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ABSTRACT

This lecture describes and examines some of the problems encountered in educational research and suggests recommended courses of action that may result in a stronger, healthier, and more productive educational research and development (R and D) effort. The remarks are organized around the following headings: (1) "Balancing the Program of Research and Development," (2) "Improving the Organizational Structure of R and D Centers," (3) "Modifying Expectations of Educational R and D," (4) "Building a Political Constituency and Developing Realistic Legislative Goals," (5) "Obtaining Continuing and Adequate Research Support," and (6) "Bridging the Gap Between Research and Practitioner." Each section contains specific recommendations. The questions and answers that followed the lecture are included. (Author)

Improving Educational Research And Development

By David R. Krathwohl

Occasional Paper No. 21

THE CENTER FOR VOCATIONAL EDUCATION
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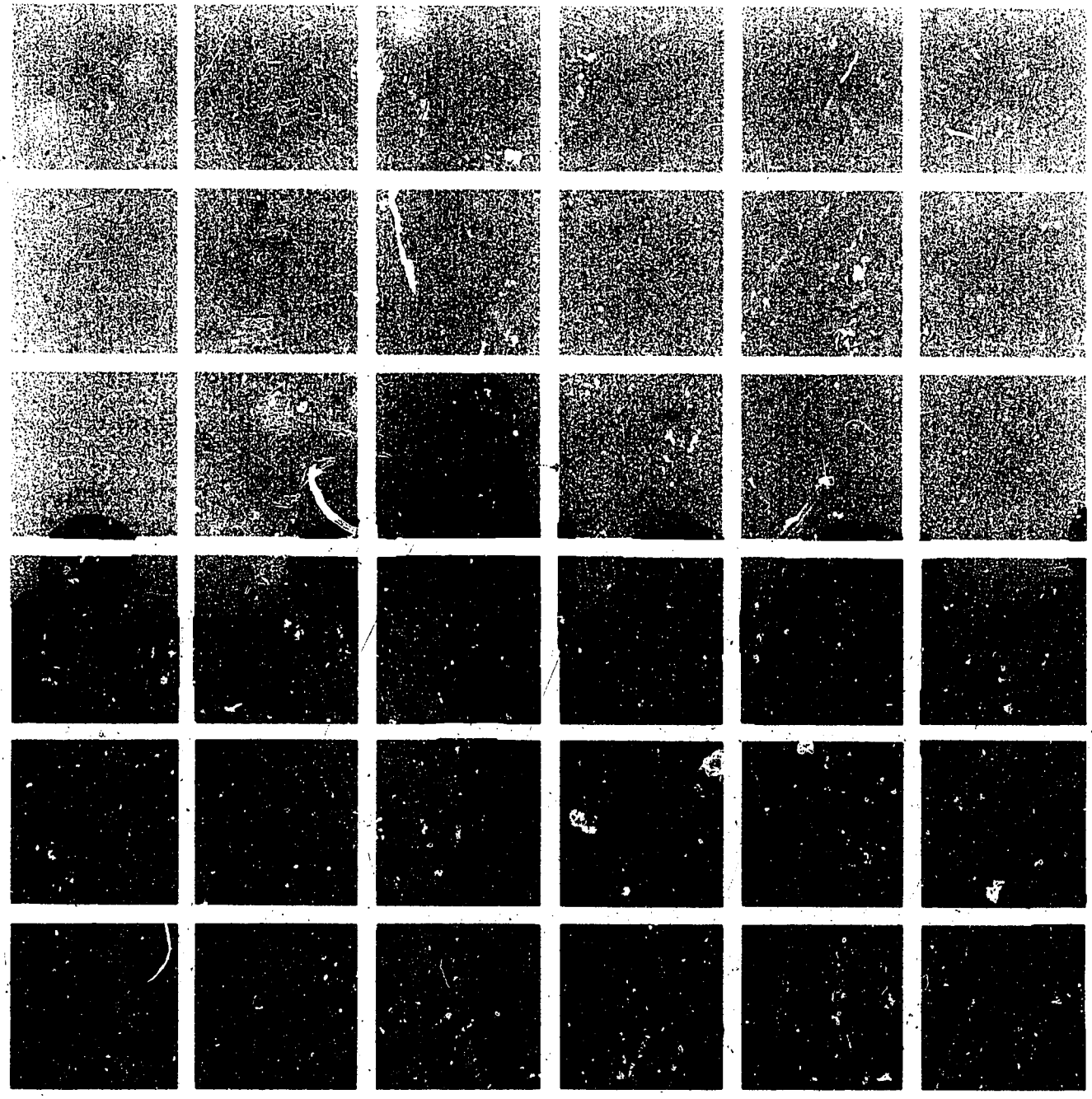

THE CENTER MISSION STATEMENT

The Center for Vocational Education's mission is to increase the ability of diverse agencies, institutions, and organizations to solve educational problems relating to individual career planning, preparation, and progression. The Center fulfills its mission by:

- Generating knowledge through research
- Developing educational programs and products
- Evaluating individual program needs and outcomes
- Installing educational programs and products
- Operating information systems and services
- Conducting leadership development and training programs

Occasional Paper No. 21

IMPROVING EDUCATIONAL RESEARCH AND DEVELOPMENT

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PREFACE

The Center for Vocational Education is indebted to Dr. David Krathwohl for his lecture on April 2, 1976, entitled "Improving Educational Research and Development."

Dr. Krathwohl presents in his lecture the need to (1) balance the program of research and development in education, (2) improve the organizational structure of R&D centers, (3) modify expectations of educational R&D, (4) build a political constituency and development of realistic legislative goals, (5) continue adequate research support, and (6) bridge the gap between researchers and practitioners. Krathwohl raises many of the issues currently confronting state and federal educational administrators responsible for establishing educational policy and regulating educational programs.

Born in Chicago, Illinois, Dr. Krathwohl received a E.S. from the University of Chicago in 1943. He later obtained his M.A. and Ph.D. in 1947 and 1953 respectively.

Dr. Krathwohl is presently at Syracuse University where he has been serving as Dean and Professor of Education since 1965.

Dr. Krathwohl began his professional career as an instructor at The University of Illinois and later became a professor at Michigan State University in 1958.

He is presently a member of the American Education Research Association where he served as president in 1968-69. He is also a member of the American Psychology Association in which he was elected president of the Division of Educational Psychology in 1973-74.

During Dr. Krathwohl's career, he has published several articles and co-authored two texts including *How to Prepare a Research Proposal* and *Taxonomy of Educational Objectives.*

On behalf of The Center and The Ohio State University, I take pleasure in presenting Dr. Krathwohl's lecture "Improving Educational Research and Development."

Robert E. Taylor
Director

IMPROVING EDUCATIONAL RESEARCH AND DEVELOPMENT

Is the title "Improving Educational Research and Development" to be read as a statement of fact? Education R and D is indeed improving! That would sound a note of hope and signal expectations of steadily more satisfying growth in those activities.

But, our title also can be seen to indicate what is needed in educational R and D. Viewed this way, it would be a warning that things are not as good as they should be, and we must work to correct them.

The latter view seems to flow naturally from the recent history of the National Institute of Education (NIE). Just a year ago we wondered if we could even keep it alive, let alone get it funded at a decent level. Only a few years ago, Representative Edith Green received a standing ovation from the members of the House of Representatives when she proposed a large reduction in the budget of NIE. Shortly before that, Senator Magnuson received a letter of congratulations from the President of the American Federation of Teachers when the Senate Appropriation Committee recommended a markedly reduced budget for NIE. These and similar incidents might well lead one to conclude that the title is infused with pessimism, and precludes a stern lecture . . . Not so!

Certainly there have been problems, and they have been severe. But in the perspective of the long view, there also has been substantial progress. Consider the many ways in which the field of educational R and D has changed since the initiation of the Cooperative Research Program of the U.S. Office of Education twenty years ago: (1) the substantially greater pool of research personnel available and their enhanced sophistication in research methods; (2) the enlarged breadth of research methods being used—from historical, to observational, to simple quantitative, to very complex statistical methods and experimental designs; (3) the multiple disciplines across the social science spectrum actively involved in research on educational problems—especially economics but also anthropology and political science; (4) the widespread capacity to develop large scale, field-based, empirically validated instructional materials; (5) the recently increasing capacity to mount large, strong evaluative programs; (6) the large number of universities that have research capacity; (7) the increased proportion of deans and other administrative leaders with research credentials who were chosen both for their ability to manage R and D and for their capacity to handle the traditional responsibilities; (8) the many corporate educational research units that have been formed—small and large, profit and non-profit, free-standing and parts of large comprehensive R and D corporations; (9) the expanding number of policy research centers concerned with the problems of education; (10) the substantial group of government-initiated laboratories and research and development centers. Even this partial listing is enough to underscore the substantial progress that has been made and the R and D capacity that has been developed.

Also contributing to a feeling of optimism is the fact that instead of just bending over and keeping our noses to the grindstone, we've begun to raise our heads and take the long view; to determine where our problems have arisen, to do more careful diagnoses of these problems, and to plan some remedies. An increasing number of articles recently have been published along these lines:

Clark, '76; Coleman, '72; Cronback, '75; Gideonse, '74; Guba and Clark, '74; Getzels, '74; Howe, '76; Hunt, '76; McKeachie, '74; Morrison, '73; and Suppes, '74.[1] The fact that so many are encouraged to make these analyses suggests that we are beginning to better understand our problems. Our tentative diagnosis of some of them has been reinforced by the recent travail through which we have been passing and which now seems to be slightly ameliorating. As we better understand our problems we are in a stronger position to cope with them.

Better understanding and improved coping are the intended outcomes of the material that follows. It describes and examines some of the problems we have encountered and suggests recommended courses of action that may result in a stronger, healthier, and more productive educational R and D effort. The remarks are organized around the following headings: (1) Balancing the Program of Research and Development, (2) Improving the Organizational Structure of R and D Centers, (3) Modifying Expectations of Educational R and D, (4) Building a Political Constituency and Developing Realistic Legislative Goals, (5) Obtaining Continuing and Adequate Research Support, and (6) Bridging the Gap between Researcher and Practitioner. Each section contains specific recommendations set in italics so they are easily identifiable.[2]

Balancing the Program of Research and Development

The first federal program in research and development was the Cooperative Research Program of the U.S. Office of Education. It was operated as an unsolicited grants programs; researchers proposed the problems on which they wished to work, and were judged by a panel composed primarily of their peers. Much criticism was directed at this effort because it came to be shaped largely by the content of the proposals submitted instead of being designed to reflect priority programmatic guidelines. The research was fragmented and projects tended to be unrelated to each other. Problems important to practitioners, the really critical problems of education, too often received too little attention.

These problems of fragmentation and insufficient concentration of resources were central considerations in the development of the National Institute of Education which inherited responsibility for funding the areas initially under the Cooperative Research Program. From its inception, NIE has

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[1] David L. Clark, "Federal Policy in Educational Research and Development," *Educational Researcher*, 5, 4-9, 1976 (initially published by The Center for Vocational Education, The Ohio State University, as Occasional Paper No. 5, August 1974); James S. Coleman, *Policy Research in the Social Sciences*, Morristown, New Jersey: General Learning Press, 1972; Lee J. Cronbach, "Beyond the Two Disciplines of Scientific Psychology," *American Psychologist*, 16, 116-127, 1975; Henry D. Gideonse, *Social Science Policy and the Federal Government*, Washington, D.C.: Memorandum to the Committee on Science and Astronautics, August 14, 1974; Egon J. Guba and David L. Clark, *The Configurational Perspective: A View of Educational Knowledge, Production and Utilization*, Washington, D.C.: Council for Educational Development and Research, Inc., 1974; Jacob W. Getzels, "Images of the Classroom and Visions of the Learner," *School Review*, 82, 527-540, 1974; Harold Howe, II, "Educational Research—The Promise and the Problem," *Educational Researcher*, 5, 2-7, 1976; David E. Hunt, *Teachers are Psychologists Too: On the Application of Psychology to Education*, Research Report No. 73, Iowa City, Iowa: American College Testing Program, 1976; Wilbert J. McKeachie, "The Decline and Fall of the Laws of Learning," *Educational Researcher*, 3, 7-11, 1974; Edward F. Morrison, *Educational Research and Development: Status, Problems, and Principles*, Columbus, Ohio: The Center for Vocational Education, The Ohio State University, 1973; Patrick Suppes, "The Place of Theory in Educational Research," *Educational Researcher*, 3, 3-10, 1974.

[2] This paper focuses on NIE since it is the only source of funds that are not targeted by the mission of the agency as are the funds in handicapped or defense research. Thus its 10 million share of the $470 or so million the federal government spends on research, development, dissemination, and utilization is small. Yet it is expected to contribute substantially to the nearly 100,000 million that is expended for education yearly.

been under pressure to show progress, especially to have a better record than the old program. The Office of Management and Budget has insisted that in contrast to a program defined by the projects received, only as NIE made its direction clear and got what it needed from the field to carry out *its own* programs would it be given support for its budget. Instead of attempting to cover the entire range of educational problems, certain areas were chosen for concentrated effort. The funds for these areas were committed in accord with carefully developed spending plans intended to make *visible* headway on the problems under attack.

Thus, very little (3 percent) of the current NIE funding goes to support unsolicited proposals.[3] It is distributed instead for projects defined by NIE and contracted more often than not through the Request for Proposal route. The latter allows the researcher to bid for the privilege of working on a predefined problem, where even the approach and many of the details of the project have sometimes already been specified. Quite a contrast to the freedom the researchers exercised under the Cooperative Program.

It is too early to tell whether this approach will be successful. There is a continuing dialogue between those who think it is possible to pre-program what is known into a search to the unknown, and those who believe that anything beyond very modest programming is both a waste of time and likely to result in pedestrian and unimaginative research. It is already clear that many researchers (particularly those in colleges and universities) are either turning to other sources for support of their ideas, or trying to do their research in the marginal time remaining after teaching, advising, and committee work. The latter requires reducing their problem size or redefining the problem so that it can be treated without funding.[4] Consequently, those problems outside NIE priorities requiring large scale, expensive approaches remain largely untouched and unresolved.

At the same time, required to develop detailed spending plans in the priority research areas, the staff of NIE has done the best job it can of shaping their plans in-house, and then exposing them as policy papers for public criticism and comment. So far as can be ascertained, however, these papers have neither been discussed widely, nor attracted the attention of the best minds in the field. They have not had the response from the research community that one would hope for and expect in terms of the size of the commitment of resources. Since, like all government agencies, the work of NIE is inexorably carried forward, these plans become the basis for spending anyway, move onto the RFP route, and become operating policy.

The lack of reaction is, at first, somewhat puzzling. In general, researchers say that they want to affect research policy in areas of their interest, particularly as it is likely to impinge on their activities. Some of the answers to this riddle appear to be suggested by an examination of the incompatibility between the program planning-RFP process, as now practiced, and the creative process itself. In the first place, programs are typically planned by persons, who, if they were researchers (many in NIE never were), now view themselves as administrators. They have, accordingly, turned to other administrators, including executives of professional associations to secure reactions for their plans. Thus, these plans have not reached some of the best, seminal research minds in the field.

Second, and most important, it is not clear that this process can ever tap the best ideas which people have for working in any area. As "The Double Helix"[5] points out there is a covert (not always so covert either!) competitiveness among all professionals to be first with the best ideas. While there

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[3] NIE plans to increase it to 5 percent in 1977-78.

[4] This action is in part involuntary since the academic scene is poorly equipped to respond to the short reply deadlines of most RFPs.

[5] James D. Watson, *The Double Helix*, New York: Atheneum, 1968.

is a willingness to share ideas, one also wants to effectively work out one's own ideas before giving others a chance. Thus, it is questionable whether any kind of a comment solicitation plan can elicit the best approaches unless the program planner happens to hit on them initially. Clearly, such instances as the latter will hardly be routine, since Washington, D.C. has no monopoly on the best ideas. On the other hand, even when guidelines are set as to the problem areas within which proposals will be considered, the unsolicited grant program does allow individuals to put forth their best ideas for development with some security that if the ideas are not used, they do not become public property.[6] It would appear that the unsolicited proposal mechanism with guidelines that serve to define and contain the area of work included for funding consideration, might achieve the goals of concentration of effort that is sought by NIE, but tap some of the better new ideas for pursuing those goals. While this approach might not provide as clear a spending plan as has been required by OMB in the past, it seems likely to result in a better research program because of the greater likelihood of tapping creative ideas.

RECOMMENDATION: New and careful consideration should be given to the nature of the research program planning process, including some comparative research into different approaches, to determine how to realistically capture the very best ideas for advancing research in any given area of concern. In the meantime, some combination with a better balance between solicited and unsolicited research should be struck than at present, with considerably larger commitment of funds (currently approximately 15 percent) for unsolicited research in certain targeted areas.

RECOMMENDATION: Because today's target areas of concern may be replaced by new areas in the future, work in a variety of areas beyond those immediately targeted also must be fostered. Therefore a portion of the funds available (10-20 percent) should be used to support the best research submitted on important problems in unsolicited competition outside the targeted areas. It is especially important to support some research that departs radically from past approaches. A special small "blue sky" panel might be appointed to consider such proposals and recommend selected ones.

There is another kind of balance needed in these programs to correct the imbalance produced by years of pressure for visible, tangible products, products which would give evidence to Congressmen and schoolmen alike that the programs were valuable. The R and D centers, especially, have been affected by this pressure.

Research and development centers were originally conceived, at least in part, in response to a problem: when research is contracted on a piecemeal annual basis, it is difficult to retain competent professional staff and to maintain the momentum of a project. Much mental energy and anxiety is continually devoted to whether the next phase of the project will indeed be funded and what one will do with the staff if it isn't. Establishment of research and development centers was intended to provide continued funding over a period of time for research concentration in specific problem areas (administration, early childhood, etc.). Thus a better staff could be maintained and higher quality, integrated work could be done. Further, the problem of the fragmented nature of educational research would be attacked as well by having the center draw up internally coordinated work plans.

R and D centers, being university based, were intended to bring the total resources and strengths of their institutions to bear on the problem areas which were their concern.

While most R and D centers started down this path, their directions were, unfortunately, diverted. Federal administrative policies required the centers to be visible distinct entities, separated from the

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[6]Proposals do not come into the public domain under the Freedom of Information Act unless they are funded.

schools and colleges of education which spawned them. They have thus tended to become more or less isolated from the rest of the university units with which they should relate.

Further, because the centers had to turn increased attention to the development of products in order to retain continued funding, the emphasis on research has decreased markedly.

Because the centers have been on a program purchase basis, they have never been certain of continuity of funding and have continued to be concerned about the next project while trying to finish the current one.

Because they have had to increasingly conform to the priority plans of NIE in order to get funding, these centers have been unable to initiate plans to map out new work in their areas of prime concern. In some instances, centers are almost indistinguishable from educational laboratories which took educational development rather than research as their main *raison d'etre* from the beginning.

Together these two trends—(1) highly detailed program planning with little creativity and concomitant forcing of conformity to these plans by the RFP funding pattern, and (2) the conversion of the research and development centers into developmental laboratories have reduced the rate of the growth in our most imaginative research. As Roald Campbell points out, research is the base capital on which the development, dissemination, and adoption structure depends. If this research is dull and unimaginative, then the rest of the structure is likely to be too.

RECOMMENDATION: Over the next five years, the research and development centers should be oriented much more heavily toward research than they are at present, with funding latitude that would permit them, subject to a quality review, to take the initiative to man bold new research plans in their area of concern. (To change too rapidly would be a disservice to the present personnel on board and the projects in which they are engaged.) They should be encouraged to make more use of the best available professional personnel on campus and to share staff with the institution.[7]

Improving the Organizational Structure of R and D Centers

There is considerable question, however, as to whether merely attempting to reorient present R and D centers toward research is sufficient to restore them to the zesty, productive institutions they were intended to be. It is at least worth a trial to determine whether there is not a better model for an R and D center than those currently being supported.

Consider, for example, a center with a flexible personnel policy which: (1) bridges geographic locations so the very best personnel can be used in the center, wherever they are, whatever kind of institution—university, profit, non-profit corporation—they work in; (2) selects among these individuals the best projects and cycles project directors into a program in order to support the development of an idea with considerable promise and then, as that lead is exhausted or proves fruitless, out of a program; (3) fosters communication and joint research planning among the best researchers in an area; (4) is free to chart new directions without a great deal of bureaucratic formality; (5) has a central staff that works consciously and continuously at synthesizing and integrating the research, interpreting it, and getting it into the proper channels for use.

Does such a model exist? I believe it does if one modifies and builds upon the model that once was tried by the Early Childhood Laboratory. That this laboratory failed to achieve its goals is not a function of the model implied above. It did bridge universities but in fact, it is precisely because it *did not* follow the policies suggested that it failed. This occurred because: (1) it did *not* rotate

[7] The Higher Education Amendments of 1976 create a panel to recommend policy on laboratories and centers. It is to be hoped that the panel will provide clarity, stability and long-term policies for the labs and centers that will contribute to their greater effectiveness.

out unproductive members; (2) it did not bring in productive new ones; (3) it did not seek to jointly plan projects—indeed, control of the center was ceded to project directors who, by scratching each others' backs, let each have what they *individually* wanted; and (4) it did not synthesize the work or attempt to jointly disseminate it.[8] NIE has established two national laboratories.[9] This is an excellent opportunity to given this model a *real* trial.

RECOMMENDATION: That an R and D center model based on the best aspects of that used in the Early Childhood Research Laboratory be developed and then implemented for at least several of the R and D centers as they are converted back to a greater emphasis on research and that this be the model used on the proposed national centers that the National Council on Educational Research has indicated it wants NIE to establish over the next few years.

Modifying Expectations of Educational R and D

The problem that educational R and D has had in delivering on its promise has already been noted. Teachers and school administrators who, as its ultimate benefactors, ought to be among research's strongest supporters, tend instead to be among the critics. To them, research competes for resources that would otherwise provide more obvious benefit to the educational process. There are real, long-term benefits from research as well as less glamorous, short-term results that are equally beneficial. But the lack of visibility and understanding of the short-term results does little to help the case. Moreoever, while the long-term payoff is understood and accepted in theory, when it comes down to where the most "squeak" in the educational system can be stopped with the least "grease," better support of aspects of the day-to-day school operation beats out long-term research investment every time.

While immediate concerns always have a stronger pull than future ones, there are other contributing factors. For example, twenty years of research funding, without markedly reducing the ills of the educational world, have resulted in unhappiness. That the amount of this funding was miniscule relative to the size of the educational enterprise itself is not taken into adequate account. Neither is the long period of time physicists, chemists, and biologists have been working to achieve what understandings they have versus the comparative infancy of educational research.

Still, the pressing problems of the educational practitioner are highly visible, and cry out for relief. The general expectation is that some particularly brilliant piece of research will solve these problems, thereby initiating a massive development and dissemination program, the end result of which would be a significant and universal change in school practice. Rarely, if ever, has change in education due to research come about in this way.

The fact is that research does change practice, but slowly and unobtrusively, by helping us all to understand educational phenomena differently, by providing a different conceptual context, and by providing new theoretical frameworks, which cause us to see things in a new light. Such change is less obvious and less glamorous, but nonetheless real.

Jacob Getzels (1974) provides an excellent example of what can be done to help practitioners understand the links of research to practice:

> . . . Almost within sight of my office are four school buildings. In one, dating from the turn of the century, the spaces called classrooms are rectangular in shape, the pupils' chairs are firmly bolted to the floor in straight rows, and the teacher's desk is front and

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[8] See also the first question in "Questions and Answers" section at the end of this paper.

[9] The first laboratories are in teaching and reading; the third is expected to be in finance and productivity.

center. In the second building, dating from the 1930s, the classrooms are square, the pupils' chairs are movable into various patterns around the room, and the teacher's desk is out of the way in a corner. In the third building, dating from the 1950s, the classrooms are also square but the pupils' movable desks are now trapezoidal in shape so that when they are placed next to each other they make a circle, and the teacher's desk has vanished! In the fourth building, there is a classroom, constructed a year or so ago that is four times the size of the ordinary classroom. It has no teacher's or pupils' desks at all but is filled instead with odds and ends, from fish bowls and birds' nests to drawing boards and Cuisinaire rods. If one were not told it was a classroom, this space might be mistaken for an overgrown playroom or a warehouse full of children's paraphernalia.[10]

In the remainder of the article he traces each of these classroom forms to a conception of the learner—conceptions based on educational psychology research: (1) the rectangular room to the early empty learner-connectionist conceptions; (2) the square room to the active learner conception that involved Gestalt psychology and research on affective learning; (3) the circular classroom—the social learner conception—to social psychology research and group dynamics; and (4) the open classroom—stimulus seeking conception—to recent research on the individual as not only a problem solving, stimulus-reducing organism, but also as a problem finding, stimulus seeking organism.

Getzels takes common practices, traces them to their research roots, and publishes this material in a journal which reaches practitioners *and* administrators, thus helping to bridge the gap between research and practice. Developing additional articles that trace the roots of practice, as Getzels has done, would similarly contribute to a better understanding of the contributions of research. It would be only a beginning, but would lead in the right direction.

There are further inconspicuous, but extremely important returns from educational research which help us to achieve short-term gains. Consider the role of educational research not as the leader of change, but in laying the groundwork, and then legitimizing movements that result in massive educational change.[11] An example is the competency-based teacher education movement (CBTE).

The roots of CBTE, in terms of the clear statement of behavioral objectives which is followed by measurements of their achievement, have been growing a long time. The thirteen model elementary teacher education programs that were developed with USOE instigation and funding gave these characteristics new impetus for changing teacher education. Nearly all of these models independently projected the creation of competency-based programs with specifically stated objectives and follow-up measures.

It seems very likely that these models would have passed into obscurity, however, as utterly unachievable ideals had they not been preceded by the research of Ryans, Flanders, Medley, Mitzel, Soar, and others in the field of classroom observation scales. These researchers had begun to link the actions of the teacher in the classroom to the effectiveness of the student's learning. While these findings were embryonic, the fact that they existed at all made it seem possible that in time a

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[10]Jacob W. Getzels, "Images of the Classroom and Visions of the Learner." *School Review*, 82, 527-528, 1974.

[11] I am indebted especially to Dr. David Clark of Indiana University, who shared with me the discovery of this insight on the role of research in the course of a committee meeting discussion.

competency-based curriculum might indeed become a reality. The result has been a boom in the development of CBTE programs. This has led to the expectation that these earlier meager findings would be reinforced and expanded by later material that would winnow from the lists of competencies those that did not clearly relate to children's learning and significantly reinforce certain others that did.

In a very real sense, then, this early research legitimized the movement to CBTE, made it seem achievable, and helped CBTE to grow in the expectation of additional research findings. Research, both in past reality and in future expectation, served to fuel this movement. Research legitimized CBTE practice. It preceded the change in practice, it gave that change impetus, legitimized the change in the eyes of those who questioned it, and thus facilitated its acceptance by those resistant to the change. Here, as in other such instances, research played a very important role.

Just as research *legitimizes*, it also *de-legitimizes*. Many practices (the orthographic alphabets, for example), are touted as the answer to important problems. Initially, research may serve as the legitimizer of these changes, as it did for the alphabets, but as research accumulates, as it shows, for example, the increased spelling errors resulting from the phonetic emphasis, the practice is de-legitimized, the movement loses its momentum, and the practice is dropped.

These examples help to show that one of the reasons research does not appear to be at the core of educational change is that it frequently serves a much less obvious and less glamorous role: to legitimize or de-legitimize change.

Practice proceeds as rapidly as the inventive mind of the practitioner can push it. Viewing teaching as an art which is to be practiced to the best of one's capacity, the teacher and administrator cannot and will not wait for research to explain whether and/or why something works; they try it. Research plays an important role as a support for these practitioners, coming along later, pointing out whether they were right in believing they improved practice, and suggesting why certain practices have worked.[12] It provides the theoretical basis, the conceptual context in which the practice is understood. This lends ever increasing solidity to our educational practices. It distinguishes between two practices that can be justified on the grounds of "plain common sense," one of which is more effective than the other. It provides us with products which have been validated. It shows that these products will actually achieve certain stated goals at specified levels of achievement. It has saved the educational community countless man-years and millions of dollars by aborting ineffective movements that were well on their way to being adopted by substantial numbers of teachers and administrators. Similarly, it has fueled the growth of movements that have resulted in significant, positive changes in as many programs. These are substantial accomplishments!

The problem, of course, is that these are not the kinds of breakthroughs that those who supply funds dream about. It becomes increasingly clear that we need to help those who are in policy making roles to realistically see that research does indeed contribute to educational practice in substantial ways both on a short-term and a long-term basis.

RECOMMENDATION: We must do more to understand the real *role and contributions of research to the improvement of educational practice, past and present. Though this role may often be less glamorous than the stereotyped role attributed research-based change it is nonetheless real. The reality and usefulness of this role must be conveyed to teachers and administrators through our teacher preparation and in-service training courses, and to school board members and state and federal policy makers through readable and interesting position papers.*

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[12] See also the Kounin example under the third question in the "Questions and Answers" section of this paper.

Building a Political Constituency and Developing Realistic Legislative Goals

The funding of educational research has become almost entirely a federal responsibility. The demand for human service funds at all levels of government always exceeds the available resources, but where one bears the day-to-day operational responsibilities, they seem especially heavy. It is only the federal level that is free of these latter responsibilities. Therefore, it is up to the federal level with freedom from day-to-day involvement, to invest resources in the long-term development of education. Surely, educational research, broadly defined, has one of the strongest claims on those funds!

This makes it imperative that attention be directed at the political process of the federal government to assure authorization of appropriate agencies to administer programs of educational research, development, dissemination, adoption, and installation, and appropriation of sufficient funds to conduct them. Senators and congressmen who have been supportive of educational research indicate that they would welcome such attention. For years, they have been waging a lonely battle. Until recently, nobody, not even the research community that directly benefitted, bothered to make *any* comment to these public servants when educational research legislation was passed.

A few years ago, this situation began to change. The leader was CEDaR, the Council for Educational Development and Research. Originally begun to help disseminate the work of the educational laboratories and R and D centers, when these units were in danger of being phased out and their funding redirected to other projects, CEDaR became an organization that helped to communicate the concerns of the labs and centers to legislators and policy makers. Later, the Association of Colleges and Schools of Education of State Universities and Land Grant Colleges and Affiliated Private Universities (ACSESULGC/APU) formed an active Legislative Liaison and Planning Committee (LLPC) which David L. Clark initially chaired and to which I succeeded as chairman. It was fortunate to have former Secretary of HEW, Wilbur Cohen, now Dean of Education at the University of Michigan, as a member. That committee has been coordinating its efforts with AACTE's Governmental Relations Committee. David Imig of AACTE has recently staffed the combined committee's activities. These efforts, moreover, have been joined by others. For example, AERA has formed a committee to support R and D and has hired a person to staff this area. ASCD has taken a lead in supporting R and D; ACE has been interested and helpful in the cause of educational research.

With the leadership of LLPC, a coalition of organizations was formed to support educational R and D and to testify on behalf of NIE whenever it could support its policies (or seek to change them). It joined another such coalition formed by ASCD. In the spring of 1976, this effort resulted in testimony supporting the reauthorization of NIE before Chairman Brademas' Committee which was signed by thirty-one professional organizations.

LLPC's venture seems to have been successful so far; more so than one might have expected. On the other hand, LLPC has legislative priorities that extend beyond educational research. Further, its members can devote only small amounts of time to committee work. The work of routinely tracking legislation in this area must be carried by the staff of a professional association. Of the full-time Washington association staff devoted to tracking educational legislation, only CEDaR and AERA are concerned primarily with research and development. AERA, as the more broadly based organization, would seem to be the most natural leader of the coalition on research and development.

It is encouraging that AERA has, at last, begun to take an active role in the federal scene. Despite the association's obvious self-interest, its officers have traditionally taken the position that it should only be concerned with the academic side of communication about research and its improvement, *not* with the process by which support for that research comes about. The abandonment of similar

stances by other professional associations has had its impact on AERA, which recently employed a staff member for legislative liaison work. Yet to be determined is how firm the commitment of the AERA officers to this effort will be or what kind of leadership the association staff can mount. This is clearly one direction from which leadership for the support of educational R and D could be developed.

RECOMMENDATION: We must assure that some organization, as broadly based as possible, takes the leadership among the professional associations in support of educational research and development. While the natural candidate for such a role is AERA, if it does not assume this role, then another of the associations (such as AACTE or ACSESULGC/APU) must give priority in their legislative liaison planning to educational R and D. Members of these associations must monitor the work of their officers and staff sufficiently to see that this important responsibility is fulfilled.

A second direction is to imbed educational R and D in the context of the variety of issues that are of concern in any given congressional session, and to form a coalition of interested organizations. Such a group developed around the bills relating to vocational education, renewal of EPDA, and teacher centers this current congressional session. This group has included the support of educational research among its concern. Like the LLPC's NIE group, it is an ad hoc coalition, but even this is a hopeful sign, for educational organizations have a history of working more for their own selfish interests than forming common cause. It would be very encouraging if this could become the beginning of a regular working arrangement, but we will probably have to learn to walk before running.[13]

RECOMMENDATION: Experimentation should continue with different types of coalitions to determine the most effective form that collective action can take. The ad hoc coalition devoted solely to educational R and D probably seems likely to be less effective in the long run than a coalition that encompasses some limited common spectrum of issues, and which develops longer and more cohesive relationships among a small subgroup of associations. Such a group can be expanded around any given issue such as educational R and D when and if additional support is needed.

David Clark (1976) suggests that a nucleus of organizations should form a coalition in support of educational R and D.[14] Such a coalition is similar in its constituency to what is described above. Clark suggests forming a "national conference board similar in intent, if not in structure, to the New York State Educational Conference Board which worked so effectively in mobilizing a state platform for school support in New York" (Bailey, 1962).[15] Such a group could formulate a national policy and action program for educational R and D. This is a recommendation to be heartily endorsed. It will, however, take strong and effective leadership to become a reality. Coalitions are especially dependent on the quality and effectiveness of their leadership. Someone to play the role of Paul Mort, who made the New York board so effective, must be found if this dream is to become substance.

A third direction for work on the federal scene is toward achieving more consistently larger appropriations for educational R and D. The Committee on Full Funding has been remarkably successful in getting appropriations in the priority areas mutually agreed to by the Committee members. It is an excellent example of the loose coalition, formed around a common interest with

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[13] Unfortunately, true to past form, this coalition later came unstuck over the vocational education and teacher center issues. It looks as though we'll have to learn to crawl before walking.

[14] David L. Clark, "Federal Policy in Educational Research and Development," *Educational Researcher*, 5, 4-9, 1976.

[15] Stephen K. Bailey; R. T. Frost; P. E. Marsh; and R. S. Wood, *Schoolmen and Politics*, Syracuse, New York: Syracuse University Press, 1962, p. 57.

strong leadership, which is called for in the preceding discussion. Mr. Charles Lee, a former Senate staff member of Senator Morse's, provides that leadership. There are no regular dues or assessments; member associations contribute voluntarily. Priorities are set by the committee members, choosing those that are important and that have some chance of realization. Educational research has not emerged as sufficiently important to warrant priority status, and the poor relations of NIE with Congress helped eliminate it from priority consideration. As NIE's Congressional relations change, there will be more hope of pressing the case.

RECOMMENDATION: Members encourage their associations to become a part of the Committee for Full Funding and work toward getting educational R and D accepted as one of the priority areas of the committee.

Continuing and Adequate Research Support

Any business firm knows that to remain competitive and to make progress, a certain portion of its annual resources must go to find new—better—ways of doing things. Such investment is essential to its continuing existence; otherwise, the firm will fall prey to those who do invest in research.

Public education is at base, a monopoly. Thus the element of competition, except during a crisis such as was caused by Sputnik, is absent. While there is a professional responsibility to improve each and every year, it is a moral obligation, and moral obligations have far less clout in allocating resources than does a competitive threat to survival. Yet, as Sputnik demonstrated, educational needs are really central to the ultimate welfare of our nation.[16] Can we not be forward thinking enough to include adequate research support among our regular top educational priorities?

One way of giving it regular priority is to assure that a fixed percentage of the federal educational allocation goes to educational research and development. Industries seem to spend between 3 percent and 8 percent annually on research. Were a rider to be included on each education appropriation bill that 5 percent of the gross funding be expended for research, the role of research in educational improvement and development would be more appropriately acknowledged and we might begin to build a more adequate resource pool for research support.

RECOMMENDATION: The coalition of associations supporting the federal educational R and D effort take as one of their priority goals the allocation, initially, of 3 percent of each federal educational appropriation for educational research development and dissemination. A later goal, if the first is achieved, would be to raise this level to 5 percent.

Bridging the Gap Between Researchers and Practitioners

In the paper referred to earlier in connection with coalitions, Clark (1976) notes:

> The basis for this coalition will have to be built upon a reconceptualization of the role of R and D in education, which will diversify the types of and sites for productivity in Educational R and D. The process of inquiry will have to be brought closer to the point of effective action in education, i.e., will involve the direct participation of practitioner agencies in all the processes of Educational R and D.

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[16] After Sputnik, President Eisenhower told NEA that "our schools are strong points in our national defense . . . more important than Nike batteries, more necessary than radar warning nets, and more powerful than even the energy of the atom." Senator Benton returned from a tour of the Soviet Union to tell reporters "Russia's classrooms and libraries, her laboratories and teaching methods may threaten us more than her hydrogen bomb . . . " Mark Travaglini, "In the Wake of Sputnik" in *A Nation of Learners*, Leroy V. Goodman, ed., Washington, D.C.: U.S. Government Printing Office, 1976.

Clark's statement echoes the unhappiness of many with the practitioner's involvement in the research and development process. He wants them to be more actively caught up in that process in order to facilitate their perception of it as relevant to their needs, and thereby useful. Certainly designing a process in which practitioners feel involved, as Clark suggests, through scattered sites and involvement of local teachers, might go a long way toward resolving the problem.

There may be other ways of ameliorating the problem. As been suggested elsewhere (Krathwohl, 1974), it would help if researchers would modify their views of themselves from "knowledge producers" to "producers of findings to be confirmed in practice."[17] In this role research findings would be more clearly presented in their true status, as tentatively held as true and subject to further validation. Viewed this way, it is natural to make suggestions to practitioners to help in further validating or invalidating the findings. Such suggestions would be included in journals, as a section parallel to the one that suggests to researchers ways for further carrying on the line of investigation. This would elevate the validating role of the user. It would give evidence of a change in attitude toward the practitioner as partner in the investigation rather than the passive recipient of its findings. It should also help to reduce the time for translation into use of a new idea or product.

Reviews of research might also be combined with reviews of practice. Recognizing that knowledge comes from practice as well as research, and that the ultimate validation of educational research is in educational practice, reviewers of research could be encouraged to search out confirming or disconfirming evidence from practice to set alongside research findings. As research studies include suggestions for practitioner validation, these reviews would become the collating points for that practical evidence. At first limited to case studies, these reviews might later summarize the case study evidence and then seek more sophisticated evidence from practice as this direction becomes established

Another answer, however, is to build instructional materials so they enhance the teacher's role rather than detract from it. The development process, as currently and frequently practiced, seems best shaped to produce "teacher proof" materials—materials that deny teachers a creative role in teaching and reduce their possibilities of self-realization through teaching. By contrast, materials can be developed that increase the self-perception of the teacher. Through intermeshing those activities done best by the teacher with those best accomplished with instructional materials, student achievement is increased, teachers are made to feel more effective, and their overall self-esteem is enhanced. This is the goal to be sought.

Whether this is best achieved by the linear development process now practiced—there is no reason inherent in the process itself why it cannot be—or whether it requires scattered sites and local involvement of practitioners in the creative development process we do not, at this point, know. In fact, research is only now beginning to be able to specify what a teacher does that increases student achievement. It is clear that some teacher actions (e.g., the reward of lower-class students when they achieve, holding high standards for upper-class students, and bringing a feeling of enthusiasm and excitement into the classroom) are better done by teachers than be materials alone, though their combination may be more effective still. The exact determination of just how to best accomplish this requires yet more research.

RECOMMENDATION: We must try alternative ways of modifying the R and D process so that practitioners feel more closely related to it and perceive it as better answering their needs. Many parts of the research and development process may have to be changed to bring this about, but a

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[17] David R. Krathwohl, "An Analysis of the Perceived Effectiveness of Educational Research and Some Recommendations," *Educational Psychologist*, 11, 73-86, 1974.

concerted effort by any of a variety of associations and institutions could make some contribution toward this overall change in orientation. NIE should establish a task force to suggest ways of bringing this about and then work with the various institutions, such as the laboratories, R and D centers, and CEDaR, as well as the professional associations and journals to facilitate bringing this reorientation about.

Building instructional materials as noted above may be helpful but may not yet be enough. The "build a better mousetrap and the world will beat a path to your door" theory has not proven very effective in education. Education is not alone in this. The huge numbers of demonstration plots used to promote the adoption of hybrid seed corn when its advantages were not hidden behind some teacher's classroom door, but were in the field for all to see, attests to the difficulty of instituting change. But we have so far been unwilling to make an adequate dissemination—adoption and installation effort.

A substantial difficulty in mounting such an effort is that education is a highly labor intensive operation. All but a small fraction of the total funds are committed to personnel expenses. This has two implications: (1) there are few funds available for the purchase of instructional materials which currently are the major products of educational development; (2) all we know about change in a labor intensive field leads us to believe that bringing it about is itself a labor intensive and therefore very expensive process.

Thus, it is clear we need additional research on how to bring about educational change—the dissemination, adoption, installation, and maintenance of new practices—seeking ways that will maximize the change and minimize the cost.

RECOMMENDATION: Priority should be given to research and demonstration of different demonstration, adoption, installation, and maintenance systems (DAI&M) which are tied to a modified R and D process—modifications that will make R and D more acceptable to practitioners. Prime criteria for the evaluation of the above demonstrations should be: (1) a positive change in practitioner perception of the effectiveness of R and D and in willingness to use it, (2) creation of this change in ways that have a ripple effect to those not in the demonstration.

A program of significant size should continue to take substantial priority over whatever period of years is necessary to make substantial progress on this problem.

Out of this research should come one or more DAI&M designs that would facilitate the use of empirically validated educational practices and products. Because such designs are likely to be highly labor intensive, their support should not be carried in the R and D budget for the transition from demonstration to routine operation. Transition and operation should be transferred to either the U.S. Office of Education or, if Congress prefers, a new agency. Since such a system would very closely relate to, and most likely be a part of state and local school administrations, part of the costs should be borne there if it is to be properly appreciated and used. A cost sharing formula like that of Title XX of the Social Security Act could be used (e.g., federal 75 percent, state 15 percent, local 10 percent or federal 60 percent, state 25 percent, local 5 percent).

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This set of recommendations is advanced in the hope of further stimulating thought about and action on the R and D scene. The increasing number of analyses of the research scene now appearing are indicative of a growing maturity. This paper reinforces some of their ideas and advances others. Out of this conversation clearer directions should emerge, which in turn should provide more useful guides to action.

QUESTIONS AND ANSWERS

Question: Would you comment further on why the Early Childhood Laboratory failed?

Much of the laboratory's problem lay in its administration. Like all laboratories and R and D centers, the sponsor's expectations of the laboratory were neither entirely clear, nor consistent from year to year. Thus at the initiation of the laboratory, its advisory board counseled heavy emphasis on a research program examining basic childhood behaviors and their growth. Some time after developing these directions, the Washington-based monitors indicated that the research should be much more practically oriented—building curricula, and testing and validating teaching practices. As a result, the director stopped convening his very distinguished but research oriented advisory board and emphasized development type projects in the new and replacement work. Not all of the participants in the laboratory either could do this work nor wanted to do it if they could, and so their support was phased out. This markedly weakened the laboratory and made it less attractive to continued funding.

There were simultaneously other problems. Questions arose regarding the administrative responsibility for the laboratory. How much control was the administration of the university which housed the director allowed to exercise? What was the role of the advisory board? What rights vis-a-vis the laboratory's director, did the heads of the unit at each of the cooperating universities have? Did the university which housed the director also have a right to participate in the program as a cooperating university? Each of these questions was an issue that caused problems.

These and similar questions would have to be clarified if this model were to be used again.

Question: How can a reorientation of the R and D process that would more fully include the consumer be brought about?

This is a task that must be pursued at many levels by many different people. One of our first tasks is to make researchers, developers, and the like aware of the need for such reorientation. Nearly all of the analyses of the R and D situation referred to earlier include some discussion of this problem. In our discussions with the coalitions with NEA, AFT, CSSO, NASB, and others we must try to be sure that this point of view is taken by our researcher representatives. We have supported the appointment of consumers to NIE's Advisory Council, as well as their inclusion in NIE's conferences on research policy. At a more local level, this R and D center should examine what it is doing in this direction. Your director is already cognizant of the need to operationalize this reorientation. My impression is that the laboratories have progressed further in regard to action in this direction than the academic community.

Question: What relation has classroom practice to the discovery of ideas and to research?

Many good ideas for research grow out of practice, especially when researchers watch good teachers in the classroom to determine what they do. The trick is to tease out what it is that is making the

difference and then to validate it by research. One of the best examples of this is the work of Dr. Jacob Kounin (1970) of Wayne State University.[18] He noted that generally teachers with emotionally disturbed children in their classroom had great difficulty maintaining classroom control; the disturbed children disrupted whatever the teacher tried to do. But certain teachers seemed to have children who, though equally disturbed, were much less disruptive. Through careful study of the videotapes of these classrooms, Kounin established that these teachers differed significantly in the ways they made transitions from one classroom activity to another. Disturbed children would explode if the teachers made abrupt transitions from, for example, reading to art. The teacher who changed activities smoothly didn't loose these particular children.

Kounin's insight sounds like good common sense when laid out this way. Yet the research in isolating and validating this critically important behavior was essential in pinpointing the critical difference between apparently equally competent teachers. A wide variety of other behaviors might have appeared equally reasonable. Research empirically separated from among those that appear to be reasonable, those that really make the difference. This kind of careful use of the classroom is one example of a relation between research and practice. (It also illustrates a role of research described earlier!)

Another is exemplified by the little volume, *Complexities of an Urban Classroom*, by Louis Smith and William Geoffrey (1968). Smith is a social psychologist who observed the classes of Geoffrey, a classroom teacher.[19] The book is rich with the kind of hypotheses that this kind of collaboration, an insightful teacher and a perceptive psychologist, might together uncover. This is still another kind of relation between the classroom and research.

Question: Aren't teachers more sophisticated about research than they used to be?

Yes, they are, there is little question about that, and I'm glad that they are. They have more knowledge and understanding about research both in process and in product. Yet, I think that we have a long way to go. Consider the achievement tests that teachers use. How many of them are aware of the extensive research and complex psychometric theory that was involved in their construction and validation? This work simply does not show. While teachers and administrators certainly need not know the details, they do need to know enough to appreciate what has been accomplished. We need to do more in our teacher and administration training courses to make this clear.

Question: How do you see local school districts and colleges and universities joining in support of research?

I don't know whether you have school study councils in Ohio, but this is one of a number of models that can be used. Unless it is a very large one, a single district is not usually a large enough unit to support research by itself. The council joins together the resources of a number of districts in a loose confederation. Together with a university they can support such activities as seem appropriate. Of course, this tends to limit the work to a very practical kind of research question, since school boards

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[18] Jacob S. Kounin, *Discipline and Group Management in Classrooms*, New York: Holt, Rinehart, and Winston, 1970.

[19] Louis M. Smith and William Geoffrey, *The Complexities of an Urban Classroom: An Analysis Toward a General Theory of Teaching*, New York: Holt, Rinehart, and Winston, 1968.

aren't much interested in contributing to questions other than those that have some immediate return to them, but it is a start toward providing a common forum for mutually beneficial activities. The unit that we have at Syracuse is a membership organization with districts contributing in accordance with their size. There is a small research fund in the council. Hopefully we can wean them onto something stronger.

We will have to find ways of tapping into the local level for cost-sharing over time. This is more than just a matter of finding one additional source of support. In part this is a matter of increasing their responsibility for research, in part it is also calculated to keep research practical, and in part it serves to increase the appreciation of research at that level. If people know they are paying for it they are more likely to use it, and if they use it, and it helps, then they are more likely to appreciate the potential role that research can *realistically* play.

Question: Does your earlier comment about a modification of the development process mean that we should release work for use even before it has gone through final revision?

Yes, I think probably so, if I understand you. But this is something that we need to experiment with. It seems clear that teachers want to make a product their own. Even the elaborate NSF curricula, which have cost millions to develop, are modified by teachers to fit their particular style of teaching, to emphasize their objectives, and to make more prominent those things which interest and concern them. Thus, in some sence, the "fine tuning" that we do to curricula is a waste of time as they are now used. We would, perhaps do better to produce curricula that require this kind of personalized modification. We would be saying to the teacher, "Here, adapt it to your purposes!" We would need to run workshops to show teachers how to make such adaptation, but we already do some of that now as part of the adoption process. This would transfer part of the finishing process to these workshops.

Question: Does this mean that we should package curricula with options like cars are sold?

Yes, that makes some sense, though there are some drawbacks to it too. When one buys a car there is a basic configuration such as a basic body style, transmission, steering, and brakes. One can then add a radio, clock, cruise control, etc. In like fashion we could package options that would help certain kinds of teachers in particular school situations to attain certain goals. On the other hand, options in instructional materials do not seem to have been very successful if they get very complex. Too many options lead to a melange of combinations which overwhelm the teacher rather than helping. By analogy, most individuals buy a car from the stock available in the lot rather than have one ordered from the factory with just those options that they want on it. This analogy is probably a close fit to the curriculum market as well and suggests substantial pre-packaging with easily available add-ons for "customizing."

Question: How did you decide whom to include in a Washington coalition of associations and how big it should be? Was the AVA part of the one you were describing?

Yes, the AVA was included as were some thirty other organizations. The coalition was open to any association that wished to join it and which endorsed its goals.

But for a coalition expected to work together over a variety of issues, the thirty-one association group is too large. The broader one's group, the more problems encountered in remaining cohesive.

The group needs to be large enough to include associations that cover diverse constituencies, if possible, consumers as well as producers of research. Yet there must be a common interest and enough willingness to give and take on issues so that trade-offs for support on any single issue becomes the regular mode of operation. We will, no doubt, have to experiment with different clusters of associations and with various size groups in order to find the best one at any given point in time. Further, it seems likely that the most effective grouping at any one point in time may not have that same effectiveness over all times and all issues. We are in the process of learning about this now.[16]

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[16]Since this talk was given, the small working coalition referred to lost AVA over an issue in the vocational legislation on which the other organizations would not compromise. More recently, the teacher center issue seems to have split the group even further. These are no doubt temporary setbacks, but they illustrate the ephemeral nature of these relationships, and the difficulty of getting the groups to come together and stay intact. Educational associations have a reputation for coming to the "Hill" as often to block another part of the education group from getting something as they have to argue for something. This is a terrible reputation to have, and indicates how far we have to go to overcome our past.