

## DOCUMENT RESUME

ED 050 309

AA 000 705

TITLE Products Entered into the Pool for the Dissemination Program of NCEC.

INSTITUTION Educational Testing Service, Princeton, N.J.

SPONS AGENCY National Center for Educational Communication (DHEW/OE), Washington, D.C.

BUREAU NO BR-0-0366

PUB DATE Jun 71

CONTRACT OEC-0-70-3797(519)

NOTE 111p.

EDRS PRICE MF-\$0.65 HC-\$6.58

DESCRIPTORS Cost Effectiveness, \*Information Dissemination, \*Instructional Materials, \*Program Evaluation

IDENTIFIERS \*Pool for Evaluation

## ABSTRACT

A brief, non-technical set of descriptions of products making up the 1971 Pool for Evaluation from which selections were made for focused dissemination is presented. The descriptions cover: (1) what the product is, what it does, who it serves, (2) what the reported findings are regarding effectiveness, benefits, and limitations, (3) what the costs of installation and maintenance are, including teacher preparation and non-dollar "costs," (4) what administrative considerations need to be taken into account in the course of utilization, (5) what dissemination efforts are known to have been undertaken by the developer, or in the planning stage, (6) what obstacles to implementation might be foreseen and what dissemination strategies might be appropriate. The product descriptions are organized into three groupings as follows: (1) nine products recommended for focused dissemination, (2) 11 remaining products among the 20 initially selected for further study, (3) 31 remaining products among the 51 entered into the 1971 product pool. The nine products recommended for focused dissemination are: effective questioning--elementary level, parent/child toy lending library, multi unit elementary school, cooperative urban teacher education, the teaching of science, match box, individualizing instruction in math, reinforced readiness requisites program, and communications skills. For related document see ED 050 308. (CK)

ED 050 309

PRODUCTS ENTERED INTO  
THE POOL FOR THE  
DISSEMINATION PROGRAM OF NCEC

For the National Center  
for Educational Communication  
United States Office of Education



June 1971

EDUCATIONAL TESTING SERVICE  
PRINCETON, NEW JERSEY

PRODUCTS ENTERED INTO  
THE POOL FOR THE  
DISSEMINATION PROGRAM OF NCEC

A Brief, Non-technical Set of Descriptions of Products  
Making up the 1971 Pool for Evaluation from Which Selec-  
tions Were Made for Focused Dissemination.

For the National Center for Educational Communication  
United States Office of Education

June, 1971

Educational Testing Service, Princeton, New Jersey

These descriptions were prepared by Educational Testing Service (ETS) pursuant to Amendment 1 to contract OEC-0-70-3797 (519) with the United States Department of Health, Education, and Welfare, Office of Education, which contract covers operation at ETS of the ERIC Clearinghouse on Tests, Measurement and Evaluation. The Educational Products Information Exchange (FPIE) assisted in completion of the tasks under a subcontract.

## Foreword

A part of the scope of work for this task is a brief description, in non-technical terms, of each product in the pool -- both those selected and those set aside -- the description in each case where feasible to cover

- o What the product is, what it does, who it serves,
- o What the reported findings are regarding effectiveness, benefits and limitations,
- o What the costs of installation and maintenance are, including teacher preparation and non-dollar "costs,"
- o What administrative considerations need to be taken into account in the course of utilization,
- o What dissemination efforts are known to have been undertaken by the developer, or in the planning stage,
- o What obstacles to implementation might be foreseen, and what dissemination strategies might be appropriate.

This volume is made up entirely of descriptions more or less along these lines, one for each of the fifty-one products in the 1971 pool.

Wesley W. Walton

Educational Testing Service

Princeton, New Jersey, June 1971

## Introduction

The product descriptions are organized into three groupings as follows:

- o Nine products recommended for focused dissemination
- o Eleven remaining products among the twenty initially selected for further study
- o Thirty-one remaining products among the fifty-one entered into the 1971 product pool

A color separator marks the start of the next grouping as this page does for the first group of nine. A listing of the descriptions in each group precedes the first product description, and establishes the order in which the products appear.

Nine Products Recommended for Focused Dissemination

First Priority Recommendations - (All Panel Ratings were either A, B or C.)

AC42 Tab 6 Classification 6940R Site: Berkeley, Cal.  
Effective Questioning-Elementary Level (Minicourse 1)  
FWLERD (Borg)

AC43 Tab 5 Classification 5519 Site: Berkeley, Cal.  
Parent/Child Toy Lending Library  
FWLERD (Nirnicht, Brown, Johnson, Addison)

AC70 Tab 6 Classification 6550R Site: Madison, Wisc.  
Multi-Unit Elementary School  
WREDC/CL (Klausmeier)

AC33 Tab 4 Classification 4449 Site: Kansas City, Mo.  
Cooperative Urban Teacher Education (CUTE)  
McREL (Clothier)

AC64 Tab 4 Classification 4X43 Site: Austin (Univ), Texas  
Teaching of Science: A Self-Directed Personalized  
Teacher Education Program  
U. of Texas (Butts and Hall)

Second Priority Recommendations - (At least one Panel Rating of D or lower.)

AC25 Tab 2 Classification 2X59 Site: Boston, Mass.  
Match Box  
Boston Children's Museum (Kresse)

AC28 Tab 4 Classification 4X44R Site: Berkeley, Cal.  
Individualizing Instruction in Mathematics (Minicourse 5)  
FWLERD (Gall)

AC45 Tab 1 Classification 1419 Site: Albuquerque, N.M.  
Reinforced Readiness Requisites Program  
SWCEL (Olivero - Speiss)

AC67 Tab 3 Classification 3X11R Site: Inglewood, Cal.  
Communications Skills Program  
SWLERD (O'Hara)

EFFECTIVE QUESTIONING--ELEMENTARY LEVEL  
MINICOURSE I

This is an auto-instructional teacher training package containing (1) a Teacher Handbook including self-evaluation forms, (2) a Coordinator Handbook, (3) 11 16mm instructional and model films (4) a textbook that gives detailed information on the Minicourse instructional model and reports of research evidence. Its prime use is for elementary teachers interested in the intermediate grades. It is likely to be found more effective with experienced in-service teachers than with teacher-trainees.

This Minicourse instructional model involves the following activities on the part of the trainee: (1) studying the teaching skill of effective questioning, (2) planning, conducting, video-recording, and self-evaluating a microteaching lesson, (3) revising the lesson, reteaching, video-recording and again self-evaluating.

The objectives are to increase the proportion of classroom incidents in which teachers will (1) ask questions that require students to use higher cognitive processes (such as evaluation, synthesis, problem-solving), (2) deal with incorrect responses in an accepting manner, (3) use praise and attention to reinforce pupil responses, (4) pause for a period of time between framing a question and calling for a pupil response, (5) redirect the same question to two or more pupils, and (6) probe pupil responses to increase pupil critical awareness.

About half the skills sought are based on research findings, the remainder on "psychologically sound rationales." The general intent is to get teachers away from behaviors such as repeating their questions, answering their own questions, and otherwise talking too much. In the course of the development, a pervasive objective emerged: to make significant change in teaching practice, and the more explicitly defined behavioral objectives as above came to be looked on as means to that end.

Minicourse I was validated on 48 teachers who volunteered for the study. Acknowledgement was made that the attitude of the volunteers could have had some effect on the data. A one-tailed t-test for pre- and post-test mean scores indicated that this Minicourse made a significant difference in teacher effectiveness related to questioning techniques. Since half of the 48 teachers were from schools serving working-class communities while the other half were from schools serving middle-class communities, a t-test was used on the pre- and post-test mean scores for those in each of the two groups to determine the effectiveness of this Minicourse relative to social class differences. The results indicated a significant difference in teacher effectiveness regardless of which social class was being served. However, note was made of a later study that indicated that Minicourse I may not be as effective for teachers in inner-city schools as for teachers in the suburbs.

EFFECTIVE QUESTIONING--ELEMENTARY LEVEL  
MINICOURSE I

Observed results in west coast classrooms reportedly are that students make longer responses, do more to express thoughts in their own words and with higher level thinking. Presumably this is because teachers ask more probing questions, use questioning techniques to prompt thorough responses and direct the same question in turn to several students.

Delayed post-tests (after 4 1/2 months and more recently after 3 years) have shown the new skills holding up in classroom practice. Comparable findings have been noted in a more recent independent study on the east coast.

An ancillary study done independently from the producer found, on comparing video and audio recording procedures in the microteaching phases, that one was as good as the other as a means for self-evaluation by teachers.

The Minicourse I package--including the films, a textbook, a Teacher Handbook, and a Coordinator Handbook--costs \$1,425.00. Teacher Handbooks for participants--cost \$1.80 each. Rental of the instructional package is possible at \$175.00 for six weeks. Presenting the course requires a small room, 16mm sound projector, TV camera and videotape recorder or an audiotape recorder.

A coordinator who needs no special training, other than familiarity with the Coordinator Handbook takes care of scheduling and help with equipment. Five to six pupils are also needed for the microteaching sessions.

Since the microteaching technique is best carried out during the regular school day, it is desirable for the school to provide each teacher participant with at least 8 hours of released time. In the typical case, since this can be spread over time, some schools have been managing this without engaging substitutes or by rotating a substitute from one classroom to another as the teachers are scheduled into their next minicourse lesson.

Minicourse I is currently available through Macmillan Educational Services, 8701 Wilshire Boulevard, Beverly Hills, California 90211.

## PARENT/CHILD TOY LENDING LIBRARY

This product is designed to serve parents whose income is above the OEO guidelines for Head Start but who cannot afford traditional nursery schools for their three- and four-year-old children. It includes a course for parents, and toys integrated into learning episodes to put out on loan. The course consists of ten to twelve weekly two-hour sessions designed to help parents learn some basic concepts relating to the development of their child's intellect and self-concept and to instruct the parents in the use of some toys and games to aid the child in learning specific skills and concepts. The toys are available to be taken home on loan for use with the child between the sessions. "Alumni" of the program may borrow toys, games, and books after the course is over.

The program's objectives include the following: (1) to facilitate the development of a healthy self-concept in the children; (2) to promote children's intellectual development, using toys and learning episodes that are designed to teach specific skills, concepts, and problem-solving abilities; (3) to stimulate interaction between parent and child; and (4) to encourage parents to participate in the decision-making process that affects the education of their children.

The learning episodes for both parent and child, and the toys and games supporting them, are designed to help the child develop his senses, perceptual acuity, language skills, concept formation and problem-solving abilities, and positive self-image.

Though not initially as dominant a goal, it is now seen that the sessions and toys are mainly a means to a larger end: a way of helping parents initiate actions in behalf of the affective development of the child. The restatement of purpose is "to make parents feel their own potency as ones who can help their child develop." The first three objectives summarized above are sub-sets of the larger objective; the fourth objective has been dropped.

It would not be realistic for developers to try to evaluate the impact on a child's self-concept and development from a 10-week program, and no such attempt has been made in this case. They do, however, look for signs of cognitive growth, as well as indications that the parents' attitudes towards their children's competence have improved, and that the parents respond to their children in a more positive manner as a result of the course.

In order to assess cognitive growth systematically, a controlled experiment was conducted for three months in two separate school districts of Salt Lake City, one with lower-income parents, and the other with middle-to-high income families, neither members of the primary target population.

## PARENT/CHILD TOY LENDING LIBRARY

Changes between pre- and post-test indicated that (1) the children learned a considerable amount over the ten weeks of involvement, (2) a large portion of what they did learn during this time can be attributed to the Parent/Child Program.

Other verification procedures are continuing and include interviews with parents at the end of each week's session and depth interviews at the end of the course to learn what parents thought they had learned, what they liked, what they did not like and how the program could be improved. There were no general negative criticisms. Comments on the negative factors, typically, were turned to positive kinds of reactions. Responses on what parents thought they had learned fitted into the following categories:

- o More understanding of child's growth and development
- o Realization that mother's effort can have positive effect on child's mental development
- o Knowledge that mother's participation with child can contribute to child's positive self-concept
- o Insight that learning can come from playing
- o Skill in use of positive correction
- o Child can learn more than parent thought he could

The cost for implementing the program is about \$1500.00, which includes all the toys, written instructions, film scripts and other materials needed to operate the course and the library. The yearly salary of the teacher-librarian is additional and determined by the going rate in the community involved. After receiving training in the program, a one-week familiarization workshop, paraprofessionals (parents) may be used to teach the program. After the library has been set up, a site visit by the developer is recommended to assure that the operation will work to best advantage.

Developers see training of teacher-librarians to be the key to implementation. Ideally, it is thought, university consultants would be trained, and they in turn would train people to operate the Toy Lending Library program. At some point in dissemination planning, account will need to be taken of breakage, loss, replacements, additions and other aspects of product-maintenance.

Present dissemination plans and actions include imminent installation of scaled-down versions in 75 villages in Alaska in a program that includes a training component for preparation of teacher-librarians, plans for a toy-mobile to circulate among remote rural communities, and

## PARENT/CHILD TOY LENDING LIBRARY

use of the product to prepare "teaching assistants" for Head Start centers in six cities.

One problem in implementation is continued attendance through completion of the course. This is not a matter of loss of interest or lessening enthusiasm, but interruptions related to child-care and difficult home situations. Recruitment of interested mothers has not been found a problem. Flexibility in scheduling and repeating lessons seems to be needed, though, to help mothers persist in their effort to benefit from the whole program.

MULTI UNIT ELEMENTARY SCHOOL

MUS

The Multi Unit School (MUS) is a component of a larger system of education and instruction called INDIVIDUALLY GUIDED EDUCATION (IGE). The latter is designed to produce higher educational achievement through adequate provision for differences among students in a rate of learning, learning style, and other characteristics. Included in the IGE are extensive organizational models for instruction and administration in schools and districts (the MUS component), instructional programming for each individual student with related monitoring and guidance, curriculum materials as necessary, evaluation and assessment of learning readiness, achievement measures not only for the student but for teachers, and, as well, accountability measures for the programs themselves. The system also encompasses development of facilitative environments in school buildings and districts, state education agencies and teacher education institutions, and finally a component for continuing research and development.

As a component of the IGE, MUS was designed to develop and refine an organization for instruction and related administrative arrangements on the school building level that will make possible: instructional programming for individual students in the various curriculum areas; shared decision-making by administrative and instructional personnel; open communication among students, instructional personnel, and administrative personnel; and accountability for the performance of educational personnel and for student achievement and staff development. To obtain these objectives, a three-level hierarchical organizational-administrative arrangement has been developed as follows:

- a. An organization for instruction replacing the self-contained classroom, called a nongraded instruction and research unit (I & R unit), in which instructional programs for individual children are planned, carried out, and evaluated by an instructional unit staff comprised of a lead teacher, two or more staff teachers, a beginning or resident teacher, a teaching intern, and one or more aides. A school of 600 typically organizes into four multi-age I and R units of about 150 children each, and a staff of at least five.
- b. An instructional improvement committee in each building, comprised of the building principal and the lead teachers of the I & R units that takes primary initiative for:
  - 1) stating the educational objectives and developing the educational program for the entire school building;
  - 2) interpreting and implementing district-wide and state-wide policies that affect the educational program of the building;
  - 3) coordinating unit activities to achieve continuity in all curriculum areas;
  - 4) arranging for the use of facilities, time and material that the I & R units do not manage independently.

MULTI UNIT ELEMENTARY SCHOOL  
MUS

- c. A district-wide policy committee, comprised of the central office representatives, building principals, and I & R unit lead teachers, that takes primary initiative for developing policies and providing the human and material resources essential for successful multi-unit school operations.

Results obtained during 1968-70 in two functioning MUS's where the Wisconsin Reading Course was also in use, and after the I & R units had been operating smoothly for a year, illustrate the kinds of evaluation being done. Compared with control schools, in the Multi Unit Schools:

- o Teachers spent more time in planning for instruction and diagnosing individual children's needs;
- o Teachers participated more in instructional decision-making;
- o Specialization of labor occurred among the instructional staff;
- o Communication increased among the instructional staff and between the building principal and the several lead teachers;
- o Goals were set by the instructional staff in terms of pupil achievement in reading.

Moreover, children gained more skill in reading as measured by standardized criterion-referenced tests. They made larger gains during the first year of MUS operations than they had during the prior years. MUS-related evaluations continue to be carried on, and changes are made to adapt to the emerging requirements. Evaluation reports seem to be realistic about (1) the necessity of constant assessment, (2) the importance of determination of effectiveness of the various administrative aspects of the program, as well as (3) the continuing needs for updating curriculum areas and adapting curricula to local needs and situations.

In operation, a staff of seven--a lead teacher, two staff teachers, one resident teacher, one teaching intern and two aides--typically instruct the same number of children as did five regular teachers. Costs for this differentiated staff is about the same as for five experienced teachers. Training requirements for the professionals to be involved in MUS responsibilities include a one-day work up for the chief school officer, a three-day workshop for prospective building principals and lead teacher, and a one-week institute prior to the opening of the school term for the entire building staff. In addition, there needs to be a one-day workshop for the building staff during the first semester, and another during the second semester. To operate an MUS unit requires approximately \$20 per pupil, used for any combination of: one instructional aide per 150

## MULTI UNIT ELEMENTARY SCHOOL

## MUS

students, additional instructional materials, a higher pay for the lead teacher. Initial start-up costs for the in-service training of thirty teachers is estimated to be \$6,500.

It is preferable to have "open style or pod-type" school buildings. For a school of 600 there should be an instructional resource center to accommodate ninety children. Estimated cost for remodeling and equipping two resource centers is \$10,000.

As is apparent from above, the organizational changes required are major ones. The organization, construction, and administrative arrangements of the instructional space and central office are installed through a carefully designed four-phase in-service educational program, each involving use of multimedia instructional materials. Components parallel with the organization and installed simultaneously are (1) the instructional programming model for the individual student, and (2) a curriculum package in reading as one focus area through which to actually implement programming for the individual student. It is also apparent that strong support from the chief school officer and the board of education is essential. It is also necessary to have above average instructional leadership, a willingness on the part of teachers to participate in a team-type activity, and readiness on the part of all participants to pursue the sequences of the in-service training program.

The Multi Unit School has demonstrated its feasibility. Without outside support, the number of Multi Unit Schools installed in the state of Wisconsin by the Department of Public Instruction increased from nine in 1967-68 to ninety-nine in 1970-71.

COOPERATIVE URBAN TEACHER EDUCATION  
CUTE

The Cooperative Urban Teacher Education (CUTE) program is a curriculum providing one semester (16 weeks) of full-time interdisciplinary field experiences for college students majoring in education who plan to teach in urban school systems. It seeks to improve the preparation of potential inner-city teachers and to bring about close cooperation between college and urban school systems. The program is based on the assumption that a prospective inner-city teacher will be better prepared if he (a) understands both his own and his pupils attitudes, insecurities, anxieties, and prejudices; (b) understands both his own and his pupils' environment and culture; (c) has a command of teaching strategies and methods that work for inner-city learners.

Major thrusts of the program are first-hand orientation, exploration and involvement in social and cultural variations of the inner city; and teaching in the inner-city schools under the supervision of qualified cooperating teachers. Students are encouraged to participate in such activities as tutoring inner-city children, working in the neighborhood centers and storefront churches, and experiencing a weekend live-in in low socio-economic homes. In addition to eight weeks of student teaching, seminars are held where emphasis is placed on classroom methods for inner-city schools, and the psychology of learning. Four microteaching sessions apply the methodological approaches discussed in seminars. Mental health sessions provide opportunity to discuss and analyze feelings, problems, and frustrations and help ameliorate the effects of cultural-shock.

This curriculum is thought to be unique in the following respects:

- o The program is housed in the inner-city and although students enroll in their home institutions, they come to the city for the 16-week field experience and are involved with various community agencies.
- o There is a high degree of interdisciplinary cooperation with psychologists, sociologists, and educators involved.
- o Teacher self-understanding is given more emphasis than is usual in teacher education programs.
- o Inner-city residents participate in evaluation of students to determine their knowledge of the inner-city and their competence as potential inner-city teachers.

## COOPERATIVE URBAN TEACHER EDUCATION

## CUTE

In order to assess the effects of the program, the following instruments were used: The Rokeach D-Scale (for the 1969-70 evaluation, but subsequently dropped because no significant differences were found between experimental and control groups), the Teaching Situation Reaction Test (TSRT), the Semantic Differential, the Minnesota Teacher Attitude Inventory (MTAI) and the Cultural Attitude Inventory. Through McREL Interaction Analysis (MIA), an extended form of Flanders Interaction Analysis, classroom observation data were collected. Biographical material was also obtained.

A comparison study was executed with students who had participated in the CUTE program in three locations and comparable students who had not experienced the program. Data were collected three times during the 16-week training program, at the beginning, at the end of 8 weeks, and at the end of the 16-week training.

Research data from 1968-70 indicate change in the desired direction of both student teacher attitudes and verbal classroom behavior, particularly during the first eight weeks of the program. Classroom management practices and teaching skills were found to be better among CUTE-exposed student-teachers. They were more democratic in their teaching, understood inner-city learners better, had a higher level of positive mental health, and exhibited a greater degree of flexibility in accommodating to a variety of situations.

In the 1969-70 field experience with student teachers, 78 percent of 122 graduating accepted teaching positions, 55 percent in urban schools; and six percent in related fields such as social work, a reasonably good indication that the program had a positive effect on potential inner-city teachers. It was also observed that the objective of close cooperation between teacher-training institutions and public school systems and community agencies was realized.

Follow-up studies of the graduates of the program indicate that 71 percent of the graduates teaching in 1969-70 school year were in inner-city schools and 81 percent of graduates who had signed contracts for 1970-71 were for inner-city positions. Also, not one graduate had given as a reason for leaving a position a dislike for teaching in inner-city. The majority of CUTE students also received above average ratings when compared with other first-year teachers by their principals and average or above when compared to all other staff. The principals also indicated that they would rehire all but three of the CUTE trained teachers.

## COOPERATIVE URBAN TEACHER EDUCATION

## CUTE

It is reported that CUTE can be installed and operated for about \$60,000 to \$70,000 per year including salary of special personnel, stipend for cooperating teachers, tapes for micro-teaching purposes, transportation for field experiences and supervision, books, reading materials and office supplies. Close cooperation with inner-city schools facilitates use of inner-city classroom without additional charges. On-site costs encountered by student-teachers including their housing are additional expenses.

The interdisciplinary nature of the program requires: a half-time field-oriented sociologist, a half-time mental health specialist, two full-time teacher education specialists (elementary and secondary), and one cooperating teacher for each prospective teacher to facilitate professional growth of the prospective teachers. There should be a master's degree minimum requirement for the sociologist and teacher education specialists. The mental health specialist should have an orientation compatible with the objectives of the program.

It is desirable that facilities be located in or close to inner-city agencies and educational institutions. Also a nearby house for students to live in enhances interaction and provides a supportive environment for participating students.

A group of twenty to forty student-teachers enrolled at their respective colleges makes up a reasonable base for conducting the program. Full semester credit should be offered to students participating in the urban center off-campus activities.

There are CUTE projects in Kansas City, Wichita, Oklahoma City and Omaha, and Model Cities as well as other fund sources are being used. Over its four-year history, several awards have been made to the program.

Dissemination plans include continuing publication of reports on the many facets of the program: mental health of urban teachers, school-community cooperation, etc.

THE TEACHING OF SCIENCE

A SELF-DIRECTED TEACHER EDUCATION PROGRAM

This product is a self-directed learning program for the training of elementary and middle school teachers. It prepares teachers to utilize in turn the self-directed approach in their teaching of elementary school science. The objectives are to give the teacher competencies in science skills, the design of instruction, classroom management, and interaction with children in the classroom. There are two versions of the program each forty-five contact hours in length. One is designed as a pre-service 3-semester hour course, the other is designed specifically as an in-service course for teachers who are teaching or preparing to teach Science-A Process Approach. There are six levels of the in-service course, corresponding to the successive grade levels of elementary school.

Materials include Self-Directed Learning Guides, a module for Analysis of Teaching Behavior, one for Stating Instructional Objectives, and an Instructors Guide. Laboratory apparatus for students and demonstration materials for instructors are provided; these consisting mainly of simple common objects. The Learning Guides are written as self-paced instruction. Emphasis is given to (1) activities based on mastery of the subject matter, (2) diagnostic and thus individually-prescribed sequences, (3) self-paced format, (4) immediate feedback to reinforce or redirect an individual's performance, and (5) planned group interaction.

The pre-service version has been used at the university level in a cooperatively developed teacher preparation program that is in its third year of operation. It has been nationally field tested in a network of 12 colleges and universities during the 1969-70 school year by college professors after they had participated in a specially designed Leadership Conference in the summer of 1969; and again nationally field tested during the 1970-71 school year at eight institutions with college professors who had had no special training in the use of the materials. Finally, the in-service materials have been field tested with more than 900 in-service teachers. In each of these situations data were collected on how the students performed and how they felt about their experiences.

Data have been reported from 11 colleges in the 1969-70 field tests. Two groups of elementary education majors participated. One group received the Self-Directed Learning Guides; the other received comparable group-based instruction. Both groups utilized the same materials and tasks. Pre- and post-tests were administered to each group on each of 23 science competencies. Using a criterion level of 90 percent success 90 percent of the time, the students in each group demonstrated satisfactory performance on only one of the 23 tasks in the pre-test, although it was a

THE TEACHING OF SCIENCE  
A SELF-DIRECTED TEACHER EDUCATION PROGRAM

different task for each group. At the end of the instruction, the students receiving group-based instruction demonstrated satisfactory performance on 6 of the 23 tasks, while the students receiving self-paced instruction demonstrated satisfactory performance on all 23 of the tasks.

Among 500 teachers in one city using the program, there are wide reports of increased confidence in doing science with their pupils, and more science taught than before.

In another study currently underway the program is being field tested with 13 groups at 10 colleges involving about 700 students. Four of the institutions have complete auxiliary materials, the others are provided only printed materials, and a few items essential to the program that are not commercially available, and are otherwise asked to turn up what is needed from a traditional science education laboratory or from local sources. Pre- and post-data are being collected in three areas: competency in twenty-three science skills, attitudes toward science teaching and concerning self-paced instruction, and concerns about teaching. The results of this study will be available in August, 1971. Neither plan for the current studies involves a formal control group, although in three institutions comparisons are being made with traditional courses.

The cost of the components of hardware, some of which were specially created for the course, is approximately \$600 and cost of printed materials is about \$2 per unit. The latter are expendable. The total package is designed to serve forty-five students. In addition, it is recommended that copies of both the manuals and equipment for parts of the Science Curriculum Improvement Study (publisher: Rand McNally), Science - A Process Approach (publisher: Xerox Co.), and the Elementary Science Study (publisher: McGraw Hill) be available. The initial cost of these materials is about \$1500. They are permanent additions to science equipment, not expendables.

Regular college science education instructors may use the pre-service version to prepare teachers in use of the program. They should be alert to individual students' concerns and problems. In the first field tests, the instructors first participated in a 2-week summer conference conducted by project staff. Current field testing, however, is being done with instructors who have had no direct contact with project staff. Although students work in small groups or in teams of two, the developer recommends that during a given period of time the instructor have no more than 24 teacher-trainees for which he is responsible.

THE TEACHING OF SCIENCE  
A SELF-DIRECTED TEACHER EDUCATION PROGRAM

After teacher preparation, the program is designed to work with children in existing instructional facilities, preferably with tables rather than desks, and with convenient and adequate storage space. Users will likely find, however, that per pupil floor space requirements will be higher than ordinary, to allow children to work on their own in a "laboratory" setting.

No arrangements have yet been made for a publisher, since the materials still are in the developmental stage. Dissemination plans will be based upon findings from the evaluation studies currently being concluded. Meanwhile, however, the program is due for announcement in Publisher's Alert. One hundred sets have been requested for delivery and use in the summer of 1971, and these are available.

MATCH BOX

MATERIALS AND ACTIVITIES FOR TEACHERS AND CHILDREN

MATCH boxes are self-contained, multi-media Kits designed to enable elementary school teachers and children to learn and communicate predominantly through nonverbal means. They stress the child's involvement and responsibility for his own learning. Each Kit is designed for a class of approximately 30 students to use daily for an hour to an hour and a quarter for two to three weeks, after which it can be circulated to another class.

Kits were developed in three generations with tryouts in classrooms after each phase:

First Generation, 1965	Target	Second Generation, 1966	Target
Grouping Birds	K-2	Houses	Nursery-2
The City	1-3	Animal Camouflage	2,3
The Algonquins	3,4	Netsilik Eskimos	3,4
Seeds	3,4	Musical Sound and Shapes	3,4
A House of Ancient Greece	5,6	Rocks	5,6
		Japanese Family 1966	5,6
		Medieval People	5,6
Third Generation, 1967		Target	
Waterplay		Nursery-2	
Imagination Unlimited		3-4	
"Paddle-to-the-Sea"		4-6	
The MATCH Box Press		5-6	

The teacher's guide which accompanies each Kit includes a bibliography and detailed plans for a variety of activities that can be carried out with the Kit. A typical Kit, from 40 to 100 pounds, contains photographs, films, pictures, recordings, and models which can be handled and used by individual students and by small groups of students. "The City" is intended to show how a city changes, the importance of the neighborhood, the variety of city sounds. It provides the opportunity to create model cities and engage in role playing and discussion. "Japanese Family 1966" includes Japanese clothing (which may be tried on), chopsticks and Japanese food. The activities include dividing the class into families whose histories are documented by photograph albums and books of family history. The teacher's guide for "A House in Ancient Greece" suggests that the class be divided into teams of archaeologists who excavate an ancient villa.

## MATCH BOX

## MATERIALS AND ACTIVITIES FOR TEACHERS AND CHILDREN

Second generation Boxes were more formally evaluated than the others. A standard Teacher's Final Appraisal Form was used at this phase for all the Boxes, and analyses were conducted to show cross-Box comparisons and summations. Responses to fixed-answer questions from the full sample of 157 teachers in percent responding were as follows:

Consensus of using teachers seems to have been that the Boxes are highly successful, original, and student-involving. Teachers as well as students learned from them, the teachers encountered new methods that they then could apply in other classroom situations. Too, the situations set up in using the Boxes gave teachers the opportunity of knowing their students better and quicker, with the varied student response modes evoked by the Kits--writing, role playing, discussion--affording more than an ordinary chance to observe student behaviors. There was some indication that the Boxes work particularly well toward fuller involvement of slow learners.

Thirteen Boxes are available on a rental basis from the Children's Museum, The Jamaica Way, Boston, Massachusetts 02130 at an average cost of \$35.00 for two weeks, with distribution limited to New England. Three of the Kits are in commercially published form, ranging in price from \$525 to \$770 with film in color. Teacher's guides are \$4.00, four year maintenance costs are estimated at \$120, and the total five-year cost of the Boxes is estimated to average \$670 per MATCH Box. The publisher is American Science Engineering, 20 Overland Street, Boston, Massachusetts 02215.

Although it is said that teachers require no special training, there being a Teacher's guide which provides instructional information, workshops in the use of MATCH Kits are offered by the Children's Museum at a fee of \$5.00 per participant. Interested schools may secure Boxes for preview from the publisher.

About seven of the Boxes still unpublished are recommended by the developer to be ready for commercial distribution. Sales of published Kits, however, have not come close to the publisher's original predictions, and further publication plans have been set aside.

MATCH Boxes have had wide reaction in all major media including television. Some 34,000 students have used them, 4,000 educators have attended sixty workshops, Kits available on a rental basis are scheduled months in advance. There are not comparable products in the educational market.

A newsletter of MATCH Box users is thought by the developer to be a needed next step as well as traveling workshops to instruct teachers in use of the Kits. Another strategy suggested is for design workshops to be held for school people who wish to develop additional

## MATCH BOX

## MATERIALS AND ACTIVITIES FOR TEACHERS AND CHILDREN

Kits on their own to get help from museum specialists.

Account needs to be taken of one obstacle to wide spread proliferation of Boxes of this type. Certain of the artifacts that can readily be secured in limited quantity would quickly dry up at the source were substantially larger quantities required, as for example parts of the MATCH Box on Eskimos.

INDIVIDUALIZING INSTRUCTION IN MATHEMATICS

MINICOURSE 5

This product is a thirteen-hour self-instructional program designed to improve teacher's skills in the individual tutoring of pupils who are deficient in their understanding of mathematical concepts and algorithms. The program uses a microteaching approach: instruction by films and handbook, opportunity for controlled practice, feedback on one's performance, opportunity for improved practice. This Minicourse emphasizes methods rather than content.

There are five instructional sequences for accomplishing the objectives. The objectives and skills in the sequences are as follows:

1.           Objective    To improve teacher skill in rewarding pupil's correct responses and encouraging their active participation in the tutoring process.  
  
              Skills Covered   Using verbal praise to reward correct responses, asking prompting questions to increase pupil's active involvement in the tutoring process.
  
2.           Objective    To increase teacher skill in diagnosing pupils' deficiencies in understanding of mathematical concepts and computational procedures.  
  
              Skills Covered   Asking general diagnostic questions, asking questions to test pupils' understanding, and asking questions which test pupils' ability to read the problem and to decide on an appropriate operation.
  
3.           Objective    To increase teacher use of techniques which help to develop pupils' understanding of mathematical concepts and computational procedures.  
  
              Skills Covered   Estimating an answer prior to using a computational algorithm, using expanded notation, the number line etc., and having the pupil draw a picture of the problem and writing a number sentence to express its requirements.
  
4.           Objective    To increase teacher skill in evaluating student progress and assigning practice examples.  
  
              Skills Covered   Assigning practice examples, and assigning an evaluation example.

INDIVIDUALIZING INSTRUCTION IN MATHEMATICS  
MINICOURSE 5

5. Objective To improve teacher skill in organizing the mathematics class period for individual tutoring.

Skills Covered Having pupils correct their own work, and having pupils tutor each other.

Teachers who participate in the Minicourse view nine 16mm color films, a general introductory film and pairs of films for the first four sequences. Each pair demonstrates the objectives sought and shows "model teachers" in regular classroom settings (operating from a prepared script) using each of the skills covered.

In pursuing Sequence 1, for example, a teacher-in-training sees instances wherein the model teacher employs general verbal praise, specific verbal praise, and prompting questions. The Teachers' Handbook helps reinforce the learning of these skills. Two microteach lessons are then taught applying the objectives and employing the skills. After the first session, the teacher reviews a self-made videotape or audiotape of that lesson. The lesson is then improved on the basis of this self-evaluation, presented again in a microteach setting, and self-evaluated in the same manner. Then, the teacher-in-training proceeds to the next Sequence.

Although the emphasis is upon tutoring skills and remedial work, the skills are useful in regular mathematics instruction as well. Moreover, teachers in regular instruction are afforded more time to give students individual attention; the Minicourse will help them learn to use their time effectively. Elementary school children that are exposed to the content of the Sequences will also be helped for the "number operations" and "verbal problem" areas from which the mathematical content was drawn are found to be those that most often present learning difficulties.

A non-comparative pre- and post-course design was used to evaluate the effectiveness of Minicourse 5. Forty-seven teachers participated in the evaluation study. The nine 16mm films, coordinated by the Teachers' Handbook, were viewed. Pre- and post-course tapes of each teacher were evaluated independently by two raters. The raters scored each teacher on six variables paralleling the objectives listed in instructional sequences 1-5. For each variable the rater determined the number of instances in which the classroom teacher made use of the variable in the pre- and post-tapes microteaching sessions. For example, the variable "verbal praise" was scored by a rater count of each occurrence of general and specific verbal praise. Interrater reliability was typically about 0.70 to 0.90.

## INDIVIDUALIZING INSTRUCTION IN MATHEMATICS

## MINICOURSE 5

From this evidence, it is clear that Minicourse 5 does bring about observable changes in mathematics tutoring skills. For example, it was reported that the frequency of verbal praise increased by approximately 50 per cent from pre- to post-course tapes. Positive gains were shown also in length of time spent in tutoring sessions, frequency of diagnostic questions, use of demonstration techniques, the number of practice exercises assigned. The extent to which there were corresponding gains in student achievement has not been studied.

Three other evaluations have been conducted, all reporting comparable improvement in teachers' tutoring behaviors.

The complete Minicourse 5 package is available through Macmillan Educational Services, 8701 Wilshire Boulevard, Beverly Hills, California 90211, at a cost of \$1,395. The purchase price includes a complete set of materials: nine 16mm films (total running time 200 minutes); one teacher handbook; one coordinator handbook; one research report. The rental cost for a period of six weeks is \$198. The only expendable item is the Teachers' Handbook, at a cost of \$2.40 per teacher. Use of the Minicourse involves a 16mm film projector and either a video or an audio tape recorder. It can be used in any existing school or university setting, provided that there is available at least a small room or other area for microteaching, and a place for viewing films.

The Minicourse is a self-instructional product. A part-time coordinator is needed to train the elementary school teachers in use of the equipment and to coordinate time schedules. In an in-service training setting, each teacher would need thirteen hours of released time to see films, plan lessons, practice newly acquired skills and complete self-evaluations.

## REINFORCED READINESS REQUISITES PROGRAM

### RRR

The RRR Program was designed to alleviate academic deficiencies shared in common by children from a culture of poverty at kindergarten and first-grade levels. Its goals are to instill motivation for learning through a system of reward strategies, and to enable the child to acquire competencies and motivational patterns that are prerequisites for optimal learning in school. Approximately 157 lessons, each ten minutes or less in length, include material on associative vocabulary, visual discrimination, numerical concepts, listening comprehension, and aural discrimination, and left to right discrimination. Many lessons include associative vocabulary tasks based on evidence that deficits attributable to children from a culture of poverty cluster in this factor. Each lesson package contains teacher directions, stimulus picture cards, example cards, and individual child worksheets.

There are three phases in the implementation of the program: (1) tangible rewards are used to motivate and maintain desired behavior and rewards are given for acceptable group performance; (2) tokens are given to provide the essential link in moving children from immediate to deferred gratification without harmful by-products; (3) tangible rewards are gradually withdrawn until performance is maintained independently from outside tangible sources of motivation such as teacher praise and approval. All RRR lessons and the preparatory teacher-training are designed to meet four terminal objectives: to increase the child's willingness to defer rewards; to make the reinforcement intrinsic or integral to the task; to increase the teacher's effectiveness in shaping and maintaining desirable behavior among his pupils; to provide kindergarten and first-grade children with readiness competencies that are prerequisites for successful school achievement.

The emphasis in RRR is to stimulate interest in achievement without introducing the element of competition. It is group, not individual, performance that is rewarded. RRR is regarded as particularly appropriate for children from Spanish, Indian, Black and some Anglo homes where competitive attitudes are not fostered. It is an effort to adjust such youngsters to the school situation without facing the issues related to variance in values among the several cultures.

In 1968-69 data were obtained from 2,029 first-grade children from cultures of poverty in four southwestern states. Approximately 1,242 children in 36 classrooms received the RRR program while 787 served as controls. In 1969-70 data were obtained from the experimental group only on pre and post-tests. Classes that were to have served as control groups inadvertently were exposed to RRR materials because of interest that had been engendered in the experimental classes.

## REINFORCED READINESS REQUISITES PROGRAM

## RRR

Daily diagnostic, retention, and pre- and post-tests were multiple choice instruments used as an integral part of the program. The child need not rely upon spoken English, but may demonstrate his language listening comprehension and understanding of different concepts by simply marking the correct answer. The tests were used to (1) demonstrate cognitive and affective changes associated with the application of reinforcement strategies and (2) provide developers an objective evaluation of pupil performance. Since the program is heavily teacher-dependent, an observation schedule was used as an assessment and feedback device regarding teacher behaviors.

In the 1968-69 field tests, children scored significantly higher (88.62 percent) on the experimental program than the controls (74.40). In the 1969 field tests, subjects made substantial gains, from 54.02 for the pre-test and 87.40 for the post-test. The program worked well for both boys and girls, and there was no significant difference in the performance of either. Mexican-Americans who composed about 80 percent of the population showed a substantial gain in performance from a pre-test mean of 51.99 percent correct to a post-test mean of 86.52.

Informal evidence of better class attendance of children participating in the RRR and increase in the class cohesiveness--children feeling obliged to help each other in areas other than the formal part of the program--were taken as additional indicators of the RRR program's success.

All RRR items have recently been packaged in a specially designed pasteboard shipping box that doubles for classroom storage. This packed with the materials now costs \$110, with \$72 in annual maintenance costs, and a Reinforced Requisites Teacher's Manual, a Reinforced Readiness Requisites Children's Workshop, films, transparencies, slide-tape presentations, tokens, toys, and other miscellaneous materials are included. Teachers must receive training in the correct use of the program at institutes held under the auspices of the developer. Some 15 to 20 hours of instruction spread over one week are involved. Present estimates of training costs run slightly over \$400 per trainee.

Several steps are underway toward dissemination, the key one being a series of arrangements with several state colleges and universities for RRR training to be regularly available to teachers at those institutions.

A second plan to "externalize" dissemination focusses upon a master teacher in a school district, board of cooperative services or educational service center who would provide the training for teachers in those jurisdictions. The developer is currently prepared to deliver 450 units.

FIRST YEAR COMMUNICATIONS SKILLS PROGRAM

FYCSP

The FYCSP is a comprehensive set of highly organized materials and procedures designed to teach the basic skills in English Language communication to kindergarten students. Four programs supplementary to it are also available. The program is not restricted to any one group but is for all children at the kindergarten level. Program objectives are: (1) reading the approximate 100 words taught, (2) reading 23 selected initial and ending word sounds, (3) sounding out and reading any one-syllable word composed of elements taught, (4) naming each letter of the alphabet when shown the printed letter. The FYCSP is composed of ten units - timed at approximately three weeks per unit and 25 minutes per day.

One of the supplementary programs is the Instructional Concepts Program (ICP) which seeks to teach concepts basic to classroom instruction-- colors, sizes, shapes, amounts, etc. The ICP consists of 65 lessons and takes twelve weeks.

In addition there is a Tutorial Program which calls for use of upper grade children, a Parent-Assisted Learning Program, a Summer Reading Program to help children retain what they have learned, and language and concept skills program for Spanish speakers. The FYCSP and ICP are heavily teacher-dependent.

A set of procedures has been developed for "Quality Assurance" in the FYCSP. Expectations of pupil performance and pacing of learning activities are built into the instructional programs in the form of pacing guidelines, regular assessment exercises and individual achievement records. Additional materials and procedures have been developed for each component of the kindergarten program to specify optional alternatives in the event the monitoring information indicates the learner is not realizing the performance criteria. These quality assurance materials and procedures are related to: (1) mid-year and end-of-year pupil performance, (2) information collection and reporting, (3) school-wide sampling plan and schedule, (4) data processing, (5) decision rules for selecting alternative courses of action, and (6) guidelines for evaluation program modifications.

The FYCSP has been developed over a four-year period and has involved experiments and field tryouts with more than 12,000 children in southwestern school districts. In 1970-71 it is being used by approximately 30,000 children in 12 states--Arizona, California, Colorado, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Nevada, Tennessee and Texas--almost all kindergarten. Tryouts have been conducted in the inner-city schools of several large urban districts.

In each trial, comparisons of the pupils in the FYCSP with those in other curriculums have reportedly "demonstrated the superiority of the FYCSP on all objectives unique to the program, on all objectives shared

## FIRST YEAR COMMUNICATIONS SKILLS PROGRAM

## FYCSP

in common with other programs, and on objectives unique to commercial programs." A post-test result shows that with an n of 889, 67 percent of the population achieved a score above 30 right out of a total of 40 items. A one-semester program in 53 classrooms with more than 1,100 children seemed to indicate substantial improvement in concept identification. "Mean scores on the 35-item Concept Identification Test were 21.95 before the tryout and 29.334 after 15 weeks of instruction."

In ICP field tryouts between 1968 and 1970 in inner city schools, 1700 kindergarten pupils, including a large number from low income, minority homes participated. Over 29,000 are involved in the 1970-71 tryout. End of year program pupil performance on the completed studies show an increase of 27 percent in "Mastery," with a criterion of eighty percent correct, and a rise from pre-test to post-test of the mean score from 25.7 to 30.7, out of a possible thirty-five.

The cost of FYCSP is \$34.20 per class of thirty, \$3.14 per pupil; of ICP \$49.50 and \$1.65, respectively. Supplementary programs are each in the \$60.00 to \$80.00 range. To install the entire system for a class of thirty would cost \$280.00, at about \$10.00 per pupil. Material that comes as part of the FYCSP includes procedure cards, alphabet and class cards, criterion exercise training cards, oral work index cards, activities and material cards, criterion exercise direction cards, animal and entry skills test cards, class record sheets, good work badges, and a teacher's manual. A classroom set includes thirty copies each of fifty-two storybooks, ten criterion exercises, forty practice exercises, one exercise training lesson and eight comprehension sheets.

The program includes a research-based training system with all materials and procedures required to equip persons responsible for operation within the school district. The developer conducts one-half day training sessions for district representatives who in turn train teachers to use FYCSP in their respective schools. An alternate version of the training system has recently been packaged and is fully exportable from the laboratory. Audio-visual forms of instruction are used and three hours are needed to prepare teachers for use of the program materials.

Using the Non-Exclusive Licensing Agreement, the developer works with school districts who first must determine the number of pupils who will use the program and the specific schools and classes within those schools which will participate in the tryout. A three-year strategy, using federal funds for incentive financing and working at the state agency level has also been developed.

FYCSP presently is distributed through Delta Lithograph Company.

At present out on RFP for publisher's proposals as a comprehensive package for kindergarten level are the FYCSP and ICP together with the Tutorial Program, Parent-Assisted Learning Program and the Summer Reading Program. Apparently the response from publishers has been favorable.

Eleven products among the twenty initially selected for further study, and which were not recommended for dissemination.

- AC01 Tab 2 Classification 2X37 Site: Chicago, Illinois  
Job Experience Kits  
Stanford University (Krumboltz) Now SRA
- AC11 Tab 3 Classification 3X35 Site: Minneapolis, Minn. U.  
Social Studies Curriculum Guides and Materials K-4  
University of Minnesota (West)
- AC15 Tab 3 Classification 3X55 Site: Providence R. I.  
Geo-Historical Structure for Social Studies Curriculum  
Rhode Island College (Shinn)
- AC19 Tab 4 Classification 4X40 Site: Columbus, Ohio  
Simulation Training in Planning Vocational Education  
Programs and Facilities  
Ohio State U. (Ward)
- AC22 Tab 5 Classification 541X Site: Maryville, Missouri  
Individual Readiness Test  
Northwest Missouri State College (Walker)
- AC24 Tab 6 Classification 6519 Site: New York City  
Educational Television for Preschoolers (Sesame Street)  
Children's Television Workshop (Ganz)
- AC35 Tab 4 Classification 4X40 Site: Portland, Oregon  
Instructional System in Development of Higher Level  
Thinking Abilities  
NWREL (Fish)
- AC38 Tab 4 Classification 4X40 Site: Minneapolis, Minn.  
Individualized Instruction Through Contingency Management  
UMREL (Morreau)
- AC52 Tab 3 Classification 3X37 Site: Columbus, Ohio  
Industrial Arts Curriculum Project  
Ohio State University (Lux and Ray)
- AC58 Tab 1 Classification 1219 Site: Austin, Texas  
Bilingual Early Childhood Education Learning System  
SWEDL (Nedler)
- AC68 Tab 4 Classification 4940 Site: Berkeley (Univ.) Cal.  
Instruments and Procedures for Describing Effective  
Teacher Behavior  
U. of California (Berkeley) (Medsker)

## JOB EXPERIENCE KITS

Job Experience Kits were designed for 8th-12th grade students; there are twenty in the set. Each Kit is composed of multiple-choice questions about various problems likely to be encountered in a given job. Occupations include accountant, electronic technician, medical technologist, police officer, salesperson, X-ray technician, automobile mechanic, beautician, designer, elementary school teacher, lawyer, librarian, motel manager, secretary, truckdriver, veterinarian. The appliance serviceman, carpenter, draftsman, and plumber Kits contain such three-dimensional objects as light-weight circuit tests, 1/4-inch fittings, etc. The twenty occupations are coded to the basic interest areas identified in the Kuder Preference Record.

Each Kit contains a booklet with problems and a pad of answer sheets, and some contain supplementary material. Students are not expected to have prior technical information. Problems are based either on "common sense" or on technical information supplied in the booklet. Students refer to this information in the process of answering questions.

It takes one class period of fifty minutes to complete each Kit. Students may work with as many different Kits as the teacher allows. Answer sheets are hand scored and retained by the students after completing the Kits. Since no marks are made on the booklets or supplementary material, Kits may be reused.

The objective is to provide vocational guidance information and to stimulate student interest in career planning. It is expected that the problem-solving, self-testing format will provide a challenge without the external pressure of a testing or job-competition situation.

The initial development led to the production of seven Kits. Design features evolved at this formative stage apparently were incorporated subsequently in thirteen additional Kits. The experiments reported were generally designed to measure the effects of different ways of presenting the Kits on the interest shown by the students. In one study by the developer three types of measures were used: expressed interest, scores on an information test, and requests for more information made by the students. Students did express interest in the Kits, and 204 out of a total of 284 students asked to work on additional Kits. Other measures of interest indicated that students showed more interest in the occupation for which they had used Kits than for the other occupations. Not all Kits developed the same amount of interest. In another experiment with 85 high school sophomores, a majority said they enjoyed working with the Kits but only a third asked for additional information.

## JOB EXPERIENCE KITS

The Indiana Career Resource Center conducted an independent evaluation in which 445 students and seven teachers in three public schools in South Bend, Indiana, used all the Kits. No formal questionnaires were used, but all teachers agreed that the Kits stimulated interest and enthusiasm and that more Kits should be developed to cover more occupations. They felt that three-dimensional materials were especially successful with slow learners. Many believed the reading level was too high for low ability students and perhaps too simple for the academically talented. The reading level of four Kits (appliance serviceman, plumber, draftsman, carpenter) was considered too high for elementary school but the tasks were too simple for junior high school. The other sixteen Kits were considered more appropriate for 7th, 8th, and 9th grades rather than for 8th through 11th grade.

There is no evidence on the extent to which the Kits have been modified to account for findings in the experiments, or how much of the formative findings on the first seven are reflected in the last thirteen. Nor is there any information given as to whether this material has any demonstrable advantage over alternate occupational materials, as for example a book covering the same subjects.

It should also be noted that the Kits give the student little or no information or experience in the social or physical aspects of the job, though these aspects may be of great importance. One gets the impression that some of the Kits are very unrealistic. The one on the accountant, for example, does not fully accord with experiences of accountants in the field.

The twenty Kits, teacher's guides, and thirty answer sheets per Kit cost \$130. Individual materials are available as follows: teacher's guide - \$1.00; pad of thirty answer sheets - \$.50; regular Kits - \$5.95; Kits on Three-Dimensionals - \$8.95. The training requirement is minimal; a five-minute orientation is all the student needs. Teacher's guide can be used without special training.

Job Experience Kits are published by Science Research Associates, 259 East Erie Street, Chicago, Illinois 60611.

One obstacle to implementation has to do with the difficulty level of the reading material. Whereas academically-minded students would find the reading simple, students with low level verbal ability or limited reading skills would likely encounter problems, especially in the Kits of primary interest. Another obstacle relates to a difference in reading level according to whether the occupation is college-oriented or not. This would tend to exclude the poorer readers from exploring those occupations for which college preparation is ordinarily required.

AC11  
Spring 1971

SOCIAL STUDIES CURRICULUM GUIDES  
AND MATERIALS FOR GRADES K TO 12

This curriculum illustrates how criteria for the selection of content, multiple principles for the organization of content and learning experience, and different teaching strategies can be combined to achieve multiple goals with pupils of varied interests, abilities, cognitive styles, and personality patterns in different communities. At the same time, it provides for change in the light of new developments in the world and in the social sciences.

The framework provides for the sequential development of concepts, generalizations, skills, and attitudinal behaviors, both within a given year and throughout the K-12 program. The guides draw upon all the social sciences, and weave together disciplines and inter-disciplines in a curricular design which provides balance among the different fields. They seek to achieve goals which the staff identified as important for a program focused upon citizenship education.

Compared with others, the curriculum provides for increased emphasis on behavioral sciences and on the non-Western world. It allows for individual differences among the entire student population rather than being directed toward a specific segment of the population.

There are extensive resource units and an overall teacher's guide for each year, and pupil materials for some of the courses where materials are not otherwise available. The resource units suggest various activities which rely on materials available from other sources, e.g., textbooks, pamphlets, filmstrips, maps, etc. There also is a series of fifteen background papers useful to those interested in understanding or using the curriculum; some deal with skills, values, and knowledge structure in the social studies, and others with the ideas, methodology, and teaching of the social sciences.

Formative evaluation is centered around two years of trials of the curriculum materials in local schools. After the first year, almost all teachers wanted to teach the program again. Teachers using the materials kept daily logs of their activities, submitted weekly reports, were visited weekly by staff members, and attended periodic workshops. The written and oral feedback from these activities was incorporated in construction and revision of instructional materials. It should be noted that not all materials were able to be revised prior to the second year's try-outs, and three units never were tried out.

A formal evaluation of Man and Culture, the seventh-grade course which draws heavily from sociology and anthropology, had two objectives: 1) assessing the extent to which the course materials were effective in achieving the stated aims, and 2) discerning meanings attached by students to concepts from sociology and anthropology.

SOCIAL STUDIES CURRICULUM GUIDES  
AND MATERIALS FOR GRADES K TO 12

The four components of this evaluation were classroom observation, teacher questionnaires, teacher meetings, and a group of three tests developed to measure achievement in the areas of content and verbal association. The study involved 699 students in 27 classes, with 459 students in the experimental group and 240 in the control group. Students in the experimental group were able to learn material from sociology and anthropology. They made significant gains over the control group in the areas measured.

Further evaluative material is in a University of Minnesota doctoral study by Marlowe Berg of the primary grade materials using a group interview technique, and one by Michael Rockler comparing the eighth-grade course on political behavior with the traditional structurally-oriented government course in terms of effects upon political socialization. Particularly significant from the Berg study was the finding that students using these materials showed attitudinal differences in that they noted more often than others similarities between themselves and people of other cultures.

The curriculum, developed at the University of Minnesota, has been implemented in several school systems outside the state, including Bellevue, Washington; Chelmsford, Massachusetts; and in the SPEEDIER Project in Easton, Pennsylvania. The SPEEDIER Project and the Bellevue system have conducted some evaluation studies of their own at the elementary level.

The cost of implementing the curriculum will vary according to the materials chosen. The teacher's guides, resource units, student materials, and background papers are available in mimeograph from Green Printing Company, 631 Eighth Avenue North, Minneapolis 55411. Seventh- and eighth-grade materials will be published commercially by Addison-Wesley; Education Development Corporation in Newton, Massachusetts, is developing multi-media Kits for grades 1-4. These are to be available in 1971 for around \$175. Intermediate grade Kits are due for publication in 1972, same price range.

Teacher-training and preparatory experience are necessary, preferably at the pre-service stage. The Project staff feel that teachers need to work with the materials for a period of time to grasp the rationale of the curriculum and to be able to use inquiry techniques effectively. Considerable preparation is needed before teachers begin teaching the curriculum so that they will have needed pupil materials readily available. A pre-teaching summer session accompanied by periodic workshops during the progress of the course is the ideal means of training.

SOCIAL STUDIES CURRICULUM GUIDES  
AND MATERIALS FOR GRADES K TO 12

Availability of filmstrip projectors and overhead projectors is assumed. There is an emphasis in this curriculum on sequential teaching; this would seem to call for introducing the complete curriculum, though the developer indicated that it would be possible for an adoption to involve a single teacher and a single class.

Dissemination has been principally through the local Educational Research and Development Center, and staff members have held several workshops around Minnesota. Use of the materials in the Chelmsford, Massachusetts and Bellevue, Washington school systems has also contributed to broader dissemination.

There has been an observable obstacle at the secondary school level: a sensitivity on the part of high school social studies teachers that their disciplines are being intruded upon. A second difficulty at the same level is that, in its present form, it would be difficult to administer the curriculum using modular scheduling. At the elementary level, the only major obstacle is the need for special and extended teacher training, not effectively done by an "each one teach one" cadre system. A school planning to use this would have to look to the university for the teacher training component.

A GEO-HISTORICAL STRUCTURE FOR  
A SOCIAL STUDIES CURRICULUM

This curriculum offers a new structural pattern for a K-12 social studies program. Geography and history serve as "intergrating disciplines" by providing a core around which concepts, content, vocabulary, and certain aspects of method from the Social Sciences are related. The developers have drawn upon anthropology, economics, geography, history, political science and sociology.

Emphasis is placed upon mastery of basic social studies concepts; content can be altered so long as the basic conceptual aims of the courses are realized. This flexibility in choice of materials allows for student involvement in planning, for student-teacher interaction, and also for greater adaptability of course content to changing social concerns.

Resource units in grades K-3 are organized around the theme of "Neighborhoods"; grades 4-7, "Regions"; and grades 8-12, "Civilizations." Content is organized as follows:

- |   |   |
|---|---|
| K - The Family - Functions and Patterns                         | 7 - Studies of Three Culture Regions: Southeast Asia, Western Europe, and the Soviet      |
| 1 - Man's Basic Needs   | 8 - A Study of Contemporary Civilizations (East Asian, Muslim)                            |
| 2 - Analysis of Neighborhood Patterns                           | 9 - A Study of Contemporary Civilizations (Indian, Western, Toward a World Civilization?) |
| 3 - Analysis of Community                                       | 10 & 11 - American Studies  |
| 4 - A Type Study of Regions                                     | 12 - Issues in Contemporary Societies   |
| 5 - Analysis of One-Culture Region: The United States & Canada  |   |
| 6 - A Comparison of Two-Culture Regions: Africa & Latin America |   |

Resource units are for teacher use; development of student materials was not a goal of the project.

Three kinds of evaluation evidence were compiled: informal evidence, formal evidence, and academic content evidence. In the pilot and early implementation stages, teachers in test schools recorded observations, filled out evaluation sheets periodically, participated in building and grade-level conferences, and talked to members of the project staff. Student questionnaires probed student perceptions of the program to learn their feelings about it.

A GEO-HISTORICAL STRUCTURE FOR  
A SOCIAL STUDIES CURRICULUM

No attempt was made to give tests specifically for the project although the project staff analyzed the results of such standardized social studies achievement tests as were administered in the schools during the course of the project. Staff felt a need for formal evaluation of the project by an outside agency, and a local O.E.O. agency was contracted to study the project in terms of teacher perceptions, student perceptions and the relationship between these understandings and the actual behaviors observable in the classrooms.

Additional outside evaluators were asked to assess the academic content of the curriculum. Each read all of the curriculum guides and resource units and wrote a brief evaluation essay in response to two questions: 1) How has the discipline actually been used in the project? 2) What evaluative judgment could be made about its treatment in the context of the aims and assumptions of the project and in the light of the requisites of the discipline? In addition, the evaluators were asked to make specific recommendations.

A complete set of 43 curriculum guides and resource units costs \$52.80 and is available from the Rhode Island College Bookstore, 600 Mt. Pleasant Avenue, Providence, Rhode Island 02908. This set is for use by teachers; no student materials have been developed.

Student materials are to be assembled using lists in the resource units from commercially available textbooks, picture sets, filmstrips, etc. The estimated cost of introducing the necessary materials is \$10.00 per student amortized over a 3-year period. A maintenance cost of \$1.00 per student per year for the following three years is estimated. Commercial publication of the curriculum guides and resource units is planned.

Thirty hours of initial in-service teacher training are recommended by the developer, this providing only an introduction to the "new" social studies. A continuing support and in-service training system is thought to be needed. The project staff is ready to bring out a set of materials for in-service training if a publisher is interested.

Availability of filmstrip and overhead projectors is assumed. Two academic years are required to put the curriculum fully into effect.

This development has stimulated interest among schools in Rhode Island, where its development occurred, and there have been inquiries from the other forty-nine states and from abroad. Presently, however, the program is in effect in Providence, and in-service training is underway at Newport.

SIMULATION TRAINING IN PLANNING  
VOCATIONAL EDUCATIONAL PROGRAMS

This is a training package made up of simulated materials concerned with the day-to-day working problems of state vocational education supervisory personnel. It consists of four simulation exercises pertaining to program planning, proposal review and approval, site selection, and preliminary facility planning. Also included are an instructor's guide, background data for the exercises, and student working papers. The exercises may be used individually, as a set, or in combination with other available simulation exercises. Three of the exercises require the participant to assume the role of Assistant Supervisor, in a state department of education, and the fourth exercise requires him to assume one of five different roles. The exercises were developed from actual case histories submitted by present leaders of vocational education.

The purpose of this training program is to improve the human and technical skills of state and other vocational education leaders in program and facility planning, with specific objectives as follows:

- o To delineate some of the tasks and attendant problems one might encounter in planning for a new vocational education facility
- o To illustrate the relevance and importance of communication, human relations, and decision-making to effective leadership
- o To develop understanding of the problems in program and facility planning for vocational-technical education
- o To develop improved skills in program and facility planning of vocational-technical education leaders
- o To practice and relate these concepts to the solution of leadership problems through involvement in simulated experiences

The materials are designed for use either on an in-service basis or through graduate education programs. Instructor and students are enabled to compress time, reduce risks and avoid real life costs until knowledge is acquired. In a workshop setting, the exercises can be administered in three to five days.

SIMULATION TRAINING IN PLANNING  
VOCATIONAL EDUCATIONAL PROGRAMS

Although the activities appear to be realistic, interesting and of appropriate difficulty, there are no data on their effect on trainees exposed to them. Validation efforts during the development were limited to formative evaluations, and revisions of materials were made after both pilot test and field test. As is shown above, however, three of the objectives to be attained involve measurable changes; perhaps it would be fruitful to make measurements to see if such changes occur as a result of the simulation training. It is understood that no plans are underway to validate materials in terms of their effectiveness in light of the project's objectives, nor have the materials generated any research studies of other types. On both counts, this seems unfortunate.

Required materials may be reproduced locally from the project report. Copies of the original edition of the report are available from the Center for Technical and Vocational Education, Ohio State University, Columbus, Ohio 43210, @ \$3.50 each; Microfiche (\$1.00) and hard copy (\$10.25); reproductions are also available.

A single workshop for 20-25 participants would cost approximately \$2000 which includes materials, lead instructor, two content consultants, travel expense, per diem and hotel costs for the instructional team. This figure does not include the participants' expenses. The training is thought to be generative, each workshop being the basis for training top level personnel who in turn conduct subsequent workshops with other vocational-technical personnel both in state education department in-service training and in college level vocational education courses.

Except for the high level of training required of the lead instructor, the administrative considerations appear to be negligible. The package is flexible enough time-wise to be utilized in conventional class situations or situations that require less than a continuous 3-5 day workshop. A minimum of five persons is required for the fourth simulation exercise since it involves roll-playing on a rotating basis.

Materials have been sent free to all state directors of vocational-technical education and all chairmen of departments of vocational-technical teacher training programs. Several college faculty are presently using the materials in courses, especially in educational administration. There are no restrictions on the use of the materials. These can be reproduced, used in workshops as originally planned, or separately as part of training programs or in other educational arrangements, at the option of the user.

### INDIVIDUAL READINESS TEST

The product is two forms (A & B) of a reportedly culture-fair and non-verbal individual readiness test intended for disadvantaged, preschool children in the United States. The test is comprised of pictures, figures and symbols. It can be used with children 3 to 9 years old. Two forms have been provided so that, in its typical application, teachers can use one form to identify needs early in the preschool program, set up, and carry out specific remedial programs for individual children, and then use the second form to assess the efficiency of the program in terms of individual progress.

Norms have been developed in the form of percentile ranks separately for rural and urban groups, full-year and summer session programs, and boys and girls by chronological age.

The objective of this effort was to provide an easily administered test with adequate directions and instructions to insure uniform results with a minimum of time invested by teachers. A second objective was to prepare equivalent forms to aid teachers in diagnosis and remediation practices.

There are four parts totaling fifty multiple-choice items: similarities, differences, numerical analogies and missing parts. Use is made of pictures, figures and symbols not necessarily associated with particular culture or environment. In addition to the tasks mentioned above, the test can measure a child's visual acuity, listening ability, imagery and ability to follow instructions. The instrument is designed to be individually administered. Directions are given in English, French, and Spanish.

Form A was administered at 208 centers with 3501 cases and 156 centers with 3071 cases. The former were classified urban and the latter rural. During full-year programs, 4256 children participated at 234 centers, and 2406 children at 130 centers were enrolled during summer programs. For Form B, 5271 children were used; 2727 at 166 urban centers, 2544 at 135 rural centers; 3132 were enrolled in full time programs at 182 centers and 2139 were in summer programs at 119 centers. Each of the 50 states had at least one sample class. Scores were compared with children's scores on standardized tests and with teachers' appraisals of children's readiness for entrance into public schools. Data are summarized for full year programs by population, race, and sex, for summer programs in the same way, and totals are given for both.

Correlations are reported between scores on Forms A & B of the test and scores on the Peabody Picture Vocabulary Test, Goodenough-Harris Draw A Man Test, ABC Inventory, Caldwell Pre-School Inventory,

## INDIVIDUAL READINESS TEST

Metropolitan Readiness Test, Stanford-Binet, Science Research Associates Pre-School Test, Vineland Scale of Social Maturity, Columbia Mental Maturity Scale, American Guidance Pre-School Attainment Test, Form I, Test 12, and Form II, MacMillan Readiness Test, Screening Test of Academic Readiness Potential, Frostigs Developmental Test of Visual Perception, Jordan and Massey Readiness Test and the Slassen Intelligence Test. Highest correlations were between this product and the Metropolitan Readiness Test (.791 Form A) and (.757 Form B), The Caldwell PreSchool Inventory (.807 Form A) (.708 Form B), the Columbia Mental Maturity Scale (.677 Form A) (.697 Form B) and the Slossan Intelligence Test (.628 Form A). Low correlations between children's scores on this product and some standardized tests, are attributed by the developer to the possibility that some of those standardized tests may not be culture-fair.

The only costs are those for reproduction of the test materials. These are available within the project's report through the Regional Research Program Office, Department of Health, Education, and Welfare, 601 East 12th Street, Kansas City, Missouri. Access may also be had through ERIC ED 037253, microfiche \$.65, hard copy \$6.58.

There is no special training required in using the instrument and none but routine administrative considerations related to giving tests to a young child.

EDUCATIONAL TELEVISION FOR PRESCHOOLERS

SESAME STREET

The aims of Sesame Street are to promote intellectual and cultural growth of preschoolers through educational television and to narrow academic achievement gaps between disadvantaged and middle-class children which appear early in school and increase in higher grades. The instructional goals fall into three large categories: symbolic representation, problem solving and reasoning, familiarity with the physical and social environments.

The primary population served are the some twelve million children between three and five in the United States. In the first year (1969-1970) about 7 million of them are thought to have watched the series. Video tapes of 130 one-hour programs were produced in 1969-1970. In 1970-1971, 150 new one-hour programs will be produced for viewing in the United States. In Canada and 25 other countries, programs from 1969-1970 are being broadcast. The series is particularly appropriate for children for whom English is a second language.

Studies in ghetto areas of New York, Chicago, and Los Angeles found that Sesame Street regularly reached 80-90 percent of the children in these areas. The major validation study involved 943 children from Boston, Massachusetts; Durham, North Carolina; Philadelphia, Pennsylvania; Phoenix, Arizona; and rural NE California. The sample included 731 disadvantaged, 169 advantaged, 13 Spanish-speaking, 61 rural. Most were 4 years old. They were divided into quartiles by amount of viewing time. Of the disadvantaged, 389 were at home and 342 at school.

The impact of the series was found to be educationally and statistically significant. Those who watched achieved many of stated goals in letters, numbers, and forms; gained appreciably in sorting and classifying skills. Where specific knowledge and skills were directly taught, the younger children gained more than older ones.

Lower SES children who viewed had lower attainment at pretest than high SES children who did not view. At posttest, however, low SES children who viewed surpassed high SES children who did not view. Then too, high viewers surpassed low viewers. Sesame Street did not require adjunct professional helpers in order that the viewing child could benefit, and there was as a consequence no advantage in viewing the program in a classroom situation.

The amount of viewing was related to the amount of gain. Gain is greater as viewing increases, but rate of gain declines with increasingly higher amounts of viewing. High viewing Spanish-speaking children from a disadvantaged community and with low SES indices gained more than virtually any other group.

The heavier viewers tended to come from homes where mothers spent much time talking about the show with their children.

EDUCATIONAL TELEVISION FOR PRESCHOOLERS  
SESAME STREET

The program is made available free to ETV stations, and at a cost-related charge to commercial stations who agree to use it without advertising. Ordinary broadcasting facilities are required. There is a Parent Guide Magazine (4 issues/year) for \$2.00 (free to inner city parents) from the Children's Television Workshop, 1865 Broadway, New York, New York 10023. Kits of educational materials are available from Time-Life, Inc., and Sesame Street records from Columbia Records.

To increase program outreach, supplementary materials have been made available both in English and Spanish, and these are distributed in twelve cities by field coordinators. The coordinators are points of contact also for interested classroom teachers. Plans are made to place a coordinator in Appalachia effective 1971-72, and to intensify efforts to reach the Spanish-speaking population in the Southwest.

DEVELOPMENT OF HIGHER LEVEL  
THINKING ABILITIES

This product is a complete instructional system to train teachers in the development of higher level thought processes on the part of their students. The system is presented in full detail in one of two alternative manuals--the Trainer's Manual by McCullum and Dravis, 428 pages, and the Leadership Manual by Duvall, 334 pages. The system, requiring about two weeks of full-time workshop activity, trains teachers in relating a structure of process with a structure of knowledge. Structure of knowledge refers to a hierarchy in the order: (1) factual data, (2) concepts, and (3) generalization. Structure of process refers to a hierarchy in the order: (1) recall, (2) translation, (3) interpretation, and (4) application of discovered knowledge to new situations.

In brief, the goal of the product is to develop skills in teachers so that learners in their classrooms are able to function skillfully in conceptualizing and generalizing knowledge. The instructional system for developing higher level thinking abilities is based in Hilda Taba's work at San Francisco State College in high level thinking (OE CRP 2404 of 1964 and 1966) and has its foundation in general semantics. One of the project's working assumptions was that if teachers had the skills to evince higher level thinking in the classroom, something would happen to their students as far as use of higher level thinking processes was concerned.

An instructional model for the teacher-training is used which the teachers subsequently are to transpose to the classroom for use with their own students. The model includes sensitivity experiences in which each thinking process is introduced through role-playing, the instructor serving as teacher and the trainees as students. A knowledge base is developed after each sensitivity experience by a short presentation of theory and technique, and specific strategies within that thinking process are developed. A laboratory experience then follows with trainees teaching the process in a classroom setting under observation. Data are collected and fed back on their behavior. Participants program an instructional sequence in their own curricular areas, applying the processes to that substance.

Learning conditions in the model, also for replication in the classroom after training, include open active dialogue, freedom to inquire and explore, and explicit actions to adjust to the individual needs and abilities of the participants.

DEVELOPMENT OF HIGHER LEVEL  
THINKING ABILITIES

The instructional system was used experimentally for 111 workshops involving 3,778 teachers in the Northwest. Using television, training was provided for 1500 additional teachers. One workshop held for the training of college level instructors was subjected to an in-depth analysis. Included were influence of background, attitude, and laboratory involvement. These were viewed in relation to dependent measures of performance and to actual and projected system use. Of 290 teachers, 75 percent reported totally positive reactions to the training program and 40 percent of 251 teachers voluntarily reported changes in their own or their students' behavior as a result of the workshop. There have been no fully negative open-ended comments.

Later use in the classroom of specific higher level thinking paradigms were reported as follows: Concept diagnosis--73 percent, Data interpretation--41 percent, Knowledge application--38 percent. These data were assembled by voluntary self-report. By the same means, there is some indication of more open classrooms, freer exchange of ideas, more frequently productive teacher-student interactions.

More definitive data on verification, for example, related to observed changes in teachers and students must await availability of a report on summative research findings.

The costs of conducting a workshop are released-time for participants, substitute staff time, the cost of the materials themselves, and for the workshop leader. The trainer's manual is \$10-\$15, and materials for trainees are \$2-\$3 each.

The instructional system can be self-perpetuating in that participants themselves can become trainers. Thus, a school district might send two teachers, a supervisor and the principal to a workshop and thus acquire a trained team to conduct workshops back in their own school district.

One workshop leader should be able to manage 36 trainees in a workshop. Most satisfactory arrangements to date have been summer in-service and evening graduate credit programs. Held during school-year and school hours, two weeks of released full-time are required.

In its present form, the system seems more applicable to teachers of social studies and science than to others.

The developer has an active list of 75 workshop leaders as source of trainers of trainers. Additional implementation efforts include summer 3-week workshops for the training of trainers virtually fee-free at Portland State University in 1971 and 1972 and University of Hawaii in 1972. The workshops will, if fully successful, provide trainers nation-wide.

INDIVIDUALIZED INSTRUCTION THROUGH  
CONTINGENCY MANAGEMENT

The goals are to provide in-service and pre-service elementary school teachers with techniques for systematically manipulating pupil-behavior in the contingency management (CM) classroom. Briefly, the CM classroom contains three areas--a task area where pupils complete individually prescribed assignments, a progress checkpoint where a teacher-aide checks each assignment, and a reenforcing (recreation) area where each pupil, having completed his task with 100 percent accuracy, is allowed to engage in a recreation of his choice. Programmed texts and videotape simulation are used to make the teacher--trainee more sensitive to behaviors that are reenforcing (enjoyable) and to show the teacher how to prescribe for each of his pupils the optimum dosage of work and pleasure to maximize learning.

This product focuses upon principles of contingency management and behavioral engineering. Teacher success in the management of behaviors is said to be contingent upon the teacher's ability to (1) identify specific student behavior--e.g., "Mary wrote five answers," (2) measure the frequency and duration with which the behavior occurs--e.g., "Mary read three 5-minute selections to the class during the 40-minute period," (3) record the frequency and duration with which the behavior occurs, and (4) arrange a contract for the pupil based upon an analysis of these data.

Through recording the frequency and duration of specific behaviors the teacher in time is expected to be able to identify behaviors that have high probability (HPB) and low probability (LPB) of occurring again. Subsequently, the teacher will be able to make productive intermixes of low probability behaviors, such as the performance of academic tasks needing to be done, and high probability or reinforcing events, such as activities like games which a child enjoys. These then can be designed as contracts for the child. For example, "upon completion of ten additional problems with 100 percent accuracy, John will be allowed to handle the gerbil." The reinforcing event (HPB) is considered to be the most important part of the management strategy because of its impact upon increased frequency of task (LPB) behaviors. It could be assumed in the example that the teacher previously had observed John's fondness for the animal.

The product consists of five modules each in a programmed text, and all contained in an Instructor's Manual. There also is a videotape simulation. Basic principles of programmed instruction are followed, including general self-pacing, self-checking, and overt responding with feedback. The learner proceeds through the five modules as follows:

INDIVIDUALIZED INSTRUCTION THROUGH  
CONTINGENCY MANAGEMENT

<p>Module I - Analysis of Behavior</p> <p>Module II - Arranging Contracts</p> <p>Module III - Classroom Design which provides for the arrangement of stimulus conditions--the task area, the progress check point area--means for the facilitation of behavioral management.</p>	<p>Module IV - The Reinforcement Menu which provides for the development of a list of activities for student selection of reinforcing events.</p> <p>Module V - Implementation Procedures which provide for sequential involvement of students in learning about the operation of the behaviorally engineered classroom.</p>
--	--

Two supplementary modules entitled "An Aide to Contingency Management for Aides" and "Guidelines for Preparing Paraprofessionals," are also part of the product.

Twenty-seven contingency management classrooms in grades 1 through 6 are said to be in operation in inner-city areas of and with Indians in Minnesota and in rural areas of South Dakota. On the basis of observation by project staff, twenty-six were found to meet the conditions set through behavioral objectives in various content areas.

A follow-up has indicated a positive change in attitude by participating teachers towards behavioral management. This is reflected in teacher responses to a series of 29 questions. The analysis of responses showed the following differences:

MEANS ON RATINGS OF ATTITUDES

Teacher Status	1 (Poor)	5 (Excellent)
	Pre-Program Impression	Post-Program Impression
In-service	3.32	4.11
Pre-service	2.47	3.62

Two tests, Test on Behavioral Prescription Writing (BPW) and Test on Contingency Management Principles (CMP) were administered both as pre- and post-tests. The sample on which the analysis was performed consisted of 25 teachers in-service at four different elementary schools and 76 teacher candidates. Pre- and post-test papers for each of the two tests were

INDIVIDUALIZED INSTRUCTION THROUGH  
CONTINGENCY MANAGEMENT

independently scored by two scorers "in order to control for score bias and to increase the reliability of the scores." Interscorer correlations were in the high-eighties and mid-nineties. The conclusion was that exposure to the programmed texts led to significant gains in ability to (1) write behavioral prescriptions and (2) write basic principles of contingency management when presented with open-ended questions pertaining to these principles.

The Instructor's Manual, a document of approximately 100 pages which includes the five modules, can be reproduced at a cost of approximately \$3 each in quantities over a hundred. The modules are designed for one-time use only. The videotape recording can be reused indefinitely and costs about \$100. The only special facility required is a room equipped with a videotape unit with tables (or desks) and chairs. The setting should be equipped to handle the learners in groups of from six to eight. No trained personnel are necessary to administer this program. A leader or technically competent aide for scheduling the learners and handling the video unit is all that is required.

Note is made of the fact that this product was nominated along with a companion product, AC41 The Contingency Management Classroom. Training teachers in contingency management without provisions for the contingency management classrooms necessary for this type of teaching would be of dubious value. The costs of contingency management classrooms is outlined in the precis for AC41; the greatest expense involves the annual salary of a teacher-aide for each such classroom. In implementation, it would be necessary to consider both products (AC38 and AC41) as a unit. For this reason, such dissemination efforts as there are should likely deal with a product defined as in AC41 with the present product being its training subsystem.

JUNIOR HIGH SCHOOL INDUSTRIAL TECHNOLOGY CURRICULUM

IACP

The product is made up of curriculum materials and teacher-training procedures for a two-year junior high school industrial arts program. Materials for the first-year course cover "The World of Construction," those for the second-year course, "The World of Manufacturing." The project staff states the theme as follows: "how to work efficiently with men, materials, tools, and techniques to produce material goods." Students are expected to gain from the curriculum "understanding that will contribute to enlightened citizenship, occupational awareness, integration with the culture, and success in the industrialized world." It is reasonable to expect that problems may be encountered among students who read two years below grade level, for although the course is offered as group instruction, it is heavily dependent on reading ability. The materials deal both with building techniques and management practices.

Objectives are explicitly stated, are sub-divided to the level of daily lessons, and expressed in behavioral terms. The curriculum materials consist of the two textbooks, one on construction, the other on manufacturing, and "laboratory" manuals which contain pencil-and-paper games and management exercises as well as laboratory projects for the student, many transparencies, several filmstrips and 16mm films, and a series of achievement tests. Detailed lists are also given of what materials are needed for the students' laboratory projects. The curriculum is organized on the basis of forty-five minute classes of twenty-five students daily during two school years and calls also for textbook reading assignments.

The project has had two interrelated goals: reconceptualization of the industrial arts curricula for junior high schools throughout the United States, and revision of industrial arts teacher preparation programs at the colleges to reflect the changing nature of the field.

A national advisory council took part in the reconceptualization task. The council's work became the basis for the curriculum design. Emphases and topics put into the program were checked against present practices and trends in construction and manufacturing. Extensive evaluation data were collected, especially during the formative stages. These have been the bases for a number of doctoral studies. The five-year funding period ends in August 1971, and the full evaluation report will be available at that time. Longitudinal studies by graduate students will continue into the future.

## JUNIOR HIGH SCHOOL INDUSTRIAL TECHNOLOGY CURRICULUM

## IACP

Presently available evaluative data have shown limited gains from the course experience. In one study, students who had taken "Construction" did no better than students who had taken a traditional shop course on a commercially available achievement test in industrial arts, and students who had had no industrial arts training at all did about as well as both groups. On the test especially developed for the course, however, "Construction" students did significantly better than the other two groups.

Another study deals with attitudes towards the manufacturing industry; conventionally taught students were found to entertain a higher regard for industry than did IACP-taught ones. The investigators speculate that this result may be due to improved critical faculties on the part of IACP-trained students. Still another study shows no significant differences on scores on the Ohio Vocational Interest Test for IACP and conventionally taught students.

A less formal more positive finding was that of those seventh graders required to take the first-year "Construction" course in one location, over 80 percent elected the second-year "Manufacturing" course in the eighth grade.

Four types of costs are associated with the program: (1) initial outlay: hardware, space, hand tools; (2) training of teachers in the workshops; (3) maintenance and replacement of consumable goods; and (4) instructional materials, such as text, lab manual, and film strips. Given adequate space and traditional equipment, additional expenses under (1) and (4) include

\$1200 hardware/125 students  
\$5/student--consumable software  
\$8/student---text and lab manual

If no traditionally equipped industrial arts laboratory is available, the initial outlay may run \$5,000. For 125 students, initial materials investment may be another \$2,000-\$3,000. For a similar number of students in subsequent years, the materials cost would be about \$1,700. These cost data concern "Construction"; it would seem likely that the laboratory facilities would serve also for "Manufacturing," and that materials costs would be similar for the second-year course. One full-time certified industrial arts teacher will be needed for each 125 students.

JUNIOR HIGH SCHOOL INDUSTRIAL TECHNOLOGY CURRICULUM  
IACP

The program has been adopted successfully in several hundred schools throughout the country, using teachers who have had 60 to 80 contact hours of Project staff-provided pre-service workshops. This training, two to six weeks in length, is thought to be essential, and IACP materials are not made available to schools which are unable to arrange for the training component.

Forty-five colleges will hold IACP training workshops in the summer of 1971, offering graduate credit. At each institution, a faculty member augmented by an industrial arts teacher from an IACP junior high school will lead the workshop. Institutional responsibility for the training activity, in the developer's view, will increase the impact the IACP may be expected to have on the host institutions' industrial arts teacher education program.

Although workshops are arranged for persons preparing to teach IACP, there seems to be a broader purpose. As announced, workshops are "open to all interested persons who wish: to understand IACP rationale and course content; to learn how to utilize behavioral objectives, role playing, production scheduling, and other effective teaching techniques; to gain a working knowledge of management and production practices utilized in the construction and manufacturing industries; to become familiar with the teaching procedures, student activities, and instructional materials used in THE WORLD OF CONSTRUCTION and THE WORLD OF MANUFACTURING courses."

IACP-materials-in-use can be examined and evaluated in six field evaluation centers (involving some 24 teachers and 3,000 students) and ten demonstration centers (involving some 18 teachers and 2,000 students) throughout the country. Dissemination planning has been one of the strongest features of IACP. The staff has carefully worked out most of the important dissemination problems including training of teachers, using experienced teachers in subsequent workshops, linkage to industrial arts teacher education programs in other universities, publication of instructional materials, tying distribution to workshop training, reporting at conferences, and a steady stream of research studies undertaken by doctoral candidates. Although this is not the only effort to modify traditional industrial arts instruction, it is the most highly developed one. Availability of the full evaluation report will be awaited with great interest.

BILINGUAL EARLY CHILDHOOD LEARNING  
SYSTEM

This early childhood education program is a planned intervention program for economically disadvantaged 3, 4, and 5 year old Mexican-American children, their parents and their teachers. The goal is to affect the children's cognitive, social and physical growth through the use of activities conducted in Spanish and in English. The project's objectives also include the development of the child's appreciation of his own culture, preservation of his native language, and the development of his visual, auditory and motor skills, language abilities, and reasoning and problem solving capabilities.

The activities are sequential, encompassing three levels, I, II, and III; each consists of 26 instructional units that deal with particular content areas. For each unit, there are 15-20 lessons designed to interest and involve the child. Each lesson requires action on the part of the child. Each unit also includes a list of equipment that should be placed in the room. The teacher is given behavioral objectives for each lesson, and there are classroom performance tests for each unit.

There is a staff development component in the System that is designed to aid teachers of young economically disadvantaged children. Modules of this component may be used in summer staff workshops and in-service training sessions during the school year. The System also includes activities for use by parents in the home environment. They are done in English and/or Spanish and involve use of materials usually found in the home. Their purpose is to provide home support and reinforcement for classroom instruction. Some elements of the System may stand alone, as for example, Los Niños - a 20 minute weekly TV program, and Paso de Paso con Los Niños - a group of Spanish folk songs and dances for cultural enrichment.

The results of testing were somewhat inconclusive, but the program does seem to raise the intellectual performance level of disadvantaged Mexican-American children. Some of the Bilingual System results were compared with two other programs--one involving structured parental involvement and the other a traditional day care center--neither could be typed specifically as bilingual.

The three-year-old subjects were given three IQ tests, the Leiter International Performance Scale, a nonverbal IQ measure and forms A (English) and B (Spanish) of the Peabody Picture Vocabulary Test. The three tests were given in both September and May of the school year by the same examiner. Mean pre- and post-test IQ scores for the groups show highest gains for

BILINGUAL EARLY CHILDHOOD LEARNING  
SYSTEM

the group using the Bilingual System. Although the study was not longitudinal, longitudinal data will be gathered as the program continues. In the following year, testing of experimental groups showed significant IQ gains for three-year-olds, from 95.6 to 115.0. Results were not equally supportive among four- and five-year-olds.

Language development was measured and significant gains were recorded for three- and four-year-olds on the Auditory Test of Language with comparable gains realized in both Spanish and English. On five-year-olds, using the Linguistic Capacity Index, significant gains again were observed in vocabulary recognition, phonology, and grammar.

Levels I and II are available as is Level III to schools which have acquired the others, use of II being prerequisite to III. The materials are available at reproduction cost, but are not yet in commercial form. They include, in addition to the instructional units, teacher guides, media materials, supplementary materials, and certain staff development materials, primarily filmstrips.

The System calls for a teacher and a teacher-aide for a class of twenty children. For each group of ten classrooms, there needs to be a coordinator. A one-week pre-service workshop is necessary as are regular in-service sessions of two hours on a weekly basis. Also, testing and data analysis are available at about \$5.00 per child.

Presently, the developer controls participation in the System; the using schools contract each year for materials at cost, consultant services as needed, and for sending and meeting expenses of a key staff person for training during a summer workshop. Expense of the workshop itself is borne by the developer. Use cannot be arranged without this direct relationship. In 1970-71, there are eight such sites with 2,000 children involved.

Within a year, the developer expects to have packaged training sessions and material to make the System more disseminable.

The major problem in implementation of this System comes from not knowing very much about its effect. The findings reported above are a small segment of the evaluative effort, but about the only reportable results. Before the picture becomes clear much more comprehensive measurement and data analyses are needed including explicit attention to the System's bilingual aspect and to verification that the stated objectives have been realized. It is understood that the developer has plans along these lines and their outcome will be viewed with great interest.

INSTRUMENTS AND PROCEDURES FOR DESCRIBING  
EFFECTIVE TEACHER BEHAVIOR

The objectives of this product are to provide systematic, flexible and economical procedures for evaluating college teachers; to assist them by providing feedback about how their teaching is perceived by students and colleagues; to provide a broader information base for making tenure and promotion decisions; and to assist students in their choice of courses and teachers.

There are four versions of an instrument for describing teacher behavior, several combinations of which may be used. There are short (7 items) and medium-length (52 items) forms for obtaining teacher descriptions from students, and short (12 items) and medium-length (79 items) forms for obtaining teacher descriptions from teaching colleagues. Each of the forms yields numerical scores on 5 sub-scales of teacher behavior and an overall scale. Provision also is made for open-ended comments. The two forms for completion by students provide additional space for items that might be relevant to a particular teaching situation. The two forms for completion by colleagues in addition provide scores on 5 scales relating to perceptions of the instructor by his fellows.

Associated procedures for administration of the forms, the reduction of data and the formatting of information feedback, although they are not yet fully available, will eventually be a part of the package.

The instrument was developed as a result of an extensive study of college teaching done in 1967 and 1968 at the University of California at Davis. In this study a sample of 338 students and 119 faculty members returned separate questionnaires in which they identified the two faculty members who in their opinion were the best and worst teachers. Excellent agreement is reported between the students and teachers on this identification and also between the students in this survey and in both an earlier independent survey and a later cross validation survey of 1,015 students.

Each student in the initial sample was asked whether each of 158 descriptors of aspects of teaching was characteristic of the teachers he named. A factor analysis was done of 91 of the descriptors that proved to discriminate the "best" from the "worst" teachers to a high degree of significance. The five scales (Analytic/Synthetic Approach, Organization/Clarity, Instructor-Group Interaction, Instructor-Individual Student Interaction, and Dynamism/Enthusiasm) used in the instrument came from this analysis. A similar factor analysis of 67 colleague descriptors that were most discriminating resulted in the five additional scales found in the forms for colleagues (Research Activity and Recognition, Intellectual Breadth, Participation in the Academic Community, Relations with Students, and Concern for Teaching).

INSTRUMENTS AND PROCEDURES FOR DESCRIBING  
EFFECTIVE TEACHER BEHAVIOR

Five summary descriptions of scales used with students were included in the cross validation study along with full lists of the items from the earlier study. Mean scores of the summary descriptions correlated very well with the scores obtained from the full lists. Essentially it is the summary descriptions that comprise the present short forms and samples from the full lists that comprise the medium-length forms.

The fact that the sample was identified, in a sense, through self-selection may have introduced bias. However, those responding were reported to be reasonably representative in terms of sex, class level, major field of study, and grade-point average. Also the agreement to a .0005 level of significance on the identification of the best and worst teachers between the later student survey and the earlier survey that had a 90 percent return provided indirect evidence, according to the developers, that significant bias was not introduced. The study also found that "best" and "worst" teachers engage in the same professional activities and allocate their time among academic pursuits in about the same ways.

Finally, in general, student ratings of best teachers showed only negligible correlations with academic rank of instructor, class level, number of courses previously taken in the same department, class size, required versus optional course, course in major or not, sex of respondent, class level of respondent, grade point average, and expected grade in the course.

The instrument in any of its forms costs a few cents each. Optical scanning response sheets or mark sensed cards may be used, or data may be assembled and reduced by hand. The total cost of an evaluation of teaching behavior depends on many factors, such as the numbers of students and teachers involved, whether departmental or institutional norms are computed, and the form in which the results are to be disseminated. The developers estimate a cost range of about \$5.00 to \$25.00 per teacher evaluated.

A user's manual is reported to be available and supplies the necessary information for implementation. For large scale implementation, advice by a member of the psychology, education, or sociology department is recommended. Otherwise, no specialized training is necessary. If implemented by a department, the administration, reduction of data and interpretation can be handled by a Committee. If implementation is institutional, centralized data reduction facilities may be necessary.

Presently the forms are known to be in use on 12 campuses. The developers have received about 200 requests from other colleges for the report and the instrument. Most of the requests have been from institutional committees in the process of developing teaching evaluation procedures. Follow-up study is planned for fall 1971.

Faculty members on many campuses, of course, have reservations about the institution of formal procedures for evaluating teaching. Successful implementation requires early and continuous consultation with and involvement by the faculty. Safeguards to insure that the information gathered takes into account individual and local circumstances are important features of the implementation plan.

Thirty-one products in the 1971 pool, consideration of which was concluded during the initial selection phase.

- 02 The Vocational Development Inventory 5-0038 5X57  
Dr. John O. Crites, Principal Investigator  
University of Iowa
- 04 Harvard Project Physics 5-1038 3X33  
Professor Gerard Holton, Associate Professor  
F. James Rutherford, Professor Fletcher G. Watson,  
Principal Investigators  
Harvard University
- 05 A System for Individualizing and Optimizing Learning  
Through Computer Management of the Educational Process  
8-0157 5X5X  
Dr. Alexander Schure, Principal Investigator  
New York Institute of Technology
- 08 Inquiry Materials for Social Studies HS-041, H-292 3535  
Edwin Fenton, Principal Investigator  
Carnegie-Mellon University
- 09 Multi-Media Economics Curriculum Development Project  
8-0447 2X45  
Edmund W. Fitzpatrick, Principal Investigator  
Educational Technology Center
- 10 Intermediate Science Curriculum Project (ISCS) 6-1762 2X33  
Ernest Burkman, Principal Investigator  
Florida State University
- 12 The Taba Curriculum Development Project in Social Studies  
5-1314 3X55  
Dr. Norman Wallen, Principal Investigator  
San Francisco State College
- 16 Project Africa 7-0724 1139  
Barry K. Beyer, Principal Investigator  
Carnegie-Mellon University
- 17 The Development of Instructional Materials and Teaching  
Strategies on Race and Culture in American Life 8-0197 3X25  
Dr. John S. Gibson, Principal Investigator  
Tufts University

- 20 The Oregon Curriculum: A Sequential Program in English  
5-0366 3X31  
Albert R. Kitzhaber, Principal Investigator  
University of Oregon
- 23 Unified Mathematics Program 7-0711 3634  
Dr. Howard F. Fehr  
Columbia Teachers College
- 26 Behavioral Objectives Package 4740  
Dr. James L. Olivero, Dr. Carmen R. Rimiraos, Principal  
Investigators  
Southwestern Cooperative Educational Laboratory
- 27 Backgrounds in Language 4X41  
Mrs. Barbara K. Long, Principal Investigator  
Upper Midwest Regional Educational Laboratory
- 36 Dialects and Dialect Learning - An English Inservice Program  
4X41  
Karen Matison Hess, Principal Investigator  
Upper Midwest Regional Educational Laboratory
- 39 Instructional System In Facilitating Inquiry in the Classroom  
4X40  
Lawrence D. Fish, Principal Investigator  
Northwest Regional Educational Laboratory
- 41 Model CM Classrooms for Individualized Instruction - Grades  
4-6 2X20  
John C. Maxwell, Principal Investigator  
Upper Midwest Educational Laboratory
- 44 The Oral Language Program 1211  
Dr. James L. Olivero, Dr. Robert T. Reeback, Mrs. Helgi  
Osterriech, Principal Investigators  
Southwestern Cooperative Educational Laboratory

- 47 Self-Instructional System in Basic Electricity 2X37  
Lawrence D. Fish, Principal Investigator  
Northwest Regional Educational Laboratory
- 48 Instructional System in Systematic and Objective Analysis  
of Instruction 4X40  
Lawrence D. Fish, Principal Investigator  
Northwest Regional Educational Laboratory
- 49 Instructional System in Interaction Analysis 4X40  
Lawrence D. Fish, Principal Investigator  
Northwest Regional Educational Laboratory
- 50 Self-Instructional System in Welding 2X37  
Lawrence D. Fish, Principal Investigator  
Northwest Regional Educational Laboratory
- 53 An Enlarged Music Repertory for Kindergarten Through Grade  
Six 5-0219 3X58  
Gordon Hardy, Principal Investigator  
The Julliard School
- 56 Western Interstate Commission for Higher Education,  
Planning, Analysis and Management Systems Project 8--0708 3940  
Dr. Robert Huff, Principal Investigator  
WICHE/MPS
- 59 Multicultural Social Education Program 1415  
Mrs. Martha Smith  
Southwest Educational Development Laboratory
- 60 Research and Development on Preschool Disadvantaged  
Children 5-1181 1410  
Professor Merle B. Karnes  
Institute for Research on Exceptional Children

- 61 Exploration in Biology Topics (Inquiry Skills Program)  
5X33  
Eugenia M. Koos  
Mid-Continent Regional Educational Laboratory
- 62 Development of Materials for a One-Year Course in African Music for the General Undergraduate Student 6-1179 1148  
Dr. Vada E. Butcher, Principal Investigator  
Howard University
- 63 A Program for Leadership Training in Team Teaching 4440  
L. Jean York, Principal Investigator  
University of Texas (Austin)
- 65 Comprehensive Personal Assessment and Counseling Feedback Systems for Pre-Service Teacher Education Programs 4940  
Oliver W. Brown, Co-Director  
University of Texas (Austin)
- 66 Alternatives for Learning Through Educational Research and Technology (AIERT): An Educational Information System 5959  
C. L. Hutchins, Principal Investigator  
Far West Laboratory for Educational Research and Development
- 69 An Instrument and Procedures for Improving Communication and Academic Policy Making 5940  
Leland L. Medsker, Director  
University of California (Berkeley)

## THE VOCATIONAL DEVELOPMENT INVENTORY

The Vocational Development Inventory is being developed by the Vocational Development Project at the University of Iowa in order to investigate vocational development at various ages and in various situations, the factors which affect such development, and means of helping in the solving of problems in vocational decision making. The developers consider the Inventory primarily a research tool.

The Inventory will be composed of an Attitude Scale and a Competence Test. The Attitude Scale is operational. It consists of 50 attitudinal statements designed to assess "five different dispositional response tendencies in vocational choices":

- 1) involvement in the choice process
- 2) orientation toward work
- 3) independence in decision-making
- 4) preference among factors that influence choice
- 5) conceptions of the choice process

The Competence Test is in process of being standardized.

The developers state that the Attitude Scale can be used with any students who read at or above the fifth grade level, and has sufficient ceiling for college upperclassmen, particularly if they are undecided or unrealistic about vocational choices. They add, however, that the Scale is more likely to be applicable to students in grades seven through twelve and to college freshmen and sophomores. Percentile norms are available for grades five through twelve, for all four college years, for vocational-technical groups, blacks, American Indians, Mexican Americans, French Canadians, and other groups. The scoring key was empirically derived from differences between the majority response of twelfth graders in the standardization sample and lower grades. All items are monotonically related to grades, and together they yield a total Vocational Maturity score.

Research on the Attitude Scale has been cross-sectional rather than longitudinal. The developers indicate the need for more and more extensive research. However, a program of survey, technique, theoretical, and applied research on the Scale indicates a positive relationship between it and achievement, intellectual, and personality variables, and correlations with other measures of vocational maturity. "Content" validity was experimentally corroborated by comparing an empirically based scoring key with a rationally derived one based on the judgment of counseling psychologists. The two keys agreed in three out of four instances. Applied research attempted to evaluate the effects of certain treatment variables, such as counseling and informational experiences, on the maturity of vocational attitudes.

The Attitude Scale was standardized on some 10,000 students, here and in other countries. Mean internal consistence for six grades is .74, computed by analysis-of-variance procedures. Mean test-retest stability for six grades over a year's testing interval is .71. A Research Data Bank is available to investigators who use the Attitude Scale.

There are no special requirements for administering the Attitude Scale, which takes about 15 or 20 minutes. It can be given to individuals or to groups, and scored locally by hand or sent to a scoring service for machine scoring and interpretation, interpretation, and listing of IBM cards.

The Scale costs \$.10 a student, for a booklet and an answer sheet. It is available from the Vocational Development Project, The University of Iowa, Iowa City, Iowa 52240. Scoring service is available from Measurement Research Center, Iowa City, Iowa 52240.

The developer reports no special efforts or plans to disseminate information about the Vocational Development Inventory.

### HARVARD PROJECT PHYSICS

Project Physics is a complete multimedia instructional learning system for a one-year humanistic physics course. The Project intends to

- a. help students increase their knowledge of the physical world,
- b. help students see physics as the many-sided human activity it is,
- c. increase the opportunity for immediately rewarding experiences while obtaining knowledge and skill which will be useful throughout life,
- d. enable teachers to adapt the physics course to the wide range of interests and abilities among their students, and
- e. recognize the importance of the teacher in the course and the vast spectrum of teaching situations that prevail.

A basic aim for the course is to increase greatly the number of students enrolled in physics courses.

A great variety of materials are supplied for the course, which is divided into six units, "Concepts of Motion," "Motion in the Heavens," "The Triumph of Mechanics," "Light and Electromagnetism," "Models of the Atom," and "The Nucleus." Basic materials -- text, student handbook, readers (anthologies), test booklets, transparencies, and teacher resource books -- are organized around the units. Programed instruction booklets, supplemental texts and laboratory guides, 8 mm film loops, and 16 mm sound films are organized around topics of interest. Laboratory materials and equipment are available as well, as are 21 half-hour 16 mm films for teacher training.

Eleventh- and twelfth-grade students of all sorts -- girls, art and literature majors, industrial arts majors, as well as those normally interested in science -- can, through this course, learn physics and relate it to their lives and interests. The flexible nature of the materials makes it possible for the teacher to adapt the course to a variety of students and instructional settings.

Research on the course was designed to supply data for course improvement, for the description of users of the material, and for the description of factors affecting science learning. Initial evaluation began in 1966-1967, when some 40 teachers tried the materials. The next year a carefully selected sample of 34 teachers taught the course to their students, having had a six-week training course in the summer. At the same time a control group of 19 teachers, with only a two-day briefing session, taught their regular course. The two sets of students took the same tests. Achievement test scores were higher for the Project students, but not significantly so. Their course satisfaction scores were, however, significantly higher. In addition, enrollment in physics courses has increased enormously in schools where Project Physics is available.

The course is designed to be taught by a professionally prepared physics teacher, preferably one with an interest in the history and the philosophy of science, and with some familiarity with multimedia and individualized approaches to learning. The developers recommend that teachers attend a special training session before teaching the course. A laboratory is required for the course, but the flexibility of the course makes it adaptable to just about any sort of laboratory situation.

The developers emphasize the importance of informing guidance counselors about the course and its suitability for many students whom they would steer away from traditional courses.

The course is sufficiently flexible to fit into traditional or modular scheduling. It works out best if there are 250 minutes of instruction a week, however arranged.

The initial expense of implementing the program is quite high. Some adjustments can be made by renting instead of buying films, by obtaining materials over a three-year period, by making use of material and equipment on hand, and by selecting the least expensive experiments from the great array offered. Ordering minimum equipment, it is possible to offer the course to four classes of 32 students each for about \$40 a student. With recommended equipment the cost rises to about \$50; with a complete set of equipment it is about \$65. These figures include expendable materials but not the sound films. The annual expense for expendable materials is about \$135 for four classes. The three student films can be brought for \$486 or rented for an average of \$17.50 each; the 21 teacher training films can be bought for \$2,207 or rented for \$12.50 each.

All materials are available from Holt, Rinehart, and Winston, Inc., 383 Madison Avenue, New York, New York 10017. Individual prices are as follows: Text, \$6.54; Handbook, \$2.43; Readers, \$9.36; Tests, \$1.44; Programed Instruction Booklets, in preparation; Teacher's Guide, \$17.82; Transparencies, \$300.00; Film Loops, \$1,233.00; Laboratory Apparatus for 32 students, \$1,797.00 for starter set, \$2,994.00 for recommended set, \$5,219.00 for complete set; sound films, see above.

Participants in the Harvard Physics Project have taken advantage of numerous opportunities to describe the Project to members of professional associations. They have written articles on the Project for 32 journals. One entire issue (May 1967) of The Physics Teacher was devoted to the Project.

Continuing information dissemination efforts include the operation of summer teacher-training institutes (sponsored by the National Science Foundation) by the developer and advertising of the materials in journals and flyers by the producer.

A SYSTEM FOR INDIVIDUALIZING AND OPTIMIZING LEARNING THROUGH COMPUTER MANAGEMENT  
OF THE EDUCATIONAL PROCESS: PROGRAMMED MATHEMATICS CONTINUUM LEVEL I

Programmed Mathematics Continuum (PMC) Level I is a computer-managed, self-paced, independent study course in high school algebra. It can serve as a self-study program, or can be used under teacher supervision either as a complete course or as a workbook activity paralleling classroom activity. The course is designed not only to teach mathematics but also to serve as a model for the application of systems engineering and computer techniques to the learning process. It includes a syllabus, suggested core and remedial texts, study guides with pre- and post-tests, and mid-term and final examinations. Lesson, reading, and homework assignments are made by the computer, in order to free the teacher to work with students on special problems.

The computer permits each student to proceed at his own pace, and "loops" him back to instructional material if he is unable to answer questions correctly. It also keeps records of each student's performance and is programmed to summarize class performance whenever required, even if students are in entirely different segments of the program. The computer furnishes the teacher with lists of students who have indicated weaknesses in certain objectives and the program provides specific remedial prescriptions in such cases.

PMC Level I is primarily designed for use in the first year of high school, but it can be used as a remedial course in two-year colleges or technical schools. Students must be able to read at the ninth-grade level. The computer management system is designed for virtually any grade level or subject matter, starting with the early primary grades.

The developers established criteria for PMC Level I by a systems analysis approach to course objectives, instructional materials, criteria assessment measures, student abilities, and student aims. They evaluated the program in its formative stages by using it over a three-semester period with students taking first-year high school algebra in a technical institute, comparing PMC student performance with that of students taught by conventional means. Evaluation continues as more students, in college and in high school, use the program. Ongoing statistical analysis of group performance indicates what aspects of instructional or testing materials need revision in order to meet program criteria.

Operational trials of the program made it clear that teachers require pre-service training in order to operate the program efficiently, and that a means is needed to permit the teacher to monitor the computer. They also showed the necessity to train students in the use of response devices to avoid man-made foul-ups in the system.

The system is designed to work in traditional high school environments supplemented by a computer and computer operating personnel. A computer configuration equal to an IBM 360/30 with 64,000 bytes of core capacity, and a FORTRAN IV compiler along with discs and tapes, are required to implement the program as it stands. (Conversion to an IBM 360/65 is in process.) Computer management personnel will need about two weeks of special training.

The program assumes the availability of professionally certified mathematics teachers and qualified clerks. The teachers will require about sixteen hours of pre-service training. One teacher can teach 150 students by this method, with the help of a clerk half-time.

An additional administrative consideration is the availability of background material on the students who will use the program. The developers recommend for best use of the management program that the background data include measures of arithmetic computation skills, abstract reasoning, reading comprehension, psychological background, and I. Q.

A school which already has a computer can use PMC for 200 students a year for five years at a cost of about \$55 a student. A set of all reusable materials for the instructor comes to \$33. Instructional and background material and response forms are available from New York Institute of Technology, Old Westbury, New York 11568. The developers recommend either of two core texts and either of two remedial texts:

Core: Peterson, Intermediate Algebra for College Students, Harper and Row, 1967

or

Dolciana et al., Modern Algebra, Houghton Mifflin, 1965

Remedial: \_\_\_\_\_, Ninth Year Mathematics, Amasco, \_\_\_\_\_

or

Dodes and Greitzer, Algebra I, Hayden, 1967

The developers of PMC Level I have sought users for the program, in colleges and in high schools, for the most part on the Eastern seaboard. Since course content is based on SMSG materials and New York State Regents' syllabi, a plan for extensive use may be a reasonable expectation.

**INQUIRY MATERIALS FOR SOCIAL STUDIES  
(THE HOLT SOCIAL STUDIES CURRICULUM)**

The goal of this curriculum is the promotion of inquiry learning in secondary school social studies. It sets forth a rationale for inquiry learning and provides materials and teaching techniques designed to improve student attitudes toward learning, develop positive self-concepts, clarify values, develop learning and inquiry skills, and assist in the acquisition of useful knowledge.

The eight one-semester courses in the curriculum build upon each other to assure sequential and cumulative learning, and are arranged to draw on the major subject competencies of teachers at various grade levels. The courses are:

**Ninth grade:** Comparative Political Systems  
Comparative Economic Systems

**Tenth grade:** The Shaping of Western Society  
Studies of the Non-Western World

**Eleventh grade:** The American Experience (two semesters)

**Twelfth grade:** An Introduction to the Behavioral Sciences  
The Humanities in Three Cities: Ancient Athens, Renaissance  
Florence, and Modern New York

The materials for each semester course consist of a text, an audiovisual kit, a testing program, and a teacher's guide. Also available are a rationale, a methods book designed for teachers, and twelve teacher training films. The curriculum was originally designed for able students and then modified before publication for use with average students as well. A similar set of materials for slow learners is expected to be available by 1975.

Pre-publication evaluation of the experimental version of the materials was performed on a group of 463 able students in the Pittsburgh Public Schools. The results of a battery of eight standardized tests administered over a two-year period indicated that only on a test of economic understanding did the experimental group make significantly greater gains than the control group, and that on the particular measures used the experimental group showed no significant improvement compared to the control group in skills of critical thinking. Because teachers of the experimental classes felt that their students were learning valuable skills not tested by conventional instruments, the developers wrote a test to assess knowledge of and ability to use the mode of inquiry stressed in the experimental curriculum. The students in the experimental curriculum made significantly greater gains on this test, but the developers themselves point out the danger of evaluating a new curriculum by means of a test based on the curriculum itself. In this case in particular it would appear that at least some of the test is based on learned definitions of terms and concepts.

The published materials, substantially revised for use with average as well as able students, have been tried and evaluated in the Fairfax County, Virginia, Public Schools; the SPEEDIER Project in eastern Pennsylvania; the Social Sciences Education Consortium in Boulder, Colorado; the Metropolitan Social Studies Center in St. Louis; and the Department of Education in Victoria, Australia. These studies are largely descriptive and no statistical data have been collected.

Professional certified teachers trained in inquiry teaching techniques should teach this curriculum. They may do so without special training, using the detailed lesson plans, the rationale, and the methods book provided. It is recommended, however, that they view the twelve training films and attend a workshop operated under the developer's auspices.

Schools which normally schedule social studies for 40- or 50-minute periods four or five times a week need make no special adjustments for this curriculum. It will fit into ordinary or team-teaching schedules, and supplementary materials are available if required. It is assumed that the school has projection and playtack equipment.

The developers recommend that the entire program be adopted, in the interests of sequential and cumulative learning. They also recommend that a pre-introduction tryout involve at least two teachers and four classes, to provide interaction.

The initial cost per grade per year for student materials is \$7.00 to \$10.00 per student, or \$1.40 to \$2.00 per student over a five-year period. This provides texts, tests, audiovisual materials, and a teacher's guide, but not training films, which can be rented for a nominal sum, rationale, or methods book. All materials are available from Holt, Rinehart, and Winston, Inc., 383 Madison Avenue, New York, New York 10017.

Members of the developer's staff have written a number of articles and made over 300 presentations on the new curriculum, and nearly 500 teachers have been introduced to it in summer institutes or in Experienced and Prospective Teacher Fellowship Programs. The publisher employs two full-time representatives to demonstrate the materials. They also have twelve films showing the curriculum in use, and have published two books which deal in part with the curriculum.

## MULTIMEDIA ECONOMICS CURRICULUM DEVELOPMENT PROJECT

The Multimedia Economics Curriculum is a modular self-instructional course designed to cover introductory college economics in less than a semester. Students may elect to use six self-instructional texts or three audio cassette/workbook packages. Also available for enrichment are seven computer-based economic simulations, another self-instructional volume, and six films from a television course on the American economy.

The course is divided into four concept areas -- basic economics, macro economics, micro economics, and domestic and international issues -- divided into work segments. Each segment is culminated by a self-administered progress test in a portable electronic response board which is programmed to refer the student to additional materials if he answers incorrectly. The board also stores responses for later computer evaluation. There are also introductory, concept-area, and final examinations, and two very short criterion-referenced tests for the optional enrichment segments.

The Curriculum can, according to its developers, be used by college undergraduates, high school students seeking college credit, and extension/correspondence course students.

The Curriculum materials were first tried in early 1969 on 41 college students who had had no college course in economics. In late 1969 a revised course was tried by 39 college sophomores and juniors; 97 per cent of them achieved within one semester's time 80 per cent of the performance objectives set for the Curriculum. No standardized economics tests were given, and no comparisons were made with students who took conventional economics courses.

The students rated the enrichment films, about half finding them effective and relevant to the course, about half finding them boring and a waste of time. The other supplementary materials were not rated.

Instructors of the course reported that a sufficiently large majority of the students elected the self-instructional texts over the cassette/workbook packages to make it questionable whether the cassette/workbooks are necessary. Further, they say that the computer simulations might be better presented as student research projects, or at least that systematic comparison of the two modes of presentation would be useful. The other optional materials, they say, overlap the core materials to the extent that a cost-benefit analysis might show them not worth their price.

No organizational changes are required to implement the curriculum, but there may be an increased clerical and administrative load, to accommodate the varied rates at which students progress through the Curriculum and require examinations, and to schedule, distribute, and keep track of software and equipment. A computer is not necessary to the program, but is needed if the enrichment simulations are used and can be used to summarize and report on performance.

The course can be operated with one instructor per 150 to 180 students. It might be enriched by having a trained economist as instructor, but that is not necessary, according to the developers. A course administrator/aide is needed to manage the audiovisual materials. Teacher-staff training is required for all initial installations, some 40 to 80 contact hours. The developers need a training course for \$1,500 up, depending upon the size of the training

program, and supplies telephone and mail counseling at no charge.

Basic materials for 30 students, a teacher, and a course administrator come to \$2,500-\$3,000. The unit price is lower on purchases of larger volume, and the cost of materials can be amortized over several years. The set of computer simulation programs comes to \$16.70; the student simulation manuals range from \$3.25 to \$3.95. Two response boards are recommended by the developers, one at \$30 and one at \$60. Materials are available from the Educational Technology Center of Sterling Institute, The Water Gate, 2600 Virginia Avenue N. W., Washington, D. C. 20037. One response board is the "Coxco Respondex;" the other is the "Q. R. S. Responder."

The developer is repackaging the course to lower its cost, increase its flexibility, and improve its appearance. He expects to issue brochures to that effect. Other dissemination efforts will include direct mail advertising, contact with economics associations, advertising in economics journals, demonstrations at schools, seminars and workshops, selective mailing of sample materials, promotional visits to major schools, and so forth.

## INTERMEDIATE SCIENCE CURRICULUM STUDY (ISCS)

The Intermediate Science Curriculum Study (ISCS) Program is a complete science curriculum for the junior high school. There are three levels, for grades seven, eight, and nine respectively, each organized around broad themes of scientific inquiry and science concepts. The themes for Level I (seventh grade) are "Energy, Its Forms and Characteristics" and "Measurement and Operational Definitions." The eighth-grade themes are "Matter, Its Composition and Behavior" and "Model Building." Ninth-graders make separate experimental investigations into topics in biological, earth, and space sciences.

The program is laboratory-centered; its texts incorporate laboratory guides, and laboratory apparatus and response booklets for laboratory exercises are supplied. It also is individualized and self-pacing, and includes not only core material for all but also supplemental material for enrichment exercises for the capable or remedial ones for the less able. Self-evaluation exercises are part of the program, as are standardized tests.

In 1966-1967 over 5,000 students and 50 teachers in five states started using the first form of the Level I program. A grade level and new tryout centers were added each year, and by 1970-1971 200,000 students in 50 states, Australia, Canada, Japan, and the Philippines are trying the materials.

In each of three years, three groups of some four to five thousand students each, plus matched control groups of about 500 students each, have followed an achievement testing schedule of selected standardized measures and project-developed tests. Also, teachers and students supply written (evidently generally favorable) comments on their reactions and experiences. Further, a selected group of students of varied ability at Florida State University have used a computer-assisted version of the materials, with their responses to questions and level of participation in activities recorded. All these sources of feedback have been used to guide revision and further development of the materials, to the point where a stable version of Level I is now on the market and is in process of being evaluated in use. Levels II and III will be accorded similar treatment.

The developers applied four readability formulas to the materials and found them to be at or below the grade levels for which they are intended. Student and teacher comments on readability reflected these findings, and ISCS students showed substantial gains, greater than those of a matched control group, in end-of-year mean percentile ranks on the Metropolitan Reading Test.

The program is designed to be taught by regular science teachers; those who find it easy to assume the role of resource person may find it possible to prepare just by using the teacher guides. However, the developers emphasize that teachers are much more likely to be successful if they have pre-service or in-service training; the developers offer institutes, seminars, and training manuals for the purpose, and plan comprehensive individualized teacher-training modules to insure fidelity in teacher-training programs. Florida State University has a credit course in teaching ISCS materials.

Implementation will be smoothest for systems which have junior high schools and basic laboratory facilities. In any case, a large amount of advance planning is required because of the scope of the program. The program does lend itself to modular scheduling.

The developers have made considerable effort to disseminate information about the program. They have made presentations at professional meetings, established demonstration centers, operated "summer institutes" and "drive-in conferences," published a newsletter, and written articles for professional journals. They also have appointed 26 "regional consultants" to answer questions and disseminate information regionally. They plan to continue and increase efforts in connection with teacher training. Their activities have been and will continue to be supplemented by the publisher's promotional campaign.

A complete set of laboratory materials for one teaching station for about 30 students for the Level I course costs \$750, assuming that at least flat-top tables, an electrical outlet, a sink with running water and drain, and storage facilities to which students have easy access are available. The cost may be considerably reduced if more extensive laboratory facilities are available. Additional laboratory materials cost about \$30 per class of 30 students. Thus the cost for five classes is about \$5.80 per student, plus the cost of the text (\$4.95) and the student record book (\$1.65). About fifteen per cent of Level I laboratory materials and thirty five per cent of Level II laboratory materials are expendable each year. Level III is expected to fall between the two in that respect.

Materials are published by Silver Burdett Company, Morristown, New Jersey 07960. Equipment is being produced by Damon Equipment Company, Needham Heights, Massachusetts.

## THE TABA CURRICULUM DEVELOPMENT PROJECT IN SOCIAL STUDIES

The Taba curriculum is designed for grades one through eight and is organized around key concepts which are given recurring emphasis throughout the elementary school years. Each unit offers sequentially developed activities in which students are actively involved. Six teaching strategies are employed, three for teaching cognitive skills and three for exploring attitudes, feelings, and values. The cognitive set includes strategies for developing concepts, for inferring and generalizing, and for applying generalizations; the affective set includes strategies for exploring feelings, for interpersonal problem solving, and for analyzing values. The strategies place great value on relating learning activities.

There is a teacher's guide for each grade. Teachers select learning activities on the basis of prescriptions in the guides, which also contain explanatory notes, evaluation procedures, and other helps. A comprehensive package of guides and materials for grades one through four will be available by September 1971.

A formal evaluation study was carried out in the sixth grade, primarily in schools in the San Francisco Bay area. Ten curriculum classrooms were compared with ten control classrooms, using pre- and post-testing. Among the instruments used were several measures developed to accompany the curriculum. There were measures of ability to apply generalizations, to explain cause-effect relationships, and to interpret data, and free response measures. The STEP Social Studies Test and other standardized tests administered throughout California were also used. Results suggested greater gain for "curriculum" pupils in interpreting data, use of appropriately abstract concepts, and emphasis on human-related topics. Several measures showed no difference between the groups and some appeared to show gain for the "control" pupils, for example, comparing and contrasting, grouping and labeling, and using concrete concepts.

The developers point out that a one-year study such as that they conducted fails to take into account the fact that the curriculum places considerable emphasis on recurring experiences related to key concepts as a child proceeds through the elementary grades. A meaningful evaluation should take the form of a longitudinal study over a longer period of time.

A school needs no special equipment or facilities to implement the curriculum. The developers recommend that the entire curriculum be introduced into the school at once. They strongly advise that teachers receive special training; it is available as a two-week workshop from Institute of Staff Development, Suite 316, 3000 Biscayne Boulevard, Miami, Florida 33137. Teachers will find useful also Hilda Taba's Teachers Handbook for Elementary Social Studies, published by Addison-Wesley in 1967 and shortly to be reissued in a new edition.

Teachers' Guides are available from Rapid Printers, 25377 Huntwood Avenue, Hayward, California 94544, at about \$3.00 or \$3.50 each, or from Addison-Wesley, Inc., 2527 Sandhill Road, Menlo Park, California 94025 for \$3.60 (\$2.55 to educators) each. The Addison-Wesley guides are indexed. As mentioned earlier, Addison-Wesley will package guides and materials for grades one through four in September 1971.

Project staff members have addressed teacher training groups and professional associations about the curriculum, and have written articles for professional periodicals. The curriculum has been included in demonstration centers in Oregon and in Illinois, the former under the auspices of the Northwest Regional Educational Laboratory, which has served as an information source for the curriculum. The major

dissemination efforts, however, have been in connection with teacher training which has been accomplished by means of publications, "each-one-teach-one" programs, summer institutes, and teacher workshops. Further such activities are planned.

## PROJECT AFRICA

Project Africa is concerned with providing educators with information enabling them to develop specific programs of study about Africa south of the Sahara expressly suited to the needs and desires of their own students.

Curricula have been developed for two educational levels. Africa South of the Sahara: An Inquiry Program for Grades 7-10 aims specifically at the unlearning of erroneous stereotypes, and uses other cultures as a means for better understanding of one's own culture, thus developing skills and attitudes requisite for effective independent learning in the future. The entire program is designed so that students will enjoy learning and succeed at it, thereby perhaps developing a more positive self-image than they otherwise might have.

The program is not concerned with data, facts, or information except as they have relevance for the conceptual learning objectives. One of the essential aims is to help students realize that people can act unlike us and still not be inferior or wrong, that people are affected in how they act by the kind of place in which they live, the mores of their culture, their history, and the location of their country.

For the twelfth grade the Project has developed resource materials for use by teachers as sources of ideas, information, materials, and teaching strategies for use in locally developed courses.

Materials for grades seven through ten consist of teaching guides and student materials for some twenty four-to-five day units in four areas:

Africa South of the Sahara: Rationale and Introduction  
People of Africa -- Topic I  
History of Africa -- Topic II  
Changing Africa -- Topic III

The twelfth-grade resource units cover:

Traditional African Religion (selected resources and model unit with teaching guide and student materials)  
Urbanization in Africa (selected resources and model unit with teaching guide and student materials)  
Africa -- A Data Book (country-by-country descriptions, statistical economic, political, social, and demographic data, 1970)

The Project has also developed a 176-frame self-testing program called Geography of Africa which includes diagrams, maps, charts, and a test.

Evaluation procedures for Africa South of the Sahara began with a pilot study in the spring of 1968 involving eight classroom teachers and students representing several ability levels, a variety of grade levels, and different types of schools. From the pilot came specific guidelines for improving teaching strategies and revising materials. The materials were, before being tried in classrooms again, evaluated by university specialists on Africa.

In the spring of 1969 the materials were subjected to a formal field trial. The experimental group consisted of eighteen classes of average ability and different grade levels all over the country. Most of their teachers had had no formal

training in Africa or in inquiry teaching. There was a control group of eighteen classes of average ability who studied the course on Africa normally taught in their schools. Then there were additional classes taught the Project Africa materials by four persons who had worked for Project Africa and therefore knew its objectives and methods. They had students of high, low, and average ability. Evaluations included pre- and post-tests of cognitive learning, an inquiry skills test, and teacher and student questionnaires. Results seem to indicate that the course works in the classroom, regardless of whether the teacher has had special training. Also it appeared that average students learn in an inquiry teaching mode even when the teacher is unfamiliar with it, so long as carefully structured lessons and materials are supplied in advance. The greatest influence on student attitudes in the classroom seemed to be the teacher's attitude.

The materials are designed to fit into the existing social studies framework, so no additional personnel is required, nor are any special training and facilities.

Plans are under way to have the materials for the Project Africa courses published by Thomas Y. Crowell Company, Inc. in the meantime, certain of the materials are available from EDRS:

Africa South of the Sahara: Rationale and Introduction Microfiche \$.50,  
paper, \$3.45  
Peoples of Africa -- Topic I Microfiche \$1.00  
History of Africa -- Topic II Microfiche \$1.00  
Changing Africa -- Topic III Microfiche \$.50  
Traditional African Religion Microfiche \$.50, paper \$3.75  
Geography of Africa Microfiche \$.75, paper \$9.65

The Project staff has written articles about the Project for professional journals, made presentations at national conferences, and conducted in-service workshops. In addition, they have made use of the ERIC system as a means of dissemination. These activities will continue, and it is expected that commercial publication will lead to dissemination activities on the part of the publisher.

THE INTERGROUP RELATIONS CURRICULUM  
The Development of Instructional Materials and Teaching Strategies  
on Race and Culture in American Life

The Intergroup Relations Curriculum, through instructional materials and teaching strategies, attempts to advance democratic intergroup relations among students in grades one through six by reducing stereotypic and prejudicial thinking and discriminatory behavior related to race and culture. This is accomplished in part through historical studies of the influence of ethnic groups in American life. By encouraging student participation, in the form of role playing, games, and free inquiry, the Curriculum attempts to advance each student's positive self-concept and to increase the teacher's awareness of his/her own prejudices and limitations.

The materials are organized into 21 learning activities, each with a stated objective. There also are films, audiotapes, photographs, bibliographies, and two broad instructional units, on American Indians and the Declaration of Independence. Broad objectives and statistical background are given in Volume I of the Curriculum. Volume II is a teacher's manual which suggests specific learning activities and the goals each should achieve, as well as listing bibliography and suggestions for adapting the Curriculum for specific situations.

The basic structure of the material is geared to the social studies and can be used to supplement an already-existing social studies program, though some teachers are using it as the basis for a new curriculum. It can also be adapted to course in English and history.

The theory, practice, and processes of government provide the structure for organization of the Curriculum. Course content is differentiated five ways: similarities (universal and group); differences (individual and group); interactions; ideals, myths, and realities; and the here and now.

The Curriculum is revised frequently on the basis of results of use of the materials. Since 1965, when development began, 8,000 students have been taught the new Curriculum by 350 teachers trained in its use. Pre- and post-audit forms evaluated the impact of the Curriculum on teachers and students. A majority of the teachers reported that they were more aware of their own sensitivities and the problems of intergroup relations after using the curriculum, and that they would revise their teaching methods because of what they had learned. Some teachers felt that the material is emotionally loaded and others that it emphasized blacks to the exclusion of other ethnic groups. Many felt that the methodology was more helpful than the content.

In the spring of 1967, three schools in one town participated in a program designed to help the developers evaluate both the Curriculum and the techniques for its evaluation. Seventy-five students participated; they were evaluated on the basis of oral responses to questions, drawings on relevant subjects, and responses to sentence completion items. The value of the evaluative tools was found to be high and the need for the Curriculum was validated.

The Curriculum and the manual called Seminar on Intergroup Relations Education have been extensively adapted and supplemented in recent months, particularly in the area of the performing arts. They will be available in the fall of 1971.

The Curriculum is designed to be taught by any elementary teacher who participates in 10 two-hour seminar sessions conducted by the developer, or who has a Seminar on Intergroup Relations Education. No other special requirements met in order to implement the Curriculum.

Volumes I and II together come to \$10.00; Volume II alone is \$7.50. A set of 25 sixteen- by twenty-inch photographs is \$25.00. Participation in a Seminar on Intergroup Relations Education, including receipt of visual aids on a programmed basis, comes to about \$500.00 for a school which sends one teacher to be trained. Films and materials can be rented for \$300.00. All materials are available from the Lincoln Filene Center, Tufts University, Medford, Massachusetts 02155.

Dissemination of information about the program has been extensive; there have been some 20,000 requests for the two volumes which comprise the curriculum, and more than 2,000 copies of Race and Culture in American Life have been distributed. Interest has been generated by numerous speeches and articles by members of the developer's staff, and by six intensive inservice training sessions involving 350 teachers and administrators. Other activities include broad use of the curriculum in schools on the eastern seaboard, and monthly two-day seminars for teachers.

## THE OREGON CURRICULUM: A SEQUENTIAL PROGRAM IN ENGLISH

The Oregon Curriculum is a sequential and cumulative curriculum in language, literature, and oral and written composition for regular or advanced seventh-grade through twelfth-grade students. The developers took into account in laying out the curriculum current knowledge about language, logic, literary analysis, criticism, and rhetoric, and developed new tests and measurements to evaluate the impact of the curriculum.

The literature curriculum is designed to demonstrate that literature shows us something about ourselves, to show how to judge what makes a text difficult or trite, and to show how to find out to what degree literature is ethical or persuasive. The curriculum becomes less and less prescriptive every year, so that by the twelfth grade students are expected to bring to bear on any literary work the standards learned over the years. The literary selections are paired as to theme, regardless of period or country, to give students a sense of the continuity of experience.

The language curriculum is described as focusing on scientific transformational grammar and encouraging etymological study as an aid in semantics and spelling. The rhetoric curriculum plays up the differences between oral and written communications and the necessity for effectiveness in both modes.

Textbooks and a teacher's guide are necessary for each grade for each strand of the curriculum, Literature and Language/Rhetoric. Also available are longplaying records and tests for each grade, a "skills box" for the entire curriculum, and three self-instructional programmed booklets, two for the student and one as orientation for the teacher. Transparencies and filmstrips are in preparation.

The curriculum was tried in pilot classes prior to publication and specially developed tests were used to evaluate pilot students' performances. The study indicated that the materials were reasonably appropriate for their purposes. The tests proved to be quite reliable. A comparison of students using the new material with those being taught conventionally revealed no significant differences. Teachers who responded to a questionnaire in general found the materials appropriate for the students and the teacher materials very valuable.

No special personnel, facilities, equipment, or scheduling arrangements are needed to implement the program. Summer institutes are available for teacher training.

Textbooks run from about \$4.00 to about \$5.25 each. Teachers' guides are typically \$3.00, though there are two which cost \$2.40. The longplaying records now ready are \$4.26. Programed booklets are \$.90 for one, \$1.41 for each of the other two. No prices are available for the tests, which will be issued as duplicating masters. The "skills box" is \$60.00. All materials are available from Holt, Rinehart, and Winston, Inc., 383 Madison Avenue, New York, New York 10017.

No report is available on efforts to disseminate information about the curriculum.

### UNIFIED MODERN MATHEMATICS PROGRAM

The Unified Modern Mathematics Program is the product of the Secondary School Mathematics Curriculum Improvement Study, now in its fifth year of research and experimentation. The Program is described as a six-year unified modern mathematics curriculum for college-capable students in grades seven through twelve. Unification is achieved by developing basic concepts of sets, relations, mappings, and operations, by building the structures of groups, rings, fields, and vector spaces, and by stressing the use of these structures.

Courses I, II, and III, for grades seven, eight, and nine, are available, Course IV is in experimental use and will be available in the fall of 1971, and Courses V and VI are in preparation. Each Course is prescribed in a two-volume textbook and a teacher's commentary. A comprehensive examination covering Courses I, II, and III is under construction. A study on necessary teacher education for the Program is under way; in the meantime, NSF summer institutes for teachers, started during the developmental stage of the Program, are still being held.

During the developmental stage, experimental classes were taught by teachers who had been given instruction in fundamental concepts underlying the unified mathematics program and in contemporary methods for teaching these concepts. The developers regularly observed the classes and held conferences to discuss progress and problems. The students were tested on their learning of the important new concepts introduced in the curriculum. Results indicated that students learned all that traditional mathematics courses would be expected to teach them and gained the ability to work with powerful new mathematics concepts as well.

Teachability of the Courses has been tested and verified also. Each Course is subjected to a three-year cycle of planning, writing, tryout, revision, tryout, and revision. During the 1969-1970 school year Course I was in use in 130 seventh-grade classes with 3,500 students, Course II in 60 eighth-grade classes with 1,800 students, and Course III in 15 ninth-grade classes with about 320 students.

During 1970, a Student Opinion Survey was conducted in Courses I, II, III, and IV. It will be repeated in the spring of 1971. There was too an intrinsic, noncomparative study of how well eight-grade students reached the objectives of a unit on transformation geometry. The results suggest that the materials were successful and most of the classes met the standards set for most of the test questions. There were indications that teachers and students found the ideas of transformation geometry interesting and enjoyable.

Teachers of this Program need a different and deeper kind of mathematical knowledge, including an understanding of the unity of mathematics. They also need the pedagogical ability to produce high levels of intellectual activity on the part of students. It is highly desirable for teachers to attend an NSF summer institute on the Program before attempting to teach it.

Students in the Program should probably be in the upper 15 or 20 per cent of their classes. However, students of average ability can cope with the curriculum if the pace is slowed. Proposals are being prepared to modify the Program for mass education by creating a core of unified modern mathematics.

Teachers' commentaries are \$3.25 each; the two-part textbooks sell for \$3.25 a part. Free informational and technical reports are available. All materials are ordered from Teachers College Press, Columbia University, 1234 Amsterdam  
New York, New York 10027.

Alternate New York State Regents Examinations for tenth and eleventh grades are available for students using the Unified Modern Mathematics Program, and comparisons of its concepts with those in Level I and Level II Mathematics Tests of the College Entrance Examination Board are being made to guard against unfair treatment of students using the new curriculum.

The Courses have been adapted and translated into French for use in Quebec and Hebrew for use in Israel. Concepts from them have been adopted in other foreign countries. They have had considerable recognition in this country; in 1971-1972 there will be 13,000 students in the United States studying Courses I through VI. Several hundred teachers have heard about the Program in detail through NSF summer institutes.

BEHAVIORAL OBJECTIVES PACKAGE

The stated purpose of the Behavioral Objectives Package is "to provide educators with a tool by which they can determine what they want the student to learn." It has been designed primarily to make available to teachers of adult basic education the technique for defining and using behavioral objectives in their teaching. However, the package could be used by teachers at other levels.

The Behavioral Objectives Package contains slide-tape presentations and a workbook. The workbook covers six topics: goals and objectives; the instructional program; the three domains (cognitive, affective, and psychomotor); entering behaviors; components of a behavioral objective; instructions on how to write behavioral objectives. It also includes a pretest and a post-test. The package requires about four hours to present.

Reports of five consultants who evaluated the Package, in some cases observing it in use, are for the most part favorable, suggesting only minor revisions. The Package was field-tested at adult basic education institutes in the summer of 1970; no report on results is available.

No special facilities are required to implement the program beyond a slide projector and a tape recorder. Instruction in its use must be given by a representative of the developer. The cost is \$234 for training and materials (which the school retains), plus the travel and living expenses of the instructor. Arrangements should be made with Southwestern Cooperative Educational Laboratory, 117 Richmond Drive, N. E., Albuquerque, New Mexico 87106.

There is no report of efforts to spread the word about the Package.

## BACKGROUNDS IN LANGUAGE

Backgrounds in Language is a kit of materials -- films, filmstrips, records, tapes, books, and two manuals -- dealing with three aspects of language teaching: modern grammars, dialectology, and history of the English language. The kit is for inservice training of elementary and secondary teachers of English and language arts, but it has been used successfully for preservice training of undergraduates who are preparing to teach and with junior college English teachers.

The kit, designed for group training, is a means for bringing English teachers up to date at small cost. Eight full two-hour sessions cover the subject matter; however, participants must do assigned reading in addition to attending the sessions. In addition to the Student's Manual, the basic texts for the course are The Teaching of Language in Our Schools by Miriam Goldstein, Linguistics and Teaching by Robert W. DeLancey, and Story of Our Language by Henry Alexander. Other bibliographic materials are included in the kit and listed in the Appendix to the Student's Manual. One purpose for the host of bibliographic material is to provide for individual differences with regard to the experiential background and interests of the participants.

In addition to providing knowledge of grammars, dialectology, and history of the English language, the program attempts to relate the knowledge to the decisions a teacher must make about what curriculum materials to use, in what way to use them, and with which students to use them.

The Leader's Manual contains the same information as the Student's Manual; a helpful feature of both is the explicit information about procedures, time limits, and plans for each class session. The Leader's Manual also contains material regarding the philosophy of the program and outlines the preparation needed by the leader before group work begins.

The kit has had three field trials, involving 30 groups for a total of about 500 teachers. The developers designed and validated three instruments, a Knowledge Test, an Opinion Scale, and a Critical Commentary, each of which was given before and after the course. The instruments were revised on the basis of the first trial, which involved six groups, experimental rural, city, and suburban and control rural, city and urban, of fifteen teachers each. On the Knowledge Test and the Opinion Survey, there was a significant difference on pretest and post-test between the experimental groups (which used the kit) and the control groups (which did not use the kit).

The second field test results indicate that teacher participants have increased in knowledge, altered their attitudes, and become more skilful at appraising curriculum materials. The mean gain score on the 50-item Knowledge Test was 7.75 or 16 per cent, and on the 35-item Opinion Scale 9.4 or 27 per cent. The Critical Commentary responses were rated on a scale of one to five by two independent evaluators; the mean gain score for one was 1.9 or 38 per cent, for the other, .64 or 13 per cent.

No special personnel or equipment are needed to implement the program. A leader (supervisor, principal, teacher, etc.) must read the Leader's Training Guide before the course begins and follow the Leader's Manual carefully during the course. The course is ideally given to from 15 to 25 teachers at a time.

All materials are available from the National Council of Teachers of English, 508 South Sixth Street, Champaign, Illinois 61820. Sale price for materials for 15 teachers is \$600, for 25, \$750. Comparable lease prices (for ten weeks) are \$135 and \$1

DIALECTS AND DIALECT LEARNING  
An English Inservice Program

Dialects and Dialect Learning is a self-instructional program which provides basic information and skills to those who wish to modify their procedures in teaching standard English usage as well as to those who would find an introduction to the study of language (particularly nonstandard English) useful and interesting. It is intended both for inservice training of elementary and secondary teachers and for preservice training of undergraduates who are preparing to teach.

The kit consists of

- 1) A Manual which contains
  - a) Four programmed units
    - (1) "About Dialects"
    - (2) "Broad Phonetic Transcription Program"
    - (3) "Analyzing Nonstandard Dialects"
    - (4) "Curriculum Decisions"
  - b) Self-scoring pretest
  - c) Posttests for each unit
  - d) Self-scoring check test for two units
- 2) Self-instructional guides for those working alone
- 3) Seven 30-minute audio tapes, packed for reel or cassette recorder
- 4) A Leader's Manual whose use is optional for leaders of inservice groups

The material provides information about dialects in general, the phonetics of American English, and features of nonstandard usage which commonly occur in American speech. A broad general knowledge of linguistics as it pertains to American speech can be expected to be an outcome of having used the kit.

The materials of a larger program of which Dialects and Dialect Learning was a part were field-tested twice. In 1969, with eight out of 15 people enrolled completing the program, and once in 1970, with nine out of 54 people enrolled completing the program at four field sites. The most frequent reason given for not completing the program was that it required too much time. As a result of this information, supported by other evidence, the decision was made to split the program into two parts.

A fourth and final field test of Dialects and Dialect Learning only is currently in progress and preliminary data are available from two out of four field sites with a total of 24 teachers. Post-test gains using multivariate analysis of variance were reported significant at the .001 level with the conclusions that the gains were a function of the instrument.

Ideally the program should be undertaken by a group of from 15 to 30 persons, with a group leader who has been through the program and has studied the Leader's Manual carefully. It may, however, be used on an individual basis. No special equipment or considerations are required except a tape recorder.

Materials will be available in the summer of 1971 from the National Council of Teachers of English, 508 South Sixth Street, Champaign, Illinois 61820. Each manual will be about \$4.00; a set of tapes will sell for about \$70.00, rent for about \$10.00.

There is no report of efforts to disseminate information about the program.

## FACILITATING INQUIRY IN THE CLASSROOM

Facilitating Inquiry in the Classroom is an instructional system designed as an inservice workshop or a college course. It takes 42 hours of instruction and is intended to prepare teachers to perform 27 behaviors that encourage pupils to inquire and become autonomous learners. The system includes a leader's guide organized into 18 units; participant materials such as exercises, worksheets, and evaluation forms; and four instructional audiotapes of classroom inquiry sessions.

Teachers who go through the system are expected to develop the ability to

- 1) identify, practice, and use certain interaction patterns that allow students to inquire, help students to grow in ability to learn independently, and reveal student attitudes toward and perceptions of inquiry processes
- 2) identify what students do when they inquire and how they grow as inquirers, and to diagnose and evaluate where individual students are on a continuum of inquirer growth
- 3) carry out and assess their own learning

Specific teaching strategies have been identified to provide classroom conditions which encourage and support active inquiry by students. They provide students the opportunity to classify and generalize, compare and contrast, analyze and synthesize, deduce and infer, and evaluate, rather than simply to memorize facts and recall the "right answer."

The system has been used experimentally to conduct 88 workshops for 2,192 teachers. Results are in process of being summarized.

Leaders must be persons who have participated in the program previously. They can conduct the program for from six to 24 participants, in a class which meets 14 times or in a workshop which runs for six hours a day for seven days. A regular classroom is all that is required for regular sessions, but there must be provision for separate practice sessions for participants and access to tape recorders for participants.

Participant and leader materials are available from Copy-Print Centers, 1206 S.W. Jefferson Street, Portland, Oregon 97201. The leader's guide is \$15.00; participant materials are \$2.50 per participant. The audiotapes are available from Rex Recording Studios, 931 S.W. King Street, Portland, Oregon 97205 at \$12.27 a set. Each group will require one set. Demonstration equipment is necessary also, much of which is easily obtained locally. The materials include pulse glasses and bi-metallic strips, available from School Teaching Aids and Supplies, 1225 Eighth Street, Berkeley, California 94710 at \$3.00 each or \$32.40 a dozen for the glasses, and \$1.20 each or \$12.96 a dozen for the strips.

The developers of the system have prepared a descriptive brochure about it. The extent to which it has been distributed is not known.

MODEL CONTINGENCY MANAGEMENT CLASSROOMS FOR INDIVIDUALIZED INSTRUCTION  
IN GRADES FOUR THROUGH SIX

The Model Contingency Management (CM) Classrooms constitute a new method of conducting elementary education by approximating a total systems approach which accounts for nearly all facets of classroom operation. The program helps the teacher manage classroom activities by providing a systematic means of dealing with problems of motivation, extensive catalogs of behavioral objectives, and a means for keeping close and constant records of pupil performance as a basis for presenting individual learning tasks. It also provides a high degree of individualization, particularly in basic skills. Each classroom is managed by one certified teacher and one teacher aide.

The Implementation Package consists of the following items:

- 1) Training programs (audiovisual and printed materials) for teachers, aides, and administrators
- 2) Instructional objective catalogs for reading, mathematics, English usage, spelling, written composition, and science, keyed to the Individualized Prescribed Instruction (IPI) programs where available.
- 3) Seven guides for various facets of classroom operations which are to be used subsequent to the training programs and provide specific suggestions based on demonstrated needs of teachers who participated in the CM classrooms field tests. These include using curriculum materials; collecting, storing, and interpreting student data (manual format); prescribing microtasks; maintaining the reinforcement area; reporting to parents; managing non-individualized curricula (e.g., social studies); and administrative support function.

Verification of the model is based upon its continuing operation in more than twenty classrooms in grades one through eight in four sites representing three cultures. Subject-matter experts who have observed the classrooms say that almost without exception they meet the conditions specified by the behavioral objectives for the various content areas. The model has undergone revision and clarification of implementing procedures throughout the trial period. Observation indicates improved attendance patterns on the part of students and marked increases in the rate of responding to academic material. The developers have gathered no data on norm-referenced standardized tests since the model is based on criterion-referenced standards. No information is given on correlation between standard instructional materials prescribed in the model (e.g., IPI mathematics and reading) and the objectives of the CM model classroom.

The developers have investigated during the field trials not only the performance of the students but also that of the teachers who took the training program. Results (based on tests about which no statistical information is given) indicate that exposure to the programmed text led to significant gains in ability to write behavioral prescriptions and basic principles of contingency management as provided in the curriculum.

Provision must be made for between five and ten hours of self-instruction for teachers, aides, and administrators, who must have access during that time to playback equipment for tapes, filmstrips, and videotapes. Aides, as indicated, are necessary to the operation of the program. They may have to be

hired specially if the school does not ordinarily use them. Otherwise no organizational changes are required to implement the program.

Ordinary classrooms are suited to the model, except that sight barriers must be erected between task and reinforcement areas. Desks and chairs must be movable.

Instructional materials come to \$50.00 per student if only one classroom per grade is operated on the CM model. An additional \$5.00 per student is required for special materials for the reinforcement area. Sight barriers may cost from \$45.00 to \$75.00 a classroom. File cabinets and shelving are required. The cost for materials for training one teacher is about \$30.00.

Instructional materials are available from their publishers; the Implementation Package is available from Upper Midwest Regional Educational Laboratory, 1640 East 78th Street, Minneapolis, Minnesota 55423.

Articles about the CM model have appeared in professional journals. The developers expect to establish demonstration sites to permit examination of the classrooms in operation, with filmstrips or videotape presentations supplied to show aspects of the program not in operation at the time of a site visit.

### THE ORAL LANGUAGE PROGRAM

The Oral Language Program (OLP) is a set of instructional materials in English as a second language for children from five to seven years old. The instructional system consists of 150 lessons plus pupil assessment devices, teacher training procedures and materials, program evaluation procedures, and installation and monitoring procedures.

Aimed at providing non-English-speaking children (primarily Mexican-American and Indian children) with facility in speaking and understanding English, the lessons are intended to be used daily for 25 minutes by one teacher with groups of up to ten children for the duration of the school year.

The language encountered by the child in the OLP is both controlled and sequenced. It is presented through games, physical activities, dialogues, pictures, and other stimuli in order to take advantage of the kinds of behavior young children are likely to engage in. Content of the lessons is divided into structure and pronunciation.

The OLP was the subject of a careful field test in 1969-1970 to discover the conditions in which the program is successful, compare the performance of pupils using OLP with that of those not using it, and find what aspects of the program and its teaching strategies required revision. The program was used with selected students in 170 classrooms whose English was judged (on the basis of an objective test) to be inadequate for regular class work. They were retested at the end of the program and the mean gain score was 44.2, where a gain of 30 had been considered acceptable. Students in control groups showed significantly less gain.

Five teachers using OLP had weekly conferences with a representative of the developer. They recorded their experiences on tape, reported on Criteria Lessons (tests given after every eighth or ninth lesson), and reviewed program content.

Overall findings indicate that the OLP is successful with Spanish-speaking and Indian children who enter school with inadequate knowledge of English, but should not be used as a standard English program for children who speak a nonstandard dialect.

Additional evaluation is being carried on during the 1970-1971 school year. Great care is being taken to get additional information in the area of child characteristics and teaching and assessment procedures which will be helpful to those using the program.

Teachers are required to attend a two-week institute operated by the developer and to participate in inservice meetings during the school year. No changes are needed in school facilities or schedules.

Materials for the program include a teacher's manual, a six-volume set of 150 lessons, hand puppets, toys, records, and pictures. Cost for training teachers and for materials comes to approximately \$23.00 per pupil a year. Training and materials are available from Southwestern Cooperative Educational Laboratory, 117 Richmond Drive N. E., Albuquerque, New Mexico 87106.

The developers have published a report on OLP and several descriptive brochures.

## SELF-INSTRUCTIONAL SYSTEM IN BASIC ELECTRICITY

The self-Instructional System in Basic Electricity is a self-contained, programmed-learning, multimedia system that may be used as a complete unit or incorporated into existing courses. Although each student works at his own pace, an average of four weeks, one hour every other day, is required to complete the course. The content of the nine-unit system includes electricity as a form of energy, Ohm's law, simple series and parallel circuits, and work-power relationships.

The system is designed for junior/senior high school students in any setting where the objective is for students to acquire fundamental concepts of electricity. By applying reinforcement, self-pacing, self-evaluation, and multisensory contact, the system attempts to enable instructors to provide quality instruction for larger numbers of students, provide a wider variety of subject-matter alternatives, and enlarge students' opportunities to do independent work.

The student attends a self-paced slide-and-tape presentation while making written responses in a workbook. He also uses a circuit board to practice applications of the concepts he is learning. Self-evaluation is provided for by pre- and post-tests for each unit.

The original developmental work on the system involved 30 students from grades three through 12, with a median grade level of 7.5. They took the first three lessons of the system and also the system tests as pre- and post-measures of achievement, showing an average gain of 43.6 per cent. There was no significant relationship between amount of gain and grade level, students from all levels demonstrating "substantial" gain.

A second study, of a six-lesson version of the course, involved 130 students in rural Alaska, Idaho, Montana, Oregon, and Washington. Complete test data (before and after Lessons 1 through 3, after Lessons 4 and 5, and after Lesson 6) are available for only 22 of them, in grades seven through 12. Students at all grade levels showed gains; the means before and after Lessons 1 through 3, for instance, being 7.3 and 14.4 on a 20-item test.

Students and teachers in this second study were surveyed as to their opinions of the course and showed positive acceptance and a high degree of satisfaction.

In a small field test in late 1970, nine of 10 students achieved individual means of 70 percent or better on all nine post-tests, and all 10 averaged 80 percent or better on 56 per cent of the nine post-tests.

The instructional system can be used in a wide variety of settings to supplement existing curriculum without increasing staff requirements. However, individual scheduling and monitoring of students is necessary. The regular classroom teacher serves as the teacher-manager who functions by organizing schedules, encouraging student learning, and providing projects in addition to those included in the course. He need not be highly skilled in the subject matter, but should receive some orientation concerning the functioning of the system and should be thoroughly familiar with its content.

Materials for the course are available from Audiscan, Incorporated, Box 1456, Bellevue, Washington 98009. They consist of

an Audiscan TSM projector	\$345.00	(one per group of 10 or 12)
nine Audiscan cartridges	\$360.00	(one set per group of 10 or 12)
circuit test board and case	\$59.00	(one per group of 10 or 12)
instructor's guide	\$1.50	(one per group of 10 or 12)
nine student workbooks	\$4.50	(one set per student)
nine pretests	\$.15	(one set per student)
nine post-tests	\$.15	(one set per student)

The supplier has published a promotional brochure on the system and plans wide distribution of it. The system will be the subject of advertising and of product demonstrations. The developer includes the course in its product list, and had submitted it for inclusion in USOE's Product Installation Project and ATPI listings.

INSTRUCTIONAL SYSTEM IN SYSTEMATIC AND OBJECTIVE ANALYSIS OF INSTRUCTION

The Instructional System in Systematic and Objective Analysis of Instruction (SOAI) is designed to provide educators with skills in interpersonal relations, supervisory techniques, and teaching strategies which can be applied in self-analysis and in the analysis of other teachers for the improvement of instruction. It utilizes a deductive approach in which the participant practices an activity and then examines his performance as a means of learning.

SOAI provides 100 hours of instruction, in a four-week workshop. It is suitable for teachers, supervisory personnel, and administrators at all levels of instruction and in all subjects. A training manual contains all the necessary instructional ingredients, including a schedule, a bibliography, a rationale, objectives, and activities. SOAI has been used experimentally in colleges and universities with nearly 1,100 teachers and administrators.

There must be one trainer for every group of 12 participants; trainers must have been through the program themselves. Participants will be involved full time for four weeks, necessitating release from regular duties for that amount of time. The program requires no special rooms or facilities; each group of 12 will need a classroom for seminars and two laboratory classrooms.

For the last three of the four weeks of the program each group of 12 must have access to two laboratory classes, each with a teacher and at least 15 elementary or secondary students. Two student teachers or novice interns may participate also. If the program becomes large, it may be necessary to have someone administer the laboratory school.

The trainer's manual costs from \$10.00 to \$15.00; a set of participant's materials is \$2.00 to \$3.00. Information is available from Northwest Regional Educational Laboratory, 400 Lindsay Building, 710 S. W. Second Avenue, Portland, Oregon 97204.

No special efforts to publicize the program are reported.

## INSTRUCTIONAL SYSTEM IN INTERACTION ANALYSIS

The Instructional System in Interaction Analysis is a programmed developmental sequence intended to develop skills for using interaction analysis techniques for collecting data about what happens in the classroom, analyzing and interpreting the information, and using it to make sound judgments for improving instruction. It is for use in inservice or preservice training of classroom teachers, supervisors, and administrators, and is independent of level of instruction or subject area.

The System consists of a 215-page trainer's manual and related audiovisual aids designed to provide 30 hours of instruction. There are 18 programmed units providing instruction in small segments. For each unit, the manual provides

- 1) Complete instructions for conducting an activity (rationale, objectives, procedures, and materials)
- 2) A set of materials to be reproduced and used by each participant
- 3) Copy for production of instructional transparencies

The System materials were devised with the advice of educators and revised after experimental use. They have been used experimentally with 2,472 teachers and administrators in 97 workshops, according to their developers.

No special equipment or facilities are required to implement the System. The materials are designed for a 30-hour workshop, with a maximum of 30 participants in a group. It may be necessary to arrange for released time to allow for 30 hours of participation.

Each group needs an instructor who is familiar with the materials. Usually a person who has taken the course is qualified to lead a group.

Materials for the course include

- 1) Trainer's manual, \$4.00, available from Northwest Regional Educational Laboratory, 400 Lindsay Building, 710 S. W. Second Avenue, Portland, Oregon 97204
- 2) Seven-episode training tape, \$12.00, available from Teacher Inservice Programs and Services (TIPS), Box 465, Eugene, Oregon 97401
- 3) Training film: "Interpretation of an Interaction Analysis Matrix," \$225.00; rental, \$5.00, available from TIPS (see 2 above)
- 4) Filmstrip with audiotape: "Studying Teacher Influence," \$20.00, available from University of Minnesota Audiovisual Center, Minneapolis, Minnesota 55455
- 5) Book: "Interaction Analysis Theory, Research, and Application," \$4.50, available from Addison Wesley Publishing Company, 2525 Sandhill Road, Menlo Park, California 94025. Also ERIC document ED 029 849.

Participant materials and transparencies are to be reproduced from the trainer's manual.

Brochures describing the program have been prepared and distributed. Publication of the course materials has served to call them to the attention of a range of potential users.

## SELF-INSTRUCTIONAL SYSTEM IN WELDING

The Self-Instructional System in Welding is designed to serve secondary school students in any setting where the goal is for students to acquire the basic skills of electric arc welding. The objectives have two foci: procedural and equipment safety, and proficiency in six basic welds.

The student works through the System at his own pace according to a three-step sequence: he views one of eight demonstration film loops; he works through a corresponding unit in a programmed instruction book; and he practices the aspect of welding depicted in the film and the programmed text. Self-evaluation is accomplished by means of end-of-unit reviews, performance check lists, and actual models of the basic welds prepared by professional welders for comparison.

In the first tryout of the System, in 1966-1968, a sample of 15 high school industrial arts students, 10 college students, and 10 non-college adults worked through the material. A performance test had indicated that the participants initially possessed few or no welding skills. For each of the three groups, data were collected on performance post-tests, time for completing the course, frequency of viewing the films, number of errors in using the instruction books, and evaluation of the films. All participants reached levels of performance that had been predefined as satisfactory by a jury of welding experts. The times for completing the course ranged from three hours and a half to 13 hours and 10 minutes, with an average time of five hours and 10 minutes. However, at this stage of development the System contained only four film loops and related texts, as opposed to the eight now included. Few errors were made in using the instruction books, and most students liked the films, rating them about right in terms of difficulty, length, speed, and clarity.

In another study in 1968-1969 and 1969-1970, the System was used at eight rural high schools in Alaska, Idaho, Montana, Oregon, and Washington. Fourteen male students from the ninth through the twelfth grades at two of these sites underwent performance testing. The safety-oriented objectives were checked by a close observation of the students as they welded. It was reported that 83 per cent of the objectives were attained by 85 per cent of the students. The proficiency on each of six aspects of each of the six basic welds was checked by comparing the students' welds with "correct" and "incorrect" welds prepared by professional welders. On a seven-point scale with the "incorrect" model rated two and the "correct" model rated six, most of the student performances were between four and six, with no student rated below two on any aspect of any weld, and 21 per cent of the ratings at six or seven. A survey of the teachers and students at all eight test sites indicated that their attitudes toward the System were positive.

The regular classroom teacher serves as the teacher-manager and functions by organizing schedules, showing students how to use the system, providing projects in addition to those in the System, and being available to answer questions and encourage student learning. He need not be highly skilled in welding, but should be thoroughly familiar with the content of the system before implementing it. Some experience in organizing a class for individualized instruction is desirable; some assistance is recommended if the teacher has not had that experience.

The cost of installing this system is about \$1,072 for materials for the group, \$3.87 per student for expendables, and \$.33 for the instructor's guide. The group materials are very expensive, but for the most part reusable. They include a Fairchild Mark IV (standard 8) projector; no other projector can be substituted. One set of materials is enough for 10 to 12 students with adequate scheduling. Unit prices are as follows:

Projector	\$485.00
Film loops	\$192.00
Welding and safety equipment, and steel	\$295.00
Comparison models	\$100.00
Instruction book	\$2.00
Answer booklet	\$1.20
Tests	\$.67
Instructor's guide	\$.33

A corner of the school shop area may be used for the System. No other special facilities or arrangements are required.

The developer has a brochure describing the System to be sent to interested persons. The System has been submitted for inclusion in USOE's Product Installation Project and ATPI's listings. The System is the subject of presentations at conferences and product demonstration meetings.

**AN ENLARGED MUSIC REPERTORY FOR KINDERGARTEN THROUGH GRADE SIX  
THE JUILLIARD REPERTORY LIBRARY**

This is a new set of teaching materials for music instruction in kindergarten through grade six. It includes hitherto unavailable choral, vocal, and instrumental scores of songs from 38 countries, backgrounds, and folk traditions, and from the major Western musical styles and periods (pre-Renaissance, Renaissance, Baroque, Classical, Romantic), including 65 new scores. All music is presented in its original form, unadapted and unabridged, but with modernized notations included when necessary. Performance suggestions are included for scores which might be unfamiliar to teachers. Texts are printed in their original languages below the English translations, and explanations and background are given for each song. Religious works, and ones dealing with subjects unpleasant to elementary school students, are not included. The range of African music is smaller than desirable because of the lack of written scores for African folk songs.

About 40,000 students in 150 rural, urban, and suburban schools used (for two grades) the library originally assembled by a panel of eight musicians. It was found that they were not interested in songs about romantic love, which they considered "mushy," but that they liked songs about nature, patriotism, and children of other lands. They enjoyed singing simple songs in foreign languages. Oriental music was too difficult for young ears attuned to Western sounds.

Nine music education consultants, with the help of local music specialists, made the final selections in light of these findings.

A teacher certified to teach music in kindergarten through grade six is required to teach the vocal portions of the program, which is designed for classes of about 30 students each, meeting twice a week. Each vocal volume contains music of varying levels of difficulty and representing many periods and styles. The instrumental selections may be included, either by the same teacher or by another specially trained as a conductor. The instrumental library includes selections which require only the simplest rhythm band instruments as well as ones for ensembles and even full orchestra.

A Reference Library Edition of all music in the Repertory is \$9.50. Each of the eight vocal volumes is \$1.00. The first two instrumental volumes (duos, trios, and quartets) are \$1.00 each. The third instrumental volume is available as full score for \$1.00, in parts for instruments of various keys for from \$.75 to \$.90. The fourth instrumental volume consists of full orchestra score and parts, at \$8.50. Minimum expenditure to implement the whole program for a class of 30 is \$109.00: the Reference Library Edition for the teacher(s), two vocal scores per student, four copies each of the first two instrumental volumes (one for each member of a quartet), one score and a complement of parts for the third volume, and the fourth instrumental volume. The per-pupil cost of course would be greatly reduced if the music were used by a number of classes.

The music is available through music dealers or from Canyon Press, Inc., Box 1235, Cincinnati, Ohio 45201.

The developer expects to use all proceeds from the sale of the library to make more music of good quality available for elementary school students.

PLANNING, ANALYSIS, AND MANAGEMENT SYSTEMS PROJECT

The product is a short series of training exercises designed to give college faculty members, administrative officers, and trustees some experience with systems approaches to institutional management. The plan is to raise the quality of information which goes into decision-making, encourage comparability of information systems among institutions, encourage exchange of information among institutions, and strengthen practices concerned with reports between institutions and government agencies.

A hypothetical "Micro-U," with departments of history, mathematics, and biology, is the setting for simulations related to such functions as budgeting and resource allocation. An instructor, trained by the developer's staff and using the developer's materials, seeks to engage his "students" in activities which will increase their understanding of techniques useful in planning and in improving decision making. Among the methods emphasized are program budgeting, resource requirement analysis, and prediction modeling.

Although the simulations can be carried out manually, they were designed for use where computer support is an integral part of the instructional process.

The program materials have been tested and revised in the course of carrying out 50 training sessions for some 1,500 college teachers, administrators, and trustees. Detailed data are not available.

To use the training exercises, an institution or a consortium sends an instructor to the developer for training, which is supplied at cost. The instructor must become proficient in using the project concepts and materials, and in exercising the simulation model. Printed materials and systems and program tapes are available from the developer as well, at very low cost, since the expense is borne in part by USOE and the Ford Foundation. The costs for using the computer need not be high, particularly if as many as fifty trainees are scheduled for a given series of simulation exercises. Full information is available from the developer, Western Interstate Commission for Higher Education, Boulder, Colorado 80302.

There are no reports of efforts to publicize the system.

## MULTICULTURAL SOCIAL EDUCATION LEARNING SYSTEM

The Multicultural Social Education Learning System is designed to help economically deprived and culturally different children in the first and second grades understand who they are, how they and their families are similar, and how they are different from people in the dominant culture. Filmstrips, tapes, transparencies, slides, photographs, and puzzles provide stimuli for the "thinking" activities, in which the children compare and contrast information, apply concepts, and analyze problems and solutions. A unique and important feature of the materials is that they do not rely on a child's ability to read. They reinforce pluralism (multiculturalism) as a positive value and teach respect for other cultures. Children are taught to see themselves as contributing members of society, as persons of worth who understand and have the ability to cope with social, economic, and political realities.

Thus far the materials have been used with both rural and urban Mexican-Americans, blacks, and whites. They have not been tried except with economically disadvantaged children.

The System is designed for daily 20- to 30-minute sessions. There is a manual for teachers, accompanied by other materials, including three tapes of presentations for preservice training. The students' materials are organized around units of learning and include multimedia resources. They are structured so that teaching strategies and experiential bases for learning are inherent. Thus the teacher is relieved of decisions as to what and how to teach and can concentrate on responding to pupil behavior, knowing that the success of a lesson does not depend on whether the pupils have had the experience discussed. Each lesson is divided into three phases, Action, Interaction, and Focus, and actively engages the interest and involvement of all the students.

In the course of developing the System, the developers gave a series of criterion-referenced tests to 800 first-grade students, in rural and urban settings, who represented various ethnic groups. The students were tested before the course, after each unit, and at the end of the course. The aim was to judge each student's content mastery of each unit as an indication of which units needed modification. Overall gain for these ethnic groups was considerable. Blacks gained 21.8 per cent, mixed groups (blacks and whites) gained 13 per cent, and Mexican-Americans gained 14.9 per cent. There also is some evidence that the System brought these three ethnic groups closer together on the themes assessed by these instruments.

Teachers reported by means of interviews and questionnaires their reactions to the System. Their responses were positive.

The System is designed to fit into existing schedules and facilities. One teacher is needed for each 30 children. The teacher must have a half day of inservice training in the use of the materials. The school must make arrangements to have one member of the developer's staff undertake to coordinate communications and logistical support.

The cost for implementing the first-grade System for 30 students is about \$150, including student materials, teacher development materials, the developer's representative, etc. Grade two expenses would be similar. Information and materials are available from Southwest Educational Development Laboratory, 800 Brazos, Austin, Texas 78701.

RESEARCH AND DEVELOPMENT PROGRAM ON PRESCHOOL DISADVANTAGED CHILDREN

The Research and Development Program on Preschool Disadvantaged Children is not itself a product but a three-volume report that should aid school systems in selecting an approach to disadvantaged children early in life. Four major questions serve to focus on the various reports:

- 1) What kind of classroom intervention is most effective?
- 2) How long must special classroom intervention be maintained to stabilize effective functioning?
- 3) At what age must educational intervention be initiated to prevent learning disabilities associated with cultural deprivation?
- 4) Can effective educational development be achieved by paraprofessional classroom teachers and mothers at home?

Volume I of the report evaluates the learning behavior of disadvantaged children in five programs (listed from the least to the most structured): the Traditional Nursery School, the Community-Integrated Program, the Montessori Program, the Ameliorative Program, and the Direct Verbal Program.

Volume II has seven studies by researchers on highly structured programs that further extend the development and testing of the preschool disadvantaged. Hypotheses, procedures, population, methods, and results on each student are contained in this volume.

Volume III deals with the description and analysis of family and kinship, neighborhood, and community variables that bear on a child's readiness and competence to enter into formal education.

If the reports are considered products, there is no evaluation of the three volumes as such. However, the several evaluations of various curriculum and readiness programs within the three volumes are strong points, as they do furnish much information not only on programs but also on content areas and methods.

In evaluating the five intervention programs mentioned in the description, the Stanford-Binet Individual Intelligence Scale, the Illinois Test of Psycholinguistic Abilities, the Peabody Picture Vocabulary Test, the Frostig Developmental Test of Visual Perception, and the Metropolitan Readiness Tests were used with four-year olds matched according to IQ, sex, race, and SES. Results suggest that the highly structured programs are more effective; final evaluation must await the evaluation of the performance of the subjects in school. Since the term "highly structured" refers to an approach whereby all activities are carefully programmed to ameliorate specific deficits of the disadvantaged child, in learning as well as in basic motivation, the volumes deal with many specific curricular areas and approaches.

The complete report is long (700 pages) and somewhat technical. The summaries are excellent and take away some of the forboding aspects of charts, graphs, and technical statistical techniques. An administrator or teacher or task force with sufficient time to absorb the contents and the skill to translate the findings into an appropriate approach to the disadvantaged will be required to get full use of it.

The materials are available from ERIC on microfiche. Volume I is available in copy for \$15.10:

## EXPLORATIONS IN BIOLOGY TOPICS

The purposes of the Explorations in Biology (EIB) Topics are to provide standardized tests of inquiry skill in biology and technical information useful for evaluation and individualization of instruction. The purposes are accomplished by supplying criterion-referenced scores earned by high school biology students both before and after instruction.

The EIB Topics are eight multiple-choice tests of inquiry skill cast in the form of simulated investigations of eight topics in biology. The student is presented with visual material (on paper, slides, or videotape) and then asked how he would plan an investigation of the Topic (Book A) and how he would manage the implementation (Book B). The tests have branching format; the student's answer determines which question he will be given next. Topics include such matters as food preferences of newly-hatched snakes, bird aggression, and maternal behavior in rats.

The EIB questions were written to test specific cognitive objectives prepared jointly by the Midcontinent Regional Educational Laboratory and the Biological Sciences Study Committee. These objectives relate to the following major factors in the inquiry approach: formulating a problem, formulating hypotheses, designing a study, executing a plan of investigation, interpreting data or findings, and synthesizing knowledge gained from the findings.

The target population is high school sophomores (or others) in the first course in biology, accelerated junior high school students in life science or biology courses, freshman college students in the first course in biology, and science education student teachers. The reading level is sixth grade.

The objectives writers judge that the EIB items do indeed test the objectives they derived. They have, too, been subjected to small-scale field-testing at intervals to study their reliability and validity. High schools in Connecticut, Hawaii, Missouri, and Pennsylvania have participated, as has Northwest Missouri State College.

- 1) Concurrent validity has been studied through the administration of the Processes of Science Test, Behavioral Checklist for Science Students (a rating scale, initiated by the Midcontinent Laboratory, for inquiry activities), and the Watson-Glaser Critical Thinking Inventory.
- 2) The Kuder-Richardson formula 20 was applied to the initial EIB-1 form to study the internal consistency of the whole test.
- 3) The Cronbach alpha was applied to weighted scores for the revised EIB-1, EIB-2, and EIB-3, Books A and B separately, in the study of the 1970 field test.
- 4) Alternate-form equivalence of the EIB-1, EIB-2, and EIB-3 tests was studied, along with factor components of Books A and B of each, through collection of data on intelligence and basic skills; these were held constant through partial correlation procedures and the contribution of each to total or part scores on EIB were thus studied. These findings are currently being cross-validated on a new sample of 96 students.

On the basis of the earliest field test of EIB-1, EIB-2, and EIB-3, several changes in format of the tests were made. The revised tests have now been included in the field testing, and information has been adduced about interrelationships among the tests, between academic aptitude and EIB scores, and between Books A and B of each EIB Topic.

The tests may be given in a classroom or resource center with no special equipment, though slides and videotapes are available for schools who want them. No special training (except a half-hour briefing) is required to give the tests, but each one takes 55 minutes and it is recommended that no student take fewer than two and preferably four. In addition, an introductory problem which takes 30 minutes must be given before the first EIB session, to familiarize students with the branching format. Thus the program can be time-consuming for the administrator and for the student.

A psychometrist with at least a master's degree is required to interpret the test results.

Each EIB Topic costs \$3.50 in its simplest (paper and pencil) form. Slides, available for each Topic, are an additional \$7.50 a set. For one of the EIB's there are two videotapes at \$100.00 each. IBM answer sheets (two per EIB per student) are \$.05 each; electrographic pencils are \$.05 each. The Manual of Instruction and the Technical Reports (two so far) are \$1.00 each. A set of scoring templates is \$3.00. All materials are available to persons giving statements of their psychometric background and expressing willingness to share data from Midcontinent Educational Research Laboratory, 104 East Independence Avenue, Kansas City, Missouri 64106

Schools which prefer not to score answer sheets locally may send them to the Midcontinent Laboratory, which will return scores and summary statistics. Price information is available from the Laboratory.

The developers have issued detailed reports on EIB. They are investigating the possibility of having the materials published commercially.

The developers point out several limitations which must be considered in planning to use EIB Topics. For one thing, the limited nature of the multiple-choice format may prevent one from obtaining the student's preferred reply to a question. Again, only cognitive objectives for inquiry instruction are assessed. Other objectives, such as manipulative operations, quantitative skills, unstructured formulation, and actual gathering of data must be measured by other means. Then, the theoretical problems inherent in a branching test have not been resolved, so these tests should not be used as the only means of evaluating achievement.

## AFRICAN MUSIC FOR THE GENERAL UNDERGRADUATE STUDENT

The Project in African Music set out to develop materials for a one-year course in African music for general education curricula in colleges. Public interest dictated the need to expand the plans to include Afro-American music and to adapt the materials for use in secondary schools as well as colleges.

Accordingly, the Project has developed two course outlines, Introduction to African Music and Introduction to Afro-American Music, which the developers consider models for further study rather than as final products of research. They are, however, quite comprehensive. They consist of 17 monographs, units, and papers on areas and composers of African music; slides and tapes of rhythmic patterns and instruments of Africa; and tapes of works of Afro-American composers. The materials are organized so that the instructor may select or emphasize those portions of the subject matter which are appropriate for his classes. Materials or experiences especially suitable for a particular educational level are so designated. In addition to the materials in the outlines, commercially available records, books, and periodicals will be required, and it is advised that students have the opportunity to examine and play authentic musical instruments. The developers recommend, too, that African and Afro-American musicians appear as guest lecturers as often as possible.

The materials were created with the assistance of internationally recognized African and Afro-American musicians. Criteria used in determining the appropriateness of materials were authenticity, proper documentation, use of the English language, minimum use of technical terminology, and easy availability in the United States.

The materials have been tested in pilot courses and workshops at a university and at several high schools. Two questionnaires, one for workshop participants and one for persons who had requested the materials developed by the Project, were sent out, to collect information on how effective the workshops had been and how useful the materials were. Results indicate that the objectives of the Project had been achieved; the materials and the way in which they are organized were favorably received as were the workshops.

It is best that the course be taught by a professionally certified music teacher but other teachers might do so. They in particular would need to participate in a training workshop, which is available for all teachers.

No special facilities or arrangements need be made; it is assumed that schools have the necessary projectors and playback equipment. In some cases it may be necessary to reorganize schedules to give students an opportunity to take the course in high school, the course might form part of the history or the social studies curriculum.

Precise costs depend upon what materials the instructor selects for his course. Materials mentioned in the course outlines include bibliographies, texts, biographies, periodicals, commercial recordings, field recordings, audiovisual materials, and musical instruments. Further information is available from Project in African Music, College of Fine Arts, Howard University, 2401 Sixth Street, N. W., Washington, D. C. 20001.

The developers have made considerable effort to share their product, sending materials to all workshop participants and to persons requesting them, with the understanding that recipients will assist in the evaluation process. They welcome

visitors to the Project and specifically invite all who show an interest to come and observe. They have mounted exhibits of African musical instruments at the Festival of Black Art in Reston, Virginia, and at the Black Music and Musicians Project at Virginia State College in Petersburg. It is expected that such activities will continue.

## A PROGRAM FOR LEADERSHIP TRAINING IN TEAM TEACHING

The Program for Leadership Training in Team Teaching is a set of seven paper-back books, called modules, designed to instruct education classes and inservice teachers in various aspects of team teaching.

Each module contains a statement of purpose and a rationale, and a list of specific behavioral objectives. These are followed by

- 1) A self-administered 20- to 25-item Study Guide, which is a multiple-choice test on general questions on the subject of the module, together with a key for interpreting the test.
- 2) Suggested audiovisual aids, to be purchased or rented separately. These may be filmed lectures or filmed classroom situations.
- 3) Published articles, bibliographies, and sets of background information dealing with the subject.
- 4) True/false tests (with keys), one for each segment.
- 5) Suggestions to the class leader for group activities, such as visits to team teaching classrooms and planning curricula.
- 6) A timed and self-graded post-test, with key.

Since the modules are self-paced and include necessary self-evaluative material they may be used for independent study. They were, however, designed to form the basis for a two- or two-and-a-half-hour a week course, or a supplement to a conventional education course. A module may take from two to eight hours to complete. There is no prescribed sequence of study, though the first module is suggested as a prerequisite for the others, since it covers background, philosophy, and purposes of team teaching.

Prototypes of the modules were tested during the developmental stage in pilot studies involving 75 elementary school teachers and 30 graduate education students. The modules also were evaluated by educational consultants, and by professional educators who were given an opportunity to try them at professional meetings. Data are collected, too, on the performance of teachers in three sites now using the modules. Final versions of the modules were written in light of the results of these pilot testings and experimental uses.

The 30 inservice and preservice teachers who used the modules in a graduate education course completed anonymous biographical data sheets before beginning the training, and also took a "Team Teaching Problems Inventory" which asked them to rate on a one-to-seven scale how problematical they considered each of 35 team teaching issues to be. They took the Inventory again after training was completed. The more extensive their experience with team teaching, the more positive their attitudes toward it were. However, attitude did not directly affect performance on module post-tests. Only one of the teachers failed to achieve at least half of the behavioral objectives established for the course.

A Leadership Training Conference in Team Teaching will prepare a professional educator to supervise as many as 30 or 40 preservice or inservice teachers in the course. He may, however, be able to do so adequately merely by taking the course himself. No unusual facilities are required to implement the program, but some minor changes may be required when inservice teachers are to use it.

The modules, without supplementary materials, cost \$2.80 each. The eight suggested films rent for from \$10.00 to \$15.00 each; the one suggested filmstrip rents for \$1.25. The four audiotapes are available for \$2.00 each for Texas residents, \$3.00 each for others.

The modules and the films and filmstrip are available from the Leslie Press, 111 Leslie Street, Dallas, Texas 75207. The audiotapes may be bought from Region XII Education Service Center, Fifth at Speight Streets, Waco, Texas 76706.

The materials have been used in workshops at several professional meetings, and complimentary copies have been distributed to state education authorities and other groups who might be especially interested. They also are in use at a number of sites.

The developers plan a comprehensive Leadership Training Conference in Team Teaching to further the use of the modules. Participants will complete two of the modules, view related films, and discuss team teaching theories.

COMPREHENSIVE PERSONAL ASSESSMENT AND COUNSELING FEEDBACK SYSTEMS  
FOR PRE-SERVICE TEACHER EDUCATION

The Comprehensive Personal Assessment and Counseling Feedback Systems for Pre-Service Teacher Education Programs are composed of three components: the initial assessment of students in a teacher education program with seven instruments, a computerized feedback system, and a personal-performance-assessment feedback which permits counselors to help students in a personalized way with their teacher education programs.

Students are initially assessed with these instruments:

- 1) Identification-Locator Form: a "who are you?" form indicating name, social security number, and other basic information
- 2) Biographical Information Form: personal history, previous education, health history, work experiences, views on teaching
- 3) One-Word Sentence Completion Form: 62 sentences, each containing a blank to be filled in with a single word; expected to give counselors a general picture of the student's attitude toward himself, his relationships with others, and some of his job-related characteristics
- 4) Directed Imagination Form: four blank sheets on which the student writes four fictionalized stories about teaching, each in a four-minute time limit. Counselor rates student on six areas: handwriting and coherence, attitude toward teaching, attitude toward other people, tone of description of teaching, active or passive personality traits, primacy of teaching in student's view of his life
- 5) Adjective Self-Description Form: 56 adjectives with instructions to student to indicate how well each describes him. Student is rated on seven factors: attitude, behavior, efficiency, introversion, anxiety, idealism, physical attractiveness
- 6) Self-Report Inventory: 40 statements intended to yield the following attitude scores: self, others, children, authority, work, reality, parents, hope
- 7) Concerns of Teacher Form: designed to help determine in a systematic way the kinds of information and skills the student is most interested in acquiring

A computer program compares the student's raw scores to those of a large appropriate normative sample. The data yielded by these comparisons are discussed between the counseling psychologist and the student at the beginning and at the end of his teacher training.

Two sound films, taken at the beginning and at the end of student teaching, show a teacher trainee in classroom situations. A counseling psychologist evaluates the student's performance and discusses it with him in an exit interview. The purpose of the interview, which follows a standard format with possibility for individual flexibility, is to determine the student's reactions to the filming, to psychological tests, and to the research project in general.

Feedback of the results of the evaluation procedures are incorporated in the system at a number of points and counseling services are available to any student at any time during the program.

Some parts of the system, such as some of the assessment instruments, could be used apart from computer-based analysis. However, the full effectiveness of the program would seem to depend upon full information for a core faculty group willing to provide individualized counseling for teacher education students.

The system has been used at a number of institutions which have adopted all or part of it. It is difficult to summarize evaluation of the product because of the many components, but detailed information on the development of each assessment instrument has been published. Formative evaluation procedures did indeed lead to revision of several of the instruments.

The single most definitive verification of effects shows that feedback procedures used in controlled experimental studies effected positive changes in teacher personality and behavior to a greater extent than the procedures with the feedback component missing did in control groups. Feedback for most students increases awareness of teaching-relevant motivations; it informs them of strengths and weaknesses which should have an effect on their future academic choices, including voluntary exposure to challenging (and threatening) situations in student teaching.

Implementation of the program requires that the entire education department be willing to experience change and devote considerable time to a personalized instruction program. The program requires the assistance of all who teach beginning teacher education students. In addition, there must be a program coordinator for every 100 students, and an assistant coordinator. Also, an assessment analyst and a counselor will be required for every 100 students. In that these positions may mean additions to the staff, they may be costly.

Training is necessary; it will require from two to six days for staff member orientation. There are separate training procedures for assessment analysts and counselors. Trainees will be required to visit the University of Texas for training.

A computer is necessary for full operation of the program and private offices are required for assessment feedback and counseling. Otherwise the program makes no special demands on the institution's facilities.

All assessment instruments, manuals, and orientation materials are available from Research and Development Center for Teacher Education, The University of Texas at Austin, Austin, Texas 78731 for about \$5.00 a student. Personnel training, available from the same source, will come to about \$5,000.00.

The developers have published a number of reports on the assessment instruments and on feedback counseling. They have published articles in professional journals and have discussed the project at professional meetings.

**ALERT: ALTERNATIVES FOR LEARNING THROUGH EDUCATIONAL RESEARCH AND TECHNOLOGY  
AN EDUCATIONAL INFORMATION SYSTEM**

ALERT is a collection of informational materials for use by elementary school personnel. The purpose is to identify new products and other innovative systems and materials derived from educational research and development. The user can relate each product by grade level, target, content, and distinctive features to its possible usefulness in his school. He also can learn enough of the critical background for the item to determine whether it is worthy of detailed consideration. As a side benefit, the user broadens his knowledge of new fields and innovative practices.

ALERT focuses on products which are ready for use in schools. It provides several levels of information, to serve search, review, and decision-making needs of pupils and parents, teachers, coordinators, and administrators. Information is contained in a file of edge-punched cards, one for each program; a four-page summary of each program; newsletters, focused on new fields; audiovisual briefings on complex programs; detailed reports for particularly significant programs; and multimedia information units comparing various programs in one field.

Several components of ALERT have been subjected to field testing to verify them as effective tools for use in deciding to adopt, reject, or modify products. The developers report that users have demonstrated significant increases in knowledge about products, and that they like and value the system.

The system, now a second-generation model, is currently moving through a performance test phase. Analyses of data on system performance may lead to further revision over the summer, and a complete system will be available for wide use in the fall of 1971. Meanwhile, several of the components are already available. They have, for the most part, been subjected to field tests but not performance tests.

The system makes no special demands on facilities, organization, or scheduling. It can be useful to anyone connected with elementary education.

Cost of introducing ALERT into a school is about \$50.00. For this, the school receives a basic deck of edge-punched cards, a storage box, and a sorting needle; three copies of each of 75 summaries; 12 copies of each newsletter; three copies of each of six reports; and temporary use of six audiovisual briefings or one information unit. The user will be asked to report on his experiences to the developer.

Materials are available from Far West Laboratory for Educational Research and Development, Hotel Claremont, 1 Garden Circle, Berkeley, California 94705.

The developer has issued final reports on the system components and has published and issued descriptive brochures.

AN INSTRUMENT AND PROCEDURES FOR IMPROVING COMMUNICATIONS AND ACADEMIC POLICY-MAKING

The instrument is a Faculty Characteristics Questionnaire, Experimental Form I. It consists of a number of multiple-choice questions, rating scales, and opinion questions. It also contains questions of fact about such matters as grading practices, job satisfactions, relations with colleagues, student involvement in teaching activities, and student characteristics and attitudes. Its purposes are to make faculty opinions, beliefs, and practices more explicit; to improve communication within the college community; and to provide a broad information base for policy-making. The Questionnaire can help to point out situations where considerable agreement permits immediate informed policy decisions and ones where considerable disagreement indicates the need for discussion and consideration before a policy is decided upon.

The Questionnaire is accompanied by a Manual of Information which enables the user to administer, score, and interpret it. It also gives examples of uses for the Questionnaire and explains how the nine scales used in its interpretation were developed by factor analysis.

Responses to the Questionnaire of 1,069 faculty members in large and small, public and private, two-year and four-year colleges and universities were collected and factor-analyzed to derive the nine scales. Kuder-Richardson 21 reliability coefficients for scores on the scales range from .62 to .91.

There are no special personnel requirements unless very large-scale use is contemplated, in which case the advice of an educator or a social scientist may be helpful. Such use also makes it important to arrange for centralized data reduction services, often available on campuses.

Two somewhat sensitive considerations have to do with ensuring anonymity and preventing selective interpretation of data not made available to all. The need for caution in these areas will vary greatly from institution to institution.

The Questionnaire is available for \$.35 a copy from the Center for Research and Development in Higher Education, University of California at Berkeley, Berkeley, California 94720. Arrangements must be made for answer sheets or cards, depending on how the college plans to score the Questionnaire.

The developer responds to requests for information about the system, but has no announced plans for widespread dissemination of information about it.