

DOCUMENT RESUME

ED 045 217

PS 004 201

TITLE Cognitively Oriented Curriculum, Ypsilanti, Michigan: A Program that Exposes Preschool Children to a Variety of Materials and Equipment to Teach Concepts Through Physical and Verbal Experiences. Model Programs--Childhood Education.

INSTITUTION American Institutes for Research, Palo Alto, Calif.

SPONS AGENCY National Center for Educational Communication (DHEW/OE), Washington, D.C.; Office of Economic Opportunity, Washington, D.C.

REPORT NO OE-20145

PUB DATE 70

NOTE 28p.; Booklet is one in a series of 34 descriptive booklets on childhood education programs prepared for the White House Conference on Children, December, 1970

AVAILABLE FROM Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (HF 5.220:20145, \$0.25)

EDRS PRICE EDRS Price MF-\$0.25 HC Not Available from EDRS.

DESCRIPTORS *Cognitive Development, *Concept Formation, *Disadvantaged Youth, Home Visits, Pamphlets, *Preschool Programs, *Program Descriptions, Program Evaluation, Team Teaching

IDENTIFIERS Cognitively Oriented Curriculum, Piaget

ABSTRACT

The Perry Preschool Project, for educable mentally retarded 3- and 4-year-olds from disadvantaged homes is described. This program uses a cognitively oriented curriculum (based on Piagetian theory) designed to help the child construct the mental representations of himself and his environment that will lead to the development of logical modes of thought. Sources of more detailed information are provided for this program, specifically, and for Model Programs Childhood Education, in general. (Author/NH)

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Model Programs

Childhood Education

Cognitively Oriented Curriculum

Ypsilanti, Michigan

A program that exposes preschool children to a variety of materials and equipment to teach concepts through physical and verbal experiences

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Elliot L. Richardson, Secretary

Office of Education

Terrel H. Bell, Acting Commissioner of Education

OFFICE OF ECONOMIC OPPORTUNITY

Donald Rumsfeld, Director

Prepared by the American Institutes for Research under contract with the Office of Education and cooperative funding by the Office of Economic Opportunity in support of the White House Conference on Children. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official Office of Education position or policy.

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Superintendent of Documents Catalog No. HE 5.220:20145

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON: 1970

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 25 cents

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FOREWORD

This booklet is one of 34 in a series of promising programs on childhood education prepared for the White House Conference on Children, December 1970. The series was written under contract by the American Institutes for Research for the Office of Economic Opportunity, and the Office of Child Development and the Office of Education, U.S. Department of Health, Education, and Welfare.

Within the broad area of childhood education the series

includes descriptions of programs on reading and language development, the disadvantaged, preschool education, and special education. In describing a program, each booklet provides details about the purpose; the children reached; specific materials, facilities, and staff involved; and other special features such as community services, parental involvement, and finances. Sources of further information on the programs are also provided.

Educable mentally retarded 3- and 4-year-olds from disadvantaged homes are being given a preschool foundation that will enable them to start school in a regular classroom setting. They are benefiting from a theoretical model and curriculum design developed and tested in the Perry Preschool Project, a 5-year program begun in Ypsilanti in 1962 under the direction of Dr. David Weikart.

Ypsilanti, located near Detroit, has a heterogeneous population of about 50,000. Of the 25 percent who are black, many live in poverty areas with substandard housing. The project grew out of a study in the Ypsilanti public schools which showed lower achievement rates among children in disadvantaged neighborhoods when compared to those in middle-class areas. The researchers discovered that the variety of activities in a traditional nursery school classroom did not seem to help disadvantaged youngsters learn the fundamental concepts that other preschool children grasped easily. As a result, the project focused on the definition of basic concepts to which specific activities could be related.

The resulting Cognitively Oriented Curriculum has proved to be an effective approach in assisting disadvantaged children to develop the concepts and abilities necessary for academic success in school. Many educators across the country have incorporated its ideas into their own preschool programs, and it is the model for 10 Follow Through and several Head Start programs. The High/Scope Educational Research Foundation in Ypsilanti, established to conduct research in the area of childhood education, continues to refine the curriculum and adapt it to different age levels and pupil characteristics.

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**BASED ON THE
THEORIES OF
JEAN PIAGET**

Focusing on the intellectual, or cognitive, development of the child, the curriculum draws on the theories of the Swiss psychologist, Jean Piaget. Piaget formulated definite stages of intellectual development common to all children, each stage characterized by a child's way of looking at the world, different from that of an adult. As the child's intelligence develops, each stage builds on the previous one. The particular age at which each stage evolves depends largely on the child's environment.

Preschool age 3- and 4-year-olds have a view of the world that is largely presymbolic. That is, although they use symbols such as words, their thinking is tied to the objects themselves, governed to a large extent by how things appear to them at the moment. The same object viewed from a changed perspective becomes a wholly new object to a child at this stage. This is illustrated by what became one of Piaget's classic observations. Piaget's own small child had a view of a mountain from the window of his room; when taken on a trip to this same mountain, he failed to recognize it as the mountain he saw every day from his window. A child at this level only gradually begins to develop mental representations, or symbols, of actions and objects, and then to rely on what he knows as well as on what he sees, deriving meaning from symbolizations apart from the actual physical object.

The cognitively oriented curriculum is designed to help the child construct the mental representations of himself and his environment that will lead to the development of logical modes of thought. Although many of the activities and materials used are basically the same as those used in most nursery schools.

**DESIGNED FOR THE
DEVELOPMENT OF
LOGICAL THOUGHT**

they are used in more specific ways. Teachers first define the goals of cognitive development and then select activities appropriate to the child that will best meet these goals.

The curriculum is based on a three-part theoretical framework: four content categories (classification, seriation, spatial relations, temporal relations); three levels of representation (index, symbol, sign); and two levels of operation (motoric and verbal).

Content--Through grouping, or *classification*, the child learns to recognize likenesses and differences among objects and to group them in various ways: objects that are used for the same activity, such as a spoon and a fork; objects that have similar qualities such as size, shape, or color; objects that belong to the same general category, such as food or furniture. In ordering, or *seriation*, the child makes comparisons and arranges objects in order by size, quality, or quantity. He learns to describe objects in the classroom, using terms such as "big" and "little," "more" and "less," "rough" and "smooth." Matching and other activities develop the concept of one-to-one correspondence. An understanding of *spatial relations* is developed by pointing

out the position of the child in relation to other objects through the use of prepositions of position (in, out), prepositions of direction (to, from), and prepositions of distance (near, far). To understand *temporal relations*, the child learns that time periods have a beginning and an end, that events can be ordered, and that time periods can vary in duration. Throughout the curriculum, the child's daily routine is organized to reinforce these temporal concepts of first, last, before, after, and next. Any given activity deals with only one concept so that the child can focus on and master this concept.

Levels of Representation--The levels of representation outlined by Piaget describe the stages which children go through as they learn to think in an increasingly abstract and complex way, each level providing the basis for the next higher level. Since experience with real objects and events is the basis for the development of higher levels of representation, the cognitive curriculum provides opportunities to see and use a variety of real objects both in the classroom and through short walks or field trips.

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As the child gains experience with the real object, he learns to operate on the *index level*; that is, he can mentally construct the object when only part of it is seen, when a part is missing, or when it is perceived through senses other than sight. In order to provide a link between the real object and this first level of representation, the materials and equipment used are as realistic as possible, for example, rubber animals or model cars and airplanes. From looking at the wing of a toy airplane, the child might be asked to guess what the whole object is; or the teacher might devise a mystery bag game in which the child identifies objects in a bag through the sense of touch.

At the *symbol level* the child's mental images become strong enough to enable him to deal with representations of objects that are distinct from the objects themselves. Included at this level is the use of the body in representing objects and events; a child might pretend he is a dog by walking on all fours and saying, "bow-wow, bow-wow." The child can also make models of objects from art materials such as clay; use objects to represent other objects, such as a cup for a pail; recognize objects shown in photographs and drawings; and make his own drawings.

The final level, the *sign level*, is representation through words. In the cognitive classroom students are encouraged to verbalize, but the teachers do not teach concepts verbally. Through involvement with objects and people, the child is provided with the kinds of experiences at earlier levels of representation which will support later development at the sign level.

Levels of Operation--The third component of the framework deals with the *motoric* and *verbal* levels of operation. Very young children generally interact with their environment with their bodies--the motoric level--and gradually develop the ability to interact with words--the verbal level. The cognitively oriented curriculum assumes that children learn through physical interaction with their environment and tries to expose them to a variety of materials and equipment to teach concepts by both physical and verbal experiences. The child is given the opportunity to squeeze, drop, cut, and float materials; use his body to run, jump, and climb; and move under, over, or around something. Meanwhile, the teacher explains verbally the child's physical experiences and encourages his use of language.

THE PRESCHOOL IN YPSILANTI

The Ypsilanti Public School District operates a preschool using the cognitively oriented curriculum for thirty-six 3- and 4-year-olds from disadvantaged homes. All the children score 85 or below on intelligence tests and are classified as educable mentally retarded. They are divided into two classes and attend the school for half a day, 5 days a week. Each class has two teachers and two teacher aides who spend half a day teaching and the other half visiting the children's homes and planning lessons. The aides are drawn from the community and frequently are mothers of children who have been in the preschool. They take an active role in planning and implementing the classroom activities.

THE STRUCTURE OF THE COGNITIVE CLASSROOM

The materials and equipment in the preschool at Ypsilanti are very similar to those in most preschools. There are four distinct areas: an *art area* with paper, paint, clay, and other art supplies; a *quiet area* with toys, games, puzzles, and books; a *housekeeping area* with a small stove, sink, refrigerator, and kitchen utensils; and a *block area* with blocks, toys, and other equipment. There is also an open space for group activities. Materials have been carefully selected to reinforce concepts in the areas of classification and seriation, and the classroom

is arranged so that wherever a child is working he will be involved in activities to reinforce these concepts.

At the beginning of the year, the kinds of equipment in the classroom are limited in order to aid the children in the development of classification skills. The children learn to classify things that are the *same* and *different*. This concept is reinforced as the children learn that all the blocks are shelved together while puzzles go on a different shelf. Gradually, other materials are introduced into the classroom, and the children learn to classify within a group. For example, in the quiet area there are wooden beads of different colors and shapes; they learn to put all beads of the same color in one box or all beads of the same shape together.

Materials are also selected which the child can order according to size, number, and qualities. At first only two sizes of objects are included in the classroom, such as big and little blocks and a big and a little spoon. The equipment in the classroom reinforces the child's concept of large and small. Then other sizes of objects are introduced, and the child learns to order them. For example, the children might cut out three different sizes of paper circles and arrange them to make a mobile. To learn about

different qualities, the children might play musical instruments in three degrees of loudness: *soft*, *louder*, and *loudest*. To provide experiences with different quantities, the teacher might group blocks and ask the children questions about the groups in terms of *same*, *more*, or *less*.

THE STRUCTURE OF THE DAY

The daily routine provides an order to the day for the children; the routine usually does not vary and is followed throughout the year. The children's concepts of time relationships are reinforced through this daily routine. They learn that there is a *beginning* and *end* to the day; that planning time comes *first* in the day; that juice time comes *after* cleanup; and that circle time comes *last*. As the year progresses, the children learn to order events in terms of periods of time and to understand that time periods have different lengths. They also develop a clear idea of what is expected of them since the daily routine provides a structure or order for them to follow.

<u>Daily Schedule</u>	<u>Approximate Length of Time</u>
Arrival	
Planning Time	20 minutes

Work Time	40 minutes
Evaluation Time	10 minutes
Cleanup	15 minutes
Juice and Group Time	30 minutes
Activity Time	20 minutes
Circle Time	15 minutes
Dismissal	

The curriculum developers found that the disadvantaged pre-school child tended to flit from one activity to another without becoming involved with the materials and without concentrating on his tasks. To increase the attention span, the ideas of Sara Smilansky were incorporated into a sequence of planning, doing, and evaluating by making planning time, work time, and evaluation time part of the daily schedule.

Planning Time--Upon arriving at school, the children sit on the floor in a circle for planning time. One of the teachers discusses with them what is available in the four work areas of

the classroom, using objects and pictures to clarify her explanations; each child then decides on what he will do during work time. Each child has his own symbol--a bell, circle, house, or other shape cut from construction paper with his photograph taped on it. The symbol is used to help the child "see" his plans. Each child takes his symbol and hangs it on a small bulletin board which is located at the area where he has chosen to work. After he has completed a task at this area, he may move to another area, taking his symbol with him. This process encourages the child to think ahead, to control his impulses, and to complete a task.

Work Time--During work time the children work in their chosen area. The teachers help the children to concentrate on their tasks and to complete one activity before starting a new one. The children are not generally allowed to "play" freely, since play in itself is viewed as insufficient to assure intellectual development; however, they are allowed periods of free exploration to experience materials and play activities used as a means to reach curriculum goals.

In the art area certain materials are always available, such as crayons, scissors, paper, and paste. The teacher might plan an activity to develop a specific skill, having the children paste animal shapes over an outline of the animal to show the relationships between outlines and shapes. Or she may have them make representations of objects. For example, the teacher may show the children a live turtle which they can watch and touch, and then put out various materials they can use to make representations of the turtle, such as paper plates, pipe cleaners, and paper. One child may just color the paper plate the color of the turtle; another might use his body to act out the movements of the turtle; a third might attach the pipe cleaners to a paper plate to represent a turtle; and a child at a higher level of representation might make a clay model of a turtle. Although all the children are engaged in a similar activity, each is operating at a specific level.

In the quiet area the child works with such materials as blocks, books, beads, rubber people and animals, and small cars and trucks. The teacher places materials in the quiet area that will reinforce curriculum goals. She might provide several toys which go together in a specific order, such as nesting blocks,

serrated barrels, or stack rings; or she might use an abacus made with coat hangers and bottle caps to illustrate the concepts *some, more, and less*. To develop body awareness and to show how parts go together to make a whole, she might put out picture puzzles of people which have separate pieces for the main body parts.

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The equipment in the housekeeping area also reinforces concepts. For example, there are two sizes of spoons, cake pans, and cups, and three sizes of pots, mixing bowls, and dolls. The equipment at the beginning of the year is as real as possible-- a real telephone, real dishes, and real cooking utensils. As the children become more familiar with the objects, substitutes are used--for example, a toy telephone and paper plates. Teachers encourage them to pretend that these representations are the real objects. The housekeeping area also provides many opportunities for sociodramatic play, for example, when the children play "house" or "store" and take make-believe roles. Sociodramatic play is encouraged to help the child work through his experiences and to learn to make believe rather than to depend on toys.

The block area contains such equipment as blocks, boards, sand table, trucks, and other toys. While the child plays, the teacher can develop many spatial concepts through statements like, "The truck is *on* the table, the car is *in* the garage, the block is *under* the chair." Other concepts related to classification, seriation, and temporal relations can also be reinforced.

Evaluation Time--During evaluation time the children are encouraged to discuss what they did during work time and tell whether they felt that they worked well or could have worked better.

Cleanup--The children practice familiar concepts as they put the materials away during cleanup time. They put all the cars on one shelf, the biggest blocks together, and the red beads all in one box. Teachers help put things away and ask the children to explain why they put the materials in a particular place.

Juice and Group Time--For juice and group time, children are divided into groups on the basis of ability level, allowing each teacher or aide to work more intensively on specific goals. The children learn one-to-one relationships as they pass out one

napkin and one cup to each child. There may be two sizes of cookies, and the children separate the big cookies from the little cookies. As a followup to experiences with real animals, they may have animal cookies and identify the head, tail, and other parts of the animal. A group may then do other things related to animals, such as examining more closely a live pet in the classroom, playing a mystery bag game with rubber animals, or looking at pictures of animals in a book.

Activity Time--Indoor activities include songs, rhythm instruments, circle games, and ball games. Outdoors the children play on slides, swings, and climbing equipment and gain experience with real objects such as leaves, rocks, and grass. The teachers talk about what they are doing. For instance, "Connie is coming *down* the slide; Peter is going *forward* and *back* on the swing; Mona is climbing *through* the tunnel; the merry-go-round came to a *stop*; who is *first* in line; who is *next*?"

Circle Time--Circle time provides an opportunity to recall what was done during the day and perhaps to read a story or sing a song. This is the last period of the day, and the ordering

of events is stressed as the children review what they did *first*, *next*, *later*, and *last*.

Dismissal--Children are dismissed in some special way, such as singing, walking like a duck, or hopping to their cubby. Certain concepts may be reinforced as the children put on their coats, for example, "Your mitten goes on your hand."

Although language is not taught directly in the cognitively oriented curriculum, the teacher does encourage the child's language development. For the child who is just beginning to talk and is slow to respond to questions and directions, the teacher uses a technique of "verbal stimulation" in which she matches her language to what the child is doing. The child's own vocabulary soon increases as he relates the teacher's words to his own activities. The teacher might also expand the child's early attempts at language into phrases or simple sentences. Verbal expansion is done in an accepting, encouraging manner and is related to the child's activities. As he learns to express himself verbally, the teacher relies increasingly on the technique of questioning. For example, she might ask, "What will

USE OF LANGUAGE

happen if you tip the pitcher of water?" or "Who can think of some way to use the doll carriage?" Such questions encourage the children to interpret their own experiences and to communicate with others.

HOME VISITS

8 A teacher or aide visits the home of each child every other week to involve the mother in the education of her child and to extend the school activities into the home. The teacher prepares for the visit by selecting materials to teach a concept, interest the child, and encourage the mother to participate. She might bring with her crayons, paper, scissors, clay, old magazines, or other materials. The home visit generally lasts for an hour and a half, the teacher working on activities with the child for most of this time. The mother is asked to join in, and the teacher demonstrates to her ways of using the material. She also suggests other activities for the mother and the child, using materials in the house. The teacher generally leaves behind some of the materials she has brought and asks the mother to use them with the child. Although the teacher comes to the home as an educator and does not interfere with personal problems, she does try to spend part of each visit talking informally with the mother. Such

conversations can foster a trusting relationship between the teacher and the mother, and offer the mother an opportunity to discuss various aspects of rearing children. And, hopefully, the mother will develop a more positive attitude toward education and a more active interest in the academic progress of her children.

After testing various curriculum models, the developers of the cognitive curriculum have concluded that the attitudes and functioning of the staff are critical to the success of any curriculum program. They suggest three main components for an effective staff model: the involvement of the teacher in *planning*, active participation in *team teaching*, and *supervision* by a knowledgeable curriculum supervisor.

STAFF MODEL

A committed teacher is essential to the success of the cognitively oriented curriculum. The teacher is not given a series of step-by-step activities, but rather some curriculum goals and a framework for selecting activities which will help the children reach these goals. She becomes involved with the curriculum as she decides on activities based on her understanding of the

theoretical framework and on her observations of the children in her class. She needs sufficient time for planning, generally one-half to 1 full hour each day, and should prepare plans about 1 week in advance. Through detailed planning the teacher explicitly defines what skills she wants the children to develop, outlines activities and techniques she will use to teach these skills, and evaluates the effectiveness of these activities and techniques.

Team teaching is another important element of the staff model. During the planning sessions, the two teachers and two aides share ideas, develop new activities, and focus on problems and key issues. When differences arise, they attempt to discuss them frankly to ensure that all team members clearly understand the curriculum and are implementing the curriculum goals.

Adequate supervision by a supervisor who has used the curriculum in the classroom is a key to the successful operation of the program. The supervisor reviews the plans of the teachers, observes in the classroom, and provides an inservice training

program based on the concerns and needs of the staff. The supervisor is not an administrator but must focus her energies on providing support to the teachers and aides.

The preschool program at Ypsilanti costs approximately \$60,000 per year to operate--about \$50,000 from State funds administered through the Ypsilanti Public Schools and about \$10,000 contributed by the High/Scope Educational Research Foundation. Roughly three-fourths of the budget is spent on salaries for the teachers. Other expenses are the salaries for aides (who are also bus drivers), part of the salary of the supervisor, and food and supplies for the preschool. Equipping a classroom costs about \$2,000, or \$1,000 a year over 2 years; maintaining the classroom runs about \$500 each year for the replacement of equipment, materials, and books. Although the costs of the program are high, almost \$1,900 per child each year, they must be weighed against the long-run savings. Many of these children would have to be placed in special education classes when they enter school, but because of their growth in the preschool program

COST

they are able to function in a regular classroom setting. The result is a long-run saving in both human potential and money.

EVALUATION RESULTS

Careful evaluations have been conducted on the effectiveness of the cognitive approach by comparing the achievements of children who have participated in the preschool with control groups. The finds based on children who participated from 1962 to 1967 indicate that those who attended the preschool did better than the control groups; they scored significantly higher on achievement tests and received higher ratings by their teachers in academic, emotional, and social development. These differences continued throughout the followup years, including third grade. These children also scored significantly higher on measures of intelligence than the control students, although this difference decreased as the children progressed through school and disappeared by the third grade. These results show that a preschool program using a sound curriculum carried out by a capable, committed staff can improve a disadvantaged child's chances for academic success, even for those who were initially diagnosed as functionally mentally retarded.

Additional information about the cognitively oriented curriculum, including the booklet *The Cognitive Curriculum* by Donna McClelland, can be obtained from:

**FOR MORE
INFORMATION**

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Information about the curriculum is also contained in the following documents:

David P. Weikart et al., *The Cognitively Oriented Curriculum, a Framework for Preschool Teachers*, Final Report, Volume I, U.S. Office of Health, Education, and Welfare, Office of Education, National Center for Educational Research and Development, August 1970.

David P. Weikart et al., *Longitudinal Results of the Ypsilanti Perry Preschool Project*, Final Report, Volume II, U.S. Office of Health, Education, and Welfare, Office of Education, National Center for Educational Research and Development, August 1970.

Several short 8 mm. films dealing with different aspects of the curriculum have been produced for training purposes. In addition, a 16 mm. film and a slide presentation are being prepared.

MODEL PROGRAMS--Childhood Education

This is one in a series of 34 descriptive booklets on childhood education programs prepared for the White House Conference on Children, December 1970. Following is a list of the programs and their locations:

- The Day Nursery Assn. of Cleveland, Ohio
Neighborhood House Child Care Services,
Seattle, Wash.
- Behavior Analysis Model of a Follow Through
Program, Oraibi, Ariz.
- Cross-Cultural Family Center, San
Francisco, Calif.
- NRO Migrant Child Development Center,
Pasco, Wash.
- Bilingual Early Childhood Program,
San Antonio, Tex.
- Santa Monica Children's Centers, Calif.
- Exemplary Center for Reading Instruction,
Salt Lake City, Utah
- Dubnoff School for Educational Therapy,
North Hollywood, Calif.
- Demonstration Nursery Center for Infants
and Toddlers, Greensboro, N.C.
- Responsive Environment Model of a Follow
Through Program, Goldsboro, N.C.
- Center for Early Development and
Education, Little Rock, Ark.
- DOVACK, Monticello, Fla.
- Perceptual Development Center Program,
Natchez, Miss.
- Appalachia Preschool Education Program,
Charleston, W. Va.
- Foster Grandparent Program, Nashville, Tenn.
- Hartford Early Childhood Program, Conn.
- Philadelphia Teacher Center, Pa.
- Cognitively Oriented Curriculum,
Ypsilanti, Mich.
- Mothers' Training Program, Urbana, Ill.
- The Micro-Social Preschool Learning
System, Vineland, N.J.
- Project PLAN, Parkersburg, W. Va.
- Interdependent Learner Model of a Follow
Through Program, New York, N.Y.
- San Jose Police Youth Protection Unit,
Calif.
- Model Observation Kindergarten, Amherst,
Mass.
- Boston Public Schools Learning Laboratories,
Mass.
- Martin Luther King Family Center, Chicago,
Ill.
- Behavior Principles Structural Model of a
Follow Through Program, Dayton, Ohio
- University of Hawaii Preschool Language
Curriculum, Honolulu, Hawaii
- Springfield Avenue Community School,
Newark, N.J.
- Corrective Reading Program, Wichita, Kans.
- New Schools Exchange, Santa Barbara, Calif.
- Tacoma Public Schools Early Childhood
Program, Wash.
- Community Cooperative Nursery School,
Menlo Park, Calif.