DOCUMENT RESUME

ED 059 592 EM 009 571

AUTHOR	Stowe, Richard A.
TITLE	Alternative Models for Training Developers in Education.
INSTITUTION	Indiana Univ., Bloomington. School of Education.
PUB DATE	72
NOTE	11p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Educational Development; *Instructional Technology; *Media Specialists; Models; *Professional Training; Teaching Methods

ABSTRACT

Three steps may be taken to minimize the difficulties involved in educational development: 1) a realistic expectation should be projected in regard to the prowess of development; 2) the "state-of-the-art" should receive continuous improvement; and 3) training programs to prepare fully professional developers should be established as rapidly as personnel can be recruited or trained to staff them. The alternative models used to prepare educational developers are: the problem-solving model, the systems model, the decision model, and the Nadler Model. Of these four the systems model is most prevalent in the field of educational development today. (JY)

Richard A. Stowe, Ed.D.
Assistant Professor of Education
Indiana University
Bloomington, Indiana 47401

ALTERNATIVE MODELS FOR TRAINING DEVELOPERS IN EDUCATION

The assertions of this paper largely rest on these assumptions:

1. Demand for the services of skilled developers in education is already high and will increase sharply, perhaps exponentially, in many sectors of education over the next three to five years.

2. The rapidity of the increase will create, in many cases, false expectations on the part of educators and the public toward development and its practitioners.

3. The same demand will place serious strain on institutions offering programs for the preparation of developers.

4. Lack of adequate numbers of well-prepared developers will have the following effects--creation of a "seller's market" for qualified developers accompanied by a disproportionate increase in salaries for such personnel, the employment of poorly qualified personnel to serve as developers (the effect of which may be a serious tarnishing of the image of development), the attraction of numerous recruits into the field resulting in an eventual oversupply of developers, and finally, a gradual adjustment of these imbalances, but only after a stressful period.

Professionals in the field have the opportunity to intervene now to minimize the predicted strains. At least three steps suggest themselves.

First, realistic levels of expectation should be projected in regard to the prowess of development. Leaders and key figures in national and local educational settings, as well as the public, should be discouraged from regarding development as the panacea. Exaggerated claims on behalf of the benefits of development are to be avoided. Sane assessments, objectively reported, must characterize the stance of developers.

Second, the "state of the art" should receive continuous improvement. Development is as plausible a candidate for theoretical formulation as any other area of education. Rigorous research investigation into the development process is as reasonable as is research into similar social processes. The wide spectrum of disciplines from which most developers draw can be made to nourish the process even more abundantly.

Third, training programs to prepare fully professional developers should be established as rapidly as personnel can be recruited or trained to staff them; lack of personnel should be recognized as the only excusable constraint on the alacrity with which such programs are created. A sizable, well-trained cadre of professionals entering the job market at approximately the same rate as the pace of the demand would certainly ease the pangs of the earlier predictions. Coupled with a realistic expectation of their capabilities on the part of their employers, these professionals might astonish education by actually performing up to their promise. Having met the initial surge of demand, the training programs might then display unprecedented wisdom by systematically beginning to limit admissions so as to avoid gutting the job market.

To provoke professional debate as to the nature of the optimal preparation for educational developers, the following alternatives are offered.

The problem-solving model

Many of the proposals for training programs found in the literature advocate a paradigm which might be called a problem-solving model. A specific, localized problem within an educational institution is recognized, delimited, and--by the apt selection from among plausible alternative solutions--resolved.

Clark and Hopkins describe this approach as "characterized by the effort to solve an operating problem within a system or to create a solution for a set of operating problems which would be applicable on an inter-system basis."[1] Presumably, the problem-solving approach would generally involve the customary stages of the "scientific method" such as problem definition, hypothesis formulation, empirical testing, data collection, evaluation of results, and conclusions. Training of developers in the invention of viable solutions would take the form of instruction and appropriate practice in performing each of the steps in the problem-solving model. Training in this paradigm, as in all other development approaches, should be situation-general, that is, highly conducive to transfer of training to novel problems, since the probability of recurrence of previously encountered problems is quite low.

A position often held along with this concept of the development process is that development is--or should be--the bridge between research and practice. In this view, basic research unearths findings of potential practical use. However, because of the form in which the findings are reported, they often go unnoticed by practitioners and indeed are sometimes unintelligible to practitioners even if they should happen upon them. Both researchers and practitioners have been accorded a share of the blame for this circumstance. But, the argument goes, neither group should have to bear much of the guilt; the emergence of the educational developer will put things to right. He will serve as <u>translator</u>, couching the scientific findings in terms which the field worker can readily grasp and use. Horvat observed in late 1970: "Only recently has the concept of development been recognized as the best available, and perhaps the only, means to bridge the research-practice gap."[2]

To change the metaphor, the developer is occasionally seen as <u>engineer</u>, bringing together accumulated research, knowledge, and inventions into an organized form which can be used in creating an operating program."[3]

One difficulty with this line of thought is that it fails to suggest the full scope of the relationship which might ideally exist between research and development. It supposes a "forward flow" of information from research into development, and there can be no quarrel that such nourishment of the development effort by sound research is valuable, even vital. What is often understated is that <u>research</u> may be similarly enriched by development through a sort of reverse flow of information. That is to say that development, properly practiced, is capable of generating highly significant research questions, all the more significant because of their demonstrable relevance to practice. Such a symbiosis, if created and cultivated, would facilitate both types of activities.[4] Training of the developer (as well as that of the researcher) should produce cognizance of this fact and a pre-disposition to establish a professionally meaningful relationship with his research counterparts.

Horvat proposes training in still other essential components of an academic program for developers based on a problem-solving model: praxiology, education media, communications, and evaluation.[5] Presumably implicit in his proposal is training in the development process itself.

The systems model

This variant on the problem-solving model is extremely popular with programs now in operation.

In this model the developer is seen as having the teacher or educator as his client. The educator is faced with the necessity of choosing among educational alternatives ("solving problems?"). The developer is equipped by training and experience to analyze the situation and synthesize ("engineer?") a solution. The model goes beyond what the problem-solving approach normally encompasses, however, in that the system analyst is unusually concerned with larger entities and with the totality of the critical relationships among elements within the larger system. Also, the systems approach leads to an emphasis on "being adaptive," "making revisions on the basis of feedback," "successive approximations," and other terms for the concept of responsivity. Development as practiced under the systems model, then, will be heavily characterized by an empirical, cyclical process of try-out and revision.

The systematic developmental approach seems less related to research than to the emerging concept of evaluation. Both processes feed decision-makers, both depend on objectively gathered data, and (at least insofar as formative evaluation is concerned) both use the data in making indicated revisions.

A prime characteristic of the systems analyst is his eclectic nature. He is not a disciple of a given methodology; rather, he welcomes any technique which works in a given setting. Singh calls analysis an "omnibus interdisciplinary activity that does not hesitate to make any branch of science carry grist to its own mill."[6] The same is true of the systematic developer. The techniques of operations research such as linear and dynamic programming, path analysis, queuing theory, and stocastic modeling may stand him in good stead on occasion. Again, he will feel free to borrow from information theory, principles of group dynamics, social psychology, or synectics as the need arises. The techniques of learner and task analysis deriving from learning psychology and instructional design will serve him often. As Robert Heinich remarked recently, a developer "doesn't have to be embarassed by using field theories for problem solving."[7] In short, he will not be restricted by narrow disciplinary allegiances.

One example of an academic program for developers based on the systems model is that offered within the Division of Instructional Systems Technology, Audio-Visual Center, Indiana University. The program affords opportunities to pursue a curricular emphasis in several areas--systems and management, diffusion, message design, product evaluation, research, and instructional development. In the latter, the student progressively masters the competencies required in the successive phases of a systematic paradigm for the design and validation of instruction. Building upon prerequisites which generally include courses in educational psychology, measurement and evaluation, statistics, and educational media, the student is exposed to a series of courses in development--Learner Analysis, Task Analysis, and Learning Environments Design. These are followed by, or linked with, an internship in which the student (usually as a member of a team) takes increasing responsibility for the development and validation of segments of instruction for faculty "clients."

Similar programs are currently underway at Michigan State, Syracuse, Florida State, Brigham Young, UCLA and elsewhere. Recently the Office of Education funded three other organizations (Ohio State, Pittsburgh, and the Far West Laboratory for Educational Research and Development) to offer training programs for educational developers. The FWLERD program is essentially the systems model approach, but its academic offerings provide an interesting wrinkle.[8] In addition to the somewhat more customary courses in Analysis, Planning and Design, Developmental Engineering, Evaluation, and Dissemination/Marketing (which they term "Functional Context Courses"), the plan calls for three "Specific Skill Courses." These courses (Information/Data Collection and Organization, Communication Skills, and Management) cut across the five functional contexts. The development trainee will receive relevant training in many of the specialized skills areas while taking the five function courses, but he will also receive in-depth instruction in the skills areas in the latter three courses.

The decision model

This model may be considered still another variant on the problem-solving model, and indeed many similarities to the previous two models will be apparent.

Essentially the decision model regards the developer as primarily a practitioner. As such, he is confronted with numerous choices among the potential design components which he might combine to form the optimum design. The total population of components from which he must select is an infinite set, but there are certain decision rules by which he can make most of the decisions on a sound and rational basis. In educational decision-making, of course, the "decision rules" are often little more than heuristics or simple hunches, but the decision model allows for the incorporation of relevant basic and applied research findings as rapidly as they can be generated and disseminated to the practitioner. In this view, practice (as opposed to the theoretician's task of augmenting the knowledge base) will be enhanced by any findings in which confidence can be lodged at higher than chance levels.

A training program based upon a decision model would ostensibly include wide exposure to the population of design choices, to the body of heuristics then in use, and to search strategies for locating findings which would constitute new (hopefully more substantial) decision rules for practice. Several techniques are readily available for use by trainees in a decision approach, including algorithms, symbolic logic and decision logic tables. Along with an academic regimen, the student would presumably be given the usual opportunities to apply his skills to non-trivial educational problems.

To this writer's knowledge, there are no programs at present in which the decision model plays a significant role. Some elements of it are being tested in the Indiana program, specifically in the Learning Environments Design course.

The Nadler model

In a fundamental shift away from the problem-solving approach, Gerald Nadler[9] argues for a different methodology for design than that commonly used in research. He reasons that the "research scientist is primarily oriented toward analysis" but that to begin the design process with analysis is injurious. He cites four problems often incurred when the designer begins with analysis:

1. "Analysis, which is so essential for research, implies already-existing phenomena to be analyzed. . . . The designer seeks purposeful

and functional action through new and different combinations of phenomena." (italics his)

2. "The analytic approach focuses on components rather than on wholeness. . . . It very often leads to suboptimization for the entire solution."

3. "Analysis leads to an overemphasis on techniques to separate the whole into constituent parts or elements. This can lead the designer to seek opportunities to apply the techniques, rather than to seek an optimum design for a particular problem."

4. "The emphasis on analytical tools creates a gulf between those people in an organization who possess the technical expertise to handle the tools and the majority who do not."

Although Nadler was not speaking of designers in education, the problems associated with over-dependence on analysis in educational development are clearly much the same. Nadler's indictment of analysis, however, is far from total; his quarrel is with the use of analysis as the first step of the design process. He advocates that the designer begin with a phase he terms "invention," the formulation and design of alternative ideal systems. The second phase is essentially that of analysis—gathering of information related to the feasibility of implementing one or more of the ideal systems. This phase, unlike most analytic procedures, is highly selective in the information to be sought, and it emphatically does not inquire into the status of the present (ineffectual) system. The final phase is the testing and installation of a modified "ideal" system.

The four models cited cannot be said to exhaust the possible alternatives. For example, two authors (Horvat and Nadler) perceive a need for training developers in creativity, suggesting a basis for yet another model.

Debate over the merits and disadvantages of one or another model may be in the offing. If such debate results in viable training programs, many pangs accompanying the growth of the profession will be eased.

[1]Clark, David L., and John E. Hopkins, "Special Project Memorandum: Preliminary Estimates of Research, Development and Diffusion Personnel Required in Education, 1971-72," Sept. 1, 1966 (mimeographed).

[2]Horvat, John J., "The Training of Educational Developers," SRIS (A publication of Phi Delta Kappa's School Research Information Service), Winter 1970, Vol. 3, No. 4, pp. 17-18.

[3]Clark and Hopkins, *op. cit.*

[4]This viewpoint, and its counter-argument known as the "parasitic" relationship of development to research is more fully explored in Glass, G.V., and B.R. Worthen, "Interrelationships among Research and Research-Related Roles in Education: A Conceptual Framework," University of Colorado (undated draft).

[5]Horvat, *op. cit.*

[6]Singh, Jagjit, *Great Ideas of Operations Research*. New York: Dover Publications, Inc., 1968, 228 pp.

[7]Heinich, Robert, "Toward a Definition of Instructional Development," address to a session of the Division for Instructional Development of the Association for Educational Communications and Technology, at Philadelphia, March 2, 1971.

[8]*Program of Instruction*, The Far West Consortium for D,D, and E Training, Berkeley, Calif. (undated).

[9]Nadler, Gerald, "An Investigation of Design Methodology," *Management Science*, Vol. 13, No. 10, June 1967).