send copies of your product to the publishers for review.

4. Receive Bids:

After publishers have responded to your RFP and have made proposals regarding the distribution of your product, you should analyze the proposals to determine which proposal is best for your product. You should consider:

- the number of copies to be printed;
- the royalty agreement offered;
- the length of time that they are planning to distribute the product;
- how they are planning to promote the product;
- what they are going to sell it for; and
- which specific audiences they are thinking of marketing it to.

5. Select a Publisher:

Once you have reviewed the proposals from the various publishers, select the publisher that best meets the criteria for your product.

6. Draw up a Contract:

After you have selected a publisher, draw up your own version of a contract to use with the puolisher. It is much safer to use your own contract than to use the publisher's contract. The publisher should receive exclusive license to publish the product but not hold copyright. Copyright should continue to be held by you or your school or organization. Also, it is recommended that you involve a good copyright attorney in the development of this contract and in negotiations for the licensing of the product. It is important to insure that the contract represents the best interest of you and the others involved in development.

Distribute the Product Yourself

If you decide to market the product yourself, there are a number of strategies that you should consider:

1. Determine the Audience:

As with the development of the product, one of the very first steps in distributing your product is to determine its audience. In what settings will the audience be using your product? How much time will the audience be willing to invest in learning about your product? What publications do they read? What types of articles interest them? What conferences do they attend? What are the activities in which they normally engage?

You can find out the answers to these questions by "best guess," by surveying prospective audiences and by trying different strategies in identifying your audience.

There are three types of audiences to consider when you are marketing your own products. The first are called "customers." Customers are people who already know about your product and believe that you are credible. They have purchased from you before, attended workshops that you have conducted or have done work with you in the past. "Inquirers," the second audience, are those who have expressed interest in your product. And, the third are "prospects." These are people who you think need your product, but who do not now know about it.

In promoting your product, you should put about 80% of your effort into marketing your product to customers; about 15% of your effort in marketing to inquirers, and about 5% of your effort in marketing to your prospects.

There are a number of ways to determine how to market to your audience. One of the first things to realize is that you have the highest success in marketing to the users of the product, not to the decision makers. A good example of this is the Saturday morning cartoons. On Saturday mornings, when children watch the cartoons on television, every commercial is for toys and other products that children like and use. Since parents buy the toys and other products, why are there no advertisements for toys in the evening? Because, the rule in marketing is to market to the user. If you show children a toy commercial, they will persuade their parents to buy the toy. If you show parents a toy advertisement, they will not have any need for or interest in the toy and, therefore, won't choose to buy it.

So, the rule-of-thumb in marketing your educational products is to market directly to the user. If you are developing materials that will be used by teachers, market directly to the teachers and let them convince the principals to buy the materials.

2. Determine the Objectives for Your Distribution:

This step involves deciding what you want to accomplish from your distribution efforts. With the other members of your staff, you should write specific distribution objectives for the use of your product. In developing these objectives, you may want to consider: the types of distribution activities you want to engage in; the funds you have available for distribution; and the specific audiences of your distribution activities. These objectives become the guidelines or sales projections for your distribution plan. You may even want to set distribution targets, such as number of copies distributed, amount of product income, or geographic dispersion of your products.

3. Develop a Distribution Plan:

When you have identified your audience, its characteristics, and considered the resources available on your staff, you are now ready to develop a distribution plan for your product. The variety of distribution activities that you plan to use should be integrated; not just a buffet, but a very carefully orchestrated plan to create greater distribution of your product. It should include a time-line, staff time involved, staff responsibilities and names of staff who will engage in each distribution activity.

4. Determine the Budget:

The budget is another aspect of your plan. How much money is available within your organization to use for the distribution of your products? What kinds of activities are easiest to get funds for? For example, it might be easier to get funds to support a newsletter or a product brochure than it would be to sponsor a series of awareness conferences about your product. These are important considerations when developing your awareness plan.

The following is a description of activities that you may want to consider in developing your distribution plan.

- Organize your audiences into common interest groups: Common interest groups can be used as a means of building on presently established interest and providing a broader base for sharing resources, experiences, and expertise. They can also be used to involve individuals at different stages in the distribution of your product. Such groups are particularly useful in distributing specific types of information about your product. As an example, you may want to identify groups that might be interested in just one component of your product, such as a parent component. A mailing can be done to these groups that highlights this component of your product. The disadvantage of this strategy is that in many cases it means developing a series of overlapping promotional materials for different interest groups. It is an expensive strategy, and the return may not be worth it.

- Direct mailings to all prospective audiences: A general mailing, called "direct response marketing" in the commercial world, is used as a tactic to create awareness about your product among potential users and to give them information about its uses. This technique provides an easy way for an unknown product to become known. You can reach almost every potential user at least once with this approach.

  Mailing lists, with names of the superintendents, central administrators, building administrators, teacher association representatives, department chairpersons, teachers, parents, etc., can be obtained from any number of public or private mailing agencies.

  A mailing can be sent to the identified groups, giving a brief description of your product, its benefits, and a response card for placing an order. People who respond to the mailing should be sent additional information, invited to attend workshops, and placed on your permanent mailing list. These people constitute your "customer list" and become the primary focus of your subsequent marketing activities.

  The disadvantage of general mailings is that they are sometimes expensive, particularly if you have to purchase mailing lists. Postage costs are also expensive and, in many cases, you will be sending mailings to a large number of people who are not and would not be likely to purchase your product.

- An awareness conference: Awareness conferences are useful for providing people with in-depth information about your product. They allow you to give descriptions of your product, to distribute promotional material, to talk about its possible uses, and to involve participants in particular activities and techniques of your product. They give participants an opportunity to ask questions, share their needs, and discuss whether or not your product would be helpful to them.

An advantage of this strategy is that it allows you to get several potential users together at one time. The disadvantages of an awareness conference are that it requires a great amount of staff work, a site that can accommodate a large group, and interested participants. Another disadvantage of an awareness conference is that participants often expect to receive training and are disappointed when the end result is promoting a product.

- Press releases: Press releases provide an inexpensive way to create widespread awareness of your product. Write a short, three-to-four paragraph review of your product and send it to every educational periodical that you know that prints descriptions of new products. Such articles are easy for magazines and newspapers to use as "fillers" beause they are short, already written, and provide a service to their readership. One disadvantage of a press release campaign is that it can be a very time-consuming process to write a good press release and to compile a mailing list.

- Other media awareness: Television exposure certainly enables a large audience to become quickly aware of your product. It typically results in a large number of inquiries. The problem with television is that it is often very difficult to access; it is a medium that doesn't allow in-depth discussion. Television viewers often get a distorted picture of what your product does as a result. You might find yourself receiving a large number of inquiries that don't, in any way, relate to the primary function of your product. Also, stations run such free, public service spots during low-viewing hours.

- Development of a product brochure: A product brochure provides a quick and easy way to handle inquiries about your product. It can be sent in mass mailings to potential buyers to explain your product, its components, and to identify successes and outcomes. The disadvantage of a brochure is that usually it needs to be updated frequently. You also may need to have different brochures for different audiences. This involves staff time and cost for development and production.

- Cooperative distribution activities with other projects/organizations: The use of cooperative activities with other organizations is another effective distribution strategy. Such activities might include joint conferences in which a variety of potential users are invited. Many school districts, who would not send staff to a workshop on one product, will send staff to a conference that describes several projects. Potential users that you may have missed through other strategies may attend a session on your product and become interested. State departments of education, regional professional associations, and community organizations can be very helpful in providing assistance in organizing these cooperative distribution activities.

Arends, R.L., et al. Handbook for the Development of Instructional Modules in Competency-Based Teacher Education Programs. Buffalo: Center for the Study of Teaching, 1971.

This book contains a model for developing competency-based educational programs.

Association for Educational Communications and Technology. How to Produce Newsletters. Washington, D.C.: Association for Educational Communications and Technology, 1979.

A practical guide for the novice and the experienced.

Audiovisual Market Place: A Multimedia Guide. New York: R.R. Bowker Company, 1980.

A comprehensive guide to resources for audiovisual production and marketing. Revised yearly.

Baldridge, Victor, and Robert Burnham. "Organizational Innovation: Individual, Organizational, and Environmental Impacts." Administrative Science Quarterly, Vol. 20, June 1975, pp. 165-176.

A study to determine the characteristics of those organizations most likely to adopt innovations.

Berelson, Bernard, and Morris Janowitz (eds.). Reader in Public Opinion and Communication. Second Edition. New York: Free Press, 1966.

A collection of traditional readings, well worth reviewing.

Berman, Paul, et al. Federal Programs Supporting Educational Change. (Vol. IV: The Findings in Review.) Santa Monica, California: Rand Corporation, 1975.

A change-agent policy study of problem-solving, motivation, federal monitoring, local institutional settings, project characteristics, implementation outcomes, and more.

Brigham, Nancy. How to Do Leaflets, Newsletters, and Newspapers. Somerville, Massachusetts: New England Free Press, 1976.

Includes ideas for scheduling, layout, paste up, and editing, along with a useful index of terms.

Brodinsky, Ben. An Idea Book for the Education Editor. Glassboro, N.J.: Educational Press Association of America, Glassboro State College, 1974.

Writing style, working with printers, distribution and mailing, the idea behind the newsletter, and more.

Brown, J.W., et al. Audiovisual Instruction: Materials and Methods. New York: McGraw-Hill Book Co., 1973.

A general methods book on audiovisual materials production and use.

Burke, Clifford. Printing It! Berkeley, California: Wingnow Press, 1974.

(Subtitled, A Guide to Graphic Techniques for the Impecunious.) Written for the novice printer, but contains solid help in using the offset method of printing to produce anything from a poster to a complete book.

Churchill, H.B. Film Editing Handbook: Techniques of 16mm Film Cutting. Belmont, California: Wadsworth Publishing Co., 1972.

A handbook on basic editing principles and techniques. Technical emphasis is on 16mm film and equipment.

Circular R 99: Highlights of the New Copyright Law, Washington, D.C.: Copyright Office, 1977.

"A Closer Look at the New Copyright Law." Music Educators Journal, 64:32, October 1977.

Copyright and Educational Media. Washington, D.C.: Association of Media Producers, 1977.

Copyright: New Law, New Directions. Washington, D.C.: Association of Educational Communications and Technology, 1977.

Craig, James. Production for the Graphic Designer. New York: Watson-Guptill, 1974.

Packed with illustrations, charts, and an extensive glossary, fully explains the production of printed matter; one of the best of its kind.

Eastman Kodak Company (ed.). Help Your Community...Through Photography. Rochester, New York: Eastman Kodak, 1973.

Useful text for those planning to use photos for publicity, fund-raising, and other facets of public service.

Eastman Kodak Company (ed.). Planning and Producing Slide Programs. Rochester, New York: Eastman Kodak, 1975.

A simple introductory paperback.

Farlow, Helen. Publicizing and Promoting Program. New York: McGraw-Hill, 1979.

A step-by-step guide for professionals, semiprofessionals, and volunteers involved in publicizing continuing education programs.

Ford, John J., et al. A Guide to Developing Educational Products. Andover, Massachusetts: The NETWORK, 1978.

A systematic approach that identifies the important steps and critical decision points.

General Guide to the Copyright Act of 1976. Washington, D.C., n.d.

Information on the new law available from Copyright Office, Library of Congress, Washington, D.C. 20559.

Gilmour, F.T. A Guide to Making a Display. Williamsport, Pennsylvania: Research and Information Services for Education, Williamsport Area School District.

Practical recommendations on format, construction, mounting, portability, lettering, and other topics.

Havelock, Ronald G. The Change Agent's Guide to Innovation in Education. Englewood Cliffs, New Jersey: Educational Technology Publications, 1973.

A look at change from within the school system, with emphasis on the administrator's role. (The annotated bibliography, though out of date, is useful for someone new to the field.)

Hurlbert, Allen. Publication Design: A Guide to Page Layout, Typography, Format, and Style. Revised edition. New York: Van Nostrand Reinhold, 1971.

Emphasizes mass-circulation magazines, but information presented can be applied to all periodical publishing, regardless of publication purpose, budget or scale.

Hutchins, C.L. Educational Development Case Study. ERIC Document 043 515. 1971.

Documents the planning, development, testing, revision, and production of an elementary science information unit, with cost data and other useful details.

International Association of Business Communicators. Without Bias: A Guidebook for Nondiscriminatory Communication. San Francisco: International Association of Business Communicators, 1977.

Guidelines, with many examples, on avoiding racism, sexism, and handicapism in all forms for communication.

International Paper Company. Pocket Pal: A Graphic Arts Production Handbook. New York: International Paper Company, 1979.

Covers art and copy preparation, photography, binding, paper, inks, technical terminology, and other topics; one of the most commonly used guides. Available by mail for $2.25 from International Paper Co., 220 E. 42nd Street, New York, New York 10017.

James, C.R., et al., Developer's Guide: Preparing Materials for Distribution. Columbus: Ohio State University Press, 1976.

Includes information on selecting and targeting materials, ensuring reproduction feasibililty, and complying with legal requirements. Excellent bibliography.

Klein, Susan S. Toward Consensus on Minimum Criteria for Educational Products. Paper delivered at annual meeting of AERA, San Francisco, California, April 21, 1976.

A discussion of criteria used to make various decisions about types of products — desirability, practicality, intrinsic quality, development, user effects, and spinoffs.

Kotler, Philip. Marketing for Nonprofit Organizations. Englewood Cliffs, New Jersey: Prentice-Hall, 1975.

Covers market analysis, pricing, distribution, planning and control, and other topics. Perhaps the most useful book a linking agent or change agent can read at the present time.

Laird, Dugan. A User's Look at the Audio-Visual World. Fairfax, Virginia: National Audio-Visual Association, 1973.

How to select the proper medium, choose a vendor, understand performance standards, handle maintenance, and other tasks. Excellent bibliography.

Lazar, William, and Eugene J. Kelley (eds.). Social Marketing: Perspectives and Viewpoints. Homewood, Illinois: Richard D. Irwin, 1973.

Reading chapters three, six, and eight and skimming other chapters (according to personal taste) will give you the basics from this book.

Literary Market Place. New York: R.R. Bowker Company, 1980.

A comprehensive guide to resources for book production and marketing. Revised yearly.

A Manual of Style for Authors, Editors, and Copywriters. Twelfth edition, revised. Chicago, Illinois: University of Chicago Press, 1969.

One of the most frequently used guides to all aspects of preparing copy.

McAdam, J. Robert and Charles J. Vento. Portable Videotape Recorder: A Guide for Teachers. Washington, D.C.: Association for Educational Communications and Technology, 1972.

A basic guide for use of portable videotape equipment. The emphasis is on projector techniques and use of videotape.

McGraw-Hill Book Company. Guidelines for Equal Treatment of the Sexes in McGraw-Hill Book Company Publications. New York: McGraw-Hill Book Company, n.d.

Melcher, Daniel and Nancy Larrick. Printing and Promotion Handbook. New York: McGraw-Hill, 1966.

How to plan, produce, and use printing, advertising, and direct mail.

Millerson, Gerald. The Technique of TV Production. 9th ed. New York: Hastings House Publishers, 1972.

Emphasis is on studio production in a professional setting. Basic and advanced techniques are discussed.

Minor, E.O. and Harvey R. Frye. Techniques for Producing Visual Instructional Media. New York: McGraw-Hill Book Co., 1970.

Production techniques and materials are emphasized.

Nisbett, Alec. The Technique of the Sound Studio for Radio, TV and Film. 3d ed. New York: Hastings House Publishers, 1974.

An advanced technique book limited to studio production.

Pool, Ithiel de Sola, et al. (eds). Handbook of Communication. Chicago, Illinois: Rand McNally, 1973.

Communication studies for the social scientist. Research-based information on communication systems, persuasion, mass media, public opinion, advertising research, and much more. (More than 1,000 pages of text.)

Rogers, Everett M. and F. Floyd Shoemaker. Communication of Innovations. Second Edition. New York: Free Press, 1971.

About diffusion, social change, research traditions, persuasion, rate of adoption, adopter categories, and organizational change.

Sikorski, Linda A., et al. Factors Influencing School Change. San Francisco, California: Far West Laboratory, 1976. ERIC Document 129 622.

What research and practice have established about the local change process and special strategies for diffusion and implementation of innovations.

Strunk, William, Jr. The Elements of Style: With Revisions, an Introduction, and a Chapter on Writing by E.B. White. Third edition. New York: Macmillan, 1979.

Good advice and concise presentation of basic rules for anyone who wants to write clearly and effectively.

Tallmadge, G.K. The Joint Dissemination Review Panel Ideabook. Mountain View, California: RMC Research Corporation, 1977.

A description of JDRP and the criteria used in determining the effectiveness of products.

Turnbull, Brenda, et al. Promoting Change in Schools: A Diffusion Casebook. San Francisco, California: Far West Laboratory for Educational Research and Development, 1974. ERIC Document 090 679.

Case studies on diffusion of educational innovations showing different approaches to stimulating widespread adoption and use of new programs and products.

U.S. Department of Education. Educational Programs That Work. Seventh edition. Washington, D.C.: U.S. Department of Education, 1980. Available from Far West Laboratory for Educational Research and Development, 1855 Folsom Street, San Francisco, California 94103.

Brief descriptive information on projects approved by the Department of Education's Joint Dissemination Review Panel.

U.S. Department of Education. Guide to Packaging Your Educational Program. Washington, D.C., 1980. Available from Far West Laboratory for Educational Research and Development, 1855 Folsom Street, San Francisco, California 94103.

This booklet covers planning, producing, and coordinating printed and audiovisual materials to aid in dissemination of educational materials.

U.S. Office of Education. A Practical Guide to Measuring Project Impact on Student Achievement. Washington, D.C.: U.S. Office of Education, 1975. Available from Superintendent of Documents Stock #017-080-01460.

Common hazards in evaluation, selecting an evaluation model, securing and analyzing data, reporting results, and other topics.

U.S. Office of Education. Forms and Formalities: A Resource. Washington, D.C.: U.S. Office of Education, 1978. ERIC Document 153 662.

A collection of forms, questionnaires, and other materials used by NDN Facilitators and Developer/Demonstrators in their dissemination activities.

Watkins, R.W. and C.L. Jenks. Values and Information: An Approach to Evaluation Planning. San Francisco, California: Far West Laboratory, 1976. ERIC Document 150 329.

A handbook for adopters (program directors, evaluators, district staff) of Experience-Based Career Education. May prove useful to others as a model or a source of evaluation ideas.

White-Stevens, Lillian. Guidelines for Writing and Printing Manuals: A Resource Manual for Project Directors and Staff. Hopewell, New Jersey: White-Stevens, Hopewell-Woodsville Road, Hopewell, New Jersey 98525, 1979.

Covers dissemination materials needed, planning a manual, general organization, printing and binding, publishing, copyright law, and other topics related to publishing for educational dissemination.

Wills, F. H. Complete Instruction to Fundamentals of Layout for Newspaper and Magazine Advertising, for Page Design Publications and for Brochures. Translated from the German by Kenneth T. Dutfield. New York: Dover Publications, 1971.

Full of good advice on layout design for newspaper and magazine advertising, page design for publications and brochures, and design of posters and labels.

Words into Type. Third revised edition. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1974.

A style guide for printed materials. It also includes sections on manuscript preparation, typography, and illustrations.

Zaltman, Gerald, et al. (eds.). Creating Social Change. New York: Holt, Rinehart and Winston, 1972.

Selected readings on cause, change agency, change target, and change strategies, as well as on organizing, planning, implementing, and controlling efforts.

APPENDIX A

THE PRODUCT DEVELOPMENT PROCESS

	STEPS	RESOURCES NEEDED	PERSON RESPONSIBLE	DUE DATE	COMPLETED
DETERMINE THE PURPOSE	CONDUCT MARKET RESEARCH				
	SPECIFY THE AUDIENCE				
	IDENTIFY COMPETITIVE PRODUCTS				
DEVELOP THE DRAFT VERSION OF THE PRODUCT	SELECT THE DEVELOPMENT TEAM				
	DEVELOP THE OBJECTIVES				
	CHOOSE THE MEDIUM				
	OUTLINE THE SECTION PARTS				
	PLAN THE DEVELOPMENT SCHEDULE				
	DEVELOP THE DRAFT				
	INSURE SOCIAL FAIRNESS				
	PRODUCE YOUR PROTOTYPE				
	DEVELOP THE INSTRUCTOR'S OR USER'S MANUAL				

	STEPS	RESOURCES NEEDED	PERSON RESPONSIBLE	DUE DATE	COMPLETED
CRITIQUE THE PRODUCT	IDENTIFY THE PRODUCT				
	CRITIQUE FACTORS				
	SOLICIT INTERNAL REVIEW				
	ARRANGE FOR EXPERT REVIEW				
	TEST THE PRODUCT YOURSELF				
	ESTABLISH FIELD-TEST PROCEDURES				
	MAKE FIELD-TESTING ARRANGEMENTS				
	ANALYZE THE DATE FROM FIELD-TESTING AND EXPERT REVIEW				
	VALIDATE YOUR PRODUCT				
	DECIDE ON THE REVISIONS NEEDED				
	DEVELOP THE MASTER COPY OF THE PRODUCT				

PRODUCE THE PRODUCT	CHOOSE THE FORMAT				
	DEVELOP PRINT MATERIALS				
	DEVELOP NONPTINT MATERIALS				

	STEPS	RESOURCES NEEDED	PERSON RESPONSIBLE	DUE DATE	COMPLETED
CONSIDER LEGAL ISSUES	OBTAIN COPYRIGHT				
	OBTAIN PERMISSIONS				
	OBTAIN TALENT RELEASES				
	OBTAIN FEDERAL CLEARANCES				
	NEGOTIATE NECESSARY LICENSES				
	INCLUDE DISCLAIMER				
DISSEMINATE THE PRODUCT	DECIDE ON THE MEANS OF DISTRIBUTION				
	DETERMINE YOUR INVOLVEMENT IN THE DISTRIBUTION PROCESS				
	SEEK AND NEGOTIATE WITH A COMMERCIAL PUBLISHER				
	DISTRIBUTE THE PRODUCT YOURSELF				

APPENDIX B

SAMPLE NARRATIVE PRODUCT CRITIQUE SHEET

This questionnaire was used for a critique of a case studies manual. The reviewer was asked to provide brief prose answers to the following questions:

SCOPE

1) Is the overall scope of the case studies manual adequate? Are there types of cases you would recommend be added? If so, what type?

2) Is the scope of each chapter—from initial referral to final follow-up—adequate? If not, what topics should be added?

3) Is there coverage you recommend be deleted? If so, why?

SEQUENCE

1) Within chapters, are topics (forms, etc.) logically sequenced?

LEVEL

1) What prior knowledge or course prerequisite would you assume for suitable use of the case studies manual?

2) Are terms introduced with adequate explanation?

3) Is the diction and overall style at a suitable level for students enrolled in the college special education program?

SELECTION, INTERPRETATION, AND USE OF MATERIAL

1) Is the information up-to-date?

2) Is the information accurate?

3) Does any of the material require further clarification or explanation (assumptions, tenets, etc.)?

APPENDIX C

SAMPLE SCORING SHEET FOR PRINT CRITIQUE

This evaluation form provides review data which can be easily tabulated and used for making revision decisions

Directions for Use.

1. Read carefully the introduction of the material, pay close attention to its purpose and intended outcomes.

2. When viewing the material, place yourself in the shoes of the intended audience, and make some judgments about its apparent effectiveness.

3. Consider the design issues below in judging the effectiveness of this material. Circle the number in the boxes to the right which you feel is an appropriate score for each category.

	CONTAINS MOST OF THE DATA SPECIFIED IN THIS STATEMENT		CONTAINS SOME OF THE DATA SPECIFIED IN THIS STATEMENT		LITTLE OR NO DATA PROVIDED
A) Specific objectives for the material are stated in behavioral terms.	5	4	3	2	1
B) The format and activities appear to be consistent with the oojective.	5	4	3	2	1
C) The intended audience is clearly identified.	5	4	3	2	1
D) The language used is appropriate for the intended audience.	5	4	3	2	1
E) Specific instructions on how to use the product are provided.	5	4	3	2	1
F) A rationale for development of the material is included.	5	4	3	2	1
G) A description of the scope and sequence of the material is included.	5	4	3	2	1
H) Evidence of effectiveness is provided.	5	4	3	2	1

APPENDIX D

SAMPLE TECHNICAL REVIEW SHEET

The following evaluation form was designed for use as a technical review of a video tape program.

Tape Number & Title _____

Yes	No	NA	
___	___	___	1. Is the Presentation logically sequenced? Suggestions: _____
___	___	___	2. Is there continuity between segments? Suggestions: _____
___	___	___	3. Is the script too wordy or too abrupt? Suggestions: _____
___	___	___	4. Is the style of the language consistent? Suggestions: _____
___	___	___	5. Are auditory components of adequate clarity and amplification? Suggestions: _____
___	___	___	6. Is the voice of adequate speed and quality? Suggestions: _____

Technical Review *continued*

Yes	No	NA	
___	___	___	7. Is the quality of narration (reader style) acceptable? Suggestions: _____
___	___	___	8. Is the music/sound/voice mixing acceptable? Suggestions: _____
___	___	___	9. Is there an appropriate use of illustrations? Suggestions: _____
___	___	___	10. Is the visual presentation of acceptable sharpness and clarity? Suggestions: _____
___	___	___	11. Is the visual composition (format, arrangement) acceptable? Suggestions: _____

12. Please comment on the quality of the following:

a. Staging: _____

b. Lighting: _____

c. Camera angle(s): _____

Additional comments:

APPENDIX E

SAMPLE NARRATIVE TEST REVIEW FORM

This questionnaire was designed to provide a general critique of tests.

I. PURPOSES

Please comment regarding possible uses for this test (i.e., use of results for assessment and placement of students, etc.)

II. ADEQUACY OF TECHNICAL DATA

Please comment regarding norming data, reliability and validity information.

III. ADMINISTRATION

Please comment regarding time considerations, training problems, scoring procedures, practicability of use, etc.

IV. GENERAL

Please comment regarding such issues as use of this test in relation to other instruments, formatting concerns, etc.

V. ADDITIONAL REVIEW COMMENTS

APPENDIX F

Name of Child: _____

Name of Institution _____
Address
Name of Product

I hereby grant my consent to _____, to record the likeness and to record the voice of my child.

I further grant to _____ its assignees, licenses and transferees the right to use my child's likeness, voice and name in any noncommercially or commercially produced or distributed products or materials, and for any broadcast of the products or materials, and any publicity for the products or materials.

_____ _____ _____
Witness Date Signature of Child

_____ _____ _____
Witness Date Signature of Parent/Guardian

_____
Name of Parent/Guardian

(THIS IS A SAMPLE ONLY. CONSULT YOUR PROJECT OFFICER OR THE ED COPYRIGHT OFFICER TO CONSTRUCT A FORM THAT SUITS YOUR INDIVIDUAL NEEDS.)

☆U S GOVERNMENT PRINTING OFFICE 1981—701-495 69