

# Conducting Literature Searches for Instructional Development Projects

Russell T. Osguthorpe  
201-C MCKB  
Brigham Young University  
Provo, Utah 84602

While most instructional developers would agree that some type of literature search should be conducted prior to actually producing a new training program, few would agree on the actual procedures that should be used in completing the search. Because so little attention has been paid to this area of instructional design, there also would likely be disagreement concerning the purposes of conducting the search. Most would agree that a primary purpose would be to avoid the duplication of existing training programs, but is that the only reason for reviewing literature prior to designing instruction? How, for example, is the developer to make the best use of program research and evaluation data that have been collected on the topic of the proposed instructional product?

The purpose of this paper is to describe three types of literature searches that should be conducted as part of the instructional design process: (a) an instructional materials review, (b) a content research review, and (c) an instructional theory review. A suggested set of procedures will be given for completing the searches, followed by an account of using the procedure in an actual development project.

## Types of Literature Searches

### Instructional Materials Search

During most needs assessments a significant amount of information is obtained concerning the instructional materials and approaches being used by the client. However, little information is usually gathered concerning the characteristics of existing instructional products which have goals similar to those of the instructional system being

evaluated. In order to obtain such information some type of instructional materials search must be conducted. The purposes of such a search are twofold. First, designers must be certain that the proposed instructional product has not already been developed. Second, just as researchers should attempt to build on existing research, designers should attempt to build on existing instructional approaches by gaining a broad understanding of presently available teaching materials.

The primary difficulty in conducting an instructional materials search is the relative scarcity of appropriate cataloging of such materials in most libraries. While the task of identifying current research in books or periodicals has become streamlined in recent years, the task of identifying instructional products has remained difficult. For example, the library that would provide easy access to hundreds of studies on leadership development may not have on its shelves the most popular leadership training program. Worse yet, the same library may not have any indexing system for determining the existence of such training programs.

An instructional materials search must include procedures not normally used in traditional research literature searches. Consulting indexes to educational media, searching publishers' catalogs, and contacting developers are illustrative of the procedures which must be considered when conducting a materials search. However, since a materials search is not the only search that should be conducted at the beginning of an instructional design project, it can be conducted in conjunction with the other two searches. Following a definition of the two other types of literature searches, an integrated procedure will be given for conducting simultaneously all three types.

### Content Research Review

Publishers seldom include quality

evaluative data regarding the effectiveness of their instructional products. A designer may conduct a thorough materials search, identifying every existing instructional product in a certain content area, but have little knowledge of current research and theory related to that same content. Using the example of leadership training programs, the designer would benefit from an awareness of the latest research on leadership training—while examining existing programs.

The chief challenge in conducting a content research review is deciding how broad to make it. Carefully reviewing all of the research related to leadership training could consume the greater part of any instructional design project. But when the search is properly limited, insights can be gained in a relatively short period of time, which might not have been gained in any other way. Most content research review will focus first on applied research and second on theoretical studies. Continuing with the example of leadership training, the designer would first be interested in studies which report results of using actual leadership training materials in a seminar setting. These studies might report evaluative data on training programs which have been identified in the materials search. But minimally, information will be obtained which can readily be used in the decision making process of developing a new instructional system.

Since many of the studies conducted in the field of leadership development focus primarily on theoretical questions, the developer may find the applied studies more useful. As with any literature search, the question which initiates the search must be carefully conceived. With a focused question a content research review on leadership development could reveal a variety of creative solutions to problems developers will face as the program is produced.

## Instructional Theory Review

The purpose of most instructional theory is to provide prescriptive advice to the designer. The instructional principles that apply to a wide variety of contents and delivery systems can be reviewed rather easily by consulting several major instructional design texts (Briggs, 1977; Dick & Carey, 1978; Gagne, in press; Fleming & Levie, 1979). In addition to these texts, a number of journals might also be consulted, such as: *Journal of Instructional Development*, or *Educational Technology*. While it is assumed that most designers have a working knowledge of the information in these texts and journals, it is unlikely that any designers would be equally strong across all categories of learning.

Three types of literature are included in an instructional theory review: (a) general principles of instructional design, (b) theory and research related to a particular category of learning, and (c) principles associated with a specific delivery system. General principles, such as Gagne and Briggs (1979) nine events of learning can be reviewed in existing instructional design texts. In these same texts are more specific prescriptions for separate categories of learning. These basic principles can be used to launch a designer into bodies of research related to a specific category of learning. For example, if a designer were developing a training strategy to teach technicians the names of components in a new color copier, research literature related to discrimination learning (paired-associate drill) would be reviewed. In each category of learning, existing research can often be explored beyond the usual bounds of instructional research. In the category of attitude instruction, for example, little research has been conducted on attitude change from an instructional standpoint, but research has been conducted in psychology concerning attitude formation and persuasion (McGuire, 1969).

In addition to reviewing general principles of instructional design and specific principles from research in the category of learning, designers should obtain information about the particular delivery system proposed for the instruction. A growing body of knowledge is developing, for example, around computer assisted/managed instruction (Chambers & Sprecher, 1983; Lathrop & Goodson, 1983; Merrill et al., in press; Radin & Lee, 1984; Walker & Hess, 1984),

tutoring (Allen, 1976; Osguthorpe & Scruggs, in press), cooperative classroom approaches (Aronson et al., 1978; Johnson, 1981), and self-instructional print delivery systems (Johanssen, 1982; Talmage, 1975). If a designer selects computers as a central part of the delivery system, a search into the literature related to computer assisted instruction will yield information different from any of the searches suggested previously. Research in the content area, or even in the category of learning being addressed, will not include some of the specific recommendations that relate to CAI systems.

*Abstracts, and Sociological Abstracts*. It should be kept in mind that each data base includes only those articles published in periodicals and, in some cases, papers presented at conventions which have later been submitted for referencing. Because of the difficulties of indexing articles under appropriate categorical headings, a computer-assisted search should never be considered as a complete listing of all current research in a given area. The advantage of this technique is, of course, the speed with which the user is supplied with the information; the disadvantage is the incomplete, and sometimes, incor-

---

## An instructional materials search must include procedures not normally used in traditional research literature searches.

---

### Strategies for Searching

Whether conducting a literature search for a research project or for a development project, the process is more a creative experience than it is a rigid set of procedures. Because no two bodies of literature are constituted in exactly the same way, the techniques used to extract the most useful information must be tailored to the unique characteristics of the topic being searched. The strategy, therefore, described in this section of the paper should be viewed as a guideline or suggestion—with the understanding that it will be applied somewhat differently each time it is used. The goal of any search is to locate as much relevant information as possible in the shortest length of time. An effective strategy for conducting searches will reduce the amount of time spent, as well as increase the amount of useful information obtained.

Before describing the strategy, a few explanations of general search techniques may be helpful. In recent years computers have played an ever increasing role in library science and search techniques in particular. Most computer assisted search systems allow the user to access several different data bases, such as *Current Index to Journals in Education (CCIJE)*, *Educational Resources Information Center (ERIC)*, *Psychological*

rect indexing system.

Prior to the advent of computer indexing, researchers located a relevant book or article, obtained copies of relevant articles cited in the bibliography, examined the newly obtained articles' reference lists—again obtaining copies of relevant articles. This technique might be called "branching" because the researcher uses the citations from one article or book to branch to another source, and so on. Because the researcher can read the context in which an article is cited, the chances of locating truly relevant literature is much higher than with an initial computer search. A form of branching can, however, also be accomplished using subsequent computer searches in which terms are combined from previous searches. Whichever branching technique is used (manual or computer-aided), a primary benefit is the identification of the studies which have been cited most frequently in a certain content area. If manual branching is used, the searcher soon becomes aware of the most frequently cited studies simply by checking the references section of each study. If a computer-aided search is used, accessing the *Social Science Citations Index*, will also yield this type of information.

Still another search procedure, often overlooked by less experienced research-

chers, is the "grapevine technique." Hearing something through the grapevine is often as efficient for researchers as it is for neighbors across a fence. Basically the technique consists of brief interviews conducted over the telephone or in person with those currently involved in the development of instructional products in the field of interest. One of the questions always included in these interviews is, "Do you know of anyone else doing similar work?" In this way the researcher obtains the most up-to-date information about the topic being searched. With publication lag time of at least one year, some form of the grapevine technique must be used if the researcher is to obtain information concerning work in progress. Although the cost of telephoning is a drawback, the immediacy and value of personal communication make the grapevine technique an essential part of any thorough literature search.

The following is a suggested procedure for conducting literature searches as part of an instructional design project. Included in the procedure will be four search techniques: (a) the card catalog search, (b) the computer search (c) the materials indexes search, and (d) the grapevine search:

#### Step 1—Card Catalog Search

Search under subject headings for the specific content of the proposed instructional product. If the card catalog has numerous entries in the content area being searched, select several of the most current books which appear to bear most directly on the proposed project. Keep notes on: (a) the theory underlying the content area and (b) research and evaluation studies which have assessed various approaches to teaching the content. Keep specific notes on any literature describing projects using the proposed delivery system to teach the content.

#### Step 2—Computer Search

Depending upon the breadth of the topic being searched, begin by selecting descriptors of the content area and, perhaps, the age of the learner in the proposed audience for the instructional package. For example, if you were developing self-instructional materials for parents of pre-school handicapped children, "Parent training" might first be paired with the descriptor, "handicapped children." If you wished to narrow the set of studies further, the descriptor "self-instructional" could be combined

with the previous two descriptors to identify any studies conducted on the precise topic of interest. Next, obtain copies of article abstracts appearing to be useful and full copies of the most valuable articles.

videotapes, films, audiotapes, and records. Catalogs containing educational computer software are not as accessible as other media catalogs, but are becoming more available each year. For example, Stanton et al. (1984) and Millin

---

## Designers should attempt to build on existing instructional approaches by gaining a broad understanding of presently available teaching materials.

---

If a developer is interested in programming software for computer-assisted-instruction, a computer aided search may be useful for identifying existing educational software. A number of data base index software packages have been reviewed in periodicals. Among the most useful data bases for instructional designers are: *Computer Data Base, Microcomputer Index and MENU—The International Software Data Base.*

#### Step 3—Materials Indexes Search

Two types of sources are available for conducting materials searches: (a) publishers' catalogs and (b) materials reference books. The publishers' catalogs may not be located in a library, but in a school district office or college learning resource center. The reference books are usually easily accessible in the reference section of the social science area of the library.

Begin by locating the desired subject in the card file of the publishers' catalogs collection. Next, go through any of the appropriate publishers' catalogs and record any titles of instructional products that appear to be applicable. Obtain copies of products that are especially close in purpose to the proposed instructional system. (Publishers are often willing to loan copies of materials or products for developers to examine.) It should be noted that certain catalogs are broader in content than others because they include products from more than one publisher (Beckley-Cardy, 1984; Cole, 1984).

If the proposed package includes non-print media in the design, reference books should be searched, such as those published by the National Information Center for Educational Media (NICEM, 1981). This series of books contains a broad listing of educational slides,

and Hays (1985) have published highly useful catalogs of Apple and IBM software in which descriptions of the software as well as evaluative comments are given.

#### Step 4—The Grapevine Search

Begin a grapevine search by interviewing experts who are easily accessible. Personal interviews are usually more valuable than telephone interviews and should, therefore, be conducted first. In each interview focus on at least three questions: (a) What existing instructional materials are you aware of that relate to my topic? (b) What research studies do you think I should review before beginning my project? (c) Who else do you think I should contact?

Experts in a variety of fields should be considered in the grapevine search. Researchers and developers who have expertise in the content area of interest, as well as the intended delivery system should be included in the search. Since the primary advantages of the grapevine search are speed and currency of findings, personal and telephone interviews should occur throughout the course of any development project.

### How Techniques Relate to Types of Searchers

It has been suggested that three types of literature searches should be conducted as part of an instructional development project. It has further been asserted that four main techniques should be used to complete each of the three types. Figure 1 illustrates the relationship between each of the suggested techniques and the three types of searches. Interestingly, the grapevine technique is viewed as one of the most effective overall techniques for obtaining information for all three types of searches. However, for a grapevine search to be

truly valuable, other techniques, such as a computer search, must be used first so that the developer is prepared to pose the most pertinent questions during the interviews. As computer data bases become increasingly accessible, developers will likely be able to conduct comprehensive searches without leaving the office. This is an important point because it means that those who do not

discuss theory considerations with an instructional scientist and, perhaps, obtain additional references during the conversation for later review. Likewise, although a card catalog or computer search may yield useful information regarding existing materials and theory, these techniques will be most valuable for the content research review.

Each of the techniques described in

## An Example of an ID Literature Search

In this section of the paper an actual search related to a tutoring project is described. In the project, handicapped students are trained to tutor other students in a variety of subjects. One of the most recent suggestions has been for behaviorally handicapped students to tutor others in the area of moral reasoning. Before launching such a project, it was necessary to determine if moral reasoning materials existed which were designed for young tutors. If no such materials could be found, then an instructional development project would be initiated.

During the *card catalog search* approximately 300 entries were identified under moral development. Next, ten of the most useful recent books were located (as well as some older books that appeared especially useful). Three of the ten books were highly useful. One described in detail the implementation of a project with behaviorally handicapped students, while another gave a clear description of Kohlberg's (1973) theory upon which most of the books were based. In no case, however, did any of the books discuss tutoring materials on moral reasoning.

After studying the books, a *computer search* was conducted using the descriptor "moral education" (or "moral reasoning") paired first with "educational materials" and then with "tutoring." While the search did not yield many useful references, it provided a listing of the available teaching materials. When the descriptor "tutoring" was combined with "moral education" in the computer search, no studies were located.

However, one study had previously been located which did contain an account of students teaching moral reasoning using peer tutoring as the delivery system. As the beginning step in a *grapevine search*, the author of the article was contacted by telephone and mentioned two other researchers that in her opinion should be interviewed. One of the referrals was a serious researcher in the area of moral development and had supervised the student's dissertation in which tutors participated. When contacted, this professor gave the names of a dozen new referrals, some of whom were located nearby. In talking with one of these people, it became clear that the search was approaching completion as she mentioned several of the sources

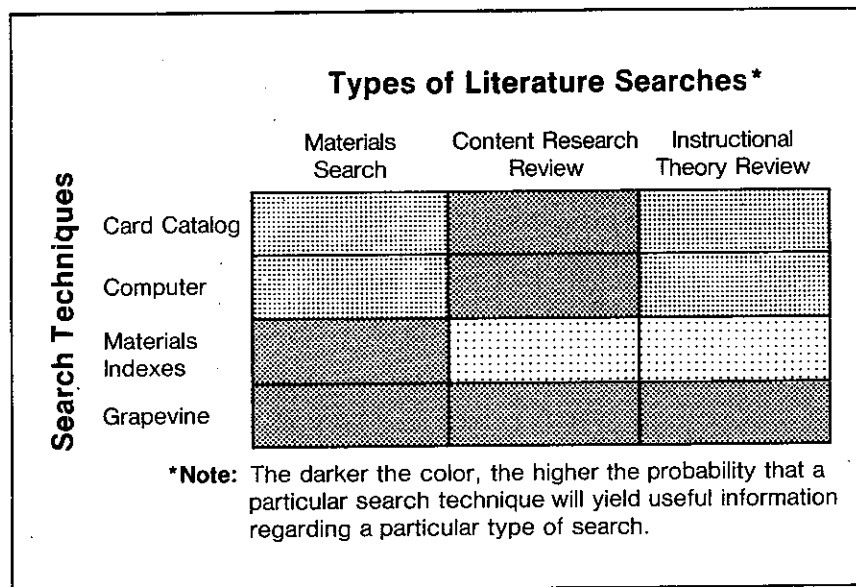


Figure 1. The relationship between types of searches and search techniques.

have easy access to a large university library will still be able to locate a relatively complete set of sources needed for a development project.

In the past developers have often expected one technique, such as a computer search or a card catalog search, to yield all of the needed information. As is shown in Figure 1, seldom can one method be relied upon to identify all of the information needed to complete a quality development project. For example, the developer would expect to gain little insight regarding instructional theory from a materials search. A much more efficient approach would be to

Figure 1 can be useful not only at the beginning of an instructional design project, but throughout the development process. Designers often find that unexpected questions arise in the middle or even at the conclusion of the development process. These questions are often best addressed by going to other experts (grapevine) and the literature. Even following the completion of a project, designers can benefit significantly from knowledge obtained through literature searches. Appropriate sources can be used to explain the rationale behind a particular instructional strategy or to aid in the design of appropriate evaluation techniques.

already obtained, along with offering to copy a set of instructional materials which she thought would be most useful in the field, even though they were not designed specifically for tutors.

Finally, a *materials index search* was conducted by consulting the social sciences reference area in the library. The *NICEM* index was useful in locating one of the films that was mentioned by the professor during the grapevine search. Publishers' catalogs revealed few commercial moral education materials, but did contain references to some materials on values and decision making that may be useful in the instructional development process.

Because of previous involvement in tutoring projects with special populations, developers already had access to a thorough review on the delivery system (tutoring). Several books and articles were helpful in summarizing evaluative data related to tutoring. Additional research articles (which had previously been identified using each of the major search techniques) revealed one study in which youth offenders participated in a tutoring program. While the content was not moral development, the results of the study were useful regarding implementation techniques with this particular population of students.

The search to this point has provided developers with confidence that instructional design work will be required to produce materials appropriate for the needs of the project. However, the search has also ensured that the resulting materials will be more effective because of others' work in the fields of moral reasoning and tutoring. In this project, as in any design project, the search process will likely continue even after the materials have been developed and evaluated. One of the advantages of a grapevine search is the opportunity it affords of making new acquaintances who sometimes can be of assistance throughout the development process. One of the contacts offered to review any newly developed materials, as well as assist in the dissemination of such materials to other interested educators.

## Conclusions

The ideas expressed rest on the following three assumptions: (a) an essential step in the instructional design process is the completion of an effective literature search (b) while similarities exist with searches conducted for research studies, instructional design searches

have unique purposes and therefore, require some uniqueness in procedures; (c) if the search process suggested in this paper is followed, the quality of an instructional product may be enhanced. Data to support the third assumption have been based primarily on the author's experience in supervising development teams as they design and produce instructional systems.

Instructional developers generally feel knowledgeable in procedures for writing objectives and conducting task analyses, but often feel inadequate in completing the literature searches required. Because current texts omit discussion of such procedures and because instructional products seldom describe the search techniques used, the topic is not given the attention it deserves. It is hoped that this paper will encourage discussion of effective strategies for conducting searches in the instructional design process and that such discussion will lead to improved instructional systems.

## References

- Allen, V. L. (1976). *Children as teachers: theory and research on tutoring*. New York: Academic Press.
- Aronson, E., Blaney, N., Stephen, C., Sikes, J., & Snapp, M. (1978). *The jigsaw classroom*. Beverly Hills, CA: Sage Publications.
- Beckley-cardy catalog I: *Computer education*. (1984). Petaluma, CA: Beckley-Cardy.
- Beckley-cardy catalog III: *Instructional materials*. (1984). Petaluma, CA: Beckley-Cardy.
- Briggs, L. J. (1977). *Instructional design*. Englewood Cliffs, New Jersey: Educational Technology Publications.
- Chambers, J.A. & Sprecher, J. W. (1983). *Computer-assisted instruction: Its use in the classroom*. Englewood Cliffs, NJ: Prentice-Hall.
- Cole supply. (1984). Pasadena, TX: Cole.
- Dick, W. & Carey, L. (1978). *The systematic design of instruction*. Glenview, IL: Scott Foresman.
- Fleming, M. & Levie, W. H. (1979). *Instructional message design*. Englewood Cliffs, New Jersey: Educational Technology Publications.
- Gagne, R. M. (in press). *Instructional technology*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Gagne, R. M. & Briggs, L. J. (1979). *Principles of instructional design*. New York: Holt, Rinehart and Winston.
- Johnson, D. W. (1981). *Reaching out: Interpersonal effectiveness and self-actualization*. Englewood Cliffs, NJ: Prentice-Hall.
- Jonassen, D. H. (1982). *The technology of text: Principles for structuring, designing, and displaying text*. Englewood Cliffs, NJ: Educational Technology Publications.
- Kohlberg, L. (Ed.) (1973). *Collected papers on moral development and moral education*. Cambridge, Mass: Harvard University, Center for Moral Education.
- Lathrop, A. & Goodson, B. (1983). *Courseware in the classroom: selecting, organizing, and using educational software*. Menlo Park, CA: Addison-Wesley.
- McGuire, W. J. (1969). The nature of attitudes and attitude change. In G. Lindzey & Aronson (Eds.), *Handbook of social psychology*, Vol. 3(2nd ed.), Reading, Mass: Addison-Wesley.
- Merrill, P. F., Tolman, M., Christensen, L., Reynolds, P., Vincent, B., & Hammons, K. (in press). *Computers in education*. Englewood Cliffs, NJ: Prentice-Hall.
- Millin, M. & Hays, N. (1985). *IBM software 1985*. Los Angeles, CA: Arrays, Inc.
- National Information Center for Educational Media. (1981). Los Angeles, CA: University of Southern California.
- Osguthorpe, R. T. & Scruggs, T. E. (in press). *The implications of tutoring research for special education*. Remedial and Special Education.
- Radin, S., & Lee, F. (1984). *Computers in the classroom: A survival guide for teachers*. Chicago: Science Research Associates.
- Reigeluth, C. M. (1983). *Instructional-design theories and models: An overview of their current status*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Stanton, J., Wells, R. P., Rochowanski, S., & Mellin, M. (1984). *The book of apple software 1984*. Los Angeles, CA: The Book Company.
- Talmage, H. (1975). *Systems of individualized instruction*. Berkeley, CA: McCutchan Publishing Corporation.
- Travers, R. M. W. (1978). *An introduction to educational research*. Toronto, Ontario: The Macmillan Company.
- Walker, D. F & Hess, R. D. (1984). *Instructional software: principles and perspectives for design and use*. Belmont, CA: Wadsworth.
- Wiersma, W. (1980). *Research methods in education: An introduction*. Itasca, IL: F. E. Peacock Publishers, Inc.
- Wilkinson, A. C. (1983). *Classroom computers and cognitive science*. New York: Academic Press.