Contents

JID After Two Years: The Editor’s Viewpoint, Kenneth H. Silber 2

ARTICLES

An Analysis of Research Needs in Instructional Development, Joseph J. Durzo, Robert M. Diamond, and Philip L. Doughty 4

Transmitting Instructional Development to University Faculty: Two Approaches, Dean N. Osterman 12

Cost-Effectiveness Analysis: Tradeoffs and Pitfalls for Planning and Evaluating Instructional Programs, Philip L. Doughty 17

Motivation and Instructional Design: A Theoretical Perspective, John M. Keller 26

DEPARTMENTS

ID Training Modules, Steven G. Sachs 18

Selected References Related to the Practice of Instructional Development Joseph J. Durzo, Robert M. Diamond, and Philip L. Doughty 19

Book Reviews, John B. Johnson 35


Teaching Patients: A Practical Handbook for the Health Professional, Carol R. Freedman, reviewed by Elaine A. Weiss 37

Educating All Handicapped Children, Robert Heinich (Ed.), reviewed by Kathleen Kreidler 38


Instructional Systems Reviews, Curtis J. McCarty 40

About this issue...

The final issue of our second year provides JID readers with the widest variety yet of articles and departments.

Durzo et al. survey the knowledge base for instructional development and raise major unanswered questions to direct future inquiry in ID.

Osterman describes a case study of a successful Oregon State University program that provides training to faculty in instructional development techniques.

Doughty addresses the key issue of cost-effectiveness analysis in the first of a three-article series. In the first installment, he clarifies terminology in the area and discusses tradeoffs and pitfalls in cost-effectiveness analysis. In future articles, he will describe specific analysis techniques and will present a case study of cost-effectiveness analysis.

Keller discusses the lack of attention given to the problem of motivation in instructional development; he reviews research and theories in the area of motivation and presents implications of these theories for the practicing developer.

A new department begins in this issue of JID—the ID Training Modules department. Its purpose is to improve readers’ skills in various aspects of instructional development by presenting training materials designed to teach (rather than just talk about) specific ID techniques. Department editor Sachs explains the department and how you can contribute. The department begins with a list of selected references to already existing materials related to the practice of instructional development by Durzo, Diamond, and Doughty.

JID also announces the specifics of another department to begin soon—the Review of Instructional Systems department, which will review some significant products that result from our ID efforts. Department editor McCarty explains what the department will be reviewing, how it will work, and how you can participate.

Our largest Book Review department yet and a perspective from editor Silber on JID’s first two years round out this issue.
With this issue, the Journal of Instructional Development celebrates the end of its second year of publication. During those 2 years, JID has grown in quality, size of audience, and stature in the field. Its future is viable and expanding.

At this point, I think it is appropriate to take stock of where the journal has been, where it is now, and where it is headed in the future. The issues I will address are: JID's status within AECT, JID's audience, the contents of JID, the number, quality, and source of manuscripts submitted to JID—and suggestions to authors. In each of these areas I will discuss, from my personal perspective as an editor, JID's problems and successes.

Status within AECT

JID began 2 years ago as a publication of the Division for Instructional Development of AECT. After a successful first year, DID saw the need for an expanded audience for the journal—beyond the membership of the Division. It requested that AECT take on JID as an Association publication of the same professional stature as ECTJ. The AECT Board approved the publication of JID by the Association for a 2-year trial period to assess its viability.

The AECT Board recently reaffirmed its commitment to JID as one of the three periodic publications of the Association, and took a major step to ensuring the success of JID: It approved a proposal to allow Comprehensive Members of AECT to receive JID or ECTJ as the journal included in that membership. This means that instructional developers can now choose to receive JID as their professional journal as part of their comprehensive membership at no additional charge. We hope that this will encourage more developers to receive JID.

Audience

JID was conceived as a professional journal for instructional developers in all work settings. This has two important implications.

First, JID is designed for those who are "informed readers." It assumes that its audience has a basic knowledge of the instructional development process, and some experience using that process. It seeks to expand the horizons of this knowledgeable audience and to facilitate communication of ideas among them. It is not designed to explain or teach ID to those who have no background in instructional development.

Second, JID is designed to serve informed readers who perform instructional development in elementary and secondary education, professional education, business and industry, government, and the military, as well as those in higher education. In other words, JID does not seek to be the exclusive province of higher education.

Herein lies the first of JID's problems. While the number of subscriptions to JID is growing rapidly, most of those subscriptions come from the higher education community. There are some subscribers from professional education, fewer from elementary and secondary education, and virtually none from business, industry, government and the military. This is a serious problem, because these four work settings employ a significant number (if not a majority) of instructional developers.

If JID is to continue to grow and expand and the full range of communication of ideas envisioned by the journal's originators is to be realized, subscriptions from these work settings must increase. You can help. If you know any instructional developers in business, industry, government, or the military who are not subscribing to JID, please spread the word about the journal to them.

Contents

The contents of JID, consisting of its articles and its departments, reflect its purpose and audience.

Up to the present, the articles published have reflected the strong higher education orientation of the readership. This is not by design but is based on the makeup of the audience JID is currently serving and the authors from whom manuscripts are received. It is this intention of JID, in the future, to publish theory, inquiry, technique, evaluation, and management articles about instructional development as it relates to all work settings. This is a necessary direction if JID is to accurately reflect the current status, and future directions, of ID theory and practice, and create a healthy dialogue among all instructional developers.

The departments are, I believe, one of the unique features of JID. First, we have gone beyond the traditional Book Review department of most journals in several ways. We have attempted to use a different approach to reviewing books. Our reviews are written by practicing instructional developers—those who have to implement the ideas presented in the literature—and not by the "experts" in the field. Further, we have had different reviews of the same book by developers with different work-based perspectives. We intend to continue these approaches. Second, we have added other departments. In this issue, we have the first ID Training Modules department. It is designed to provide actual instruction for developers in ID techniques. This department will provide vehicles for continuing education of our readers in a fashion similar to that used by the medical profession. In addition, we are announcing the beginning of an Instructional Systems Review department to begin the review of, and dissemination of information...
about, the products of our work. Finally, we will announce in the next issue the details of our final department, *ID Project Abstracts.*

**Number, Quality, and Source of Manuscripts Received**

One criterion for judging the quality of a professional journal is: "Does the journal receive enough manuscripts so that it may select only the very best to publish, rather than having to publish the best of a relatively few mediocre submissions just to fill an issue?"

Based on this criterion, I believe *JID* is doing all right and is improving constantly. First, the number of manuscripts submitted for publication is growing steadily. This reflects the growing readership of *JID* and the growing respect *JID* has earned as a professional journal in which one wants to publish. Second, the editorial board tries very hard to select only the best manuscripts submitted for publication. For the current issue, for example, 30 manuscripts were submitted. These were reviewed by at least three reviewers. Only five, or about 17% were considered acceptable for publication as they were written. Another 25% were sent back to authors for rewriting. The remaining 58% were rejected outright. In other words, *JID* is not "an easy publication." And that is something we can be proud of. As the number and quality of manuscripts submitted increase, it will be more difficult to be published in *JID*, and the quality of the journal will improve even further.

*JID* has three problems in the manuscript department.

- **Number.** *JID* does not receive as many manuscripts as it needs to ensure continued quality content. We should be receiving twice as many submissions as we do.
- **Quality.** *JID* receives many manuscripts of low quality. This can be remedied by following the "Suggestions to Authors" below.
- **Source.** Most *JID* submissions come from higher education, and more specifically, from the faculty, students, and graduates of four-year institutions.

This has two negative effects. First, it gives the impression that only four-year higher education institutions are doing work in 1D (or that there is editorial favoritism toward these institutions). We know this is simply not true. Second, it gives no chance for *JID* to communicate the ID work being done in public and professional education, business and industry, and government and the military. These areas are grossly underrepresented in *JID* to the detriment of those in these areas who have something to say and of those who want and need to hear it.

These are three critical problems. And only you can solve them. How? Submit manuscripts for publication.

**Suggestions to Authors**

How can you publish in *JID*?

Here are some suggestions which will make it more likely for you as an author to have your manuscripts accepted (and for the editorial board and I to review them). These suggestions are based on the most common reasons submissions have been rejected in the past.

- **Read and follow the "Instructions for Authors" (see inside covers).** Manuscripts not submitted in the correct format make it difficult and costly to review and publish. The instructions are simple and are standard for professional journals. Please follow them.
- **Read and follow the "Criteria for Selection of JID Articles" (see inside covers).** All manuscripts are reviewed and rated using the nine criteria explained there. Manuscripts not meeting those criteria are rejected or sent back for rewrite. If you use your article to meet those criteria, you increase your chances for success. The most common commissions or deviations from the criteria are:
  - **Not related to 1D.** We receive many manuscripts that are "media" rather than 1D oriented. We publish only articles that are related to the 1D process. (See "Types of Manuscripts.")
  - **Nothing new.** We receive some manuscripts that say nothing new but rehash ideas everyone already knowledgeable in the field has been using for years.
- **No literature.** We receive many manuscripts in which the author has not searched the literature to find out what others have had to say about the topic. In most cases, we find that these articles merely are the author's intuitive "discovery" of some concept that has been discussed in the literature for many years. If your idea is new, document it by showing that you have searched the literature, and that no one else has said it before. Articles that cite previous, related work are given preference.
- **No implications.** We receive many manuscripts that present complex research and theories, but give no practical implications to the developer about how he or she can generalize the ideas and apply them in his or her work. Most instructional developers are practical people; they want the answer to the question "That sounds good, but how can I apply it in my work?" End all articles with implications for instructional developers.

**Conclusion**

In summary then, I believe that at the end of 2 years, *JID* has reached the point where it has achieved acceptance within AECT. It has a growing audience, has sound contents including both articles and departments, and retains an adequate number of quality manuscripts.

On the minus side, *JID* does not effectively serve a significant segment of the 1D community—business, industry, government, and the military—in terms of its subscribers, its contents, and the source of its manuscripts, and *JID* does not receive as many manuscripts as it could to allow for better distribution of published articles by topics and authors.

We are working to solve *JID*’s problems, but we cannot do it without you. *JID* is your journal. We need your subscription, your manuscripts, your participation in the departments. If you are already participating, get a friend to do so, too.

It has been a good (if rough) first 2 years, and we look forward to an even better third year—with your help.
An Analysis of Research Needs in Instructional Development

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To apply what is known about instructional design and evaluation to improve educational programs, it is often necessary to establish an effective instructional development support organization. It is certainly necessary to use consulting skills with faculty clients to assist them with their innovative efforts. The more that is known about how to establish support programs and work successfully with clients, the more likely it is that what is already known about design and evaluation will find its way into the heart of educational practice. This article represents a step toward the establishment of a research agenda focused on the practice of instructional development.

To accomplish that end, this article will define what is meant by instructional development, describe the scope of the research and knowledge base upon which the practice of instructional development is built, and comment upon the sufficiency of the investigation into the components of that knowledge base. Some of the key questions that are, as yet, unanswered by research and scholarly inquiry will be posed as a tentative basis for a research agenda for the field of instructional development.

A Definition

This article is concerned with instructional development, faculty development, and organizational development. For our purposes it is useful to define what is meant by the term instructional development. Instructional development is defined here as the systematic design, implementation, and evaluation of instruction (courses, programs, and curricula). While faculty development focuses primarily on faculty members and organizational development focuses on institutions and how they operate, instructional development focuses on the effectiveness of the academic program in facilitating student learning.

Scope of the Research and Knowledge Base for Instructional Development

What is the research and knowledge base for instructional development? To get a sense of the breadth of that base, one has simply to read through the programs of the annual meetings of the American Educational Research Association (AERA), the American Association for Higher Education (AAHE), the Association for Educational Communications and Technology (AECT), the National Society for Performance and Instruction (NSPI), the Professional and Organizational Development Network (POD), and others. In the process, one could identify hundreds of sessions and topics that have some direct relationship to instructional development. Sessions about the change process, design of instructional materials, evaluation of instruction, choice of instructional media, uses of computers in educational programs, consulting skills, and a great many other topics could all be judged relevant to the practice of instructional development.

To bring some order to the consideration of the research and knowledge base for instructional development and to categorize the relevant areas of inquiry, four major areas have been identified:

1. Organization and Administration of Instructional Development Programs. This area includes the establishment and mission of agencies and programs, change/innovation process, management, supervision, administration, faculty/higher education culture, etc.

2. Instructional Development Processes and Developer-Client Interaction. This area incorporates instructional development processes, consulting skills and techniques, counseling techniques, organizational development approaches, process consultation, etc.

3. Instructional Design Process. This area includes learning theories, educational psychology, instructional design theories, design of instructional materials, needs assessment, content/task analysis, design, selection, and use of media, etc.

4. Evaluation. This area incorporates evaluation models, product evaluation/validation, faculty evaluation, student ratings of instruction, program evaluation, cost-effectiveness evaluation, tests and measurements, research design and statistical analysis, participant observation, etc.

As we have portrayed it, knowledge about instructional development practice is drawn from a wide variety of sources (as represented in Figure 1).

Each of the four primary areas is fed by work in a number of areas, each of which is the subject of discrete scholarly inquiry. Similarly, these areas are based on even more specialized inquiry. For example (as shown in Figure 2), the instructional design process can be subdivided into several areas of concern, one of which is instructional design theories. This topic can also be subdivided into even more specific categories of inquiry such as the use of advance organizers, the role of feedback, sequencing of material, etc.
The degree to which individual practitioners draw upon this research and knowledge base varies widely depending on experience, familiarity with the areas, project goals, types of tasks to be performed, time and resources available, and the setting in which the instructional developer or evaluator is working.

Sufficiency of Investigation into the Knowledge Base

As one explores the state of the art in instructional development, it becomes apparent that not all of the four major areas of inquiry supporting the practice of instructional development have received equal emphasis by researchers. It is our observation that, while a great deal of research has been conducted in the area of instructional development, most of it has been concerned with instructional design, design and use of media, and evaluation of programs, materials, and media. (e.g., research on the teaching-learning process). It is not being suggested that the considerable amount of research that has been done in these areas is not important—quite to the contrary, it is a basic cornerstone for instructional development. However, additional inquiry into the organization and administration of instructional development and the development process itself must be undertaken. Consequently, the emphasis of the remaining sections of this article is on those two areas where basic questions still remain to be asked and answered if the practice of instructional development in higher education is to be advanced.

Organization and Administration

What questions are important about organization and administration? Durzo (1978a) identified several major areas that he believed were important to understanding the nature of instructional development programs: (1) the role of instructional development agencies, (2) characteristics of the agencies, (3) approaches taken to instructional development, (4) scope of instructional development projects, and (5) project generation and selection. Each will be discussed briefly.

Role of Instructional Development Agencies

Among the first questions that should be asked regarding instructional development programs are: What role will the agency play? What activities will it support? In 1971, a conference was held at Michigan State University in which representatives from 14 instructional development agencies reported on various aspects of their programs. The results of that meeting were summarized by Alexander and Yelon (1972). One question answered by the conference participants dealt with the typical activities of their agencies. Alexander and Yelon's summary is presented in Table 1. Bratton (1978), for example, observed that 50 percent of the centers included in his
study focused on faculty development for their orientation.

Butterbaugh's (1971) study led him to conclude that instructional development programs "presently run the gamut of every nature and extent imaginable" (p. 26). A review of the literature on instructional development confirms Butterbaugh's work and verifies the accuracy of the activities suggested by Bratton and by Alexander and Yelon. Durzo (1978a) concluded that "the literature describes many roles undertaken by various agencies; however, it does not offer any clear answer to questions about the optimum combination of roles which an instructional development agency should play" (p. 118).

Several major questions about the role of agencies remain unanswered:

- When does it make sense to establish an instructional development program or agency?
- Which of the many roles that the agency could play will be optimal under what circumstances?
- Is there any way to know what types of activities will produce the most significant results for a campus?
- Should instructional development agencies have faculty advisory committees?
- How are agencies that report to central administration perceived by faculty on unionized campuses? on non-union campuses?

Characteristics of the Agencies

What kinds of staff, budget, and administrative reporting structure should an instructional development agency have? Alexander and Yelon (1972) indicated that instructional development programs would have more influence on instruction if they were located within the administration of an institution at a level where they can have a high impact on a large number of faculty members. Of the 14 agencies represented at their conference, 9 were located in the administration of their institutions. Bratton (1978) reported that 56 percent of the centers contacted in his study were located high in the administrative structure of their institutions. Durzo (1978b) also observed in a review of literature that the prevailing suggestion was that "an effective instructional development program requires open access to the top level of institutional administration" (p. 31).

Staffing of instructional development
Table 1. Typical activities of fourteen instructional development agencies

A. Service
1. Conduct faculty workshops, seminars, institutes, and training programs on learning, instruction, and associated topics. (8)
2. Assist departments in analysis, planning, and design of curricula. (7)
3. Assist faculty to develop instructional materials. (7)
4. Internal publications: handbooks, project reports, and notes on instructional development topics. (7)
5. Consult with individual faculty members. (5)
6. Provide test scoring and analysis services. (5)
7. Provide instructional TV services. (5)
8. Administer and score standard tests (admission, placement, etc.). (5)
9. Provide media equipment (store, repair, and distribute). (4)
10. Maintain reference library on instructional development topics in higher education. (4)
11. Advise and assist community agencies outside university (schools, colleges, hospitals, UNESCO, and WHO). (4)
12. Maintain laboratories for faculty research and development in instruction. (3)
13. Provide administration with technical advisory services, re: instructional development. (3)

B. Research and development
1. Learning system design: instructional models, materials and procedures. (14)
2. Instructional programs: underprivileged students, honor students, foreign language students, simulation and gaming, and professional curricula (medicine, law, and pharmacy). (14)
3. Instructional evaluation. (8)
4. Training programs for faculty and teaching assistants. (5)
5. Individualized instruction, independent learning, computer-aided instruction, and programmed instruction. (5)
6. Educational tests and measurements. (4)
7. Impact of college on student development; recruitment. (3)
8. Organizational planning and governance. (2)
9. Cost benefit analysis of instructional systems. (1)
10. Instructional applications of media. (1)

C. Courses taught
1. Instructional design and technology. (8)
2. Educational psychology. (6)
3. Statistics and research design. (3)
4. AV media. (3)

Note. Numbers in parentheses refer to the number of agencies reporting the activity.


programs is another area of important concern. What kinds of people should an instructional development program employ? Alexander and Yelon (1972) observed that instructional development agencies are staffed primarily by professionals from the behavioral sciences. Butterbaugh (1971) found that the directors of programs which he studied had doctorates from the areas of administration, educational research, educational psychology, instructional communications, and educational measurement and evaluation. Bratton (1978) reported that more than 60 percent of the professional staff of agencies surveyed came from education, psychology, and communications. Putting the questions of staff background aside, Diamond, Eickmann, Kelly, Holloway, Vickery, and Pascarella (1975) argued that three staff functions were necessary for instructional development programs: development, evaluation, and production.

Yet, despite this general guidance, some key questions about agency characteristics remain:

- What skills or competencies are required to do instructional development and what kinds of people have those skills?
- Should instructional developers reflect a traditional discipline base (e.g., history, chemistry) in order to build credibility with faculty? Would a person with a discipline background be effective working in that discipline or would he or she be a potential threat to faculty?
- Is it better to have a large, central instructional development agency or to have instructional developers resident within academic departments (e.g., a chemist who teaches half time and works on chemistry course development half time)? Under which circumstances is one approach better than the other?

Approaches Taken to Instructional Development

One of the most important debates in the literature of instructional development relates to the manner in which instructional development agencies choose to approach the process of instructional improvement. Abedor and Gustafson (1971) described two different emphases that characterize the operation of instructional development programs: (1) an emphasis on product development (courses, materials, etc.), or (2) an emphasis on people development. According to Abedor and Gustafson "product-oriented" agencies are primarily concerned with the end-products of instructional development—entire courses, programmed texts, media, simulations, etc. They reported that the "people-oriented" agencies focused more on the growth of the faculty involved in the project and on helping the faculty to become developers in their own right than on the specific outcomes of the projects.

There are trade-offs to be made in...
choosing a focus. Product-development agencies may tend to produce discernible results more quickly, but people-development agencies may produce longer-term changes because they are changing the people who develop the courses and materials. The solution seems to be to incorporate some aspects of each approach in a program so that agencies have a balance between product development and people development. This sounds easier than it is.

Turning to the research for guidance leaves the following questions about approaches to instructional development unanswered:

- What is the long-term solution that offers an institution the most return for the dollar—product focus or people focus?
- What is the optimum method for combining people development and the development of courses and materials?
- How much do faculty learn about instructional development by participating in a client in the process?
- What types of staff skills and program activities are most useful for the optimum mix between people and product development?

Scope of Instructional Development Projects

Another area of debate in the literature relates to the scope of the projects undertaken by instructional development programs. Essentially the choice is whether to focus the resources of the agency to support a few large-scale projects (while providing some informal assistance for small-scale activities)—the major project approach—or to focus on supporting numerous small projects (while taking on an occasional large-scale project)—the shotgun approach.

There is no easy answer to this question in the literature, though most practitioners hold strong opinions about the matter.

Among the questions remaining about the scope of ID projects are:

- What is the impact on agency credibility when it turns down small projects to support large ones?
- Which approach is more effective in producing campus-wide improvement of instruction?
- Which approach is more acceptable or seemingly useful to faculty clients?

- In terms of agency/program accountability, which approach is most defensible? Under what kinds of campus conditions does each approach make the most sense?
- Are staff requirements different for each approach? Do staff require the same skills or different ones?

Project Generation and Selection

How does an instructional development agency or program generate its projects? There are essentially two ways to accomplish this task—through internal selection or external selection. Because these approaches are not mutually exclusive in a strict sense, many programs employ some aspects of each. In the internal approach the staff of a development agency works with the central administration, deans, department chairpersons, and faculty to identify high-priority needs and to recruit the appropriate faculty to help carry out projects. Little effort is made to promote the services of the agency to the faculty at large, though faculty "off the street" with ideas or needs may be a source of projects as well. Rather, the primary focus of this approach is to support those projects which will have maximum impact on the institution. Diamond et al. (1975) listed the primary advantages of this approach:

Advantages

1. Better balance between priorities and projects.
2. Fewer rejected projects.

Disadvantages

1. The overall effort will be qualified.
2. Requires extensive administrative cooperation at both the department and college level. (p. 28-29)

On the other hand, the external approach is generally a widely publicized faculty grant program in which individual faculty members and departments are encouraged to submit proposals describing course design projects and requesting financial and staff support from an instructional development agency or committee. Diamond et al. (1975) have also characterized the primary advantages and disadvantages of this approach:

Advantages

1. Generates many project requests.
2. An excellent method of advertising administrative commitment to instructional improvement.

Disadvantages

1. Many projects will be low priority and of questionable quality.
2. Faculty who are turned down may be antagonized.
3. Close control of projects may be lost unless specific operational guidelines are built into the funding process.
4. Coordination of projects to meet specific institution-wide goals may be limited.
5. Political consideration for institutional balance may force awarding of grants to some high-risk, low priority projects. (p. 32)

There are some questions about the process of generating and selecting projects that have not yet been considered in the literature:

- Which selection method (external or internal) produces the greatest impact on an institution's instructional program?
- What are the anticipated outcomes of each approach (both desirable and undesirable)?
- What data should be collected to determine whether projects should be supported by the agencies?
- How are priorities for selecting instructional development projects established by agencies and committees? How should they be established?
- How do faculty feel about the various approaches for selecting projects?
- In what kind of political climate and setting is each approach most likely to be appropriate?

Instructional Development Process and Developer-Client Interaction

Instructional Development Models

There are dozens of models describing how instructional development is conducted in various centers and programs across the country (Stamas, 1973). Two of these models are portrayed graphically on the following pages. (See

![Figure 3. Systematic approach to instruction (a simple model).](image-url)
Figures 4 and 5). Both of these more elaborately portrayed models stem from the simple model of instructional development presented in Figure 3.

The question of which instructional development model is most appropriate for a setting is one which has not yet been answered and may never be adequately answered. Each institution follows a set of procedures linked to the experiences of the development staff and the setting in which they are working.

The nature of the setting has a powerful effect on the requirement for more or less explicit models. For example, in the case of a research and development firm employing 80 instructional developers with varying degrees of expertise, it makes sense to have a rather explicit set of steps to follow so that the large number of complex projects may be managed easily, because all developers will be following roughly the same steps in all projects. A small liberal arts college with one half-time instructional developer may not require a publicly stated, graphically portrayed model of development, but the advice from the literature (Durzo, 1973a,b) suggests that it is advisable to have some procedure to follow. Just what procedure that should be is not clear.

There are other unanswered questions about selecting ID procedures:

- What is the most effective instructional development procedure for higher education? Are there any real differences among instructional development models which cause different outcomes?
- How well do developers actually follow the models used at their institutions? Do they actually employ all of the procedures outlined in the models?
- Do ID models help faculty understand the process in which they are engaged or are they more confusing than helpful?
- Do faculty who design innovative courses on their own follow a systematic approach? If not, what approach do they use and how may it be used by other faculty?

Developer-Client Interaction

The heart of any instructional development effort that employs staff to consult with faculty in the design and redesign of courses is the relationship built up between developer and client. Davies (1973a, 1973b, 1974, 1975) has written about the relationship of the client to the developer and has described its importance to the field:

Instructional development and evaluation are essentially concerned with the giving and taking of advice, and, for this reason, a great deal of what is accomplished depends upon the quality of the client-consultant relationship. Creating and nurturing such a relationship, which is essential to effectiveness, demands a special set of skills (1975).

Despite the importance of these skills...
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Figure 5. Instructional development process model. (The Instructional Development Institute (IDI) Model, National Special Media Institutes, 1971—now called the University Consortium for Instructional Development and Technology. Source: Twelker, Urbach, & Buck, 1972.)

to the effective conduct of instructional development, little research effort has been invested to determine the most effective approaches to use in working through instructional development projects. Considerable inquiry about organizational development and process consultation has been done in other contexts, but little has been done in the instructional development context.

It is important to determine the following about developer-client interaction:
- What is the best approach for team building for short-term instructional development projects?
- To what degree are conflict management strategies effective in instructional development projects?
- Do the goal-setting strategies used in organizational development approaches have advantages over the strategies typically used in instructional development projects?
- What kinds of communication-building activities are appropriate for instructional development projects?
- How should client objections be handled?
- What kinds of decision-making models are most appropriate for instructional development teams?

- What skills and techniques work best in developing a high trust level between the developer and the client?

Summary
The charge then is clear. Instructional developers should begin concerted efforts to answer the questions posed here (and others which have not yet been raised) if the practice of instructional development is to be advanced. We know a great deal about how to facilitate and evaluate learning, but we need to know more about how to initiate, support, and assist with the instructional change process in higher education if our knowledge in the former area is to be fruitfully brought to bear on the task of improving instruction in higher education.

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Davies, I. K. Terminating the relationship with an instructional development client. Association for Educational Communications and Technology, Division of Instructional Development Newsletter, 1974, May, 22-23.
Davies, I. K. Development of a relationship with an instructional development client. Association for Educational Communications and Technology, Division of Instructional Development Newsletter, 1973, September, 2-5. (a)
In Search of Graduate Degree Programs In Instructional Technology 1978-79

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Graduate Degree Programs In Instructional Technology 1978-79 is available from AECT Publication Sales, Dept 8A, 1126 16th St., N.W., Washington, D.C. 20036. AECT Member Price: $3.50; Nonmember Price: $4.50. Orders under $15 must be prepaid. A $1 charge plus postage will be added to billed orders.
Transmitting Instructional Development to University Faculty: Two Approaches

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It can be said without much risk of contradiction that the rapid changes in teaching methodologies and needs have placed particular burdens upon instructional development personnel working within the university structure. For instance, the limited time available to work with all of the demands placed upon the modern professional has reduced the number of contacts with faculty thus reducing the total services that can be offered. Additionally, the cost of exposing faculty to teaching innovation on a one-to-one basis may be suspect in terms of its overall cost-effectiveness to the university (Witt, 1977). With the increase in demands and often the cut-back in assistance to the instructional developer, the instructional development consultant must be prepared to consider alternative methods of training faculty in instructional development procedures in addition to maintaining the individual consultant-client approach of working with faculty.

As an approach for resolving this dilemma, Oregon State University has designed two different projects to transmit instructional development to a larger set of faculty. They are the College and University Teaching (CAUT) Project and the Fund for the Improvement of Post-Secondary Education (FIPSE) Project on Professional Development. Both projects share a common objective—that of training university faculty to use instructional development procedures in preparing for instruction. It might be noted that the CAUT Project is approaching its sixth year of operation and the FIPSE Project on Professional Development had just begun in the fall of 1978. The CAUT Project, described first, is designed to meet the needs of faculty with specific applications for instruction; the second project outlines an attempt to train a relatively few faculty to take on a role of “change agent” or opinion leaders within a College of Liberal Arts. These individuals, as described in the literature (Rogers, 1962), are identified as professional persons trying to influence the directions that individuals will take. Specific case studies and organizational procedures are provided for the reader to generalize the effectiveness of both projects.

Description of the CAUT Project

The CAUT Project at Oregon State University (OSU) was created in 1974, to meet the increased need for instructional development on the university campus. The CAUT Project is organized to provide services that will motivate and enable faculty members to design and implement an improved instructional process. These activities require training 30 selected OSU faculty members (from various schools and colleges). The main subject matter is instructional development and curriculum design with stress upon instructional design, learning processes, and alternative instructional forms allowing for increased instructor-student involvement.

The CAUT Project encompasses, for the chosen set of faculty members, a full year with four distinct phases of instructional activities. The instructional activities themselves are designed to demonstrate by example the validity of the design techniques for improving instruction. The emphasis on using interpersonal communication methods is vital in training faculty about instructional innovations and technology. Outside instructional consultants are selected on the basis of their ability to work effectively with faculty. This process is emphasized throughout the four phases of the program.

The Four CAUT Project Phases

Phase I. Phase I (workshop session) consists of three weeks of daily sessions directed by several, nationally known instructional consultants plus the CAUT staff. Participants are exposed to several different teaching/learning approaches, and the CAUT Project staff helps participants evaluate and select the methods that most enhance the instructor’s performance. The instructional consultants selected come primarily from other universities. These consultants are skilled in current educational innovations. During the workshop period, participants are expected to develop instructional development plans for their courses. This phase takes place in early summer.

Phase II. Phase II (a two-month planning period) is used by the faculty member to design a comprehensive plan of instruction with the assistance of the CAUT Project personnel and campus resource departments. The instructional planning as developed in Phase I is refined into a more complete and well-defined instructional design during Phase II. The emphasis is on organizing and designing specific objectives, teaching strategies, and evaluation procedures—rather than on materials development. The outside consultants do not participate after Phase I, but supportive help is provided by CAUT Project staff at OSU. This phase proceeds at the individual faculty member’s own pace. It fills the period between the end of the workshop and the beginning of fall term.

Phase III. Phase III (materials and teaching strategies development period) provides each participant with consultation and aid in developing instructional Phases I and II. Again, this phase proceeds at the individual faculty member’s own pace. In general the faculty member is putting together an instructional system for a particular course, and the first teaching of that course during the next school year provides the necessary deadline.

JOURNAL OF INSTRUCTIONAL DEVELOPMENT
Phase IV. Phase IV (the evaluation period) is used to assess a final report: to describe and report the participant's output through Phases I, II, and III. Each participant prepares a report of the instructional design, objectives, and means of evaluation, the materials developed, and plans for future innovations. Once the project is completed, the CAUT staff continues to be available for assistance. As a result of the project's input to the instructor, participants are expected to determine changes in students' learning and attitudes.

Faculty Selection

One of the fundamental problems faced by a program designed to transmit instructional development is the voluntary nature of faculty involvement.

Even if a proven resource for instructional development is available, many faculty feel that merely asking for assistance is in itself an admission of inadequacy or incompetency. Presently, the CAUT Project addresses this problem by involving conscientious faculty who have expressed a desire for assistance by applying to and being selected by a departmental curriculum committee and a college dean for participation in the project. Deans-nominate faculty members from their departments on the basis of the proposals by faculty members to improve particular courses. These proposals are evaluated in terms of number of student credit hours affected, type of course, faculty members' need for the workshop, etc.

CAUT Budget

The CAUT Project is funded by the university from state funds. The budget for the most recent year was $101,000. Each of the participants receives a stipend from the CAUT Project funds of $1,000 to attend the workshop. Participants also receive an additional stipend from their respective departments, which averages $500 per participant for varied course use. Thus a participant receives approximately $1,500 for nearly full-time involvement in the 3-week workshop. No funds are provided by the CAUT Project for the additional phases of a faculty member's involvement; however, assistance is provided in obtaining funds and/or grants.

Some 150 faculty members have participated to date in CAUT Project training. As part of the overall instructional development process, they have been exposed to instruction in self-paced instruction, competency-based testing, audioworks programming, guided design, behavioral objectives, computer-assisted instruction, test analysis, learning centers, instructional television, lecture techniques, and the evaluation of teaching.

It is essential that the CAUT Project operates in the broadest possible context by providing informational exchange through (1) participant seminars to assure that the various procedures developed and results obtained by each faculty member contribute to the knowledge of all participants; (2) seminars and presentations conducted on a campus-wide basis to acquaint additional faculty with the CAUT Project and demonstrate the kinds of gains they can expect through participation in it; and (3) a comprehensive annual report distributed campus-wide and submitted for publication in the appropriate professional journals. Also, individual reports written and published by faculty participants promote a wide dissemination of practical information that can be used by other faculty and educational institutions.

As the quality of instruction is improved, it is believed that there will be a commensurate improvement in the efficiency of the learning process and in students' competencies. From the data acquired, CAUT participants have reported that by acquiring instructional development skills their effectiveness has increased. Feedback from students and administrators about the changes in the participants' methods has been supportive.

The following cases illustrate a few examples of four instructors' course work as a result of training in instructional development in the CAUT Project. Further information about the CAUT Project is available (Osterman, 1978).

**Case I: Teaching Introductory Data Processing with Competency-Based Testing**

This case describes a teaching/learning experience in the School of Business at Oregon State University. The course, "Introduction to Business Data Processing," consists of approximately 40 percent data processing and 60 percent programming in the FORTRAN language.

The investigation was stimulated by the instructor's experience in the CAUT Project in 1974.

The instructor's desire was to develop a competency-based version of the course changing the normal lecture mode of teaching to that of module instruction. This particular case focuses on competency-based testing as an intermediate step.

Competency-based testing requires that the instructor develop examinations that measure the level of competency of a student in each of several modules making up the subject matter of the course. Students in some competency-based testing schemes are allowed to progress from one module to another only after having displayed some minimum level of competency on the examination over the previous module. This means that students are to be provided with a sufficient number of versions of modular examinations to demonstrate their competency. The instructor employed competency-based testing in an introductory business data processing course wherein numerous versions of exams were provided, but one's competency on one module was not a prerequisite to work on any of the other modules.

Results. The results gleaned from this "experience" are interesting. Comparisons between the two different administrations of the course (one as competency-based, one not) were made in terms of the proportion of students successfully completing the course, the grades they achieved, the overall level of competency they achieved, and their evaluation of the overall quality of the teaching of the course.

A slightly larger proportion of students finished the course under competency-based testing (87 percent vs. 80 percent). The difference in number of students finishing the course is statistically significant at the 5 percent level.

Students in the control group (150 students) achieved an average grade of 66.30 with a standard deviation of 15.52. Students in the competency-based testing group (150 students) achieved an average grade of 73.94 with a standard deviation of 10.80. It would appear that students achieved a higher level of competency in the latter group. The performance of students in the competency-based testing group was better with statistical significance at .05.

SUMMER 1979, VOL. 2, NO. 4
Students in the control group rated the instructor at 2.65 (on a scale from 0-4), which put his performance in the fourth quintile as compared with his colleagues. Under competency-based testing, this figure was 3.28, which was in the first quintile.

In general, the results of this teaching approach show:
- The average level of student competency is increased.
- The proportion of students completing the course is increased.
- Student satisfaction is increased.
- The average grade of the course is raised.
- Student evaluation of the teaching effort is higher.

Case II: A PSI Approach to Managerial Accounting

The personalized system of instruction (PSI) is an alternative to the traditional lecture method of pedagogy. This set of techniques was originally presented by Keller, and has since been utilized and investigated at many colleges in a variety of disciplines. The major components of PSI are: modulated course structure, written study materials, student self-pacing, student-peer proctors, competency-based testing and nonrequired lectures (Keller, 1974).

Results. The PSI approach yielded the following results:
- The instructor received three separate course evaluations (on the scale described in Case I) when using a traditional approach to Introductory Managerial Accounting, and three evaluations when using the PSI approach. The author's rating for each PSI section was higher than any of the ratings from the traditional sections.
- Each of the sections rated the relative time and effort required by managerial accounting compared to other courses. The results do not indicate any substantial perceived difference in the course workloads for the different sections.
- Students were asked whether they would recommend the managerial accounting course to a friend and how strongly they would recommend the course. The unanimous recommendation of the PSI class was very impressive compared to the average percentage of 69 percent positive recommendations obtained from the other sections.
- Testing at the end of the course showed students in the PSI section scored consistently higher than their counterparts in the non-PSI section.

The instructor found PSI to be a promising and enjoyable teaching method. In addition, a post hoc analysis of student attitudes and performance found that compared to students in lecture sections, students in a PSI section of managerial accounting had more favorable attitudes toward the course, and performed better on common portions of a final examination. These findings are consistent with reported research on PSI in other disciplines.

The only constraint was that the course grade at the end of the term depended upon the number of points the student had accumulated from module exams. Students were required to achieve a given percentage score (up to 100 percent) on a unit exam before proceeding to the next unit. Course grades were then determined by the number of units completed.

"The future of both projects depends not only on success in meeting the established goals and objectives, but also on how successful it appears to the supportive groups sponsoring these two different approaches to training faculty in instructional development."

Description of the Instructional Methodology. During the fall term, 1974, at Oregon State University a variation of the PSI method was used in an introductory managerial accounting class. The instructor was introduced to PSI through the 1974 CAUT Project.

The course material was divided into 10 separate units covering the standard managerial accounting topics. For each unit, students were provided with a written study guide. The unit consisted of a set of behavioral learning objectives; a reading assignment; study question for the student to answer while completing the reading assignment; a list of required problems; a list of recommended problems; and any comments, formulas, or examples the instructor desired to add to a particular topic.

Individual students proceeded through the course at their own pace.
Summary of What the CAUT Project Offers

Phase I
- A 3-week training workshop in instructional development.
- Individual consultation with the selected outside consultants and the CAUT Project staff.
- An exposure to alternative teaching methods.

Phases II & III
- Seminars throughout the academic year.
- Aid in writing funding proposals.
- Assistance in materials development.
- Administrative and resource support.
- Evaluation assistance.

Phase IV
- A closure experience of pulling a year's instructional development work together in the form of teaching strategies and products.
- Credits for teaching improvement to be used in publications, reports, presentations, tenure, and promotion requirements.
- Continued support in developing instructional strategies and materials.

- Student evaluation of teaching ratings was different between the two sections: guided design scored higher.
- Students in the guided design section scored significantly higher on the midterm and final exams at the .05 level of significance.

Case IV: The Use of Computer Simulations to Teach Food Quality

The instructor of a food science course chose to add computer simulations to her course as a means of allowing students to analyze causal relationships of food quality. After attending the 1977 CAUT Project, the instructor designed the computer simulations to students' experience in analysis, synthesis, and evaluation of information. Computer simulations were field-tested, adjusted and revised, and used by 44 students during spring term of 1978. To measure the impact of the simulations, pre- and posttest instruments were developed to evaluate students' attitudes and achievements as a result of receiving instruction through the 26 simulation models.

Experimental Results. The experiment revealed the following:
- Students held a positive attitude toward computer simulations.
- Computer simulations can be a successful alternative method of teaching foods.
- Students seem to achieve by using rapid feedback, sequential steps, and motivational cues for learning.
- There is a relationship between learning from computer simulations and attitudes.

The achievement of the CAUT Project seems to be noted in the broader exposure of instructional development on the campus, increased motivation of instructors, and their improved teaching performance. Evaluation reports indicate higher student evaluation scores of teachers who have attended the project. Results of nine out of ten former CAUT Project participants reviewed for tenure and promotion for the 1978 year revealed improved scores after the professors attended the project. Campus resource centers indicate an increased use of instructional resources by project professors. In addition, units are experiencing more effective requests for services. Evaluative data collected over 6 years of CAUT Project participants indicate that this approach of training professors in instructional development has a direct effect upon course improvement; increased student attitudes and achievements; and spin-off effects to colleagues, students, and other institutions. The results of the professors' work has motivated peers to consider using improved teaching/learning ideas.

In addition, students have spread the word about these new teaching systems to their traditional professors.

The four case studies in this article reveal the impact of a university's attempt to provide for instructional development. The cases, therefore, speak to the effectiveness of organizing a faculty development project that provides an opportunity for project participants to explore the possibility of using instructional development strategies and procedures to improve their instruction.

Description of the FIPSE Project on Professional Development

Instead of hiring an outside specialist to advise them on instructional development and improving teaching skills, five faculty members of the College of Liberal Arts are involved in a project designed to help themselves and each other using the expertise of campus resources. The Faculty-Centered Professional Development Project is operating on a $100,000 grant awarded by the Fund for the Improvement of Post-Secondary Education (FIPSE). The dean of the College of Liberal Arts (CLA) is convinced that trained faculty from CLA can do a better job with their own faculty. The dean feels that outside assistance would not work because the CLA faculty would not take advantage of it.

The purpose of the 3-year project is to pursue an innovative approach to assisting faculty members to improve their effectiveness in instructional development activities such as teaching and scholarship. A basic hypothesis underlying the

Summary of What the FIPSE Project Offers

Five faculty members are trained for part-time service in an instructional development capacity for a 3-year period. Training occupies 2 terms (quarters). The team members receive a one-course-per-term reduction in teaching load for a period of 3 years. One training term is spent in rotating internships with three deans (Deans of Research, Undergraduate Studies, and College of Liberal Arts) and one term focusing on instructional development activities such as: instructional design and evaluation, alternative teaching approaches, cognitive styles and learning, psychology of adult development; and the relationship between governance, reward systems, and instruction. Following this training period, the team will make their skills available to their colleagues on a confidential basis. Confidentiality and project evaluation will be made compatible by the use of anonymous but documented case histories. A second team will begin training in the third year of the program.
proposal to FIPSE is that faculty members from within a complex institution with no special administrative title or responsibilities can be effective in facilitating the improved performance of their colleagues.

The plan is to train five faculty members for a 3-year period, with reduced course instructing. The training period occupies 2 terms, which are followed by 2½ years of advising colleagues. One term is spent working with the dean of research to become aware of the internal sources of support available to faculty for creative scholarly activities at Oregon State University. Methods of operation pertaining to proposals and grants are outlined. The five faculty conclude this term with a “team product” describing their approach at informing CLA faculty about the research grants, funds, and proposal activities.

The following term is spent working with the dean of Undergraduate Studies, Coordinator of the CAUT Project and Instructional Development, and the dean of the College of Liberal Arts. The five faculty are exposed to the following:

- Instructional design.
- Alternative instructional methods.
- Student learning measures.
- Cognitive learning styles.
- Handling the various clients involved in instructional development.
- Case histories in faculty development.
- Adult life cycles and learning.
- Maximizing the learning.

If the first team of faculty is successful, a new team will be trained at the end of this 3-year period. To evaluate the success of the program the five faculty will be making anonymous case studies of those faculty members who come tothem for aid concerning problems with instructing a class or other problems. These confidential reports will serve as the main source of evaluating the project.

Tentative Evaluation

The evaluative data collected at this writing have been obtained through several oral interviews with the five faculty. The summarized responses are as follows:

- Released time from one course per term is not sufficient for adequate training time.
- In 2 terms of activity, faculty do not feel “qualified” to train other faculty in instructional development. They will, however, inform faculty of resources to consult for specific problems.
- Team faculty members are ambivalent about their role: do they apply this 2-term’s work immediately to their own course work or suggest it to colleagues? The “dual-role” is confusing.
- All team members desire to attend the CAUT Project for intensive training.

Conclusion

The future of both projects depends not only on success in meeting the established goals and objectives, but also on how successful it appears to the supportive groups sponsoring these two different approaches to training faculty in instructional development. The results of the CAUT Project are being disseminated through various means, including journals, and publications. It is too early at this writing, to determine the effectiveness of the FIPSE Project; however, current reports are encouraging.

This paper has dealt with the efforts of one university to stretch the instructional development expertise to as many faculty as possible yet maintaining centralized programs offering coordinated assistance and support. The cost-effectiveness of both approaches are meaningful in terms of the total faculty, students, and innovations served by increasing the campus instructional development knowledge and practices.

The cases described in this paper speak to the effectiveness of four faculty who have prepared instruction as a result of attending one of these two methods of providing for the needs of faculty, students, and the total instructional community.

References


For further specific information regarding the case studies, one can write to the author requesting details. Only those requests that enclose a stamped self-addressed envelope will be returned.
Cost-Effectiveness Analysis
Tradeoffs and Pitfalls for Planning and Evaluating Instructional Programs

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Overview

The instructional planner and evaluator, depending upon prior education, experience, and current context, may owe primary professional allegiance to any number of associations and academic disciplines. Descriptors such as media professional, educational researcher, evaluator, economic analyst, instructional designer, operations researcher, curriculum specialist, and systems analyst represent some of the monikers used by professionals who perform the development and evaluation functions.

Regardless of professional affiliation and title, professionals making decisions about instruction must consider issues related to costs and effectiveness. How and when these issues are considered are becoming major concerns in these times of retrenchment and resource reallocation.

It is not the intent of this article to provide an all-purpose recipe for the conduct of cost-effectiveness studies. Attempts at such a cookbook approach would likely result in something akin to gastronomic distress. To date, what has been produced in fields outside conventional education contexts is the articulation of cost-effectiveness guidelines that include issues, outlines, procedures, examples, and references (Doughty, Stern & Thompson, 1976; Quade, 1976).

Editor's Note

Economic analysis, cost-effectiveness (CE) analysis, and program cost analysis all have considerable potential in planning, implementing, and evaluating instructional development projects. Whether such methods are feasible or likely to lead to more efficient or effective development is in part a function of how they are applied. Considerations of why they might be used are, perhaps, of equal importance.

The IJD editorial board has approved the publication of a three-part series of articles devoted to these issues. The leadoff article, which presents conceptual and practical criteria for judging and designing cost-effectiveness oriented studies, is presented in this issue. A subsequent issue will present discussions focusing on the technical and methodological issues inherent in most, if not all, CE studies. These will include a consideration of CE methods employed in instructional technology and a more detailed account of the techniques of program cost analysis. The third issue will present an applied case study example that demonstrates many CE features and several of the pitfalls in a potentially useful study conducted in an ID context.

The series is intended to present a rather comprehensive but terse state-of-the-art picture of cost-effectiveness methods in the context of instructional development.

Ultimately the question is asked: Where does the developer or evaluator begin in developing a cost-effectiveness analysis perspective? This article outlines several issues that distinguish studies and projects that have incorporated this perspective from those that have not.

One of the major problems is the perception that cost-effectiveness analysis does not require any particular technical or professional competence, but does include a requirement for copious quantities of common sense and sound logic. Considerable and continuing support for this notion is supplied through the proclamations of decision-makers in almost every field. Written and oral utterances such as: "We developed it in a cost-effective manner . . ." or "The benefits were maximized while the costs were cut 20 percent . . ." or "Our benefit-cost ratios prove . . ." or "The decision was made on the basis of cost-effective reasoning . . ." all serve to perpetuate the illusion of science and truth.

Somewhat farther along this science continuum falls a relatively select but growing number of individuals who mask their more sophisticated blunders with verbiage and jargon peculiar to their particular field of inquiry. Most of these are the results of errors in logic or false assumptions. Economic analysts, summative evaluators, cost analysts, program budgetors, and operations researchers all have high potential for inclusion in this club. An even more unfortunate situation arises when a quality piece of work is obfuscated by the author in catering to external requirements for specialized language, format, or purpose. Such is often the case with parochial professional journals and research oriented dissertation committees.

Add to this the confusion over concepts or terms such as the following:

Cost-Benefit or Benefit-Cost Analysis—conventionally an "ends oriented" approach that requires a quantitative valuation of both resource inputs and outcomes.

Cost-Effectiveness Analysis — a "means oriented" approach employed where the task is to select a strategy or product from a set of alternatives designed to accomplish specified goals. In addition there is less emphasis on numerical or monitory quantification of outcomes.

(Continued on page 25)
ID Training Modules

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This issue of IJD introduces its new department devoted to ID Training Modules. These modules, to be inserted periodically throughout the year, will not be articles about ID training. Instead, they will present self-instructional or other types of training materials that actually teach or improve the readers' specific skills in some aspect of the ID process such as conducting a needs assessment, developing a learning hierarchy, conducting a field test, and evaluating artistic endeavors. This department will appear in IJD as a special insert of about 8 pages several times a year.

With the state of the art in the ID field constantly changing, professional developers have an obligation to keep up with those changes to help define and legitimize the ID area as a professional field and to maintain or improve the quality of ID practice. IJD plays two roles in this process. First, it contributes to the analysis and improvement of ID through the publication of quality, professionally oriented articles. Second, through the ID Training Modules Department it will seek to bridge the gap between theory and practice by offering more than just descriptions of the elements that contribute to successful ID efforts. It will present materials designed to teach actual ID skills—skills that will range from the "how-to's" of basic design techniques to the applications of "new" and "advanced" ID approaches.

Many professional fields are now developing innovative approaches to continuing education. These approaches range from special training modules inserted in journals to the creation of special consulting and workshop networks to the publication of annotated bibliographies or compendiums that provide insight on how to deal with specific tasks or problems. AECT's guidelines for awarding Continuing Education Units (CEUs) also recognize the value of innovative approaches to continuing professional education by allowing CEUs to be awarded for learning activities outside the traditional classroom or workshop setting.

The ID Training Module introduced in this issue of IJD is a special bibliography prepared by Joe Durzo, Robert Diamond, and Phil Doughty to build on their article "Research and Instructional Development: A Perspective." It is a good starting point for this department because it serves to make the reader aware of materials that already exist in the field.

IJD welcomes ideas for topics to be covered in future ID Training Modules. Readers are also encouraged to submit instructional materials designed to improve specific skills of instructional developers.

From simple card files to complex computers, information and learning networks are everywhere. AECT's latest filmstrip describes the concepts behind networking and what it means to the media and library staff. AECT developed this color, sound filmstrip for the Leadership in Library Education Institute at Florida State University and drew upon both the ERIC Clearinghouse for Information Resources and the National Commission on Libraries and Information Science for the latest information on networking and networks. AECT visited the ERIC Clearinghouse, the University of California at Irvine, the National Education Association and Bellevue (Washington) Community College to get examples of networks in operation. The filmstrip comes with a booklet that includes common network terms and definitions, acronyms of networks, a selective, annotated bibliography, and a brief administrator's overview of computerized networking in libraries and universities.

Networks for Learning: color filmstrip, 85 frames with 11 minute audiocassette (audible and inaudible advance pulse) and information booklet on networks, $16.95 for AECT members, $19.95 for nonmembers. Order from AECT Dept. A, 1126 16th Street NW, Washington, DC 20036. A $1 charge plus postage will be added to all orders that are billed.
This list of references in the field of ID is intended to help readers quickly locate key sources in selected areas. From there individual interests and needs will take readers on different paths. It is not an all-inclusive list of references for the field of instructional development but represents selections made by the authors. For convenience the references are organized in the following manner: (I) General Overview Material About the Instructional Development Process; (II) The Design of Instructional Materials—Theories and Practice; (III) Evaluation.

I. General Overview Material About the Instructional Development Process

Doing instructional development implies the use of a systematic approach to analyzing problems, developing solutions, designing materials, and evaluating the effectiveness of the program and materials. The sources listed below reflect a number of approaches to the instructional development process.


II. The Design of Instructional Materials—Theories and Practice

A. Content and Task Analysis

The development of approaches to determining the content for courses, programs, and materials has been a matter of serious investigation for some time. It is important for instructional developers to be able to use an effective set of procedures to analyze and sequence content.

B. Instructional Design Theory and Practice

This area may be interpreted in many ways, to include everything from the writing of programmed text units to educational filmmaking. For our purposes here, we will consider media development and selection separately. Sources listed here will, instead, focus on the inherent design necessary to ensure that learning takes place. Whether a concept is "taught" via a computer lesson, slide-tape, book of readings, lecture or seminar is a matter for consideration which is beyond the scope of this section.


C. Design, Selection, and Use of Instructional Media

The state of the art in research about instructional media has moved from the comparison of one media with another to more useful work analyzing the interaction among various instructional media and learner characteristics. Nonetheless, much of the earlier research provides some foundation on which to base the selection of media for various instructional purposes. Media research is, to say the least, voluminous, but the following sources will be a good starting point:

Briggs, L. J., Campeau, P. L., Gagné, R. M., & May, M. A. Instructional media: A procedure for the design of multi-


Cronbach, L. J. Course improvement through evaluation. Teachers College Record, 1963, 64, 672–683.


B. Needs Assessment


C. Formative Evaluation for Course/Product Improvement

Baker, E. L. Formative evaluation of instruction. In W. J.

D. Economic Perspectives


E. Student Evaluation of Instruction


Cost Effectiveness
Analysis (Continued from page 17)

Cost-justification—an efficiency or monetary cost oriented set of strategies called upon when there is a requirement for defending or advocating a cost basis for a decision. For example “self-funding” instructional improvement or media support centers are more and more being called upon to develop rationale for “charging” clients for services and products.

The following list and accompanying discussion is intended to help professionals either avoid several of the more vexing problems or make informed choices about the available tradeoffs.

<table>
<thead>
<tr>
<th>Tradeoffs and Pitfalls for Evaluators and Instructional Planners</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Evaluate Criteria</strong></td>
</tr>
<tr>
<td>1. Define decision rules or criteria poorly.</td>
</tr>
<tr>
<td>2. Select wrong criteria.</td>
</tr>
<tr>
<td>3. Employ only a single criterion.</td>
</tr>
<tr>
<td>4. Emphasize throughput indicators.</td>
</tr>
<tr>
<td>5. Ignore spillover or unanticipated effects.</td>
</tr>
<tr>
<td>6. Overquantify.</td>
</tr>
<tr>
<td>7. Overgeneralize results.</td>
</tr>
<tr>
<td><strong>B. Cost Issues</strong></td>
</tr>
<tr>
<td>1. Rely on jurisdictional cost data.</td>
</tr>
<tr>
<td>2. Place undue emphasis on total dollar cost criterion.</td>
</tr>
<tr>
<td>3. Include sunk costs in cost analysis.</td>
</tr>
<tr>
<td>4. Assume unreasonable depreciation schedules.</td>
</tr>
<tr>
<td>5. Focus only on dollar expenditures.</td>
</tr>
<tr>
<td><strong>C. Cost and Effectiveness Relationships</strong></td>
</tr>
<tr>
<td>1. Misuse ratios.</td>
</tr>
<tr>
<td>2. Fail to fix cost or effectiveness.</td>
</tr>
<tr>
<td>3. Assume or imply causal relationships.</td>
</tr>
</tbody>
</table>

**Evaluable Criteria**

**Define Decision Rules or Criteria Poorly**

Studies conducted to aid decision-making often are well conducted and reported but fail to have any discernible impact. More often than not, the public and private criteria used by key decision-makers have not been determined nor used as primary components in the initial design. Of course, at times it is in the interest of an individual or an institution to divulge some decision rules. In these instances, the evaluator’s role and potential impact are considerably weakened.

**Select Wrong Criteria**

It is often tempting for evaluators to select criteria that can be easily defined and/or quantified, but are irrelevant to the decision. On the other hand, criteria are also selected because of their obvious potential impact, but they too may be the wrong or educationally insignificant ones. Dollar costs measures are as likely to be improperly or insufficiently reported as are outcome measures or indicators. Compromise is often in order when such criteria are strongly endorsed by key decision-makers.

**Employ Only a Single Criterion**

How often have we reviewed studies that report results of no significant differences when in fact there were highly significant differences in other variables or criteria? The fact that there are no differences in dollar costs to an institution for instance may ignore a requirement for the expenditure of extensive out-of-class time by learners. To rely on a single criterion, however encompassing it may be, places considerable faith in the planner or evaluator to select or create the ultimate, all purpose measure or indicator that communicates to all.

**Emphasize Throughput Indicators**

In the absence of ultimate criteria or measures based on need, job analysis, performance requirements, or whatever, proxy measures are often used as indicators or substitutes. This is of course acceptable practice. However, misleading conclusions are often drawn when throughput indicators, such as student-credit-hour or contact hour data are used as primary evidence of quality or efficiency rather than as idiosyncratic, noncomparable ratios of throughput. Such indicators are standard measures in many educational contexts but although they are necessary components in many studies, caveats about their limitations should accompany any comprehensive report that also contains other evidence of impact.

**Ignore Spillover or Unanticipated Effects**

A myopic fixation on established criteria excluding consideration of other direct evidence may not identify the alternative that compares favorably on selected criteria but excels or fails miserably in some additional area. Comments such as “Learners came in apprehensive and left hostile...” or “The reading instruction system was very efficient. Isn’t it a shame the students are no longer interested in going to the library?” provide insights into effects on systems well outside the one being considered. Obviously speculation on attribution and causality issues related to established criteria is always in order, but to ignore “other effects” shows evidence of limited vision.

**Overquantify**

In the quest to demonstrate the science of cost-effectiveness analysis, many individuals and disciplines require that all criteria be quantified in some fashion. Never mind the concern that in so doing, the evaluator has now become decision-maker by providing all standards of value and worth and utility rather than reserving those prerogatives for the decision-maker(s).

**Overgeneralize Results**

As generally applied, cost-effectiveness studies are not designed to generate universal or broadly generalizable results. Studies are conducted to inform and perhaps influence organizational behavior, or at times, individual decision-makers. Expectations of theory-driven, empirically validated generalizable models of cost-effectiveness analysis are unrealistic given the purpose and focus of this process. It is more likely that current CE methodology and purpose will and should prohibit attempts at application in classic research paradigms.

**Cost Issue**

Rely on Jurisdictional Cost Data

Most primary sources of dollar cost information aggregate and report those data according to “authority areas” or “domains of responsibility” that do not represent program, system, or result areas. Such jurisdictional costs provide
accounting information to ensure budgetary compliance but rarely do they relate directly to outcomes or program goals. Generally speaking, program or functionally related cost data are not available from existing records and must be collected or projected by the evaluator or instructional planner/developer.

Place Undue Emphasis on Total Dollar Cost Criterion

A false assumption often made or implied in evaluation or planning reports is that the total dollar cost of an alternative, including design, development, implementation, and lifetime operation, represents the total spectrum of the negative dollar costs. For instance, it may be the case that the salary of a master instructor, skillful programer, or competent manager can be accurately reflected. It is another issue entirely to assume that simply listing such salaries ensures those individuals' availability. In addition, reporting only total system costs does not permit scrutiny of cost-time phasing issues such as heavy front-end loading vs. potentially more costly continuing operational expenditures.

One useful way to think about and report program costs is to consider documenting monetary expenditures in a variety of ways including the following categories:

- Technical costs—How much does it cost? Each resource including capital expenditures and all personnel are identified and costed. Project phase specification or life-cycle phasing of expenditures is an extremely useful but rarely done way to portray these kinds of costs.
- Economic costs—What kinds of costs? Variable, fixed, direct, indirect, etc., costs are identified and reported. Occasionally amortization or depreciation schedules and discounting rates are included but then usually incorporated as part of the technical cost reporting scheme.
- Accounting costs—What types of costs? Initial capital investments and projected major investment or replacement expenditures are reported separately from current and lifetime operation expenses. This type of analysis is particularly important when considering instructional alternatives that differ considerably in labor intensity or in the application of high-technology options.
- Financial cost—Who pays? Often true or comprehensive costs of a program are shared by different contributors. This is the case for both direct and indirect costs. The notions of cost sharing by students (books, lab fees, travel expenses), academic vs. administrative (e.g., facilities) budgets, direct tuition vs. tax supported contributions are all examples of the financial cost issue.

Include Sunk Costs in Cost Analysis

When comparing feasible alternatives, one option may well be to continue an existing system that has already been implemented. In this case, an equitable analysis would consider only the future costs of operating and maintaining that system, not the sunk costs that were allocated in the past. In their attempt to be comprehensive, overzealous evaluators often include such costs rather than limiting the data to those that relate to future expenditures and outcomes. One instance where some of these costs should be included is when the data are to be used to project budget requirements to replicate the system in another setting.

Assume Unreasonable Depreciation Schedules

One way to distribute the cost of large initial hardware expenditures is to depreciate them over some specified number of years. Combining the notions of technological and content obsolescence with time or use-based depreciation is also legitimate and recommended. Problems arise, however, when analysts make unwarranted assumptions about lifespans of computer and video systems or course content, thus making it easier to justify high front-end expenditures. This is one area where careful judgment and public assumptions are basic requirements. A different but related issue concerns the assumptions made about the number of cycles an instructional program or system will be offered, as well as the number of learners or participants served during the projected lifetime of an alternative. These items have tremendous, almost overpowering impact on decisions related to judging economy of scale. Judicious estimates with supporting rationale help offset the healthy skepticism decision-makers have about such data.

Focus Only on Dollar Expenditures

Economists are quick to point out that costs are not simple negative consequences of a decision. There are, however, many decisions or alternatives that have cost implications of some kind for a variety of audiences. Negative benefits such as low student and faculty morale, study time diverted from other courses, and professional time diverted from other scholarly endeavors are examples of the broad range of costs that are not represented by balance sheets and voucher records. Such costs are real and of likely impact; although attempting to quantify and value them in dollar terms is usually not recommended.

Cost and Effectiveness Relationships

Misuse of Ratios

Some economists argue that the ultimate in scientific approaches to cost-effectiveness analysis is to quantify the evaluative criteria, preferably in dollar terms, so that benefit-to-cost ratio comparisons can be made. This approach combines the overquantification pitfall with a more fundamental problem: the lack of attention to the size or magnitude of the numerators and denominators. Most decision-makers are capable of selecting betting odds of 3 to 1 over a ratio of 5 to 2. Of course what wasn't considered was the additional information that 3:1 was actually $30 to $10 and the 5:2 indicated a benefit of 5 million dollars for a required capital investment of 2 million dollars. In this case, not only did the ratios dictate the decision, the initial selection was likely the wrong one.

Failure to Fix Costs or Effectiveness

Literature from many fields abound with the notion that cost-effectiveness analysis is a process that identifies the alternative that requires minimal resources and provides maximum effectiveness. It can be argued that this is based on the assumption that if you search hard enough or design creatively then you will eventually discover the alternative that provides infinite effectiveness for zero cost. Briefly, a more tenable guideline reads as follows: (1) identify a desired level of effectiveness and then examine the cost of alternative means of achieving that level, or (2) specify a budget level and examine the level(s) of effectiveness that might be achieved through different alternatives. Seldom, if ever, is either of these real-
ized. As a minimum gesture developers and evaluators should underscore the considerable problems associated with comparing alternative with unlike resource requirements and levels of effectiveness. Other major instructional variables such as time are also likely candidates for inclusion in such studies. Making such comparisons between multiple alternatives is often simplified by considering successive pairs of alternatives (two at a time) until all possible pairs have been analyzed.

Assume or Imply Causal Relationships

To specify, measure, and report resource requirements, process descriptions and system outcomes is a legitimate responsibility of any professional. However, to imply or assume that direct causal relationships exist between these variables requires a technical and conceptual leap well beyond current Olympic standards. Cost-effectiveness reports should always contain caveats concerning correlation, causality, and attribution.

Next Steps

Instructional planners and evaluators interested in pursuing these cost-effectiveness issues and procedures further are likely to be initially encouraged and then dismayed. Many cost-effectiveness related studies, articles, and texts have been published in the past 6 to 7 years. None of them claim to be the comprehensive guide. In addition, considerable translation of terminology and concepts is required. Explanations and examples contained in the publications cited in the reference list are particularly relevant. In summary, less translation than most, and merit consideration.

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Doughty, P. & Beilby, A. Cost analysis and teacher education: A comment on relevant relationships, a review of existing models. Syracuse University, 1974. (Monograph)


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**Other Requirements:** The manuscript must be submitted in publishable journal format and must conform to the American Psychological Association Style Manual, 1974. The author's name should be included only on the cover sheet since all manuscripts will be coded and reviewed "blind."

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Motivation and Instructional Design: A Theoretical Perspective

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Lack of Attention to Motivation

We have not given adequate systematic attention to the problem of motivation in instructional theory and technology, to the understanding of motivation in individual learners, or to the development of a technology for influencing motivation (Cooley & Lohnes, 1976; Cronbach & Snow, 1976). We know, as a rule of thumb, that we should introduce novelty, uncertainty, or a sense of mystery at the beginning of a program to elicit attention and. It is hoped, enthusiasm, and we know that we should use reinforcement to help sustain desired changes in behavior, but neither of these principles constitutes an adequate understanding of motivation. The purpose of this paper is to present a theoretical approach to understanding motivation in relation to other factors that influence learning and the design of instruction. In this context, several illustrative research studies are reviewed along with an introduction to a systematic process of influencing motivation. This presentation is not exhaustive, but serves as an introduction to the approach, and as a basis for subsequent elaborations of the issues and techniques based on this approach.

The paper begins from a historical perspective with two major influences in instructional technology that have preceded our current concern with motivation. The second portion of the paper introduces a process, or systems-type, theory that describes the relationship among the components of individual motivation, performance, and the design of instruction. The theory also provides the basis for incorporating and expanding several prescriptive theories of instructional design and management, and the development of additional prescriptive approaches where they are now lacking. Following the discussion of the content and characteristics of the theory is a brief review of related research studies and an approach to systematically influencing motivation.

Behavioral Influence

Historically, instructional technology has had a strong emphasis on the applications of behavioral psychology to instructional design and management. This approach resulted in the design and use of many types of contingency management systems (see Snelbecker, 1974, for a review) including programmed instruction, token economies, contingency contracting, and the personal-
ized system of instruction (Keller, 1968). The basic assumption in this approach is that behavior is controlled by its consequences, and the emphasis is on organizing content to minimize errors in a context of active responding together with the use of effective reinforcement schedules (Maride, 1969; Skinner, 1968). We can illustrate this approach (Figure 1) as the joint influence of an individual’s actual performance, and the contingency management system in use on the consequences that are obtained.

Cognitive and Instructional Theory Influence

While the influence of behavioral theory on instructional technology has been strong and productive, it was soon recognized that these assumptions were not sufficient. Many of the contingency management systems, even those produced by the behaviorists, contained implicit assumptions about individual abilities and the characteristics of human information processing. For example, designers of programmed instruction found that for some learners retention was influenced by the method of organizing content, and not simply by the schedule of reinforcement. Consequently, our field has also drawn heavily from the general field of cognitive psychology, including information processing theory, individual difference theory, and communications theory in order to design and manage the instructional materials from which learning takes place.

This focus on the stimulus characteristics that precede effective performance is illustrated (Figure 2) by the interaction of individual abilities, skills, and knowledge with the learning design and management approach that is utilized. It is reflected in the work of persons such as Gagné (1977), Merrill (1975), Reigeluth (Reigeluth & Merrill, 1979), and Dwyer (1978), and by the aptitude-treatment-interaction research (Cronbach & Snow, 1976). In each of these programs of research, a primary goal is

![Figure 1. Influence of consequences on performance.](image-url)
to discover and explain the characteristics of effective learning design approaches in relation to the aptitudes or cognitive styles of learners.

**Combined Influences**

Speaking in broad terms, we can say that our field now incorporates principles and practices derived from behavioral psychology and cognitive learning psychology. The influence of behavioral psychology has been primarily on controlling outcomes to influence the type and rate of response. This has improved our understanding of how often to present a reinforcement, and of the influence of different types of reinforcements. The influence of cognitive psychology has been more on the techniques for analyzing and organizing content, both in an absolute sense, and in relation to individual differences (Cronbach & Snow, 1976). These joint influences (Figure 3) illustrate the general cognitive model, which assumes that the organismic processing of stimuli must be understood along with the consequences of a response in order to understand learning.

**Omission of Motivation**

While the progress in both of these areas has been substantial and exciting, it has, in a sense, given us understanding of the head and the stomach of the learner, but not the heart. In the Republic (see Cornford, 1962), Plato describes the three-part nature of the soul. The first part is wisdom, or reason, which is associated with our heads and represents the deliberative, or governing part of our behavior. The second is honor, or spiritedness, which is associated with our chests or hearts, and represents the executive influence on our behavior. The final component is personal gain, which is related to the satisfaction of our bodily appetites. It tends to be associated with the belly and the reproductive organs, and determines the productive influence on our behavior. Analogously, we have focused with behaviorism on the influence we can have on maintaining behavior by controlling individual appetites; that is, the access of individuals to desired but scarce resources. We have also focused with cognitivism on understanding the reasoning abilities of people, and how to design instruction accordingly. But with respect to the heart or spirit of the learner, which represents individual determination and persistence, we lack an adequate, systematic approach.

**Effort and Performance Distinction**

To add this missing link in the evolution of our instructional technology, we make a distinction between effort and performance as categories of behavior. Performance means actual accomplishment; it refers to whether the individual accomplished the required task. Effort refers to whether the individual engaged in action aimed at accomplishing the task. While performance is usually measured by reference to a standard with respect to goal accomplishment, effort is usually measured in terms of persistence, or magnitude of action. Furthermore, effort is a direct indicator of motivation, while performance is an indirect measure, because it is also influenced by other variables.

**Types of Motivational Theories**

Given that effort is an indication of motivation, the challenge is to understand the components of motivation itself. Motivation is generally defined as that which accounts for the arousal, direction, and sustenance of behavior. Historically, there have been several theoretical approaches to explaining motivation (see Weiner, 1972). On one extreme are environmental theories based on conditioning principles and physiologically based drives (e.g., Hull, 1943, Skinner, 1953). On the other extreme are the humanistic theories that postulate a fundamentally free will at the root of motivation (e.g., Rogers, 1951). The position represented by the present theoretical model is that of social learning theory (e.g., Bandura, 1969; Rotter, 1966), which assumes that motivation and behavior are the result of interactions between a person and the environment. This work follows in the tradition of Lewin (1935), Tolman (1939), and a host of recent and current researchers who have worked on specific aspects and extensions of it (for a review see deCharms & Mutr, 1978).
Expectancy-Value Theory

In the context of social learning theory, motivation may be formulated in terms of expectancy-value theory. This theory, particularly as presented by Porter & Lawler (1968) serves as a basis for the present formulation. In expectancy-value theory, motivation is assumed to be a multiplicative function of expectancies and values. The term "value" refers to a person's preferences for particular outcomes from among those that are potentially available, and it has been conceptualized in several ways. Among the more common conceptualizations of "value" are Rotter's (1972) concept of reinforcement value, Murray's (1938) concept of need, and the concept of motives (Atkinson, 1974; McClelland, 1976). In the context of attitude theory, value has been defined directly in terms of beliefs (Feather, 1975; Rokeach, 1973), and in decision theory it is described as utility (Edwards, 1954) or valence (Vroom, 1964). The common thread in all these concepts is that motivation is in part a function of the characteristic choices a person will make for one type of goal over others.

The other major component is expectancy, which in this theory, refers rather explicitly to subjective probability of success. It refers to the extent to which a person is convinced that he or she would be able to accomplish a particular goal if he or she were to try. The development of personal expectancies has been studied in terms of the concept of locus of control (Rotter, 1966, 1972), attribution theory (Weiner, 1974), self efficacy (Bandura, 1977), learned helplessness (Seligman, 1975), and other influences on a generalized expectancy for success or failure (Jones, 1977; Perlmutter & Monty, 1977). A common element in all of these approaches is the attempt to explain the formation and effects of personal expectancies for success or failure, because an individual's subjective expectancies are often quite different from the actual contingencies (Rotter, 1966).

Consequently, we can add values (or motives) and expectancies to our model (Figure 4) as determinants of effort. This provides the motivational component. As to the relationship between expectancies and values, both Vroom (1964) and Atkinson (1974) argue that it is multiplicative. If zero value is placed on a given goal, or if the individual believes there to be absolutely no possibility of achieving the goal, then the product of the two will be zero. There will be no resultant motivation to exert effort in pursuit of the goal. By contrast, in an additive model either term could be zero, but there would still be a net positive motivational force if either term were greater than zero.

Any systematic effort to influence motivation and the consequent degree of effort expended would be part of a process called motivational design and management (Figure 4). Although there are notable exceptions (e.g., Aischler, 1975; deCharms, 1976), there are few identifiable, systematic efforts to develop a prescriptive theory that explains how to influence motivation in instruction. Furthermore, both of the preceding examples deal more with techniques for changing the motivational profile of individuals than with the problems of making instruction motivating, a distinction to be discussed in the last part of this paper.

Expansions of the Theory

With one exception, this completes our presentation of the basic components of the theory. However, there are additional relationships that have not been described, and parts of the theory can be elaborated by including more specifically defined variables. For example, with respect to relationships, there are feedback loops (Figure 5) that describe how experience influences motivation. The attempt to achieve a certain goal may or may not lead to a successful performance, which may or may not result in rewarding consequences. This experience will result in a revised set of expectancies with regard to one's subjective probability that effort will
lead to performance, and performance will lead to a reward.

Similarly, a reward obtained as a consequence of performance may or may not offer the anticipated need satisfaction. A student with a "Hollywood" image of psychology who wants to be a psychologist might discover, after working hard to gain admittance, that statistics and laboratory research do not offer the personal satisfactions that were foreseen. This would cause a revision in the student's values and motives, and would lead to a redirection of effort. Accordingly, there is a feedback loop from consequences to motives (Figure 5).

The major element that still remains to be included in the model illustrating the theory is a factor that helps eliminate the circularity in the feedback loop from reward to motives (Figure 5). The process by which reward influences motives can be explained by cognitive evaluation theory (Deci & Parac, 1978), equity theory (Adams, 1965), and cognitive dissonance theory (Festinger, 1957). All of these theories describe a cognitive process that involves the comparison of obtained satisfactions or rewards with those that were anticipated, were obtained by other individuals, or are retrospectively viewed as being appropriate. The interaction of an individual's approach to cognitive evaluation and the actual obtained rewards combine to influence the value the individual will attach to that goal in the future. For example, successful performance at a job could lead to a substantial salary increase. But if the increase were less than anticipated, or less than received by a colleague of perceived equal accomplishment, the salary increase would not have the effect of a reinforcer. It could actually lead to a decrement in performance.

This theory also provides a general context from which to focus on more specific problems. For example, it is useful to expand the outcome labelled consequences to make a distinction between intrinsic and extrinsic reinforcement. These alternative types of reinforcement are not always complimentary, as is sometimes suggested in the behavior modification literature. There are educationally important conditions under which extrinsic rewards will decrease the intrinsic satisfaction of an experience (Condry, 1977; Deci, 1975).

In the elaborations of the motivational component of the model, we generally include variables such as locus of control (Rotter, 1966) which modifies expectancy for success and is studied in relation to both cognitive and affective outcomes of instruction (Keller, Goldman, & Sutterer, 1978). Other variables that are being studied in conjunction with achievement motivation include future orientation and perceived instrumentality (Raynor, 1974), which modify motives, particularly the need for achievement. An example of an important but different type of influence is curiosity (Berlyne, 1965), which modifies the need for general activity, including the need to reduce uncertainty.

Because we are particularly interested in the nature of motivation in this theoretical structure, we have attempted to categorize a number of motivational concepts in terms of their relationship to expectancy-value theory (Figure 6). This array helps to illustrate the common threads in these lines of research, particularly with respect to whether their primary influence relates to the understanding of motives or expectancies. Our immediate challenge is to organize, in a similar manner, existing prescriptive principles for influencing these motivational characteristics, and to develop additional approaches where there are important gaps.

It is now appropriate to pause and look at the model we have developed. When the pieces are combined, we have a theory that describes the processes
that influence motivation and performance and that provides the basis for developing prescriptive theories of instructional influences. This theory, as previously indicated, is a social learning theory, which at the most general level assumes (Lewin, 1935) that behavior is a function of the interaction of a person and the environment; $B = f(P,E)$. It further assumes that behavior is purposive (Tolman, 1949), or goal directed. Other assumptions are implicit in our presentation of the theory, but would be excessively tedious to list in this short paper. The theory, as represented in Figure 5, has two important dimensions. Moving from left to right, we have the three major components representing motivation, cognition, and reinforcement. Moving from top to bottom we have person inputs, outputs, and environmental inputs. The environmental inputs illustrate an approach to instructional design that would include motivational design, learning design, and contingency design. The component is primarily descriptive in that it identifies categories of variables and their demonstrated or presumed relationships. This descriptive theory is not incompatible with the framework for theories of instructional design as presented by Reigeluth & Merrill (1979), and particularly as reformulated (Reigeluth, 1979) to include motivation.

Readers should not equate input and output variables with the concept of independent and dependent variables. It is possible to focus on almost any of the "input" variables as a dependent variable. One might be concerned, for example, with the influence of an achievement motivation workshop on changes in the participants' need for achievement. The workshop, although dealing with the topic of motivation, would incorporate motivational design, instructional design, and contingency management in the process of trying to bring about a change in the need for achievement, which is a motivational input variable. How would we know when we had achieved such an influence? It would be by giving the participants a task to perform, such as taking a Thematic Apperception Test, seeing whether they completed the task (an indication of effort, an outcome variable), and then analyzing the result to see whether it contained achievement imagery (an indication of performance, another outcome variable). We would then draw an inference about the participants' need for achievement. Thus, the motive for achievement, an input variable, has served as a dependent variable for this hypothetical study.

Related Research

There is a vast literature of research related to variables included in this theory, particularly when one considers the many different laboratory and clinical contexts in which human behavior is studied. The following brief review is limited to several recent and characteristic lines of inquiry in a program of educational research related to the motivational variables in the theory. More complete reviews are contained in many of the articles cited throughout this paper.

One line of research concerns expec-
tations and behavior. For example, in a study with elementary school children, Lolascono (1977) found that locus of control and method of coping with failure are related. Internally oriented children tend to withdraw following failure, while externally oriented children are more likely to become aggressive and act out their frustration. This tendency was also found by Coleman and Keller (1978) in a study of the relationship between locus of control and sources of bias in course ratings. Internals are more likely to blame themselves for poor performance while externals tend to project their frustration by giving the course a lower rating. The results of both of these studies were consistent with the findings of Keller, et al. (1978) that locus of control is related more to attitudes toward performance than to actual performance. This conclusion was expected based on predictions from attribution theory as formulated by Weiner (1974) and his associates. Other studies (e.g., Daniels & Stevens, 1976) suggest that there may be an interactive relationship between locus of control, course structure, and performance.

When we shift from a narrow view of locus of control as expectancy for control of reinforcements to the concept of locus of causation, we do tend to find a stronger relationship between performance and the combination of a personal sense of causation (deCharms, 1976) and personal expectancy for success (Jones, 1977; Fibel & Hale, 1978). With respect to the study of specific school subjects, research on foreign language learning, for example, has traditionally looked only at aptitude and the motive, or interest, part of motivation. Trabert (1979) is finding that the measurement of expectancy for success combined with subjective definitions of success helps us understand motivation toward the subject.

A different approach to understanding expectancies is that of learned helplessness (Seligman, 1975). This concept refers to a condition in which a sense of helplessness is created during a period of time when the person is actually unable to succeed at a given task. It may be established by inability, impossibility of the task, or a negative set (Hiroto & Seligman, 1975; Keller, 1975). However, once established, the helplessness condition tends to persist even after success is possible. A person with this negative expectancy will readily give up when faced with a task that requires persistence for success. Although there has been considerable research in the area of clinical psychology (Seligman, 1975) with this recently formulated concept, there has been very little in education (Thomas, 1979). The studies that have been completed (e.g., Dweck, 1975; Chapin & Dyck, 1976; Murphy, 1979) suggest that this condition can be reversed, particularly when it is interpreted and treated in a context of attribution theory (Dweck & Goetz, 1977; Abramson, Seligman, & Teasdale, 1978).

These are but a few examples of the types of studies that help us understand the influences on subjective expectancies for success and their relationship to academic performance. Another group of studies is aimed more at the influences of motives, such as the need for achievement, and performance. Persons who are high in need for achievement tend to have a relatively long time perspective; that is, they tend to project their goals farther into the future than those low in need for achievement (McClelland, 1976; Raynor, 1974). They also feel that time is rushing by very rapidly (Knapp & Green, 1960), and that they do not have enough time to get things done (Knapp, 1962).

Following Raynor's theory (1974) that future orientation is also a factor in achievement motivation, Hunter (1979) investigated several aspects of this relationship. He found that future orientation combined with an ability to perceive and project chains of instrumentally related goals into the future is related to higher degrees of motivation and performance. Although effort would be a more direct measure of motivation in these studies, performance is often used as the dependent measure, because it is of central interest to educators. Future studies would benefit from more precision in measuring both effort and performance because of the multiple variables that intervene between them.

Another area of investigation is concerned with curiosity, or a person's responsiveness to incongruity and uncertainty. This characteristic can be defined as a type of motive in that it refers to a person's need or desire to know more about oneself and one's environment (Maw & Maw, 1968). A number of studies were conducted to establish the concept and its relationship to academic attitudes and performance (Maw & Maw, 1964; Berlyne, 1965), but recent efforts tend to be more concerned with approaches to arousing and sustaining curiosity in the classroom (Dodge, 1979).

In summary, these are but a few of the studies and lines of inquiry related to the present theory of motivation, performance, and instructional influence. This theory is designed to provide an overview for synthesizing these many discrete areas of research. Consequently, its validity will be derived more from the logical consistency with which it integrates the various elements than from specific predictions that are derived. Subsequent work with the theory will be concerned with examining its consistency, and with the identification of areas of inquiry that need specific investigation.

Applications to ID

There are a number of implications and principles for influencing motivation that result from the research associated with this theory. Furthermore, these principles can be incorporated into a somewhat systematic approach to motivational design. An extended presentation of this prescriptive approach, especially the measurement issues (Keller, Kelly, & Dodge, 1978) is not possible in this paper, but we can present an overview of the process, and a brief description of each of the elements.

The process in its schematic form (Figure 7) resembles a general systematic approach. The first step is to identify the motivational problems in terms of type and location. There are four general types of motivational problems and two locations as defined in the present structure. The first three types of motivational problems consist of the extent to which the student perceives the instruction to be interesting and relevant (value terms), and possible (expectancy term). The fourth type concerns the proper management of consequences to avoid negative cognitive evaluation.

In brief, we can say that in order to have motivated students, their curiosity must be aroused and sustained; the instruction must be perceived to be relevant to personal values or instrumental to accomplishing desired goals; they must have the personal conviction that they will be able to succeed; and
the consequences of the learning experience must be consistent with the personal incentives of the learner.

The location of the problem may be in the learner or in the instruction. We say that the problem resides in the learner when the student is extremely low in a relevant motive such as need for achievement, or has an extremely low expectancy for success. This person would not likely be motivated under any set of instructional design conditions until he or she had undergone a behavioral change experience that improved his or her motives or expectancy for success. Alschuler (1973) has a highly developed program designed to help improve the achievement motivation of school children, and deChamn (1976) has a similar program aimed at helping children improve their sense of personal competency and expectancy for success.

In contrast, the problem might lie in the instruction. In this case, the students are assumed to have the basic motives and generalized expectancy for success, but there are deficiencies in the motivating characteristics of the instruction itself. For example, it is obvious that there are techniques for being boring that will anesthetize even the most naturally curious of children. And it is always possible to obscure the relationship between a given topic and any real need a child will experience in his or her life. Each of the four types of motivational problem areas has its associated deficiencies. However, these deficiencies should be controllable by means of effective instructional design. Furthermore, they are probably easier to control than the motivational problems that lie within the individual.

The second step in the process (Figure 7) is to design appropriate motivational strategies in relation to the four problem areas. For example, curiosity is increased in most individuals when an instructor can introduce novelty, surprise, uncertainty, complexity, or ambiguity into a learning situation (Dodge, 1979). The absence of these conditions may account for some aspects of the boredom that some students experience in long sequences of programmed instruction. The effort to design presentation strategies that include paradoxes or other forms of incongruity could be well spent if it served to help maintain student interest and attention to the implications of the given concept as well as its boundaries.

Another example of motivational design concerns the effort to make instruction relevant from the learner's perspective. According to Raynor (1974) a person will be more motivated to accomplish a given task if that task is perceived to be instrumentally related to the accomplishment of a desired future goal. Much of instruction is frequently not perceived by students to be related to any perceived future goal. How many times have we heard a student ask, "Why do I have to study this?" All too often the teacher tries to answer this by explaining why he or she thinks it ought to be important to the student. The trick is to get the student to begin to answer his or her own question, and two techniques for accomplishing this include the use of the future wheel and games or simulations.

The future wheel is a simple exercise in which the student puts the particular instructional task (e.g., learn Venn diagrams) into a small circle in the center of the paper. The teacher then instructs the students to imagine what the accomplishment of this task might lead to. Each consequence is written into a new circle, and lines are drawn to connect the new circles to the original one. The teacher then asks the students to imagine what each of the first order consequences might lead to, and to record them in a similar manner. It does not take long for the students to see the multiplicative consequences of their effort. Granted that this is simply a device for getting the students to think, and it would probably have no long range consequences if it were unsupported by other motivational and learning activities, but it does put the responsibility on the students to think about their future. Furthermore, it gives the teacher valuable information about the different characteristics of the students. For example, students who simply cannot construct the future wheel may have internal motivational problems that cannot be solved by instructional design alone. These students would need the previously indicated assistance in building relevant motives or expectancies.

A final example of motivational design concerns the use of games and simulations to help improve the perceived instrumentality of instruction.
Games and simulations are known to be motivating, and the assumption is that they have characteristics such as competition, goal setting, and risk taking that more closely resemble "real life" than a typical sequence of instruction. For this reason, games and simulations are often advocated because they can appeal to various motives in people, and the participants can often "learn by doing" (Orbach, 1979). However, there are often times when games are either inefficient or unfeasible for learning particular skills or knowledge. In these situations, it may still be possible to use games to increase the perceived instrumentality of the instruction. This can be accomplished by designing games that require mastery of the given skill or knowledge as a prerequisite for participation. The game then provides an immediate instrumental consequence for mastering the skill, and the consequence is a logical, functional outcome of learning as opposed to an extrinsic, arbitrary form of reinforcement. This type of consequence would increase the intrinsic motivation of the learner in addition to the perceived instrumentality.

Furthermore, this use of games could help solve the attrition problem that often accompanies self-instructional programs. These programs sometimes employ games as diversions for the learner, but that is not comparable to the present example. In the present example, the critical characteristics are that the game befunctionally related to the learning sequence, and that mastery of the learning sequence be prerequisite to playing the game. Mastery of the prerequisite skills means only that the learner will be able to play the game; it does not need to ensure that the learner will "win" the game, because chance is usually an important element in games.

These are just a few examples of the strategies that can be employed in the process of motivational design. A complete plan would require consideration of all four of the types of strategies, and consideration of whether the problem was located in the learner or the instruction. A complete plan would also require provisions for the implementation and evaluation of the approach (Figure 7). All of these factors need additional elaboration, a and a great deal of research and validation.

In summary, the general approach, and some of the specific issues presented in this paper suggest areas in which immediate work is needed. For example, the influences of curiosity, values, expectancies, and cognitive evaluation have been studied independently to a far greater extent than have their mutual and interactive influences. On a more specific level, the use of games to increase perceived instrumentality and to reduce attrition needs to be studied. To the extent that the present approach has merit, it will facilitate the identification and conduct of pertinent practices and investigations.

Reference Notes

1. Participants in a research group at Syracuse University are investigating a number of the issues addressed in this paper. We would welcome correspondence with others working on similar problems. Inquiries may be addressed to the author.

2. A detailed presentation of this prescriptive approach to motivational design is in preparation as this article is published. It will include a consideration of measurement issues in conjunction with the process of identifying motivational problems and motivational characteristics.

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This issue contains reviews of four books related to instructional development in very different ways. The *Training and Development Handbook* is a comprehensive book about how to do ID from business and industry perspectives; it offers some interesting contrasts to the “education” perspective we are used to. *Teaching Patients: A Practical Handbook for the Health Professional* shows an application of the ID process in the health professions, teaching practitioners how to develop effective patient education programs. *Eating All Children* deals with the impact of recent public laws related to educating handicapped children and contains articles explaining how the ID process will be applied more and more in special education. *Instructional Media and Technology* is a basic “AV Text” based on the notion of accountable learning systems. I believe this a healthy mix of books to have reviewed together. They give us a perspective on the broad uses, and measures, of the ID concept.

We've just received word from Larry Lipsitz of Educational Technology Publications that the existing 20-volume *Instructional Design Library* is soon to be expanded to 40 volumes. This expanded library will be available from ETP as of March 1980. This is certainly an important contribution and deserves a good deal of time for a comprehensive review. The next issue of *JID* will contain a review of the first 20 volumes, written from the point of view of practicing instructional developers viewing the Library as a reference tool.


The main problem in doing a brief review of something like the *Training and Development Handbook* is its structure. Besides a pretty comprehensive index and the front matter, those 866 pages are made up of some 47 chapters, each with a different topic, each varying a little in quality, and most important, each with a different author whose view of the topic is his or her own. Not that Craig hasn't done a good job of editing—he has, no doubt about it. But, it would be foolhardy of him to homogenize articles by people like Odiore (on MBO), Kirkpatrick (on program evaluation), and Bray (on assessment centers)—to name but three noted authors.

The book's strength is its authors and their own expertise. Arbitrarily mashing them all in the same mold would be to sacrifice substance for form's sake. Craig's judicious use of the blue pencil has added some consistency but has preserved individuality.

The material is divided into five major sections: the training and development function (7 chapters, 132 pages), program development (12 chapters, 201 pages), applications in training (12 chapters, 226 pages), and training and development resources (4 chapters, 62 pages). The page allocation gives a rough idea of where the emphasis of the handbook lies. But, to get a better conceptual map of the handbook (and perhaps ASTD's view of the training and development field), some explanation of what each section covers is in order.

It is interesting that in the front matter, O'Sullivan, ASTD's Executive Director, refers to the contributors as "authorities" rather than "authors." This subtle distinction tells the tale.

This might well be a key to the utility of the handbook for JID people. There is a major difference in place of employment of people in ID and ASTD. Recent AECT figures show that some 87 percent of ID members work in education (k-12 = 13 percent and postsecondary = 74 percent) while only 8 percent in commercial or nonprofit organizations and 5 percent in some sort of governmental (including the military) agency. A recent ASTD study yielded only 5 percent in education, 75 percent in commercial or nonprofit organizations and 12 percent in governmental agencies. The handbook can serve as input for the "educators" in ID.

Section 1, "The Training and Development Function," is comparable to the management of the instructional development (ID) process in an organization. It probably most closely corresponds with Diamond's view of ID. The chapters on budgeting, record keeping, facilities and equipment (what is it doing in this section?), and some legal aspects of training, which with some adaptation describe any instructional development program. The first three chapters, however—on history and organization of training and the selection and development of training staff—offer an insight into the differences in the training function in a large organization and the instructional development function in an educational institution. It is fascinating to read the short chapter on the history of the training field and the largely parallel development of ASTD with AECT. For anyone considering entering the training (or human resources development) field, these chapters are "must reading." They set the mental framework in which to understand the operations of the "training field" and they are invaluable in identifying the different assumptions on which instructional development in the two areas is based.

The second section, "Program Development," is more what one might expect about instructional development, although, it, too, has a marked business/industry flavor. There is little problem in converting some of the chapters into an educational setting. We've already

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"... a healthy mix of books..."
done so in a number of cases: for example, MBO, evaluation, statistical methods (a nice little how-to chapter with the bare-bones essentials of using stat for evaluation), and instructional systems. Diffusion specialists can probably easily identify with the chapter on group norms and how they affect training effectiveness. Indeed, the need for interpersonal, intraorganizational communications permeates the book—another hallmark of the human resources development field. What the DID member may find novel (and useful) in this section are chapters on career planning, the performance audit, and job design and enrichment. The last two should be especially helpful if you’re managing an instructional development project of any size or if you’re looking at the broad scope of curriculum development for an extended series of courses or a major program. If nothing else, these chapters can help to jar your thinking from more traditional patterns.

The title of the third section, “Applications in Training,” could be misinterpreted. The section contains a series of case descriptions of content areas or types of audiences to which training is applied. These range from sales training and vocational training to executive training and organizational development (another “must read” chapter) to international training and training for minority groups. As you might expect, each chapter differs widely. The chapter on training in the health care field is pretty broad brush. It has to be to cover training in all health-care institutions. In contrast, the chapter on secretarial and clerical training gets down to the nitty gritty of it all with sample task lists and training plans. Those of us in educational institutions should find helpful the chapters on organizational development, management and supervisory development, scientist and engineer continuing development (especially helpful in understanding technical faculty and SMEs), and communications training. Again, the great benefit of this section is the inside look it gives to the orientation of training outside of formal education.

The fourth section, “Media and Methods,” probably gives the most material to which AECT members could directly relate. There are the expected chapters on “audiovisuals and training,” programmed instruction, simulation and gaming, computer-assisted instruction, classroom instruction, and “learner-controlled instruction”—not too much new here except for some of the terminology and the frame of reference. The new material for instructional developers will probably be correspondence study (yes, that’s still very much alive), role-playing, case method, and human relations laboratory training (an overview, not a “how-to”). There’s a nice chapter on group methods which ranges from a detailed checklist to an analysis of the kinds of meetings and the roles of leaders. Some of it is old hat, but other chunks will help you think about the way you run—or could run—your meetings. The relative size and simplicity of the chapter on audiovisuals will help a reader put together the importance (or unimportance) that the training field, as a whole, puts on audiovisual and media. This is not to be construed as a criticism but rather an insight into the points-of-view of most trainers.

The fifth section, “Training and Development Resources,” is somewhat new ground for those of us in educational institutions. Other than the chapter on media resources (primarily print), the chapters deal with the use of external agents and materials to improve the training process. It is particularly fascinating to read the chapter describing the role that colleges and universities should play in training employees of a company. Even more fascinating and enlightening are the comments on policies (including evaluation) related to programs in postsecondary institutions. More “must reading.”

The content and structure of the handbook more or less dictate any critical review. It is only fair to evaluate the book on what it purported to be. In this case, the title is incredibly to the point. It is a handbook. It is a guide. It covers an awful lot of material and gives an overview of each topic area. Each chapter must, of necessity, have only the essentials of the topic. If you want a lot of indepth information about any particular topic, you should consult the bibliography at the end of the chapter or dig through material covering that topic alone. For someone seeking a handy reference, this is the book. A case in point. After a class, one of the technical trainers for a local industry asked me about the relationship of Argyris views to the Blake and Mouton managerial grid and how they both related to motivation in training. In all honesty I admitted that I didn’t know about Argyris. In the back of my mind, I guessed that if he were a major influence, he would probably be in the handbook. He was, and a couple of paragraphs covered the major points of his thesis. This sort of use has been one of the two chief strengths of the handbook and its value as a reference tool makes it well worth its $24.50 nonmember price ($27.50 to ASTD members).

The second invaluable use of the Handbook—at least for me—has been the insights it gives into the world of training and development. In theory, one would expect a great amount of overlap between instructional development and “training” especially in business, industry, and government. There is and there isn’t. The overlap is there but you have to look for it. It is called by different names and has different assumptions, purposes, and techniques. Some of the overlap isn’t there because of those basic differences underlying the differing organizations. This handbook can lay bare those differences and make for greater understanding. The clarification of training jargon is worth the price. If you are involved with or are considering involvement with the training/human resource development field, you probably need this book. Now the good and bad news.

Some place along the line, someone probably decided that the handbook could be used as a text. Good idea! The logical extension of that idea was that tests (with an answers section) would help people to use the handbook as a text. I like the idea but its execution fails. Some chapters seem to be well covered (or maybe it is my ignorance of the subject matter) while others are not.

For example, O’Sullivan’s 20+ pages on audiovisuals are covered in eight questions that don’t cover some of the helpful things he said. Also, the ques-

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The ASTD study previously cited tends to support this viewpoint in a very general way.
a wise decision, given the varying knowledge levels of health care professionals.

Chapter 1, "Planning for Assessment: Defining Standard Objectives and Preliminary Content," is the ubiquitous "how to write behavioral objectives" chapter tailored for use by health professionals. Thus, the author suggests starting with the treatment condition (e.g., diabetes), examining required patient behaviors for managing that condition (e.g., menu planning), and designing objectives to cover these behaviors. This is an extremely complete chapter. It includes a section on sequencing the objectives, as well as a "Professional Planning Form" that relates objectives, content, and resources. This is probably a good time to point out that, while the forms in the book may look simplistic to an experienced instructional developer, they are well suited to the people for whom this text was designed. By making the forms clear and simple, the author has greatly increased the possibility that they will be used.

Chapter 2 presents some guidelines for individualizing patient education. Meeting the needs of individual learners is a problem faced by all educators, the approach the author suggests is both as good and as questionable as any other. Her solution is to gather data during patient interviews on a "Patient Profile Form" and use these data to modify the patient's instructional program. Theoretically, this sounds fine. In practice, I wonder how many nurses or respiratory therapists have time to individualize patient interviews, let alone analyze the data and modify instruction. Of course, one can't really fault the author for constraints in the instructional setting, but a book designed specifically for professionals in that setting ought to take its constraints into account.

Chapter 3, "Designing the Instruction," showed great promise but proved to be a disappointment. Although the chapter presents an extremely complete set of instructions for conducting a task analysis of required patient behaviors, the only instructional strategy discussed in detail is providing the patient with a "handout." After such a rigorous analysis of procedures, cues, motions, and decision points, one would expect the next section of the chapter to match these behaviors to a variety of instructional strategies. Are handouts the only viable teaching aid in a health care facility? Perhaps. But if this is the case, why are we being asked to go through such a rigorous task analysis? However, in spite of this weakness, the procedures recommended for creating handouts are well thought out and based on good principles of graphic design. A number of excellent examples of health-related handouts are provided, as well as a checklist for designing handouts, which serves as a useful reference aid.

In chapters 4 and 5, which respectively cover presenting the instruction and evaluating patient performance, the author does an adequate job of summarizing basic educational principles. Obviously, these two chapters each could be books in their own right. As they are written, however, they are useful guides to health professionals who are new to the role of patient educator. Of particular value is the "Conducting Effective Learning Sessions Checklist," which presents a solid list of training guidelines in a concise job-aid format.

My major concern with this book is not what it says but what is left out. Specifically, the author does not carefully consider the ultimate goal of patient education: to help patients follow a prescribed treatment regimen even when they are no longer under the direct control of the health care professional. In other words, patients will not only become familiar with new practices, but will become committed to carrying them out. The author, and many health professionals, make the mistake of assuming that a patient who has new information will be able to and will want to act in the desired way. The ability to recall information and demonstrate procedures is only that and no more. I worry that the health professional who systematically follows the recommendations of this book will have a beautifully designed instructional program and patients who still go home and forget to take their medication.

In summary, my feelings about this book are mixed. What it says, it says well. It presents a number of useful techniques for improving the quality of patient education. And yet I can't help wishing that the author had gone one step further and tackled the central issue of all educational programs: What can we do during instruction that will really make a difference after instruction?

Reviewed by Elaine A. Weiss, an educa-
Evaluating All Handicapped Children.

Since its inception, Public Law 94-142, The Education of All Handicapped Children Act, has caused concern and confusion among standard and special educators and their administrators. How can the components of this act be met in a cost-effective manner? Where will educators and support personnel find the additional time and resources to meet these regulations? What will be the real impact of the “least restrictive environment” be upon the standard education classroom and the nonpublic facilities? How will standard educators receive the necessary understanding of students who happen to have disabilities? Where will they receive the skills that will adequately prepare them to take these students into their classrooms?

The processes and techniques that are the substance of instructional technology have long dealt with the essence of these questions. This book, edited by Robert Heinch, is an attempt to provide some answers to these and other questions pertinent to the implications for the use of instructional technology in implementing Public Law 94-142. In other instances this book attempts to raise questions that will provoke discussions of these issues. It will be the responsibility of educators and administrators to provide the answers in the future.

This book grew out of a meeting held at Annapolis, Maryland, in 1976. The meeting, which was held at the request of the Bureau of Education for the Handicapped, investigated the use of instructional technology in complying with the requirements of the Education of All Handicapped Children Act. At this meeting the decision was made to commission a series of papers that would deal with the key issues. The result was the compilation of these papers into this book, Educating All Handicapped Children.

This book will meet its purpose of provoking discussion of these “selected key issues among decision-makers in public schools, state departments of education, higher education, and appropriate federal agencies” (Heinch). Additionally, it could also become a basic college text for individuals entering education—standard or special. Instructional technologists have long seen the necessity of designing instruction so that all individuals are met at their own entry level and then offered experiences and materials which enable them to learn to a degree and at a pace appropriate to their needs and personal characteristics. Public Law 94-142 now makes this a legal requirement when educating the student who has a disability. Because one requirement of this act is that each disabled student be educated “to the maximum extent appropriate... with children who are not handicapped,” (Public Law 94-142, 1977) it will, in the future, be vital that both standard and special educators understand the requirements of this act and be given the skills necessary to fulfill its specific components. If this book were used on college campuses, in combination with a close study of the P.L. 94-142 rules and regulations, it could provide an excellent foundation for the new teacher. This would be particularly true if it were coupled with the student’s pursuit of competence in the particular areas discussed by these authors, i.e., the “what is taught, how, when and conceivably where and by whom” (Bateman) of individualization: the specifics of prescriptive teaching and its impact on classroom management as discussed by Heinch: the skills necessary for instructional design as summarized by Donald Ely, as well as the characteristics and rights of students “in need of special services.” (Blatt)

It is a positive statement to the specific fields discussed in this book, and the larger field of instructional technology, that clear lines cannot be drawn to separate specific content areas. It is simply not possible to discuss instructional design without including instructional materials/media; individualization, prescriptive teaching or learning styles; completely independent of each other; or to deal with the broad concept of mainstreaming independent of any of the above (which are all discussed from different viewpoints), or to assume mainstreaming’s success without introducing a comprehensive program of both pre- and in-service training for educators, administrators and support personnel. This then brings us back to these same concepts for the educator as well as the student, which is an underlying theme of this volume. “Teachers, like students, are individuals and need programs individualized to meet their own needs” (Flyer) is a need highlighted through many portions of this book.

The necessity of using instructional design to meet this need is particularly emphasized by both Ely and Gillespie in their articles.

Assuming that this book is intended for a professional audience familiar with the terminology and subtleties of this legislation, as well as with the terminology and methods employed in instructional technology, the effectiveness of these articles could have been improved by sequencing them differently. This reviewer would agree with the placement of the Blatt article first—it is an excellent statement on the necessity and impact of Public Law 94-142 and leads into the following articles. This is appropriately followed by Clarence Caider’s article, which contains ideas that are indicative of the use of instructional technology for effective compliance with Public Law 94-142. From this point, however, the sequencing frequently fails to place together articles that present different and/or extended views of the same concept. It seems to this reviewer that the integrated nature of the content could have been advanced by a realignment of these articles.

If this book were to be used as an instructional text for individuals entering education, it would have to be with the following assumptions:

- That the Public Law 94-142 Rules and Regulations would be closely studied both prior to and concurrently with this book. There are a significant number of inaccurate references to the components of this act. This reviewer assumes that this is attributable to many of these articles having been written prior to the release of the final rules and regulations. Some of these references seem to have come from the proposed regulations, which were available to the public prior to the final revisions and release of the act. It is regrettable that corrections could not be made prior to publication. In addition, there have been
amendments to the final regulations and the amendments have not been incorporated. This reviewer would urge that these references be corrected and updated if a second edition of this book is printed, because some of them (such as the methods and materials components) are inherent to the specific instructional technology models being presented.

Information regarding the terminology and methodology of specific instructional technology approaches must be considered prerequisite knowledge for a student using this book. I would suggest that subsequent editions include a glossary of terms, as well as a bibliography of other books and/or articles whereby this prerequisite knowledge could be gained.

The Hyer article includes references to the concern that is being raised by parents and professionals regarding the procedural safeguards included in this legislation. The possibility of instructional technology playing a vital role in the process of designing and disseminating models that will support the requirements of this component have already been substantiated in some states. Since the idea of due process encompasses much of the spirit of Public Law 94-142, the absence of an article in this area is noticeable. Again, I suggest that subsequent editions rectify this omission.

Burton Blatt’s article includes this statement: “Everyone’s worried, but it also seems that everyone thinks this was good legislation and it’s a fine thing that it happened at last.” Much the same thing could be said for this book. Many concerns have been expressed and moderate changes would increase its effectiveness. In its entirety, however, it should be viewed as a significant piece of current educational literature. This is the first publication to deal with this content area. It is, essentially, well written and raises significant issues for discussion at an appropriate time. It could, therefore, be said of this book that “it’s a fine thing that it happened at last.”—Reviewed by Kathleen Kreidler, professional development Specialist, South Metropolitan Association for Low-Incidence Handicapped; she has degrees in special education and instructional development.


In the preface, the authors state that “this textbook is not intended to be a ‘how-to-do-it’ book as much as it is intended to be a ‘what-to-do’ and ‘why-to-do-it’ book.” According to the subtitle, it is also billed as a guide to accountable learning systems. In the estimation of this reviewer, the book fails on all counts. The book is composed of nine chapters and five appendices. Although the chapters purport to be sequential, for the most part they do not build one upon another but stand alone as unrelated entities. The text abounds with lists after list; in fact, the entire text is simply an amplified list of lists. References “to accountability” are few and fleeting. No substantive discussion of the concept appears to be attempted.

The writing style is uneven and choppy. The sentence structure tends to talk down to the reader, while the superfluous use of “Education-ese jargon” only serves to make the authors’ points more ambiguous, disjointed, and abstruse than they already are. For example, the text is loaded with gems like these: impactful, validated program structure, cohere, accountability, validatable learning events, and comprehensive learner analysis. The use of jargon in this context seems to have been intended to impress impressionable undergraduates who may think that vagueness is a hallmark of scholarly writing. It doesn’t work. The book is too shallow for professionals in the field and too uneven for use as a basic text in instructional technology.

A discussion of some of the organizational flaws would serve to support my harsh criticism. The first two chapters, although not particularly well done, probably conform to the authors’ intentions as conveyed by the book’s subtitle: accountable learning systems. The continuity begins to break down, however, in the middle of Chapter 3. “Planning.” Beginning with a list of the 10 “elements of learning-event design” and a discussion of the four types of learner involvement activities, the authors suddenly shift gears (from didactic to pedantic) and proceed to expound upon storyboarding techniques, replete with samples and illustrations. As if that shift weren’t abrupt enough, the next section in this same chapter is concerned with “multimedia planning” (something that union negotiators do, right?). A multimedia plan sheet is illustrated and explained in excruciating detail right down to the little symbols and abbreviations to be used for “dissolve” and “fade to black.” Finally, the chapter is topped off with a cursory explanation of the alternate abbreviations one could use if doing television program planning rather than “multimedia.”

A chapter on media design based on a large flowchart-type illustration which, broken into components, is just another set of lists: these indicate the options available in each step in the process of media design (goal, objectives, media, involvement, bibliography, validation). Unfortunately, the authors simply stop after presenting the lists; there is no discussion that might help the reader make decisions for selecting the appropriate options in any given instructional development situation. The material seems to have been presented to readers, not for actual implementation of the procedures, but rather for memorization of the components. The conceptual flow of this chapter is also disrupted by treatment of information unrelated to what has gone before: graphic layout, legibility, graphic design characteristics (balance, pattern, simplicity, etc.) and descriptions of live, recorded, displayed and projected presentations. Finally, several memorable postulates for guiding media design are offered: “No one can know what he or she has not known…” No person is an island…” Each learner is unique…” One whole page (the last in the chapter) is devoted to “validation,” merely a reiteration of the 90:90:90 success ratio.

Things should be getting better by now, but they only get worse. The chapter on media production should simply have been omitted, with appropriate references made to a number of the excellent texts in this area (some of which were not even mentioned in the bibliography). For the most part, the treatment of production processes was inadequate, the illustrations were distracting, and inaccurate, and organization within the chapter seemed random. Several topics covered in previous areas (notably storyboarding and multimedia planning) were repeated in this chapter for no apparent reason. These things
Instructional Systems Reviews

In an upcoming issue, JID will begin a new service to its readers in the form of the Instructional Systems Review department. Our plan is to review complete, course-length instructional systems (those that have gone through some systematic development process) that are generally available to the public and teach any subject matter. We are looking for instructional systems—the actual products, not books about...

The purpose of the new department will be twofold. First, we will provide a review service of these systems (locally produced, commercial, and noncommercial alike). Secondly, we hope to communicate the results of the reviewing process to our subscribers for their decision-making. Our goal is to avoid the pitfall of "reinvention of the wheel" when a good one exists down the road or sometimes in the next department. It can also be economy for all of us. In a time of fiscal belt-tightening, knowledge of potential savings is valuable information.

Now, if we are to provide this service, we need your help, mainly to assist us in locating developed systems for review and to recommend course areas you might like to see reviewed. This department will serve as a clearinghouse for product information much like EPJE but more specific to our profession. So, as you can see, we really appreciate whatever help you can give us.

The general review process will include audience, task, and problem analysis; goals and outcomes; product quality; test data; and personal use support information. Typically, most of this information stays with the developer, so if you suggest a system for review, please try to include this information prior to submission. When a specific reviewing procedure is established, we will publish it in the Journal. Initially, there will be three reviewers from related disciplines. The final review will be a composite of the three reviewing processes.

We are all looking forward to an outstanding year with this expanded service of JID. But we need the participation of the subscribing members. If you know of any course-length instructional system that is generally available to the public and teaches any subject matter, send as much information about it as possible (contact person, where it can be obtained, cost, how extensive it is, or the product itself) to: Curtis McCarty, Editor of the Instructional Systems Review department. Thanks for your interest and involvement.

Book Reviews (continued)

An interesting book that probably should have gone unreviewed is "The Media Environment (model, accessories, speaker, amplifier, dimensions, weight, etc.). There was absolutely no discussion of the relative merits or tradeoffs that should be considered when selecting equipment. The bibliographic references for this chapter were especially inadequate, listing many outdated references (e.g., "How to Buy and Use Learning Laboratories' Nations Schools. May 1966) and failing even to mention any of the publications put out by the Educational Products Information Exchange (EPJE).

In summary, this is indeed a book that probably should have gone unreviewed. It appears to serve no useful purpose in training media professionals or school teachers that could not have been better handled by one of the other popular texts in the field. The book suffers from confusing arrangement, inaccurate and partial content treatment, and an outdated bibliography, which prevents it from being seriously considered for use either as a college textbook or as a resource volume for the media professional. The book merely hints at the instructional development process without squarely addressing the issues. The subtitle is misleading; the writing style is didactic and uninteresting. There are still many areas within the field of educational technology that deserve competent texts for so much work to have been devoted to so poor a product. A stern criticism, to be sure, but one which this reviewer is confident will receive concurrence from others who may read or review this text.—Reviewed by James D. May, Assistant Professor in the Center for Library and Audiovisual Education, St. Cloud State University, St. Cloud, MN 56301.