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ABSTRACT

This report highlights some strategic needs of research, development, dissemination, and evaluation training programs. The premises, facts, and trends in educational research and development are reviewed. Research options for RDD&E are described under three general categories: descriptive, prescriptive, and operational research. Descriptive research focuses on needed information about the current state of affairs. Prescriptive research provides information on what could or should be. Operational research provides the policy, management and administrative tools to plan and manage RDD&E training more efficiently. Results of the study indicated the need for a) more accurate and detailed information about current training requirements, b) improvement of training methodology and process, and c) methods to accomplish timely renewal and improvement of practice. A 4-item bibliography is included. (MJM)

Future Research Strategies to Improve RDD&E Training Programs

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Premises

As we examine the problem of selecting research strategies to improve RDD&E training programs, I believe there is one paramount premise. It is the assertion that training requirements are derived from personnel requirements, and personnel requirements are derived from federal program funding.

Two associated premises are:

1. That federal R&D program funding priorities can change dramatically and are often difficult to predict.

2. That training capacity has great inertia. It is slow to get started, especially in new areas, and much slower yet to change or stop.

When we link these three premises together they give us a disquieting corollary: namely, that we have a potential for a very unwieldy "system," in which there can be a gross mismatch between the initiation of a demand signal (such as the start-up or shut-down of a federal R&D program) and the response of the R&D training capacity. One obvious result is the program drift mentioned by Dave Clark and John Hopkins (1969, pp. 423-424), when demand far exceeds available supply and positions are filled by available talent that may not be qualified. The glut of physical scientists and engineers who are currently unemployed because of the retrenchment of our aerospace program is an example of what happened when supply overshoots the demand. Hence, at the strategic level, I am especially interested in what research can do to help us avoid these kinds of demand and supply mismatches.

Facts

How much do we actually know about the educational RDD&E demand and supply "system"?

Harry Ammerman and Blaine Worthen have given you some information based on the Oregon and AERA studies. As I read their findings and look at other related information, I would make the following gross summary:

1. We have considerable knowledge of educational research as a process, the characteristics of effective and ineffective programs, the number and types of programs in existence, and the number and characteristics of educational researchers being produced.

2. We know markedly less about educational development, diffusion and evaluation in terms of process, programs or trainees.

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3. Our knowledge of current supply and demand is highly imperfect but not totally absent. We have very rough ideas of current numbers employed, training content and production rates. We also have reasonably valid impressions regarding skill shortage areas. We know that the functional emphases have shifted (e.g., there is proportionally less demand for researchers and more demand for evaluators).

4. We also know that long-term projections of demand are difficult if not impossible. For instance, in 1969 Clark and Hopkins reported a projected five-fold increase in the number of educational R,D&D personnel between 1964 and 1974. In 1971, John Hopkins "updated" that projection to only a two-fold increase -- which is significantly less than their previous "most pessimistic" estimate.

Trends

If we accept these facts -- that we know a good deal about educational research but markedly less about D,D&E, that our knowledge of current supply and demand is imperfect, and that even mid-range demand projections can be misleading -- can we at least find any discernible trends that may be of help?

1. First, let us note that the educational R&D funding curve is a strange one. (see in Figure 1).

We see a USOE R & D investment that grew from $1 million in 1957 to $10 million in 1960 to $106 million in 1969 (NCERD, 1971) and that may reach $125 million in 1973. Yet the big dollar increase was between 1964 and 1966 when the USOE obligations jumped from approximately 20 millions to 80 millions. If we allow for a modest six percent inflation rate, there has been no appreciable "real" funding increase since 1966, over six years ago.

2. This leveling off in educational R & D is a general trend which is evident for most other federal agencies and affects nearly every R & D field. (see in Figure 2).

Again, in real terms the total U. S. federal R & D obligations show, when adjusted for inflationary prices, a decline of 21.9 percent from 1967 to 1971. (March, 1970, p. 7)

3. My third point is that there is now great uncertainty regarding the amount and specific direction of educational RDD&E funding. We await the advent of NIE which may bring, in FY '73, as much as $41 million in new money, and a hope for even more in the future. But educational R & D appropriations face a hard political reality. Spokesmen in Congress and in the executive branch have made it clear that extensive increases in funding may come only when a markedly better case can be made for educational R & D investment, and when credible evidence of impact on improvement of educational practices is submitted. The direction that NIE may give to educational R & D is still conjectural, but it is apparent that USOE has increasingly committed its scarce R & D dollars to problem solving, mission oriented efforts such as Right-to-read, Career Education, Experimental Schools and now Educational Renewal. All of these efforts are relatively massive and complex, indeed almost overly ambitious in their goals and objectives, given the short time lines, limited funds, fragile knowledge and technology base, and possible lack of sufficiently trained and experienced personnel.

Figure 1. USOE Obligations in Millions for Research and Research Related Activities (excluding facilities)

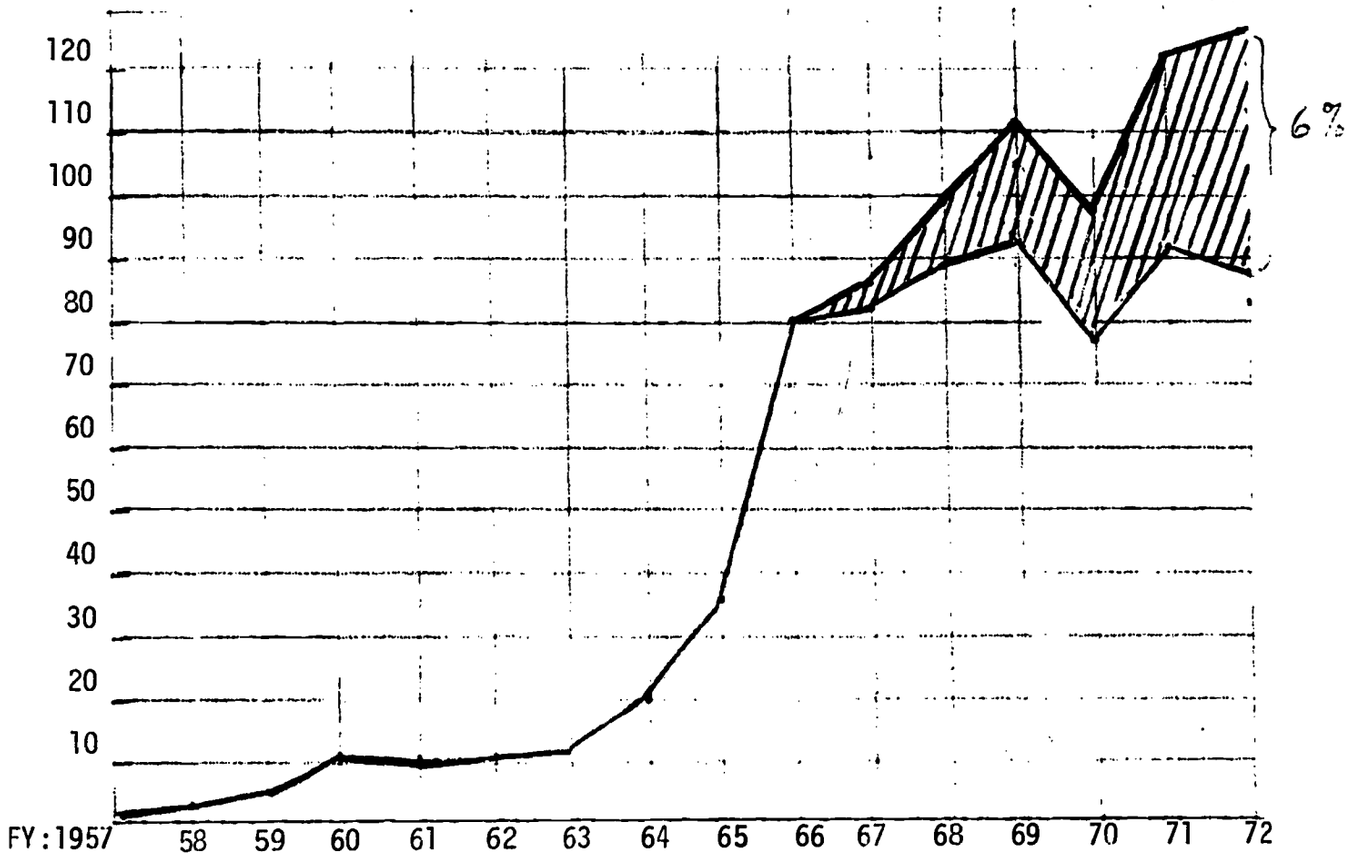
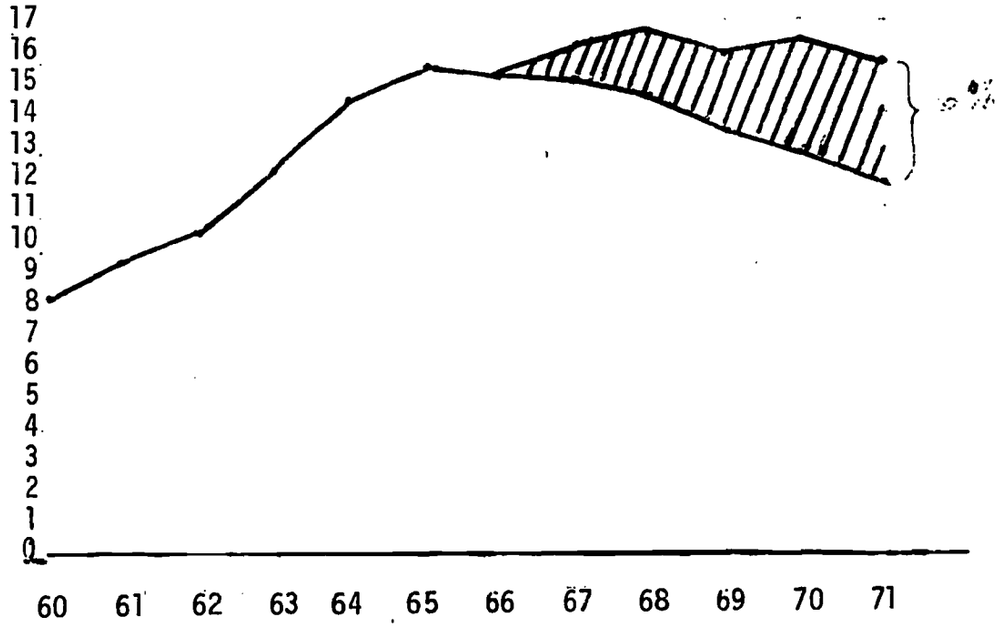


Figure 2. Total U. S. R & D Obligations in Billions



Source: Special Analyses Budget of the United States Fiscal Year 1971 and NSF, 1971.

Research Options

This is the context for educational RDD&E in the early 1970's. What then are the alternatives for research on RDD&E training?

I believe that most of our viable research options fall under three general headings:

1. Descriptive research that would focus on giving us needed information about the current state of affairs,

2. Prescriptive research that would provide us with information on what could or should be, and

3. Operational research that would provide us with the policy, management, and administrative tools to plan and manage RDD&E training more effectively.

My time will permit only a brief listing and comment on some of the most promising options.

Descriptive Research

Both the AERA and the Oregon studies have broken new ground in describing RDD&E, but much more is needed. The studies to date provide at best a patchwork basis for ascertaining needs for staff, for specific types of preservice and inservice preparation or for establishing and determining appropriate scope for new programs.

We need a nation-wide, in-depth sampling survey, to establish for the first time reliable information concerning such items as the numbers employed, types of employment, educational backgrounds, relevant experience, skill shortages, etc.

We also need more case studies that describe the processes of D,D&E in their organizational, social, and political contexts so that we can better understand the current reality of these activities.

We also need more rigorous job and task analyses to provide content information for curriculum design.

Prescriptive Research

Certainly educational RDD and E are evolving fields. We need to know more about their current character, but we also need to better understand what they could become.

We need policy studies to examine the implications of alternative models for the disciplined inquiry process and of how this inquiry can be linked to practice improvement. Currently we are mounting multimillion dollar experimental and renewal efforts with sometimes only the dimmest conceptualization of why or how to allocate our investment among RDD and E to achieve a satisfactory return.

We also need effectiveness studies to evaluate the cost effectiveness and cost benefits of training alternatives. We also need to organize and communicate

information about validated RDD&E training materials and practices. It seems a scandal that, as educational R & D personnel, we often fail so miserably to develop and to employ our knowledge or training technology or to employ rigorous evaluation to improve on our methods for the development and delivery of RDD&E training.

Operational Research

At the operational level two needs stand out. First, we need to develop methods for analyzing and projecting personnel and training requirements as a routine part of federal program planning and evaluation. We can't afford to wait until the funds have been provided and work is supposedly underway to discover that the program calls for scarce or nonexistent talent. We must learn how to study the past, look at the present, and project to the future in ways that will pinpoint probable future personnel skill shortages or training deficiencies in time to modify our training programs or take other corrective action.

Second, we must find ways to accelerate change and achieve renewal in our own RDD&E performer and training agencies. We must find ways to more accurately orient, support and reward agencies for their timely response in the development and delivery of training resources and personnel. We also need to find ways to deliver new training content rapidly, and to "retread" our preservice reasearch training staffs. And we must find ways to help performing RDD&E agencies to develop more adequate inservice programs.

Summary

I'm sure each of you could add to the list. My intent has not been to provide a comprehensive list, but rather to high-light some of what I believe to be our strategic needs. I know that funds for research on RDD&E training are and always will be limited. My plea is for a mixed investment. We need much more accurate and detailed information about what current training requirements are. We also need to be able to anticipate future requirements. We need to improve our training methodology and process. But most of all, we must learn how to accomplish for RDD&E policy, performing and training agencies the same kind of timely renewal and improvement of practice, based on disciplined inquiry, that we offer to the educational community as the justification for the support of educational RDD&E.

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