

Educational Research: From the R & D Centers into Practice

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DURING the past decade, federal support of educational research and development (R & D) has not improved educational practices as rapidly as some practitioners and policy makers had hoped. Three factors have contributed to this apparent shortcoming.

First, too much has been expected too quickly from R & D in education. Five to ten years are required to move through the sequence of identifying an educational need, formulating a proposed solution, developing and testing the required materials and procedures, and educating school personnel to use the materials and procedures in carrying out the solution.

Second, much early R & D did not lead directly to solutions of educational problems because of a serious lack of experienced personnel, tested strategies, and effective management at both the federal and local levels.¹ One to three years were required to staff the early R & D organizations and to begin operating effectively. Significant changes in staffing, strategies, and management are still occurring at the federal level.

Third, the R & D community has not kept the educational community informed of the progress it has made in attaining objec-

tives. This article is intended to help ameliorate the latter condition as it relates to university-based research and development centers.

In 1963 the university-based R & D centers' program was organized within the Office of Education as a new means of finding solutions to critical educational problems. Knowledge concerning the problems and their possible solutions was to be generated through research; and materials and procedures were to be developed, tested, and refined to solve the problems. From 1964 to 1966, eleven R & D centers were started under this program. In 1971 eight of the original eleven were functioning as centers. Two had been discontinued and one had been changed to an educational laboratory. The problem area of each of the eight remaining centers may be inferred from its title and the titles of its substantive programs:

- Center for Research and Development in Higher Education (1965), University of California, Berkeley.

Major programs: equalizing educational opportunities through relevant programs; appropriate structures, participants, and processes for program development; educational impact and student development.

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¹ For a more thorough analysis of strengths and weaknesses in educational research and development, see: Francis S. Chase. "Educational Research and Development in the Sixties: The Mixed Report Card." Background paper submitted to Select Subcommittee on Education, U.S. House of Representatives, April 1971.

• Center for Social Organization of Schools (1966), Johns Hopkins University, Baltimore, Maryland.

Major programs: academic games; social accounts; talents and competencies; school organization; careers and curricula.

• Center for the Advanced Study of Educational Administration (1964), University of Oregon, Eugene.

Major programs: control of instructional policy; organizational implications of instructional change; strategies of organizational change; procedures for system planning; instructional materials development program.

• Center for the Study of Evaluation (1966), University of California, Los Angeles.

Major programs: project for research and objective-based evaluation; school evaluation project; higher education evaluation project; program on evaluation, methodology, and theory.

• Learning Research and Development Center (1964), University of Pittsburgh, Pittsburgh, Pennsylvania.

Major programs: learning research program; computer services and research program; instructional design and evaluation program.

• Research and Development Center for Teacher Education (1965), University of Texas, Austin.

Major programs: personalized teacher education program; personalized school program.

• Stanford Center for Research and Development in Teaching (1965), Stanford University, Stanford, California.

Major programs: heuristic teaching; environment for teaching; teaching students from low-income areas.

• Wisconsin Research and Development Center for Cognitive Learning (1964), University of Wisconsin, Madison.

Major programs: research on variables and processes of learning and instruction; development of instructional programs; development of facilitative environments.

Other university-based institutions which also contribute in specialized ways to the improvement of educational practice include the National Program on Early Childhood Education, which includes seven university-based subcenters; two Educational Policy Research Centers; and two Vocational Education Research Centers. The latter were

established under provisions of the Vocational Education Act of 1963. Also operating are 11 of 20 educational laboratories funded under provisions of the Elementary and Secondary Education Act of 1965.²

It seemed appropriate in 1970 to identify outputs of the first eight R & D centers that were already reaching local school districts and institutions of higher learning. While recognizing that knowledge generated from research may be the more important output from the centers, we decided to identify the materials, procedures, and models that were designed to solve educational problems. The author³ was commissioned by the Conference of Center Directors to carry out this assignment. Other personnel were commissioned for the same purpose by the Conference of Laboratory Directors.

In 1970 each center provided information concerning each of its major programs of work; a description of each product that was already under field test or in actual use following field test; a separate U.S. map for each product to show the locations of the field testing or use; a list of schools, school districts, and colleges where the program was under field test or in use; and the number of children, teachers, parents, and others involved. (In the remainder of this article the term "in use" will also refer to products under field test, inasmuch as a product is in use during field test.)

Since this report attempts to interpret the total university-based R & D centers' program, specific products will not be identified by name with the center that developed them. However, each center will upon request supply information concerning its products, including results of formative and summative

² A 1971 catalog listing all the federally funded centers and laboratories and describing their products is available from the Information Office, Council for Educational Development and Research, 775 Lincoln Tower, 1860 Lincoln Street, Denver, Colorado 80203.

³ The author of this article accepts responsibility for its organization, for the judgments made, and for the language used. Each R & D center director provided information regarding the program of his center. Katherine Koritzinsky, administrative assistant to the author, tabulated and summarized the information.

evaluation that indicate the effects of the products on teachers or students, cost, and current or projected availability.

The information from the centers is summarized in Table 1 according to preschool and elementary education, middle and high school education, higher education and teacher education, organization and administration, evaluation, and computer technology. The numbers of states, of schools or colleges, and of students reported in the table are for the 1970-71 school year only.

At the elementary school level, the Pittsburgh and Wisconsin centers were developing instructional programs in reading and/or other language arts. These programs were in use in 93 schools or school districts in 19 states and were reaching about 28,000 children. The Pittsburgh and Wisconsin centers were also developing instructional programs in mathematics and in science. These programs were in use in 286 schools or school districts in 42 states; 451,000 children were involved.

The same two centers were field testing elements of comprehensive early childhood education programs in 14 schools or school districts in five states; 2,000 children were involved. Research for Better Schools, Inc., an educational laboratory in Philadelphia, was refining, demonstrating, and implementing some of the instructional programs of the Pittsburgh center. The National Instructional Television Center of Bloomington, Indiana, was distributing the first mathematics program of the Wisconsin center.

At the middle school and high school levels, the Johns Hopkins center was developing an element of a career education program. This program was being field tested in 19 locations in one state.

In the field of higher education, the R & D centers at Stanford and Texas were concentrating their efforts in developing improved teacher education programs, materials, and procedures. Their outputs had been placed in 170 teacher education institutions and local school systems in 47 states. The Berkeley center was working on studies concerning the evaluation of higher education and related institutional linkages. This pro-

Programs	Number of states	Number of schools, school districts, teacher education institutions *	Number of children (where applicable)
A. Preschool and elementary programs			
Reading and language programs	19	93	27,985
Math-science programs	42	286	451,289
Comprehensive early childhood education programs	5	14	1,999
B. Middle and high school programs			
Vocational education	1	19	
C. Higher education programs			
Teaching programs	47	170	
Evaluation of higher education	47	196	
D. Organization and administration	31	192	77,000
E. Evaluation	49	177	2,000
F. Computer-managed instruction	2	2	

* It was impossible to determine from the information provided whether a separate school or many schools of an entire school district were involved. Therefore, the numbers given are a total of separate school buildings and/or school districts, and teacher education institutions.

Table 1. Summary of R & D Center Programs and Their Distribution, 1970-71

gram was reaching a number of institutions in 47 states.

Organizations for instruction and the administration of local schools were being dealt with by the Johns Hopkins, Oregon, and Wisconsin centers. Some 192 schools or other agencies with programs affecting 77,000 children in 31 states were involved.

The Johns Hopkins and UCLA centers were developing evaluation programs and procedures, with the UCLA center concentrating at the elementary school level. One hundred seventy-seven institutions in 49 states were participating in these developments. The Northwest Regional Educational Laboratory and the Regional Educational Laboratory for the Carolinas and Virginia were working with the UCLA center in this effort.

The Pittsburgh and Wisconsin centers were developing programs in computer-assisted or computer-managed instruction. Two schools in two states as well as two college campuses were involved.

The practical benefits that may be inferred from the preceding account indicate what can be expected from the R & D centers during the next years. Three circumstances should accelerate the beneficial effects.

First, when the R & D centers' program started in 1964, the persons involved had no experience in putting together a sustained, integrated research and development effort. There were some able researchers, but there was a shortage of developers, evaluators, and implementers. Also, the centers relied too much on the research models of the behavioral sciences and too little on the models of needs-generated development and research that characterize large-scale efforts in outstanding colleges of agriculture, engineering, and medicine. Along these same lines, they relied too much on part-time professors and graduate students, too little on full-time employees whose only professional commitment was to solve pressing educational problems through their work in the centers. These early problems of staffing, strategies, and organization have generally been resolved at this time in the centers.

Second, changes in personnel and programs have occurred so rapidly in the Office of Education that long-term planning has been difficult. Some promising new programs have not been supported with sufficient human and financial resources to function well. Despite this handicap, the R & D centers are now properly regarded by USOE officials and independent evaluators as healthy, productive organizations, ready to participate with other agencies in the National Institute of Education. With the prospect of greater stability in personnel, programs, and funding in the National Institute, long-term planning and related high productivity appear to be a reality for the existing centers. Further, the intellectual resources of other colleges and universities will undoubtedly be utilized more fully through the establishment of additional centers.

Third, the importance of getting the fruits of educational research and development into practice was underestimated for too many years by USOE and by the R & D centers. A public domain policy was set by USOE in 1965 that effectively discouraged profit-making industry from utilizing its competence and financial resources in the final production and marketing of educational products developed with federal funds. In

1970 this policy was completely reversed. The centers are belatedly entering into agreements with publishers and other profit-making businesses to produce and distribute their field-tested products.

As another giant leap forward in implementation, the National Center for Educational Communication funded the dissemination of information about specific instructional programs in 1970, and in 1971 it started funding full-scale implementation activities along with other USOE agencies. Products of the Wisconsin R & D Center, the Far West Laboratory for Educational Research and Development, and the Southwest Educational Development Laboratory were selected for implementation in 1971. Funds were awarded to the Wisconsin R & D Center by the National Center for Educational Communication in March 1971 to begin nationwide implementation of the multiunit elementary school and the related practices of individually guided education.⁴ As a direct result of this funding, 300 new multiunit elementary schools were started in 13 states in 1971-72, and larger numbers are anticipated through additional funding for another two years. During the 1971-72 school year, outputs from the Wisconsin center alone in school organization, in reading, and in mathematics were reaching about 1,000,000 elementary school children.

In the years ahead, the federal government is committed to invest more heavily in bringing tested materials and procedures from the centers, laboratories, and other federally funded agencies into the schools and colleges. Further, the establishment of the National Institute of Education should yield a greater amount of continuous support for educational research, development, and implementation. After less than one decade of support, it is clear that the university-based R & D centers are already contributing to the improvement of education at a level similar to other university-based centers in agriculture, engineering, and medicine. □

⁴ A more complete description is given in: Herbert J. Klausmeier. "The Multi-Unit Elementary School and Individually Guided Education." *Phi Delta Kappan* 53 (3): 181-84; November 1971.

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