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## ABSTRACT

This paper examines the role of regional educational laboratories in educational research, development, and dissemination. Program activities of the Eastern Regional Institute are examined against the institute's proposed objectives. Related documents include EA 003 544, EA 003 545, EA 003 549, and EA 003 550. (Author/LLR)

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ONE LABORATORY'S ATTEMPTS AT  
TRANSFORMING EDUCATIONAL PRACTICE

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March 13, 1970

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## DO THE SCHOOLS NEED TO BE TRANSFORMED?

The schools should be educating our youth. However, education is a word with a forgotten meaning. In educational practice, it is assumed that maintaining schools will result in education of our youth. In the struggle to provide a formal setting for education, our society has fixated upon the physical and logistical problems of the school and has largely forgotten the primary meaning of education. As Postman and Weingartner (1969, p. 62) point out, the meaning of "education" should be considered relative to the word "educate" from which it is derived. "Educate" means "the bringing out of something potential or latent." Educational practice should be concerned with educating the potential within the learner. It should recognize that learning and problem solving are natural creative activities. It should be designed to begin with the experience and meanings already accrued to the learner for the purpose of stimulating him to actively extend, modify, and reorganize his experiences and meanings. Educational practice should have as its primary focus, not the operation and maintenance of schools, but the cultivation of the behavioral capabilities of the learner. Indeed there are numerous slogans which state that our schools are concerned first and foremost with educating the learner's potential. However, the slogans have little counterpart in educational practice. Indeed the assumptions which underlie actual practice in our schools are in direct conflict with the true meaning of education.

Some of the unstated assumptions which underlie educational practice have been noted by Rogers (1967, p. 174) and Postman and Weingartner (1969, p. 20). These include:

The student cannot be trusted to pursue his own learning.

Presentation equals learning.

The truth is known.

The aim of education is to accumulate brick upon brick of factual knowledge.

Constructive and creative citizens develop from passive learners.

The voice of authority is to be trusted and valued more than independent judgment.

Feelings are irrelevant in education.

Discovering knowledge is beyond the power of students and is, in any case, none of their business.

Passive acceptance is a more desirable response to ideas than active criticism.

That the schools hold such assumptions is evident from direct observation of educational practice (Goodlad, 1969, p. 60).

It is also apparent from their actual physical organization and architecture (Ackerman, 1969; Coles, 1969; DeCarlo, 1969; Goodman, 1969; Prangnell, 1969). That school practice based upon such implicit assumptions is the antithesis of education is a certainty.

Strangely, practicing educators do not usually recognize the real assumptions which underlie their practice. The reason for this is that, for practicing educators, the goals, assumptions, and justifications related to the true meaning of education are slogans. Many of them are not even new slogans. Those involved in educational practice have found that slogans should be stated, shouted, and pledged allegiance but that they have little or no relation to the operational activity of the school and the classroom. Consequently, there is a second set of assumptions and rules for the "actual" education of the child in the "real situation" of the classroom. Thus, most teachers press on, viewing themselves as "content" specialists and perceiving the "forced" transmission of the body of information of their specialties or disciplines to their students to be the first and, in most cases, the only matter of importance despite lip service paid to other views. This attitude is especially widespread among secondary school and college teachers and is frequently emulated by elementary school teachers. Curriculum developers, state education departments, and textbook publishers have also made a large contribution to this most unfortunate attitude. As Roberts (1966, p. 353) notes, most innovative curricula have been designed for the purpose of cramming more information into students. The same thing may generally be said about state education department curriculum guides. Every year,

they seem to get thicker, and the list of what the student is supposed to be made to "know" grows longer and longer.

Generally, it appears that our schools are not involved in the practice of education. In all aspects of educational practice, little emphasis is placed upon objectives and procedures dealing with assisting the learner in the motivation for learning, discovery, acquisition, organization, and application of information. Rather, all parties involved in the educational enterprise, except for the pupils, have been almost exclusively involved with three usually unrelated areas. These are the creation of slogans, the "nitty-gritty" of factual content of curriculum and instruction, and the organization and maintenance of those institutions called schools. Educational practice in our schools is still incredibly illogical, inappropriate, non-functional, and unconcerned with learning. It is no wonder, as Goodlad (1969) observes, that the numerous educational innovations of the sixties have been "blunted against the classroom door." Those curricular innovations which are most outstanding and most appropriate in terms of being designed for proper educational practice and effective learning are frequently least acceptable to teachers and schools.

#### AGENTS FOR TRANSFORMING THE SCHOOLS

The Regional Educational Laboratories are new institutions in the educational enterprise. They emerged from the Gardner

Task Force on Education established in 1964 by former President Johnson and were subsequently funded under Title IV of the Elementary and Secondary Education Act of 1965 (Bailey, 1970, p. 5). A very complete account of the laboratories, their objectives, formation, and emerging programs is presented in a recent issue of the Journal of Research and Development in Education (1970). The issue is titled Regional Educational Laboratories; Agents of Change.

From the beginning, the laboratories were conceived as agencies for transforming current educational practice in our schools. Educational laboratories were to be a new type of institution "less isolated than the university from the rest of the educational system, more sensitive to the operating needs of practitioners" (Bailey, 1970, p. 8). They were to be involved in research, development, and dissemination. Laboratories were to apply research and theory to needed reform in educational products and practice (Schmidtlein, 1970; Becker, 1970).

The concept of the laboratories grew partly out of a disenchantment with the history of educational research and development at universities. It was widely recognized that most of the research and development at universities tends to be research and that development and diffusion are typically ignored. Furthermore, the educational research conducted at universities was viewed as

generally being "academically precious and socially irrelevant" (Bailey, 1970, p. 8). It was further noted that the educational research conducted at universities has been fractionated and non-programmatic. Such research has consistently failed to produce a noticeable impact on educational practice (Bailey, 1970; Chase, 1970a, 1970b; Schmidtlein, 1970).

Ultimately, 20 regional educational laboratories were established around the country. At present, only 15 remain, five having been phased out due basically to an overall lack of funds available from the United States Office of Education Division of Educational Laboratories.

The regional laboratories were to be large institutions with each having an annual budget of from 5 to 10 million dollars (Bailey, 1970, p. 6). They were to have a direct involvement and commitment to the improvement of educational practice within their geographic regions, but they were not to be service agencies. Rather, their involvement with schools in their region was for the purpose of studying educational problems and producing educational products of national significance. The activity in the schools was to be part of a long-term programmatic research and development effort which, while having national significance and utility, would help regional schools adopt and implement new educational products and practice. The assumption was and still



is that educational research and development has little utility for changing educational practice unless it occurs in the context of curriculum content, instructional materials, teacher and pupil behavior, school management and organization, and related factors encountered in the educational enterprise.

The laboratories have never been funded at the level originally intended. Instead of the total annual budget of 75 to 150 million dollars which had been planned for the regional laboratories, the 1969 budget amounted to less than 22 million dollars, with the average for each of the 15 laboratories being under 1.5 million (Schmidlein, 1970). None of the laboratories have been funded at the 5 to 10 million dollar-per-year level which was originally planned.

As new educational institutions, the regional laboratories have emerged without benefits of strict or definite guidelines (Hemphill, 1970). This has been advantageous, but it has also been the source of difficulties. For the laboratories, in a very short period of time, have had to state their missions and translate them into operational and functional program activity. This has been a major task and as Bailey (1970) notes:

It is well to remind the academic savants who have been critical of some of the lab performances that there are few more embarrassing questions that can be asked of any academic institutions, or subdivision thereof, than

"Define your mission." The wonder is not that a few labs had difficulty in developing coherent answers to the question of mission. The wonder is that most of them succeeded in achieving (and during a period of confusion, mixed signals, and uncertain funding) clear statements of function that led increasingly to coherent and responsible performance [p. 13].

Bailey cogently states the problems encountered by the laboratories as they have attempted to define and implement their missions:

Viewing the emergence of the Laboratory Programs as a practical development as well as a development of ideology, it is also true that the early years of the laboratories put a high premium upon the various directors' tolerance for frustration. Lab directors had presumably been hired because of their capacity to innovate, to see the practical dividends of theoretical research, to develop a team of educational "philosopher-kings". In fact, much of the early period was spent by the directors in searching for personnel that did not exist (or that was secure only in a strictly academic womb); trying to second-guess the interests and philosophies of Washington staff, National Advisory Committee representatives, and local boards; making commitments without knowing whether Congress would appropriate sufficient money, and at the right time; getting the word around to important constituents that an educational laboratory did in fact exist in the area and was neither an R & D Center nor a Title III Supplementary Center [p. 16-17].

Despite all these problems, the regional laboratories have already made significant contributions to changing educational practice. This is apparent from the observations of Francis Chase (1970) as he reviews the past activities and future prospects for the laboratories.

## ERIE'S ROLE IN TRANSFORMING THE SCHOOLS

ERIE has done much to transform educational practice in many schools throughout New York and Pennsylvania. Most of this activity has resulted in findings, techniques, and products of national significances. The details of this activity are reported in many other documents and papers (Andreas, 1970; Andrulis, 1970; Cole, 1969a; Cole, 1970a, 1970b; Cole, Andreas, & Archer, 1969; Cole & Seferian, 1970; Cole, Bernstein, Seferian, et al., 1969; Herlihy, Andreas, & Archer, 1969; Mahan, 1970a, 1970b; Ritz, Wallace, C. W., Harty, & Brown, 1970; Seferian, Cole, & Bernstein, 1970). In this paper, I shall attempt to present an overview of the scope and variety of ERIE influence in schools and related educational organizations.

The work for which ERIE has been best known is the installation of Science--A Process Approach, a K-6 curriculum, in schools of diverse characteristics. This was ERIE's first major program activity. It was intended that Science--A Process Approach would serve as a vehicle for the study and testing of curriculum installation and dissemination procedures. It was felt that such a study could facilitate the effective installation and dissemination of other innovative curricula by ERIE or other agencies. What was learned about curricular installation and dissemination would be a "product" of national significance. Yet, during the

study, many schools in ERIE's region which were teaching no or very little science could be assisted in implementing a worthy and well-developed science curriculum, thus serving the needs of area schools.

Both of these objectives have been met to a large degree. Specific objectives were established for the installation of Science--A Process Approach. Assumptions underlying the installation and dissemination procedures were stated. Procedures for installing, monitoring, and disseminating the curriculum were developed. Massive teacher education efforts were undertaken. Formal agreements with the school districts, the state education departments of both states, the National Science Foundation, Title III agencies in both states and a network of college science education professors were established. All of these agencies contributed, under ERIE's direction, to more effectively implement the installation and dissemination of the curriculum. The money available for the installation and dissemination activity has been effectively increased by a large amount through funds directly contributed by these agencies and additional funded proposals prepared by the college professors to further install and implement the program.

The result of all this activity is quite impressive. To date, ERIE has installed and disseminated Science--A Process Approach to the extent that approximately 57,000 students in New York and Pennsylvania are involved in using the curriculum

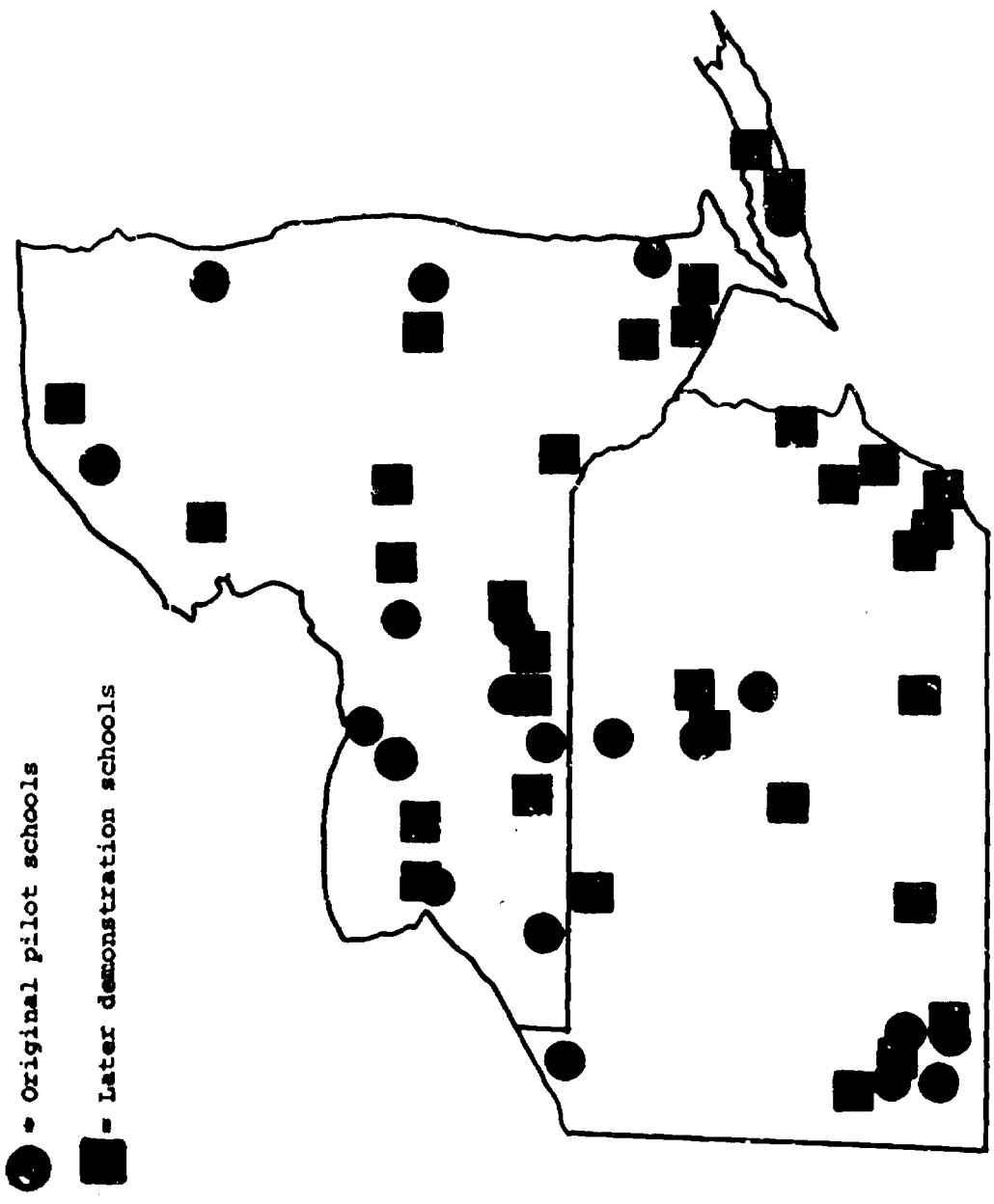
as their regular science program. Over 1300 teachers have been trained in the proper utilization of the curriculum by ERIE summer institutes and workshops (See Figure 1). With assistance from the National Science Foundation, ERIE has trained 50 professors of science and science methods from 41 colleges and universities as supportive personnel for science curriculum innovation and improvement. This group is known as the Regional Action Network (RAN). The RAN activity was begun only in mid-1968. Yet, it has already achieved much (See Table 1).

Table 1

| Major Regional Action Network Activities |  |
|--|--|
| 38                                       | professors serve as consultants to pilot and demonstration schools                       |
| 11                                       | professors served as workshop staff members (August, 1969)                               |
| 5  | professors were administrators of large inservice workshops (summer, 1969)               |
| 5  | professors submitted NSF proposals during 1969--at least three funded                    |
| 2  | professors attended a week-long seminar on Science Curriculum Improvement Study          |
| 3  | professors wrote journal articles relative to their RAN activities                       |
| 3  | professors hosted college conferences on two or more emerging curricula                  |
| 15                                       | professors delivered keynote addresses at Curriculum Demonstration Days in pilot schools |

In addition to all of this, many of the 50 RAN professors have instituted new, more appropriate preservice education courses for their students on their local campuses.

Fig. 1. Locations of Schools in New York and Pennsylvania in which ERIE Has Installed Science--A Process Approach



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Title One Laboratory's Attempts at Transforming Educational Practice (Long Version)

Author H. Cole

Date Completed (or projected) March 1970 No. Pages 30

Description:

This is an invited paper which was prepared for the National Science Teachers Association and the Association for the Education of Teachers in Science. It examines the role the regional educational laboratories were to play in educational research, development and dissemination. The program activity of the Eastern Regional Institute is examined against the mission outlined for the laboratories by individuals responsible for conceptualizing and establishing the laboratory program. This document is perhaps the most comprehensive and complete explanation of the Institute program and mission which has been written. It probably should be saved for use by future scholars or R & D program designers. ERIC might be an appropriate repository.

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Assumptions, procedures, and strategies for curriculum installation have been tested, modified, and empirically validated. Research studies relating teacher personality characteristics, demographic variables of the school communities, success of installation, and pupil achievement have been completed. More related studies are currently under way. Much has been learned about the variables and effective strategies which influence curriculum installation and dissemination.<sup>1</sup>

ERIE has been engaged in other significant but less well known work relating to improving educational practice. Another network has been established for the installation and dissemination of a second process curriculum. This is the Man: A Course of Study (MACOS) curriculum developed at Education Development Center under the direction of Jerome Bruner and Peter Dow.

From its beginning in early 1969, the ERIE program activity with the MACOS curriculum was viewed as more than simply an installation and dissemination function. The curriculum was believed to have great utility as a vehicle for teacher education at both the preservice and inservice levels. It was felt that the construction and organization of the curriculum could be

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<sup>1</sup>For the interested reader, papers by Mahan (1970a, 1970b); Andrulis (1970); and Ritz, Wallace, C. W., Harty, and Brown (1970) deal extensively with the installation, dissemination, and related research conducted by ERIE with Science--A Process Approach.



used to illustrate the operational application of much of the research and theory of Bruner, Torrance, Berlyne, and others. Consequently, a proposal was written to the National Science Foundation to establish preservice and inservice teacher education for the effective installation and dissemination of the MACOS and related process curricula (Cole, Andreas, & Archer, 1969). The proposal was funded, and the program activity has been under way for nine months. The project has already achieved sufficient success that it has been funded for another year. The project boundaries have also been expanded beyond New York and Pennsylvania into Ohio and Michigan for 1970.

The key concepts behind the project are shown in Figures 2 and 3. A five-week summer institute was conducted by ERIE staff and outstanding scholars and teachers for teams of college professors and campus school teachers from each of five teacher education institutions. Each team was trained in the philosophy, methodology, and instructional theory underlying the curriculum (See Figure 2).

Following the summer institute, each team returned to its local campus where it engaged in several activities. First, the professor and campus school teacher developed and conducted a college preservice education course in the methodology of MACOS and related innovative process curricula. They also conducted

Fig. 2. Summer Workshop Plan for Man: A Course of Study with Professors and Campus School Teachers from Teacher Education Institutions as Participant Teams.

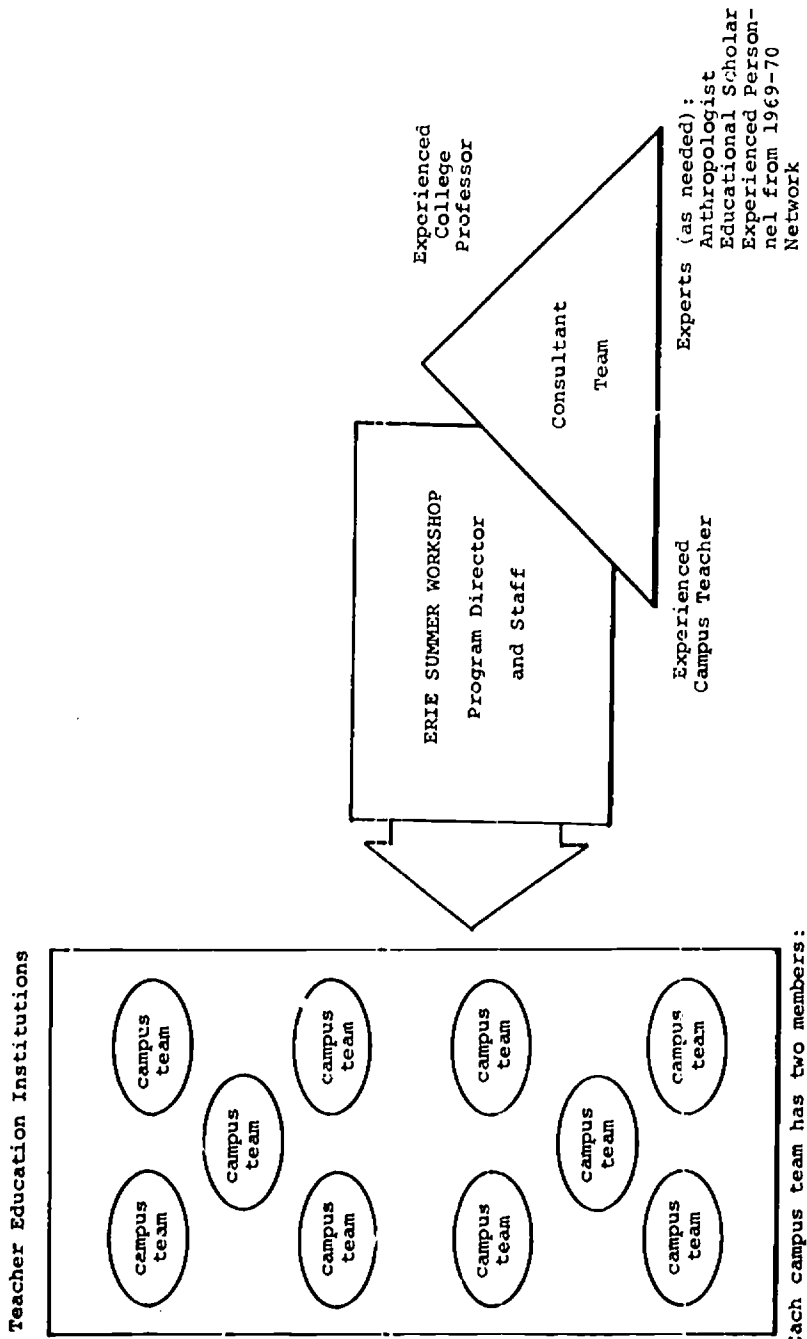
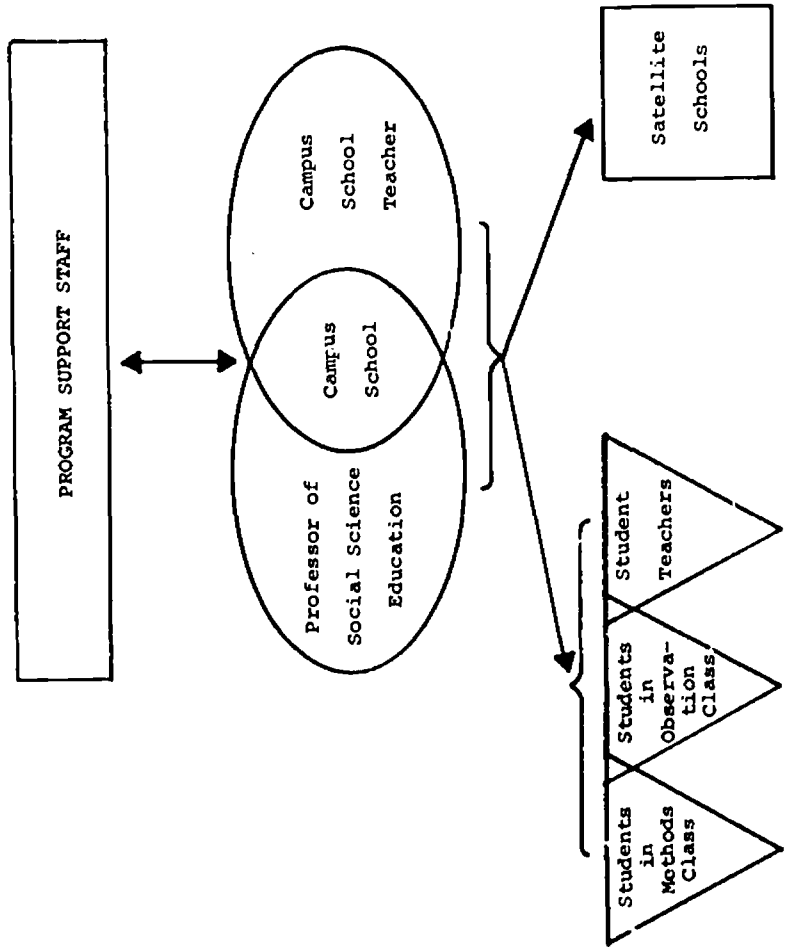


Fig. 3. Plan for Preservice Education and Inservice Training Using Man: A Course of Study as a Vehicle for Effecting Change in Teacher Preparation at Teacher Education Institutions.



biweekly inservice teacher education sessions for administrators and teachers from local satellite schools participating in the installation of the curriculum. The campus school teacher member of the team also taught the curriculum to pupils in the college laboratory school (See Figure 3).

The ERIE program activity was designed to insure a great deal of interaction between all four populations involved, namely the campus teams, preservice education college students, experienced teachers from local schools, and pupils actually involved with the curriculum. Preliminary data indicates a great deal of beneficial interaction has occurred between these groups. Furthermore, most individuals involved have found such interaction to be atypical but rewarding and worthwhile.

Definite objectives, conditions, and procedures were developed for the ERIE program activity concerned with the teacher education, installation, and dissemination of MACOS. Many of the conditions and procedures were adapted from ERIE's earlier work with Science-- A Process Approach. Evaluation of the effectiveness of the ERIE/MACOS model and conditions for the project is currently under way. An initial report of the project effectiveness will be available in the fall of 1970. In the meantime, it is apparent that ERIE has been instrumental in changing the content and organization of the courses offered by five colleges to over 700 preservice education students.

In addition, ERIE has trained the staff and provided the conditions for more than 40 teachers to receive year-long biweekly inservice training toward the proper installation and effective utilization of MACOS and related curricula. ERIE has also been influential in installing a second excellent and worthy curriculum in an additional 50 classrooms for use by approximately 1500 pupils. Thus, once again while working on problems of national concern and significance, ERIE has created direct changes in educational practice in local elementary schools and colleges.

ERIE has been engaged in other significant activity related to creating change in educational practice. As yet, much of this work is not well known. ERIE has become committed to the promotion of process education in our schools. If one holds such a commitment, one must define what is meant by process education. Furthermore, the definitions must be cast in operational terms which allow current educational practice to be changed to be consistent with the stated goals of process education. In addition, one must have some rationale and criteria for the selection and/or development of curricula with which to implement the practice of process education.

Since August 1968, a group of ERIE staff has been concerned with defining process education and its operational parameters. They have also been involved in identifying and screening existing

curricula and educational practices which exemplify process education in operation. This curricular search and analysis activity has been viewed as having a double utility. First, the detailed study of carefully selected exemplary process curricula including their related theory, research, teacher education, and instructional materials and practices, offers a great opportunity to provide a better insight into the goals, assumptions, and an operational meaning for process education. Second, such an activity could possibly result in the identification of a number of additional existing process curricula which could be installed as additional curricular components in ERIE school networks. It was also felt that a number of curricula might be identified which could be logically articulated toward the building of a complete K-6 curriculum for process education.

A detailed plan was developed and utilized to guide the curriculum search and analysis activity. The plan stated specific objectives and procedures. An early definition for "process," and an initial list of "process" categories were developed to act as descriptors to guide the activity. Two successive sets of criteria were developed for the screening of curricula identified. A nationwide search for curricula which met the criteria was conducted. Hundreds of agencies and individuals were contacted.

At the end of four months of search activity, over 350 distinct curricular components, units, and materials had been identified. Yet, it was possible to obtain the additional information demanded by the criteria for only about 35 of these, and only about 20 were judged appropriate to ERIE's needs after their materials and documents were reviewed (Cole, Bernstein, Seferian, et al., 1969). However, it became apparent that these 20 included a few exemplary process curricula. Generally, these curricula represented attempts to apply existing theory and research to educational practice. They were definitely designed for the deliberate promotion of highly useful and generalizable behaviors. They also had a large number of associated supporting documents dealing with underlying theory, objectives, teacher education, program evaluation, and research on effectiveness. They were promising in the sense that they were far more adequate on the ERIE criteria than is typically the case. These curricula and their many related documents seemed extremely worthy of study as a means of gaining further insight into process education (Cole & Seferian, 1970). There have been several results from the identification and analysis of existing process curricula.

First, it has been learned that most existing curricula are woefully inadequate on the ERIE criteria. Many curricula identified did not exist in the real sense that they could be exported to

other localities. Many other curricula consisted exclusively of materials with few or no instructions for their utilization. Still, other so-called curricula consisted only of teacher education strategies and "ideas" for instruction. Some curricula which could be considered quite complete and had been carefully developed were, in reality, only a few hours or days long. They were, in effect, a short series of lessons or teacher guides and not a major curriculum component. These and earlier findings led to the hypothesis that to be sufficiently ready for wide-scale installation and dissemination, a curriculum needed five characteristics:

A clear statement of objectives.

A variety of refined instructional materials, methods, and organizational arrangements.

Reliable and valid measures of pupil proficiency.

An effective teacher education program.

Evaluative data on the effective utilization of the curriculum in schools.

These five dimensions became a new set of criteria which were used to determine the readiness of the curricula identified for installation into schools. It soon became apparent that even the most promising process curricula identified did not fully meet these five criteria for installation.



Second, a better definition for process education has been stated (Cole, 1969a, 1970a). Operational definitions in terms of behavioral expectancy categories for pupils and teachers have been developed and are currently being refined (Berra, Calvert, Cole et al. 1969; Cole, 1969b, 1969c). These expectancy categories are now being used to define the objectives for future teacher education and evaluation activities across a number of process curricula.

Third, a number of excellent process curricula have been carefully studied and recommended for installation in schools in relation to ERIE program activity (Cole, Bernstein, & Seferian, 1969; Seferian, Cole, & Bernstein, 1970). These included Man: A Course of Study (MACOS), selected units from Materials and Activities for Teachers and Children (MATCH), SRA Social Science Laboratory Units (SRA/SSLU), Minnesota Mathematics and Science Teaching Project (MINNEMAST), Science--A Process Approach (SAPA), and several other elementary curricula including the Science Curriculum Improvement Study (SCIS) program. All of these except SCIS have subsequently been installed for further study in ERIE network and laboratory schools (See Table 2).

Other ERIE activity has been concerned with the augmentation and validation of existing curricula. This activity has been associated with the actual installation and careful monitoring of selected process curricula in two laboratory schools.

Table 2

Process Curricula Studied and Subsequently Chosen by  
ERIE for Installation in Laboratory and Network Schools

| Subject           | Grade Level                            |  |  |                               |                             |   |   |
|-------------------|--|--|--|-------------------------------|-----------------------------|---|---|
|                   | K                                      | 1                                      | 2                                      | 3                             | 4                           | 5   | 6   |
| Science           | SAPA<br>Part A                         | SAPA<br>Part B                         | SAPA<br>Part C                         | SAPA<br>Part D<br><br>**MATCH | SAPA<br>Part E<br><br>MATCH | SAPA<br>Part 6<br><br>MATCH                     |   |
| Reading           | ERIE<br>Read-<br>ing<br><br>Level<br>A | ERIE<br>Read-<br>ing<br><br>Level<br>B | ERIE<br>Read-<br>ing<br><br>Level<br>C |                               |                             |   |   |
| Math              | MINNE-<br>MAST                         | MINNE-<br>MAST                         | MINNE-<br>MAST                         |                               |                             |   |   |
| Social<br>Studies |  | MATCH                                  | MATCH                                  | MATCH                         | MATCH                       | Man:<br>A<br>Course<br>of<br>Study<br><br>MATCH | SRA<br>Social<br>Science<br>Lab<br>Units<br><br>MATCH |

\* Experimental edition

\*\* MATCH units, because of their short duration and flexibility, were recommended for multiple use across content areas and grade levels.

Augmentation has been defined as that activity related to the further development of existing curricula components along the dimensions represented by the five ERIE criteria for a complete curriculum component. Therefore, a particular curricula component could be augmented relative to objectives, instructional materials, pupil tests, teacher education, and evaluative techniques and data dealing with its general effectiveness.

Validation has been defined as that activity concerned with answering the questions, "Is the curriculum installable, manageable, and teachable?" and "Does it generally promote the specified and desired teacher and pupil behaviors?" Validation activity is ongoing at all stages, occurring before, during, and following augmentation; thereby providing information on the general effectiveness of the curriculum and its readiness for installation and dissemination at any stage of development.

Study of a number of selected exemplary process curricula in actual utilization in classrooms has confirmed the need for augmentation. It is particularly apparent that much more effort must be expended relative to teacher education. Diagnosis of pupil behavioral capability prior to and following instruction is another major dimension which needs much augmentation in all curricula studied. Presently, teachers and pupils have few indicators to use to judge their proficiency in meeting the specified program objectives. This is almost universally true with all existing curricula and in all educational practice.

Curricular augmentation and validation has been shown to be a massive and time-consuming effort. In a sense, it is a type of curriculum development. It is an activity which should be undertaken to help curricula become more viable and self-maintaining once they are disseminated. The need for curriculum augmentation may be decreased if future curriculum development activities give more attention to the dimensions of teacher education, objectives, and assessment of pupil behavior.

ERIE has learned it may not be possible or feasible to massively augment specific existing curricula because of problems relating to cost, ownership of production and copyrights, agreement on the need for augmentation, and marketing of augmented versions. A more viable approach may be to produce self-contained, generalized augmentation modules which could be effectively used with any of a large number of process curricula. For example, these modules for a teacher education program might be concerned with developing attitudes and skills which relate to the ERIE generalized "Expectancies for Teacher Behavior" (Cole, 1969b).

The concepts of curricular augmentation and validation have been extended into ERIE's work with many other elementary schools and educational agencies. ERIE is currently negotiating agreements with the original curriculum developers and commercial producers for further augmentation and study of several of the curricula selected, installed, and studied in the laboratory schools.

Through its work in curriculum analysis, augmentation, and validation, ERIE is changing not only current educational practice as reflected in the nation's schools but educational practice as reflected in the development of curricular and instructional materials for pupils and teachers. This, as other ERIE program activity, can be seen to have both a regional utility related to the more successful and viable installation of excellent new curricula into area schools and a national significance related to principles for more effective curriculum development and utilization.

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