

# The R and D Center

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IN 1964 four research and development centers were established by authority of the Cooperative Research Act of 1954. Now there are ten centers, each supported under Title IV of the Elementary and Secondary Education Act of 1965, which assumed responsibility for funding at levels between one-half and one million dollars a year.

The concept of the R and D center is marked by definite features:

1. It is a large-scale organization.
2. It has at least a five-year period for developing as an organization.
3. It is attached to a university, which directs its operation.
4. Each has a topical focus that integrates its program.

Integrating themes of the nine centers are suggested by key words in their titles: learning at Pittsburgh; administration at Oregon; learning and reeducation at Wisconsin; educational differences at Harvard; educational stimulation at Georgia; teacher education at Texas; teaching at Stanford; higher education at Berkeley; evaluation of instructional programs at Los Angeles; social organization and learning at Johns Hopkins.

The ten centers differ from the nineteen regional laboratories recently organized under the same act. Awareness of this difference is important to an understanding of the total national effort, for education is now being improved by means of four major functions:

1. Research and development
2. Evaluation and refinement of products by means of field testing
3. Demonstration and dissemination of products
4. Implementation of innovation in order to improve schools.

A center devotes most of its resources primarily to the first function, whereas the laboratory concerns itself primarily with the other functions. Schools in the 27,000 districts of the nation are the ultimate clients of the laboratory program. Hopefully, each laboratory will in turn become a client of the centers.

A laboratory is an independent institution with a corporate structure including a representative board of control. Private and public or educational and indus-

trial institutions may be involved. Therefore its control and direction differ appropriately from that of a center with its central relationship limited to one university.

### **Program of the Center in Wisconsin<sup>1</sup>**

The central goal of the center at the University of Wisconsin is to secure efficient learning in children, youth and adults, especially the learning of concepts and problem-solving skills. Also included is the development of optimal personality. Motivation for learning is of great importance. Toward this end behavioral scientists and experts in curriculum and subject-matter disciplines work with expert practitioners to examine the variables related to school learning. Designed to explore seven sets of variables, the Wisconsin R and D program organizes current knowledge and attempts to discover new knowledge by means of research in the laboratory and classroom. Further organization for development of new knowledge is gained by focusing on three problem areas:

1. Continuous improvement of instructional systems
2. Translation of new knowledge into learning theory and into an improved technology of instruction
3. Design of new models for field testing.

In general, the modus operandi includes small-scale experimentation or field testing, revision, replication of experiments in additional settings, and large-scale field testing until the product is judged ready for national adoption.

Currently, the Center staff includes twenty-five professors, fifty other professionals, and a supporting secretarial staff. Principal investigators represent thirteen departments of the university including four departments of the school of education. Staff members working in their areas of special interest and competence direct more than twenty-five projects, four of which will be described briefly.

Project 1 is concerned with the development of a mathematics instructional program. Video tapes together with pupil exercises and notes to the teacher for grades one and three have been prepared and are now being field tested. Tapes are also being prepared for grades two and four.

Project 2, a study of concept learning among culturally deprived children, relates learning and instructional technology by means of an extended integrated-functional learning theory and a reinforcement system of teaching.

Project 3, a joint effort between the Center and the Carnegie Creativity Study at the University of California, Berkeley, has incorporated Carnegie materials into a large-scale experiment on creativity and problem solving now under way in Wisconsin classrooms.

Fourth is Project Models, which is concerned with a new organization called

<sup>1</sup> Herbert J. Klausmeier, Co-Director for Research of the Center and Professor of Educational Psychology, University of Wisconsin, is primarily responsible, with the Co-Director for Administration and the Executive Committee, for designing the Center program.

the research and instruction unit and a new role, the learning specialist. Its purpose is to involve teachers in experimentation and innovation in the classroom.<sup>2</sup>

### **Potential of the Center Program**

It is no exaggeration to state that creation of the new large-scale organizations represented in centers and laboratories offers education a prospect of an organized assault upon its many problems. With only two years of experience, it is too early to appraise the contributions of centers accurately. However, five potential contributions, a kind of aspirational frontier, stimulate the imagination and serve as guideposts to the management and direction of R and D centers:

1. Potentially, new knowledge translated into technological analogues relevant to the programs, objectives and problems of the total educational enterprise will be created by the centers.

2. Through large-scale organization within a university structure, resources in various fields of inquiry may be focused upon pertinent problems. Centers can be strategic organizations in reorienting the American university to the problems of elementary, secondary, and adult education.

3. Research and development centers may give education a new viability in our national culture by emphasizing an R and D strategy that has proved successful in defense, medicine, space exploration, and industrial organizations.

4. Potentially, there can be a transcending of the barrier between the norms of the university research scholar and those of the school administrator together with the classroom teacher so that a cooperative assault upon the problems of education will result.

5. Thus far, the research and development center is a limited institution. Its ultimate potential in the reconstruction of education rests in the larger structure through which it may make its maximum contribution. Therefore, centers must have membership in a total system that not only creates new knowledge and technological analogues, but also provides for the field of improvement and evaluation of educational products, and eventually their implementation in each and every school of the nation. Without this total system, the center cannot make its unique contribution—thus reaching its full potential.

The system of communication required has yet to be created. However, the Educational Research Information Center (ERIC) is beginning to become a link in such a communication network. The laboratories will provide other necessary links. State departments of education and local school systems must be involved. Notwithstanding its current limitations, the R and D center has a powerful potential to become an agency in a network of cooperating institutions that can bring about necessary changes and improvements in American education.

Although centers have existed for only two years, issues have already appeared

<sup>2</sup> Although projects usually involve staff from more than one department, one principal investigator typically assumes leadership for a project. The projects described are led by Henry Van Engen (1), Arthur Staats (2), and Herbert Klausmeier (3, 4), respectively.

requiring the thoughtful attention of educators and other highly public-concerned citizens. National evaluation and advisory committees attached to centers, professional organizations, and officials of government at federal, state and local levels need to consider the issues. Some of the issues are as follows:

1. The technological mission orientation of the center may overshadow basic research. Thus, the scholar may be inhibited in pursuing the leads of his curiosity. There is danger that radical inquiry may not be forthcoming to replenish the knowledge needed in the future when time-worn concepts and empirical generalizations have become obsolete.

Normal science as described by Kuhn<sup>3</sup> may become the mode of R and D centers rather than revolutionary science that conceptualizes deeply the phenomena of learning and teaching; insightful penetration of these phenomena may be neglected.

2. A system of centers needs to be developed soon. Government officials and panels of professional educators and citizens need to consider feasible approaches. Only through careful planning that recognizes a balance between centralization and decentralized authority among cooperating agencies can a rational and complete system be developed to deal effectively with the many problems of education.

The issue of the ultimate control of centers needs discussion now. As in other areas of national life, relationships between the federal government and the universities are similar to those between the various levels of government and local schools concerning the issues of education.

3. Value limitations traditionally held to be normal—thus inevitable in the present system of education—ought to be examined. Alternatives that disturb current priorities must be generated if education is to be improved for the future. For example, value limitation is apparent in that all areas of the educational program do not receive their fair share of attention by researchers.

The Wisconsin experience thus far is a case in point: mathematics, science, English, and reading are receiving greater amounts of attention than other important areas. Physical fitness, health, safety, vocational and technical education, the humanities, art, and music require attention.

4. An overriding issue concerns change and improvement in education. When is a change an improvement? How is a change validated as an improvement? These questions are not necessarily soluble through scientific investigation or demonstrated technological development.

However, such questions always involve value judgments that are not only relevant to education, but also form the bases of civilization. They require the competence of the philosopher interacting with scientists, educators, and alert citizen-leaders. This needed dialogue should involve R and D centers because it represents the normative considerations that determine the direction of a research and development enterprise in education.

<sup>3</sup> Thomas S. Kuhn. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1964.

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