DOCUMENT RESUME

ED 034 586

PS 002 573

TITLE   Arizona Center for Early Childhood Education Annual
                 Report, June 1968 - June 1969.
INSTITUTION   Arizona Univ., Tucson. Arizona Center for Early
                 Childhood Education.
SPONS AGENCY   Office of Education (DHEW), Washington, D.C. Div. of
                 Educational Labs.
PUB DATE   1 Jun 69
NOTE   76p.

EDRS PRICE   EDRS Price MF-$0.50 HC-$3.90
DESCRIPTORS   *Annual Reports, Curriculum Development, *Early
                 Childhood Education, Educational Change, Educational
                 Objectives, *Educational Research, Environmental
                 Research, Individual Characteristics, *Program
                 Descriptions, Test Construction
IDENTIFIERS   Arizona Center For Early Childhood Education, Tucson
                 Early Education Model

ABSTRACT
         This 71-page annual report, June 1968-June 1969,
focuses on the purpose, development, and work of the Arizona Center
for Early Childhood Education administered through the University of
Arizona's College of Education. The Center is committed to the
systematic analysis, continued development, validation and
modification of a new and existing educational program. The purpose
of the center is to evaluate innovations and to evolve a research
base to guide future development of the early education program. The
report includes a discussion of the advantages and disadvantages of
the Center, a description of the history, instructional goals, and
principles of instruction behind the Tucson Early Education Model,
and a progress report on research and development at the Arizona
Center. The progress report includes several abstracts of pertinent
literature which involve behavioral research, case studies, and
training techniques. Appendixes include the Center's personnel
roster, a case study of the program's implementation at the fourth
grade level, and a list of selected papers contained in the progress
report. (Author/JF)

ARIZONA CENTER

FOR EARLY CHILDHOOD EDUCATION

ANNUAL REPORT

June 1968 - June 1969

June 1, 1969

The Arizo Center for Early Childhood Education is administered through the University of Arizona's College of Education, F. Robert Paulsen, Dean. It is an interdisciplinary organization and is directed by Marie M. Hughes. Ralph Wetzel, Department of Psychology, and Ronald Henderson, Department of Educational Psychology are associate members of the directorate.

TABLE OF CONTENTS

I. THE DEVELOPMENT OF NEW EDUCATIONAL PROGRAMS: CHALLENGE AND STRATEGY

For the first time in our history we must regard education with total seriousness. Just as we now realize that failure to produce food for all threatens every man, so are we beginning to see that failure to educate will underlie great human disaster. Much as the food demand exceeds our productive and distributive capacities, so do the complex and technical requirements of modern society exceed our educative capacity. It is now possible to die from lack of education. The critical examination of the educative process has taken on a new urgency. No longer is the development of new programs one merely of academic and scientific interest. Rather, educational processes are the focus of national concern and the principal hope of vast numbers of people. No longer can education be a bureaucratic institution or a system of knowledge dissemination. Rather, it must be a process of intervention designed to counter a growing threat to our national survival.

The view that new educational program is a system of intervention raises several questions. The most obvious is, "in what does educational innovation intervene?" Most frequently the answer is, "the present educational system." A growing battery of evidence convinces us that the present system for educating the people of this nation fails with large segments of the population. In addition, with recognition that the process of education is not separate from the processes of child rearing and the management of extraschool environments, we begin to recognize the need to evolve change in many segments of our culture. Serious questions concerning rights of decision, locus of control, and the establishment of goals must be faced by those implementing educational intervention.

There is little agreement about the best ways to redesign the educational process. In general, there are two current tactics, both of which presume to make use of scientific research to establish sound educational program. One strategy emphasizes the role of careful scientific inquiry to establish a sound data basis on which to implement educational change. Do the research first and then change the system is the order of this view. Practitioners of the procedure begin with research and suggest that at a future date curriculum be built in a mosaic fashion on the basis of research

findings. The advantage of this approach is that it minimizes the risk of innovations which do not prove to be improvements in the long run. The disadvantage is that much of educational program remains traditional and unchanged in spite of dissatisfaction with it. The establishment of research data is a slow and laborious process and the length of time between the production of research findings and educational change is notoriously long. The opposite strategy is to modify educational program on the basis of previous experience, best guesses, new philosophy, and available data and then set about the task of verifying and modifying on the basis of research findings. Change the system and then do the research is the order of this strategy. The advantage here is that the unsuccessful systems are discarded.

The principal difference in the two tactics is the rate at which they implement change. Though the fast-change point of view appears to get results, in the long run it may not do so and the two approaches may not differ much in efficiency. In both strategies, the process of establishing the effectiveness of a procedure tends to be separate from the process of implementing the procedure.

II.   THE FOCUS OF THE ARIZONA CENTER

The Arizona Center for Early Childhood Education is committed to the systematic analysis, continued development, validation and modification of a new and existing educational program. This program involves goals and methods of instruction different from traditional education and represents a significant change in educational procedures. It is the purpose of this center to evaluate these innovations and to evolve a research base to guide the future evolution of the early education program. In terms of the strategies described above for the implementation of educational change, the work of the Arizona Center began with a major change in program.

The rationale for relating the work of such a center to an existing educational program is based on the recognition that educational research is embedded in a context of national need and urgency. Educational program must be designed and implemented even though a scientific basis for all decisions is lacking because education is a crucial and ongoing enterprise. All research data to be meaningful must be related to a program which has been developed on several nonscientific bases. We recognize, for example, new cultural skills and attempt to build educational programs which will develop these skills although we lack the scientific and precise knowledge about the best way to produce them. We recognize the failure of traditional programs to teach behaviors necessary in a complex and technical environment and attempt to innovate a program which will best serve these ends. Again the recognition of the need preceeds the scientific examination of the means. In addition, much of education is based upon the experience of educators. Although this experience is often expressed in imprecise, subjective and personalized ways, there is no a priori basis for assuming that the accumulated experience of educators is not an important contribution to the development of program. If we are to have educational program at all, then scientific research data can be only one part of the foundation for its establishment and evolution.

At the same time, however, research within the context of an educational program is the most important basis for change and growth of the program. The strategy of the work at Arizona is not to test the efficacy of the total program in order to reject or accept it. Rather, it is the plan to

analyze important components of the program, to modify components as the data dictate, and to build a program whose validity is based on the validity of its components. Educational program, to be viable, must constantly be open to research input. As such it is never complete and can only be represented in terms of its current status. Research and the process of change must be part of the total operation of educational program.

ADVANTAGES

There are several advantages to focusing research and development on an existing educational model. The existence of the model reminds the researcher that his data must eventually be given programmatic meaning. It is a common lament that research findings are often left in obscure and irrelevant forms. Researchers tend to publish their findings in their own professional journals which do not find their way into the hands of the classroom teacher. Beyond that however, the findings are often presented in such a way that their meaning for the educational process is obscure. This is not to say that all educational research should be of an applied nature. It is to say, however, that the research thrust should be maintained to the point that the findings take on relevance for educational program. When work is aimed at an existing and defined program, the parameters of the task become clear. The researcher begins to see what will be necessary before his research can take on relevance for education. In addition, the processes and techniques of translating research findings into meaningful pieces of information for the educator can themselves be examined.

The existence of a defined educational program can also guide the selection of research problems and the focus of resources. Most educational programs contain such a wide array of research needs that almost any researcher can find some point at which the needs of the program and his particular research interest are congruent. It is also easier for the researcher working within the framework of an educational program to become aware of the actual needs and problems in the field. Thus, those responsible for implementing educational program can become aware of research as a tool and as a process which produces products useful to them. This relationship between the program needs and the research efforts paves

the way for closing the gap between research and implementation. It also means that the rate of incorporation of research and development findings and products into an actual educational enterprise is greatly increased. One recent estimate suggests that the time lag between the development of a significant innovation and its incorporation in education may be as great as 50 years.

Another advantage in relating research to existing educational program is the fact that research methodology can make significant contributions to teaching and instructional skill. In a sense, the teacher is a researcher. Many teachers work at developing new ways of working with a particular child or groups of children, of presenting problems and materials, and of organizing their classrooms. Research strategy has much to contribute to the individual teacher's design and evaluation of his teaching strategies. Further, the technology of research can often contribute to the technology of teaching.

Finally, it is only in the context of educational programs that such issues as teacher training and the dissemination of educational change can become research topics.

DISADVANTAGES

The primary disadvantage of relating research program to ongoing educational program is the fact that educational change in itself takes tremendous amounts of time and energy. A group of researchers wishing to implement significant educational change may find most of their time consumed with training, demonstration, consulting and disseminating the program and very little of their time available for the design and implementation of the research. It is clear that if significant changes in American education are to be made and evaluated, then adequate support must be provided for both endeavors. The service demand is a particularly strong one and can frequently take precedence over the research requirements. Only when both the implementation and research thrusts can be realized will there be available at any given moment an educational program of real utility and relevance which will reflect the most current contributions of research and development.

III.   THE TUCSON EARLY EDUCATION MODEL:
AN EDUCATIONAL PROGRAM FOR YOUNG CHILDREN

HISTORY

The Tucson Early Education Model began in 1965 as a three-year cooperative project on the intellectual development of young Mexican-American children conducted by the University of Arizona represented by Dr. Marie M. Hughes and Tucson District No. 1 represented by Mrs. Jewell Taylor. There were several factors which led to the development of this project. First, the school superintendent's committee on dropouts reported that Mexican-Americans as a group had the highest rate in Tucson for leaving school before the 12th grade. Second, test results in reading and social studies indicated that the discrepancy between the achievement of young Mexican-American children and their Anglo-American counterparts increased as they progressed through school. Actually Mexican-American first and second graders were nearer the norm of their Anglo-American counterparts than they were in the middle grades. At the sixth grade they were, as a group, one and one-half to three years below the test norms.

In general, the data on the Mexican-American child's progress in schools in the Southwest were similar to those data for certain other groups of children; namely, minority groups, the rural poor, and others that were from families of unskilled parents living close to a subsistence level.

The new educational program as it evolved was gradually implemented in 68 classrooms, grades one through three in eight public schools in the metropolitan Tucson area. The continued elaboration and evaluation of this model became the focus of the Arizona Center for Early Childhood Education at the University of Arizona in 1967. In 1968 the Arizona Center was asked to sponsor new Early Education Programs for Project Follow Through in fourteen communities throughout the Nation.

INSTRUCTIONAL GOALS

The major emphasis in the development of the Tucson Early Education Model has been on the instructional program. At present, four instructional goal areas have been identified. These goal areas are currently being defined

as behavioral objectives and as such form the major dependent variables
of much of the work of the Early Education Center.

1. Language Development

Language competence is one of the major technical skills of the cul-
ture to which the child must adapt. Critical information is transmitted
principally in verbal form. This requires an acquaintance with a variety
of linguistic labels, concepts, language and communication forms, and an
awareness of the function of language. The study of language, the develop-
ment of research instruments and data, and the development of curriculum
materials for language has been an important thrust of this year's Center
activities.

2. Intellectual Base

The intellectual base is a collection of skills assumed to be necessary
in the process of learning. These skills are as yet only partially recognized
and defined and are usually not formally taught in traditional educational
programs. Yet, the importance of these skills in every learning process is
becoming increasingly recognized. We are beginning to suspect that the
success of the child in the educational process is dependent upon his acquisi-
tion of several basic intellectual skills. It is hypothesized that these skills
may be learned by many children largely outside the classroom. Consider,
for example, the learning of learning skills. If a teacher gives a young child
a list of words to take home to learn to spell, the child is put in the position
of having to teach himself. If he has at home parents who are willing to read
the words to him or show him how to write out the words and check them
against the list or sibling who is willing to show him how to go about the task
of learning, he will learn the words. If he does not have these resources
outside of the classroom, he may indeed fail to teach himself. It is clear
that as a child progresses through the educational system, he is given
greater responsibilities for teaching himself. At the same time the tradi-
tional educational system does not systematically teach children the skills
of self-teaching or learning how to learn.

Some of the intellectual base skills involve the conceptual organization
of stimuli in the environment. For example, ordering events along certain

dimensions such as size, color, and form or sequencing events according to time. Some intellectual base skills are complex behaviors which are difficult to define: to be able to attend, to recall significant events, to be able to organize one's behavior toward specific goals, to evaluate alternatives, to choose, to plan, to develop expectations, to be able to discriminate significant and important behaviors in others, and to imitate. It is a goal of the Tucson Early Education Model to make these behaviors part of the instructional goals. It is necessary to identify and teach systematically these crucial behaviors the acquisition of which has traditionally been left to chance.

3. The Motivational Base

The motivational base is a collection of attitudes and behavioral characteristics related to productive social involvement and learning. These include attitudes toward school and toward the learning process, a willingness to persist at learning tasks and to take on new problems, appreciation for learning and expectation of success and a willingness to change. In addition, there are the important attitudes toward self such as confidence, expectations of success, standards of work, and finally a consistent picture of oneself as one who can learn. It is assumed that these characteristics can be taught. It is the aim of the Tucson Early Education Model to make them formal curriculum goals and to develop the techniques of developing these characteristics in the young child.

4. Societal Arts and Skills

Our culture is characterized by a wide range of arts and skills which constitute social interaction, information transmission, and scientific advance. Here are classified reading, writing, arithmetic, and other mathematic skills as well as the social skills of cooperation and democratic process. This collection of skills has been the traditional focus of Early Education Programs. It should be noted that in the Tucson Early Education Model, they constitute only one portion of the curriculum goals.

PRINCIPLES OF THE INSTRUCTIONAL PROGRAM

The purpose of the instructional program is to structure about the

child a learning environment designed to promote the development of the behaviors defined by the goal areas. Several program processes have been identified which serve to focus the research and development aspects of Center activity.

1. Basic Learning Variables

a. **Imitation** Although imitation is widely recognized as a significant process by which the young child acquires new and complex behavior, it is seldom formally incorporated into classroom practice. In the Tucson Early Education Model teachers are trained in the use of <u>modeling</u> as a technique for facilitating the development of skills and abilities. Imitation is a particularly important process in the acquisition of language in the classroom. Adults consciously and continuously work to model elaborated and extended examples of the child's own communications. Since there is a growing volume of literature on processes of imitation and modeling, research findings have much to say about ways in which modeling can be used as a significant educational process.

b. **Discrimination** Much of getting along in the contemporary world rests on one's ability to discriminate the important cues available in the environment. The processes by which children learn to recognize and respond to cues have not been formally incorporated in most teaching techniques. Cues can be used by the teacher to guide a child's behavior in a variety of significant directions. The physical arrangement of the room, the kinds of questions the teacher asks, printed words, instructions, and facial expressions are but a few of the important sources of cues to which children must learn to respond. The processes of discrimination and the conditions under which children learn to discriminate have great implications for the classroom and the area is an important one for the collaboration of research and instructional efforts.

c. **Gratification** It is clear that rewarding and gratifying experiences are crucial elements in the learning process. Reinforcement plays an important role in classroom procedures. In the Tucson Early Education Model classroom adults are trained in the technique of social reinforcement such as praise, attention, affection, and the like. Materials are chosen for

the reinforcing value and activities are arranged so they naturally result in reinforcing events. In the instructional program it is intended that through multiple reinforcing experiences the child will come to regard learning as a satisfying experience and school as a source of significant and rewarding activities.

The ways in which reinforcement is distributed in the classroom and the contingent relationship of reinforcement to the behavioral goals of the instructional program form an important focus of the research activities.

2. Classroom Organization Variables

a. Individualization   The general organization of the classroom is clearly related to the ways in which children learn what they learn and the efficiency with which they learn it. If learning is regarded to be a process by which one is provided appropriate models, taught to discriminate appropriate cues, and reinforced for particular behaviors, it is clear that it is necessary to be able to structure learning environments specifically for an individual child. Research tells us that children are different when they come to the educational environment, that they bring to school different sets of attitudes and different sets of skills, that they must begin their learning from different points in the educational process. It is clear that techniques must be developed to teach children "individually." The Tucson Early Education Model is developing a set f techniques for providing children behavioral options so that they may develop individual skills at individual rates. The organization of the classroom is predicated on the belief that it is not necessary for children to learn the same thing at the same time in order to profit from their educational experience. We are beginning to develop and to research ways in which a classroom can be organized toward individualization and at the same time prepare the young child for integration into the broader culture.

b. Generalization   One of the most serious criticisms of education today is that it is largely irrelevant. That is to say, many of the skills which a young child learns in the school have no relevance for him in his outside activities. It is an aim of the Tucson Early Education Model to build-in transfer of skills from the educational to the natural environment of the child.

The child must be able to extend his skills to a variety of settings, objects, and events. This principle has many implications for the development of teaching techniques and materials. By using materials from his own environment, by relating classroom experience to home experiences, by teaching skills in a functional setting or in many different settings, skills can be extended across content areas both within and outside of the classroom.

3. The Principle of Orchestration

The various skills reflected in the four principle goal areas (language, intellectual base, motivational base, and societal arts and skills) are seldom exercised independently of each other. Almost all intellectual activities of any relevance whatsoever require some combinations of these distinct behaviors. It is a central aspect of the Tucson Early Education Model that these skills are not taught separately one from another. This is a significant departure from the linear quality of traditional instructional method in which time segments are devoted to individual skills and in which the segments follow each other in repetitious fashion. It is an aim of the Tucson Early Education Model to develop techniques by which these skills can be taught in real and meaningful settings so the child learns how to integrate in a useful and relevant fashion the new behaviors he is learning. The relevance of the behaviors to life situations makes it possible for him to utilize the behaviors outside the school situation. This possibility results in added practice and much self-initiated work that is brought back into the school. The process of instructing in an integrated manner is called orchestration. It is hypothesized that orchestration promotes a broader use of intellectual skills in the child's natural world than does sequential skill acquisition.

IV.   RESEARCH AND DEVELOPMENT AT THE ARIZONA CENTER:
A PROGRESS REPORT

SCOPE OF WORK

Three of the four major programs of the Arizona Center have been
related to the development of the instructional model. As reported in the
Program and Prcject/Activity Resume of the National Laboratory, these
are: (A-C) The Development of an Instructional Program with New Objec-
tives for Early Childhood Education, (A-D) The Development and Evaluation
of New Instructional and Ancillary Personnel Roles, and (A-F) Basic
Learning Processes.

We recognize, however, that a total educational program involves
more than instruction. There are forces bearing on educational outcome
outside the classroom (e. g. , home and community milieu) which may, in
the long run, have greater influence on learning than the instructional pro-
gram itself. One program of the Center, (A-E) Cross-Cultural Compar-
isons, has focused on some of these extra-instructional variables. During
this year, especially with involvement in Project Follow Through, the research
and development activities have been broadened to include more of these
non-instructional but crucial aspects of a total educational program.

We are currently revising our scope of work statement for the forth-
coming Program Plan. This revision is based on three considerations:
(1) our efforts have expanded considerably in the extra-instructional area,
(2) we are initiating a process and component analysis of the instructional
program, and (3) we are attempting to articulate our work with the cate-
gories suggested in the Quarterly Report of the National Laboratory,
December 1968 to February 1969.

The categories suggested in the Quarterly Report will be used to
report progress to date. Letters in parentheses refer to the place of the
work in the Program and Project/Activity Resume. Those abstracts with-
out letters were not categorized in that resume. Original papers included
in the appendix are so designated.

THE DEVELOPMENT OF THE CURRICULUM (A-C)

The special focus for this year's work was: (1) to continue to refine and fill in gaps in the program so far developed, (2) to identify more accurately and more efficiently the individual child's responses to the educational milieu and his particular needs, (3) to secure more accurate data on the effects of the program, and (4) to extend the program downward to the five-year-old and upward to the nine-year-old.

1. Operational Descriptions (A-C)

a. Change in Classroom Appearance   One of the initial changes worked through with teachers was that of the physical attributes of the classroom. If each child was to become successful (motivational base) in his attempts at school tasks, then a variety of materials and tasks had to be present. If the teacher and aide were to increase their interaction with individuals for purposes of modeling language (language competence) demonstrating care and acceptance of each child (motivational base), and if children were to talk with one another (language competence) some changes in furniture and organization of classroom were necessary. Therefore, each room was equipped with tables and chairs for small group work, a rug was provided for a common gathering spot, cupboards were lowered or open shelves built so children could help themselves to materials (motivational) with work habits of self-responsibility (societal arts). Work habits of attention, care of materials, and independence were fostered by the children's learning to handle and being allowed to use the tape recorders, view master, and typewriters. Again, the acquisition and reinforcement of these abilities with the child's ability to view himself as a doer and a learner contributed to the motivational base.

b. New Personnel   The new furniture, cupboards, equipment, and materials of instruction forced the teachers to act in new ways if they were to make use of them. Another element, however, was necessary for the successful contribution of the arranged environment to the four goal areas. This additional factor was the introduction of the program assistant who had the skills and abilities to work with small groups of children, thus serving as model to the teacher; to help in the classroom by teaching the children the new games; to analyze the children's responses to the materials

of instruction; and to plan next steps with the teacher. The program assistant also served a supportive role. It was discouraging for teachers to have the small groups break-up unexpectedly. She had to be helped to reflect on the situation so that some hypothesis for corrective non-punitive action could emerge. In addition, teachers had to learn to relate their plans to the goal areas taking care that one part of the work did not negate another. An experienced teacher who acted as a program assistant helping the teacher in the classroom by working with children to demonstrate the needed new skills and abilities was found to accelerate acceptance of the program.

c. The Professional Response A process curriculum is oftentimes viewed as something haphazard or one entirely dependent upon the ingenuity and commitment of the teacher. Very often it is seen as without content or limited isolated content made up of bits and pieces without selection by recognized criteria.

In the Tucson Early Education Model the process curriculum is accepted as the very basis upon which future and continuous learning is dependent. The teacher and other adults in the classroom are viewed as the chief instruments of instruction. They use their interaction with the child as a primary means of giving him aid in his learning; they use it as the means of opening new challenges to him.

The professional response to the child is a technical and highly skilled behavior on the part of the teacher. It involves a conscious and thoughtful decision although it may appear offhand and fortuitous. It carries with it, at its best, an aura of "I heard you and I care about you, " "I want you to grow, " "I want you to use me for your own learning. "

The professional response can most easily be illustrated with language learning. There is now quite a body of research that indicates how the mother's response makes a difference in the child's language competence. Our teachers are trained to respond to a child in ways that provide him with a model of language competence. Child says: "Dog away. " Teacher replies: "The dog has gone into Mrs. Brown's room. " This is called corrective feedback and may be thought of as providing the functions or prepositions and other connectives that children often omit. Child says: "I see hot. " (watching a kettle boil) Teacher replies: "What you see is called steam.

Boiling water makes steam." This type of response is expansion or elaboration. It frequently takes the form of adding adjectives or adverbs to what the child has said. Sometimes the teacher helps the child make his own expansion by asking him the type or color of the truck. Even then she may wish to model the complete sentence by saying, "Yes, that was a new, blue, panel truck."

Another type of response seeks to present a model of more complex syntactical structure. This involves the use of subordination, longer sentences, and so forth.

The professional response is not only related to the development of language competence, but is pervasive in its use in social reinforcement. The discriminative or precise statement gives the child a direct clue to the desired behavior. "Good, you have made part of your G's go below the line." "You helped everyone and yourself when you brought the proper encyclopedia to us." "Fine, you are carrying the chair so it will not punch anyone."

The professional response can be used to extend knowledge and give facts that whet the curiosity and interest of children. This use calls for a wide fund of information on the part of the teacher. Even a kindergarten child who makes a visit to the Dinosaur National Park and relates his trip to his class may be intrigued by the fact that dinosaur bones have been found in the La Brea tar pits in the center of Los Angeles.

Sometimes such responses reflect the curiosity and aliveness of the teacher. "I wonder what would happen if ____ ." "Is that a tree native to this country or was it brought in from another country?"

The professional response is shown in the skill of question asking. Questions that help the child organize his experience and at the same time demonstrate the adult's interest in him. Says the child, "We went on a picnic." A teacher can respond, "That's nice." Usually the child has no more to say. But a response that asks the child to tell more, "You did? Who went with you? What did you have to eat? What did you do?" not only says to him, I think that was a great adventure and I want to know more about it; equally important, such a response allows the child an opportunity to organize his experience in a more precise and interesting manner.

Question asking in the field of content is highly professional. It can

be used to suggest relationship, to project consequences, and to state hypotheses.

The professional response as used in this program can be cultivated. Responding to others can be flexible as one reads actions and expressions. This is particularly important with young children who withdraw when too many questions are asked or too much information is given them. Listening is a learned skill as well as an expression of attitude and interest in others. It may be said that the trained teacher is differentiated from others who talk with children by the appropriateness and even elegance of her professional response.

d. New Five-Year-Old Program

The nineteen Mexican-American five-year-olds (two could not speak English) were very diffusive in their motor reactions which interfered with attention and constructive work even with blocks. (They preferred to run with a block or knock another child rather than to build.) In building the program for this group, an attempt was made to focus on motor activity. For example, the teacher made continuous use of her large repertoire of action songs.

Motor activity was organized in the building of large floor maps which depicted the route taken on their trips into the neighborhood. Trips were recreated in motor action by walking the floor map. Later the floor maps were largely discarded and wall maps took their places. The up and downs of hills, bridges and curves were easily depicted and could be traced with the finger. Printed word cards were attached to the map to describe the reaction made by children at strategic points of the trip.

Another representational device was the use of graphs of personal activities or objects. For example, the child could find his name and attach a string to the piece of cloth that told what color or design he wore; another time he could do the same for the activity he chose. Such activities captured their attention and helped to organize or classify their environment. They seemed to illustrate the three modes of thinking as described by Bruner (active or motoric, iconic and symbolic).

Language for five-year-old preschool children was emphasized through the systematic and conscious modeling by classroom adults of

labeling, sequencing, discrimination and sentence structure, i.e., asking questions, forming tentative expression, use of conditional as well as the use of corrective feedback, extension and expansion. Congruent with the attempt to develop language interaction, a language - reading environment was designed to bring the concrete object, picture and printed word to the child's attention through such materials as children's dictation, door charts, recipes, labels, books (commercial, teacher-made, child-made), games, measuring tools and writing and art materials. The stuff that composes the language - reading environment is born as children begin the search for the meaning of symbols by identifying the familiar, speculating about what the symbol might represent, asking to have records made of their dictation and experimenting with ways of making their own records.

Modification of the intellectual kits used for structured lessons consisted of manipulative materials that could be experimented with in varied ways. (For example, trying out lids or corks on a variety of containers and bottles; taking an object apart and putting it together again.) This introduction and use of concrete objects into the classroom provided opportunities for sensory experiences, discrimination, description, labeling, and language mediation. Modeling of appropriate uses of materials gave children opportunities to put materials, and ideas about them, into use in their world.

The structured period using the materials of manipulation were designed to help the child acquire an orderly manner of talking about objects though the particular manipulations were not predetermined.

Playhouse play and block building did not become patterned until about the second half of the year. At that time children began to take roles of the family, visitors, and others who might be a part of a household. The teacher and aide had modeled these roles many times. It appeared that the children's concepts of their everyday experiences gradually became organized so they were expressed in forms common to all children; house play, block building and drawing.

Language growth seemed evident in the habit of labeling objects, in the use of temporal and spatial terms, and in longer, more syntactical, complex sentences. Records of children's dictated speech will provide the basis for an analysis of language.

e. <u>Refinement of First Three Grades</u>   At the first grade level language development emphasizes more complex descriptions of objects and events (less emphasis on labeling and sequences), future tenses and recall of past, and awareness of words, e. g. , rhyming words, homographs, nonsense words, etc. The classroom environment is organized spatially into centers of interest and temporally with the introduction of choosing time and committee time.

Children are provided with a range of concrete materials for manipulation, many in the form of intellectual kits, science kits and some materials suggestive of Piaget's tasks. Teachers view these centers as areas which offer opportunities for intellectual activity through the manipulation of objects and ideas.

The reading environment is established and maintained on the basis of the children's experiences, usually recorded by the teacher at this level. Children make, dictate, and use signs, door charts, individual, committee and class books. At this level children usually establish and maintain an interest in commercial books and other printed reading materials which is supported by adults as they give attention to this interest by reading and listening to the child.

Attention is given to the development of a mathematics vocabulary with the development of one-to-one and set relationships in the use of puzzles, math games, art materials and cooking experiences.

Attempts are made to arrange the environment with a range of materials wide enough that children can pace themselves and find opportunities to involve themselves in challenging activities.

At the second grade level, more of the total school day is devoted to the structured activities at the various interest centers within the classroom. At these centers, the children engage in a wide variety of learning activities specifically planned by the teacher to give attention to formal work in the areas of reading, mathematics and writing. All children work for a period of time each day at each center (reading, mathematics and writing) as well as other centers such as music, art and science in structured, individually planned, skill developing activities. The activities at the centers are derived from the childrens' experiences and interest and are not predetermined in content ("open-ended"). Through the work at these centers,

all children at the second grade level should gain further proficiency in reading and writing and mathematical computation.

Language development at this level becomes more complex in syntax, sentence structure, and question asking. There should develop a greater ability on the part of the child to recall and use qualifying words, phrases and clauses and to be aware of his own language usage. The childrens' own language forms the base for the reading program as it is reproduced in typewritten or manuscript form in individual and class books and used at the reading center in structured skill developing activities.

Certain kinds of materials and learning aids are used at this level. These include individual copies of the alphabet, more copies of dictionaries for the childrens' use, more complex manipulative mathematics materials, i. e., sum sticks, scales of various types, cash register and play money, thermometer, commercial, teacher-made and child-made games and a wider range and wealth of commercial reading materials. The intellectual kits as manipulative materials also provide a base for extended concept development and growth in language and intellect.

In the use of this wide variety of manipulative materials, the children are led to a greater degree of abstraction and symbolic understandings. Such symbolic representations are seen in the individual and class math activities that include map making and graphs. Hopefully, children at this level will show greater ability in planning and organizing their activities and the work day so that there is involvement in learning that is pertinent to each as an individual.

Future development at the second grade level will focus on: (1) greater attention to the individualization of reading and mathematics, (2) new materials to aid concept development, and (3) continued development of techniques for the teacher to record and analyze individual development in goal areas.

The specific characteristic of the third grade level is the integration of the four major behavior goal areas: language competence, intellectual development, motivational base and societal arts and skills. It is the orchestration of these four goal areas within the learning environment that places the children in settings of involvement and intellectual extensions requiring them to move toward greater complexities. They are challenged

to make full use of old skills and are provided with a wider scope of new activities that demand new skills in all formal work areas. The following is an illustration: Based on work with an intellectual kit on envelopes, a third grade became interested in the post office and mailing system. For several weeks the formal work within the classroom was orchestrated around this interest; a walking trip to the local post office to mail a package, letter writing, reading and mathematics related to the mailing system, construction of the post office within the classroom and many other activities which have extended over the entire school year with the writing to one student's brother in Viet Nam as a pen pal. As they corresponded with him, a tremendous interest and understanding of maps and globes, time - space relationships, and world situations became apparent to them.

Another third grade made stew. They became involved in the planning and preparation of the stew which was to offer orchestrated content in the curriculum for several weeks. In fact, months later the children planted seeds in their own garden at school and anticipated using the vegetables in some other way during the next school year.

The preparation of the stew and the pleasure of eating it were only the beginning of a highly motivating, learning activity. New language emerged as the children manipulated new materials. New reading content was developed as the children dictated and wrote their stories about stew. New science concepts emerged as they observed the stew simmering and as they noted change in form and texture of the materials. New mathematical concepts were introduced as they measured the ingredients and computed the cost of the stew, first with "real" money and then in abstract numerical symbols. This integrated activity was third grade content and curriculum.

New materials for instruction are introduced at the third grade level. Some of these materials are individualized reading materials, microscopes and other science apparatus, measuring devices of all kinds, wood working tools and a great many skill developing games.

Future development should emphasize improvement of teacher skill in the individualization of reading and mathematics, increased variation of and skill in developing materials, and attention to the individual record and analysis of skills and academic needs.

f.   <u>Fourth Grade Explorations</u>   Carrying the program with its new goals and procedures into the fourth grade presented many problems and some unexplained complexities.

The goals and concepts underlying the program were new to the teachers.   Although they had expressed several concerns about the program, they elected to participate in the initial development of the curriculum at the fourth grade level.   The case study in the appendix written by the program assistant provides insight into this venture to extend program into new areas.

A program of this nature is particularly challenging at the fourth grade level where specific content areas are traditionally emphasized. Some teachers expressed concern about the absence of predetermined content and materials.   Others were uncomfortable with the increased noise level.   All expressed concern about the absence of drill in math concepts. Many were concerned about the reading level of the children though they were not sure whether this was a program effect   (the population as a whole is a low reader group).

Many were impressed with the increased interest in reading and writing, increased cooperation, interaction, and written work.   Some teachers reported better attendance.   One teacher said that though she had been discouraged, she could never return to a traditional classroom.   One teacher missed working with "the better students. " One expressed need for future guidance in "where to go when I seem to get in a vacuum. "   Another said she had discovered, "I talk too much; try to pour it in. "

In general, the program assistant and the teachers made some progress in implementing new procedures and developing materials.   Clearly, dissemination of new program raises some unique implementation issues.

2.   <u>Philosophy of the Tucson Early Education Model</u>

The four goal areas are cast into behavioral terms for each lesson, day, or week's work.   The over-arching pupil product is conceived as a learner who is involved in his environment and who is taking responsibility for his own learning when he is in school and when he is out of school.   He has developed high discriminative abilities and sensitivity to the appropriate cues in the situations in which he finds himself.   He learns continuously from his interactions with his environment (material, situation, and people);

therefore, he can generalize from one situation to another. Note that the basic learning processes he uses as he moves through his life cycle are the same processes he uses as a young child in school.

Educators who attempt to operationalize the four goal areas in a school environment and program of daily living for a group of children (five or thirty) of any age will find that it is never truly completed or tested. The efficiency of such a program depends upon the orchestration of the goals and process in every encounter the child has with the arranged environment and people in the school. It depends upon the teacher's willingness and wisdom to plan for and meet the individual variability and needs of every member of the group. The acceptance of these goals and program is a tall order. There will always be present some aspects of ambiguity. The program by definition is not a recipe nor a panacea. It is a dynamic open process guided by defined goal areas; recognized learning processes; a series of overt principles that guide the organization, the relationship of teacher and child, child to child, materials provided, the reinforcements available, and the responses the adults make to each child or group. The sum and interaction of these components constitute the design for living and learning as it emerges each day in the classroom and school.

As stated earlier in this report, it is possible to intervene to change the educational program by attacking one segment at a time or one can conceptualize new goals which in operation mean change that extends from room furniture to teacher attitudes through the elimination of present grade expectations. With the urgency present today for highly trained people for the work world and people who are also involved in the major social problems which includes our interdependence upon one another, we accepted the challenge of conceptualizing new goals and developing a classroom program to achieve these goals.

3. The Analysis of Preschool Curriculum Materials and Procedures (A-D^4)

Earlier work in the preschool laboratory with a Head Start population, age three to five, suggested that the children lacked many of the skills expected by traditional preschool curricula. As the program for the preschool laboratory developed, emphasis was placed on the examination of procedures for building a basic intellectual skill repertoire.

The skill analysis and hierarchies suggested in a working paper from

the Pittsburgh Learning R & D Center (Resnick) formed the basis for the development of an experimental preschool curriculum. The program uses seven of the sixteen areas identified by Resnick. These are: Gross Motor Skills, Sensory Skills, Classification Skills, Skills in Using Example, and Plan-Following and Pattern Recognition.

Kits were prepared for the different levels of the sequences for use in instruction. The kits are constructed from materials readily available in the natural environment of the child and to preschools and day care centers which may lack extensive curriculum funds. Instructions are provided which, it is hoped, can be readily followed by personnel with minimum formal training.

Instructional methods initially centered on small group organization, stimuli from the natural environment, and reinforcement contingency management. Individual assessment suggested that this organization failed to develop behaviors for some children and one-to-one instruction has since been introduced.

Allied with the development of the curriculum is the development of a record-keeping system. In general, many curricula lack a practical way of assessing individual progress, but preschool curricula are particularly lacking in this respect. Further, it was necessary to introduce a record-keeping system which day care center teachers and aides would use. A system has been recently devised and seems feasible in the laboratory. The training of preschool personnel in its use and studies of its application are yet to be conducted.

Pre-post data and acquisition records are now available on an experimental group of preschool children. Also being analyzed are behavioral records of children in the laboratory classroom, e. g. , disruptive behavior and the like. Some systematic contingency manipulation has been performed and these records are also being analyzed.

Future plans include extension of the skill series and assessment of transfer to more complex tasks in other settings. The analysis of reinforcement variables will continue.

ENVIRONMENTAL VARIABLES

In a true sense, instructional programs are complex environments constructed around children in the hope that such environments will develop new behaviors. The school is a special environment, the classroom a unit of that environment, and the teacher an important aspect of that unit. It is incumbent upon us to understand the processes by which behavior is affected by the environment if we are to construct the environments which produce appropriate educational outcomes.

1. Basic Learning Variables

Contemporary learning theory identifies at least three roles which environmental variables play in influencing behavior. The environment provides: (1) models for imitation, (2) cues for appropriate behavior, and (3) rewarding and punishing consequences. Understanding these basic processes is an important goal for educational research. Teachers must make maximum use of these processes to move the behavior of children toward the program goals: the development of language, intellectual skills, motivational bases, and societal arts and skills.

a. **Imitation** The following study recently completed at the Arizona Center illustrates very nicely how basic research methods can yield data meaningful to instructional procedure. The role of imitation in the transmission of social behavior has long been recognized and rather extensively researched (e. g. , Bandura; Bandura and Walters). Curiously, little research has been directed toward behaviors thought to be part of general intellectual skill. Rosenthal and Zimmerman investigated the effects of model behavior on certain classes of question-asking behavior, namely questions designed to elicit information necessary for concept formation and abstract categorization.

* * * * * * *

Observationally-Induced Changes
in Children's Information-Seeking Classes (A-F[9])
Ted Rosenthal and Barry Zimmerman

Question asking plays an important role in the acquisition and cognitive

organization of data. This study investigated the effects of modeled behavior on children's formulation of questions regarding a set of stimulus pictures. The model was an adult Anglo-female (like many teachers); the children were 140 culturally disadvantaged grade-school children, mostly Mexican-American. The sample was drawn from the population served by the Tucson Early Education Model.

Separate groups of children observed varied instances of modeled questions representing one of four classes. These question classes referred to: (1) physical attributes of the stimuli, (2) the function of the stimuli, (3) causal relationships involving the stimuli, and (4) values or preferences concerning the stimuli. Following the modeling, a new set of pictures was introduced.

Significant imitation of all question classes occurred and generalized to new stimuli. No extrinsic reward was offered in the study. Instructions to emulate the model created stronger initial imitation, but this did not generalize to new pictures.

* * * * * * *

The results of this study have immediate value to classroom personnel. An important aspect of instruction is question-asking on the part of teachers. This is usually designed to elicit certain responses in children. This study indicates that the teacher may also be teaching question-asking at the same time. The next step is to design an instructional technique in which classroom adults provide models for information-seeking responses.

b. Discrimination   Many behaviors are determined by the kinds of cues provided by various environments and by the nature of the stimulus arrays presented the child. The study below by Bergan and Crowder examines some of the ways in which the organization of stimuli affect basic processes important to the acquisition of academic skill.

* * * * * * *

The Effects of Stimulus Content, Stimulus Duration,
and Number of Stimuli on Speed of Perceptual Processing (A-F[11])

John Bergan and Christopher Crowder

Speed of perceptual processing ability has been found to be highly

related to academic skill in elementary school children (Bergan, 1967; Bergan and Nicholson, 1968). It is important to isolate those factors which determine speed of perceptual processing skill. The present study investigates the influence of three variables: stimulus duration, stimulus content, and number of stimuli on speed of perceptual processing performance in first, third, and fifth grade children.

Speed of perceptual processing is defined as recognition of stimuli flashed on a screen and followed by interfering stimuli. Three stimulus contents (words, numbers, and lines presented in varying positions) were used. Stimuli were presented at 6/24ths, 4/24ths, and 2/24ths of a second and were shown in single, double, and triple groupings.

Two hundred and forty-eight elementary children selected at random and in equal numbers from first, third, and fifth grade classes in a school district in the Southwest participated. Analysis of variance procedures revealed that there are significant developmental changes in ability and that stimulus duration, content, and number of stimuli all influence speed of perceptual processing ability.

$$* \quad * \quad * \quad * \quad * \quad * \quad *$$

Results such as these have important implications for the manner in which stimuli are structured about children. Further investigations of this sort are needed to provide guides for the development of curriculum content and sequencing.

c. <u>Reinforcement</u>   Recent investigations have demonstrated conclusively that behavior is very much affected by the contingent relationship it bears to rewarding and punishing outcomes. Considerable research has sought for the sources of academic success and failure in reinforcement contingencies functioning in the child's learning environment. Behavioral principles have been proposed as a powerful tool for teachers to employ in the amelioration of behavior problems and the individualization of curricula and experiences. Preliminary to continued research, Martin reviewed extensively the literature in this important area.

* * * * * * *

Behavior Research Relevant to the Classroom (A-F^2 appendix)
Marian Martin

Numerous investigations have shown that adult social approval func-
tions as a positive reinforcer for many behaviors of children. Other studies
indicate that token reinforcement, as part of a well-designed program is
effective in behavior modification and in promoting academic achievement.
The functional analysis of complex academic behaviors has yielded prom-
ising results. Much of the research reported in this paper took place in the
natural environments of children and involved complex behaviors as dependent
variables. Methodological considerations, implications for education, and
value judgments involved in behavioral research are discussed.

* * * * * * *

Reinforcement principles play a central role in the development of
an educational program at all levels of work. Laboratory research and class-
room investigations continue to define ways in which reinforcement operates
to influence child behavior. An instrument for recording the reinforcing
behavior of teachers has been developed (see Supporting Technology) and
training materials incorporate reinforcement concepts as a crucial element
of classroom management (see Educational Change Agents). Several impor-
tant questions remain concerning the role of reinforcement variables in the
Tucson Model. Are token systems necessary if relevant outcomes are pro-
vided for classroom activity? Can teachers dispense social reinforcement
systematically in a classroom providing behavioral options? What kinds of
non-social reinforcers are available in the classroom and upon what behaviors
are they contingent? In the meantime, reinforcement principles have pro-
vided a basis for the study of teacher interaction variables described below.

2. Teacher Interaction Variables

Traditional classroom organization often places the teacher in a
position of being a central dispenser of reinforcement. Sometimes he is the
only source of both reward and punishment, and the chances that he will

respond to and reinforce inappropriate, disruptive classes of behavior are high. Martin demonstrated in a traditional classroom setting that the teacher's rewarding and punishing behaviors had strong and direct influence on children's behavior.

* * * * * * *

Effect of Reward and Punishment
on Appropriate and Inappropriate Behaviors (A-F[3])
in the Classroom
Marian Martin

A first grade teacher dispensed five conditions of reward and punishment to children in a reading circle. The types and the frequencies of stimuli dispensed were controlled. Both rewards and punishment were social: the rewards consisted of positive attentions, smiles, praise, and the like; the "punishment" consisted of routine teacher nags ("don't do that," "pay attention," "sit up in your seat," "turn around") and scowls. Appropriate and inappropriate deportment behaviors were recorded. The effects of both verbal reward for appropriate behavior and verbal punishment for inappropriate behavior were significant (P is less than .01) in suppressing the frequency of inappropriate behavior; however, significant effect was found only in conditions where the variables occurred alone, and not when both were presented. (i. e. , either reinforce appropriate or punish inappropriate behavior, but not both) A combination of verbal reward and token reinforcement was maximally effective and retained for long term use. The relationship of the results to previous studies and to classroom management were discussed.

* * * * * * *

There are, no doubt, other variables which bear on the reinforcement value of a teacher's behavior. Garcia investigated the function of the ethnic origin and language used by the reinforcing agent in a laboratory study.

* * * * * * *

The Effect of Experimenter Language and Ethnicity
on the Bar Pressing Behavior of Bilingual Children   (A-F[9])

Angela Garcia

Forty bilingual subjects were randomly selected from three first grade classrooms of the research school.   Twenty were assigned to an Anglo experimenter, twenty to a Mexican-American experimenter.   Each subject experiences four experimental conditions: baseline, first language reinforcement condition, second language reinforcement condition, and extinction.   Order of language was systematically varied.   The analysis of variance will be used to analyze both response output and rate of responding for experimenter ethnicity, language, language order, and interactions.

* * * * * * *

Often teachers are unaware of the effects which their attention has on the behavior of children in the classroom.   In the following study, Petersen and Wetzel demonstrated that teacher attention may influence so-called "free-choice" behavior of children.   The children were twelve cul-turally deprived children enrolled in the Preschool Laboratory.

* * * * * * *

A Behavioral Analysis
of Preschool Children's Free-Choice Activities   (A-F[1])

James Petersen and Ralph Wetzel

The free-choice period generally occurred at the end of a two-hour morning session and lasted approximately twenty minutes.   The purpose of the study was to analyze the selection activities of the children during the free-choice period to ascertain group and individual selection levels for each activity.   Four possible free-choice activities were available to each child: toys, puzzles, books, and blocks.   During baseline period one, the group

spent one percent of the time over a fifteen day period with books, thirty-four percent with toys, twenty-nine percent with puzzles, and twenty-six percent with blocks. Book selection had the lowest probability of occurrence of the observed activities.

During the experimental condition, one child was selected from the group and prompted to examine books during the free-choice period. When the selected child modeled the desired behavior the experimental teacher approached, commented that the child was looking at a book, and shared a piece of graham cracker with the child. The response was imitated by other children in the classroom. As the other children imitated the model they were also reinforced by the teacher. After five days, the group data indicated that the frequency of book use had increased from one percent to fifty percent for all children, with twenty-five percent of the time being spent with toys, nine percent with puzzles, and ten percent with blocks. Analysis of the data by sex revealed that girls utilized the books more than the boys (i.e., seventy-four percent versus twenty-seven percent), after the modeling and reinforcement condition.

The experimental condition was then reversed and the contingent attention removed following the use of books. The use of books declined from fifty percent to eighteen percent while the use of toys constituted eighteen percent, puzzles forty-two percent, and blocks ten percent of the total available time period.

* * * * * * *

Even "free-choice" behavior may have its environmental causes. How teachers behave during free-choice may influence the choosing behavior.

Zimmerman has demonstrated that teacher reinforcement can affect measures of student anxiety.

* * * * * * *

The Relationship Between Teacher Classroom Behavior
and Student School Anxiety Behavior   (appendix)

Barry Zimmerman

The four hundred and forty-three children of seventeen teachers in Tucson grade schools were administered the School Anxiety Questionnaire.

This questionnaire contains items related to five classes of school anxiety. Teacher verbal behavior in the classroom was recorded and analyzed using Flander's Interaction Analysis System.

Statistical analysis demonstrated a significant inverse relationship between teacher's reward behavior and the classroom's mean level of student anxiety.

* * * * * * *

3. School Variables

Many of the environmental effects on behavior need not be analyzed in terms of the basic learning variables or concretely defined variables such as teacher behavior. There are many characteristics of classroom organization which experienced teachers vary to develop an effective learning environment. For example, it is an important principle of the Tucson Early Education Model that children be grouped heterogeneously so that they may learn new behaviors from each other. Peers, after all, are an important source of models for imitation. Henderson et al have developed data showing that maximizing the preschool interaction of culturally deprived and advantaged children affects performance on a standard intelligence scale.

* * * * * * *

Positive Effects of a Bicultural Preschool
Program on the Intellectual Performance of
Mexican-American Children   (A-CD)

Ronald Henderson, Richard Rankin
and Mary Frobisher

Eighteen Mexican-American children attended a cooperative community school in integrated classes which were designated as the Bicultural Preschool Program. A comparison group consisted of eighteen children who were comparable in ethnic identity and socio-economic status, and who attended a conventional Head Start program. A control group was comprised of eighteen Ss who attended no preschool during the interval of the investigation. Middle-class Anglo-American children in the bicultural classes were also tested to determine the effects which the integrated instructional

situation had on performance.

All Ss in the three groups of Mexican-American children were matched by initial Wechsler Preschool and Primary Scale of Intelligence (WPPSI) score. The WPPSI was readministered as a post test during the last month of the school year. The Bicultural Preschool children made greater gains in total WPPSI score than those in the Head Start, or in no formal program. The Head Start children made no gains significantly greater than children in no formal program. There was no change in the WPPSI performance of the Anglo-American children.

Implications were discussed for the segregated nature of Head Start, the investigations needed of modeling, and imitation effects in integrated classroom settings.

* * * * * * *

4. Social Variables

Perhaps even more complex than the classroom is the home environment. The processes by which home environments influence behavior can only be hypothesized and must be tested out in future controlled studies. That the home environment is related to performance on measures of academic performance is illustrated in the following study by Smart.

* * * * * * *

The Effect of the Home Environment
on Cognitive Processes

Margaret Smart

Thirty-two Mexican-American subjects were drawn from two geographical areas of the Southwest designated as lower and middle-class. The responses of parents on a questionnaire concerning the home environment were correlated with the performance of the children on a series of tasks based on Piagetian concepts and designed to sample cognitive functioning.

The expectations of parents tended to relate to intellectual performance. For example, the children's conservation performance was related to parental expectations concerning college. Also related to parental educational expectations were measures of flexibility in conceptual strategy and divergent thinking.

A question remains, of course, as to the processes of parent-child interactions or other variables which account for these observed correlations. A significant suggestion appears in these data. Flexibility in cognitive strategy, divergent thinking, and conservation behavior were related to bilingual settings in which children hear the same ideas expressed in two languages.

* * * * * * *

A study by Henderson provides fu.the r information about the variables in Mexican-American family life related to academic performance.

* * * * * * *

Environmental Variables as Predictions of Academic Performance

Ronald Henderson

This investigation provides follow-up data on children who served as subjects in a study of environmental influences on the intellectual performances of six-year-old Mexican-American children. The children (N = 30) in the original investigation were from Spanish-speaking families of Spanish surname residing in a predominantly Mexican-American neighborhood categorized as economically depressed. In the present investigation thirty-five Ss (who were six-years-old and entering the first grade when the environmental data were collected) were located at the end of the third grade. No children have been retained in the grade because of school district policy. The California Reading Test (CRT) was administered to these thirty-five subjects.

Correlations between the CRT total score and the environmental variables of achievement press (.61), language models (.46), academic guidance (.45), and activeness of family (.54), were significant at the .01 level. The CRT total score correlations with the environmental variables of intellectuality in the home (.35), identification with models (.38), range of social interaction (.39), and perceived value of education (.39) were significant at the .05 level. The correlation between the CRT total score and the environmental variable for habits in the family (.27), was not significant.

* * * * * * *

The environmental variables designated by Henderson lend themselves well to a learning analysis. In fact, subsequent factor analysis results in four factors appearing to relate to basic learning variables. Studies such as these provide important guides to the development of intervention programs for use in the families of disadvantaged children.

5.   Cultural Milieu and Ethnic Membership

What is the nature of the milieu from which children in the Tucson Early Education classrooms come? What implications does their cultural heritage have for the development of educational programs? For instruction? For parent participation? Several studies at the Arizona Center have begun to yield information about the nature of the Mexican-American cultural environment. Much of the basic research was conducted by Ayala, Garcia, Spence, and Winheld under the direction of Roger Yoshino.

* * * * * * *

The Mexican-Americans of Tucson   (A-E)

Hector Ayala, Angela Garcia, Allyn Spence,
Mark Winheld, and I. Roger Yoshino

Based on a sample of two hundred and fifty-eight Mexican-American families interviewed in 1967,   this book length monograph is scheduled for completion in August 1969. Major subdivisions will include: history, family, housing, occupation, education, ethnic affiliations, politics and government, religion, illness, recreation, clubs and sodalities. Other groups are discussed for comparison (Negroes, Anglos, Papago and Yaqui Indians, Chinese).

The Mexican-Americans are generally of lower socio-economic status, are employed in unskilled and semi-skilled jobs, and average a junior high school education, speak and communicate their thoughts and ideas primarily in Spanish, are over ninety percent Catholic, have large families of seven or more, large extended families, and generally decide to live with other Mexican-Americans.

* * * * * * *

One characteristic of Mexican-American life which emerges from this study is that of pluralism. Spence and Winheld discussed the concept

in a paper presented at the Rocky Mountain Social Science Association meetings in Lubbock, Texas.

* * * * * *

Pluralism in the Family:
The Public and Private Worlds
of the Tucson Mexican-American   (A-E, appendix)
Allyn Spence and Mark Winheld

It was hypothesized that neither interacting individuals nor interacting groups need share, respectively, the same motives and social cultural patterns for success in a public culture. The individual moves between the private world of the ethnic commonality and the public world of the secondary institutions.

The family is the basis of pluralism among Mexican-Americans in Tucson. Mexican-American families were large, interacted frequently, and were tied together by the compradrazco   (godparenthood) system.

The family provides models and orientation for both the private and public worlds. However, the family may fail to prepare its members appropriately for full participation in secondary institutions.

Mexican-American families vary in attitudes toward education and occupational mobility, and the children vary in their readiness to perform in the public world. Correlations were found between children's scores on a measure of language behavior and interaction with social cultural institutions, mother's and father's education, father's job skill level, and condition of the house interior.

In general, Mexican-Americans tend to lack the skills necessary to achieve in the public culture of which the school is a part. Primary group socio-cultural characteristics, however, are not incompatible with achievement in the public culture.

* * * * * * *

Similar discriptions of the cultural milieu are found in "Pluralism or Assimilation: The Mexican-Americans of Tucson, Arizona," an anthropology Master's thesis by Mark Winheld. This thesis incorporates the findings of the Center's research with other data on the Mexican-American.

It will be published by the University of Arizona Press.

An additional paper in preparation by Yoshino, Spence, and Winheld will present data showing that performance on a battery of ability tests is correlated significantly with the language spoken by the child and significant others in his natural environment. The speaking of English is clearly related to better performance while bilingual speech and Spanish alone were unrelated to performance.

Finally, a paper by Rosenthal describes a particular characteristic of ethnic background, namely, belief in folk magic.

* * * * * * *

Social Strata and Perception
of Magical and Folk-Medical Child-Care Practices
Ted Rosenthal, Ronald Henderson, Arline Hobson,
and Maure Hurt, Jr.

The acceptance of magical and folk-medical child-care beliefs was studied in non-Anglo and lower and upper socio-economic status Anglo-American housewives. Non-Anglo women accepted the beliefs more than lower-Anglos who, in turn, were more accepting than the upper-Anglos who strongly rejected the magical lore. Upper-Anglo women saw less similarity between themselves and Negro people and between their community and the Mexican-American community regarding the beliefs than with other groups. Low-Anglo women differentiated sharply between Negroes and Mexican-Americans, unlike both other groups who ascribe belief similarity to these ethnic minorities. The theoretical implication of the results were discussed in terms of aculturation and social perception.

* * * * * * *

EDUCATIONAL CHANGE AGENTS

In the Tucson Early Education Model, considerable attention is paid
to the process of disseminating the instructional program. It is a prin-
ciple of this model that program and the method of dissemination cannot be
separately considered. It would not be appropriate to say, for example,
that the instructional program is a good one, but the teachers are unable
to implement it appropriately. Rather, it is believed that the method of
training the teachers in new program is as much a part of educational pro-
gram as are the instructional methods. Originally the Tucson Early Educa-
tion Model called for the training of teachers and for the training of teacher
trainers. The latter became known as program assistants. With the
dissemination of the Tucson Model in Project Follow Through, program
assistants (teacher trainers) are located in each community. It is their
task to train the teachers. This situation calls for yet another level of change
agent, namely, the field staff or the trainers of teacher trainers.

A more complete analysis of the role of the program assistant is
currently being conducted. If a program is truly a new innovation, then
demands are placed on the teacher for new behaviors. These new behaviors
often require a change in values on the part of the teacher. Since new values
and behaviors cannot be exported as a package, a supportive change agent
is considered a necessity in new program implementation. It was intended
in the Cooperative Project that program assistants would not operate in the
traditional teacher supervisor role. Rather, they would be assistants in the
true sense helping the teacher in the classroom, helping the teacher develop
her program ideas, demonstrating and modeling for the teacher new and
promising techniques of classroom organization and instruction. As such,
the program assistant and teacher are on an equal level and are both part
of the classroom personnel. The original program assistants were trained
by Dr. Marie Hughes who originated the concept and the techniques.

1. A Model for the Development of Training

The problem for the researcher in the development of new educational
roles is the question of what the research products are. Typically, the
products of training are newly trained individuals. Secondarily, there may
be spin-off in the form of training materials. Training programs are seldom

researched in the sense that the training program functions as the indepen-
dent variable in a design. Even less frequently are the components of the
training program analyzed for their effectiveness and contribution to the
total training outcome.

An attempt was made to develop training materials and assessment
procedures in a program for training in behavior management techniques
for Head Start personnel conducted in the Laboratory Preschool. Teachers
and their aides from local Head Start Child Development Centers spent two
hours daily for ten days in the Child Development Laboratory observing or
working with ten preschool children whom they had selected from their own
group of children on the basis of being their "worst children." These
included the children labelled by them as either acting out or withdrawn.
The trainees were given specific assignments and the program emphasized
the practical aspects of training rather than formal instruction. The trainees
were first taught to observe and to verbalize about their goals for their
children and were gradually introduced into the classroom to practice tech-
niques of contingency management. They were under tutelage of personnel
upon their entry and assumed responsibility when the trainers felt they were
ready. (A-DA)

Each group was supervised in its own center by training personnel
for a subsequent two-week period. A total of five teacher-aide teams were
trained in a three-month period.

Concurrently with the training of teachers and aides, college student
male and females were given practical training in the use of reinforcement
techniques in the management of preschool children. These students were
undergraduates and graduates majoring in either Education or Psychology
at the University of Arizona

A sequence of training responsibilities was set up so that the college
students as they gained experience and skill were given the responsibility
in the training of other students and of Head Start personnel. This program
represented a training of trainers program. Over fifty students were sub-
sequently trained as part of this program. To test the efficacy of the train-
ing of trainers program, four students were assigned to conduct a training
program at two Day Care Centers for rural children under the auspices of
the Migrant Opportunity Program. For ten days these newly trained trainers

worked with the managers, teachers and aides of these Day Care Centers to develop skills in observation and contingency management. In addition, the trainees received guidance in various areas of preschool curriculum.

The by-products of this training development fall into three categories. (1) Training materials for teachers and aides, (2) Training materials for the trainers of paraprofessionals in techniques of behavioral management, and (3) Instruments and materials for the assessment of training. The several training materials are being organized into a Manual for Trainers of Paraprofessionals in Techniques of Behavioral Management.(A-D[1]) A teacher's guide for behavior management in a classroom has been completed by Marian Martin. A copy of this short paper can be found in the Appendix. The paper presents the view that much of a child's classroom behavior is a function of its consequences in the classroom environment. Next, a step-by-step outline for the management of problem behaviors is given followed by a set of planned sheets and specific instructions for teachers who wish to apply the techniques in their own classrooms. Numerous examples are given throughout. (A-D[1], appendix)

* * * * * * *

Attitude Change After Behavior Training (A-D[8] appendix)
Marian Martin

The purpose of this study was to analyze the verbal behavior and attitudes of Head Start teachers and aides before and after training in behavioral management techniques. An attitude survey was developed for the use of the teachers and aides who had participated in the Head Start training program.

The verbal behavior before and after training was sampled in three areas: (1) the use of reward and punishment with children, (2) the causes of child behavior, and (3) the use of records in center management. After training, all trainees showed greater verbal behavior consonant with training staff goals as well as parallel changes on other behavioral measures. Trainees showed greater gains than a group of control subjects in areas 1 and 2, however, the differences were only significant in area 1. Trainees were high in initial agreement with the trainers on the desirability of positive

reinforcement for children but only used it infrequently under actual behavior in the classroom. Maximum attitude change occurred on the topic of positive reward (i. e. , positive reinforcement should be used for appropriate behavior rather than at times of stress or upset). This was an area of maximum training emphasis.

* * * * * * *

Other techniques of assessment being developed for training programs were considered in a separate paper.

* * * * * * *

Techniques of Training Assessment (A-D[7] appendix)

Marian Martin, Joseph Patterson and Ralph Wetzel

Several techniques for evaluating the effectiveness of a training program for classroom personnel are reported and evaluated. This paper emphasizes the nature of the assessment techniques rather than the training program itself.

The general method for developing assessment measures is defined. This method emphasized the development of training goals based on observation of training behavior prior to training. Assessment measures are then devised with respect to those particular goals. The following techniques have been explored: (1) Behavior records. The reinforcing behavior of teacher and aide was recorded on an instrument developed at the Arizona Center by Ted Rosenthal and his colleagues. Pre-post comparisons on this measure indicate the particular categories of reinforcement and the frequencies of occurrence as they are effected by the training procedures. (2) Organizational skill measure. An example of the use of this standard task assignment is reported. Pre-post data reveal the change which the training produced in the staff's ability to organize a class activity. (3) Attitude survey. This instrument samples the change in ability to verbalize the principles and elements of the training. The data show little generalization beyond the specific training of concepts. (4) Video tapes. Classroom video tape comparisons are discussed. The major problem appears to be the task of editing the tapes.

The techniques of assessment are discussed in terms of the contributions which they make to: (1) the development of program goals, (2) feedback on the success of training, (3) the development of training research techniques, and (4) information on the function of training effects. It is concluded that training is a researchable enterprise, and that the collection of assessment data must be part of the trainer's responsibility.

* * * * * * *

Several other training responsibilities have been met by the Arizona Center and a number of training procedures are developing. It is our intention that as pilot work progresses, the training programs can be objectively assessed and modified. The development of training materials is a second goal of training programs. One program which is well along in development has involved the training of aides assigned to the experimental program classrooms.

* * * * * * *

The Training of Aides for the Tucson Early Education Model (A-DA)
Arline Hobson

Seven aides assigned to experimental program classrooms for the Tucson Early Education Model met daily for three weeks at the beginning of the school term for instruction and training in the systematic use of the natural method of language learning.

The general procedure was as follows. The instructor first presented the rationale for some particular operation concerning language with many examples drawn from classroom experiences. Next, the aides were asked to attempt to implement some particular objective in the classroom for the insuing week. For example, to provide verbal reinforcement with specification to the child as to which language behavior of his merited the reward. At the next session the efforts would be discussed and the instructor would provide generous reinforcement for any indication of awareness and skill however limited.

The training continued throughout the entire year although it was reduced to one afternoon a week. The original program on the systematic

use of the natural method of language was expanded to the consideration of several other behaviors comprising the child's intellectual base. Micro-teaching demonstrations were designed to identify the teaching skills essential to the learning process and the aides attended several workshops designed to teach them the skills of helping the child develop the behaviors comprising the intellectual base. As different topics were covered, written summaries were supplied to the aides. Aides were encouraged to share these materials with the classroom teacher in order to help the teacher appreciate the development of the aide. Teachers indicated that spontaneous follow-up sessions occurred quite regularly.

* * * * * * *

The summer training program for Project Follow Through to be conducted in Tucson will provide several opportunities for the research staff interested in continued development of training processes and assessment techniques. Among the groups to be trained will be program assistants from several communities using the Tucson Model, field staff to serve as consultants and trainers of program assistants, community liaison workers, field staff to serve as consultants and trainers of community liaison workers, psychological service personnel from selected communities using the Tucson Model, and other groups such as directors and administrators.

2. Video Tapes (A-DA)

Several video tapes have been produced as part of the training material. These include the following:
a. Reading #1: The use of children's dictated materials to develop skills of word classification. A teacher with a small group of children examine and discuss words from the children's dictated stories.
b. Reading #2: A teacher with a small group of children examine the language transformations possible using excerpts from the children's dictated stories.
c. Free Activity: A classroom of Tucson Early Education Model first grade children are engaged in activities of their own choice. The film illustrates the planning and organization of the free-choice period, the variety of activities, and the degrees of involvement illustrated by the children.

d. An Intellectual Kit: A teacher and a small group of children examine a collection of socks. The tape illustrates the kinds of discussion and questioning skills which a Model teacher uses, the orchestration of language and intellectual skills (particularly classification), and the extension of these skills to reading and writing.

e. A Tasting Experience: A teacher and a small group of children explore the attributes of an unusual candy. The tape demonstrates the development of exploratory behavior, sensory experiences and description, the development of question asking, the extension of language, and the involvement of mathematical concepts.

f. Cooking #1: A teacher and group of children cook cereal. The film illustrates the meaning of sequencing and the recipe, the development of measurement skills, science (changes in matter), reading, and extension of language.

g. Cooking #2: The film illustrates the development of reading skills, committee work and choosing, the function of tools, and extension of language.

h. The Application of Learning Principles in the Classroom: Dr. Wetzel discusses the principles of imitation, discrimination, and reinforcement as they are used in the organization of a learning environment.

i. Head Start Aide Behavior Before and After Training in Behavior Management (A-D^6)

j. Developing Depth in the Tucson Early Education Model: Dr. Hughes discusses several methods for increasing the complexity of skills and for measuring both the generalization of behaviors and their level of development.

INDIVIDUAL CHARACTERISTICS

One important research thrust of the Arizona Center within the domain of individual characteristics has been the investigation of the manner in which abilities can be acquired. Until recently, research on human abilities focused primarily on prediction. The practical goal of such research was to increase the capability of institutions such as schools to select accurately persons capable of achieving desired criterion behaviors. The Tucson Early Education Model represents a new and growing trend away from the goal of selecting the able. Emphasis in this Model is on teaching children to acquire the abilities and characteristics relevant to effective functioning in important life situations. Reference to the curriculum development section of this report will indicate the attempts to define behaviorally the array of abilities selected as goals of the instructional program.

Several studies bearing on questions relevant to ability acquisition have been initiated at the Arizona Center during the past year. Smith studied the correlates of creativity in preschool children. The importance of teaching creativity in the schools has received increasing recognition in recent years and creative abilities have been investigated widely in elementary and secondary students as well as in adults. However, little information is available on creative abilities in the preschool child.

* * * * * * *

Original Responses in Preschool Children

Linda Smith

Preschool children were asked to "tell as much as you can" about a set of pictures and a set of objects. Responses were scored for fluency (number of responses emitted) and originality (determined by judge's ratings). There was no significant difference in the number of responses given to the objects and to the pictures. Fluency and originality scores were significantly correlated. On the basis of a focused interview with parents, it was found that children with originality scores also tended to engage in more "imaginary" behaviors, e. g. , pretending and imaginary playmates.

* * * * * * *

One of the most useful of all the intellectual skills acquired by man

is that group of abilities which falls under the general heading of classification skills. Coxon is currently carrying out a study to describe the strategies underlying classification ability which children bring to the school situation.

* * * * * * *

A Descriptive Study of Cognitive Organizational Strategies Used by Children Entering the First Grade

Mary Coxon

Sixty children just entering first grade comprise the subjects. An attempt is being made to determine possible differences in organizational strategies used by children from two neighborhoods of different socio-economic status. Second, an attempt is being made to identify possible differences in the organizational strategies used by children of different sexes. Third, attention is being given to organizing behaviors common to children entering the first grade.

* * * * * * *

Still another important group of abilities is frequently referred to as problem-solving. In the following work, Mallory has attempted to identify some of the components of complex problem-solving behavior. She has been working to determine the relationships between ethnic groups and problem-solving styles.

* * * * * * *

Problem-Solving on the Game Twenty Questions by Males of Four Ethno-Cultural Groups

Sadie Mallory

This study compares the answers of low-income Appalachian Caucasian-American, Indian-American, Mexican-American, and Black-American males from grades three to six to those of middle-income Caucasian-American males from the same grade on the game Twenty Questions. Assessment revealed that the low SES ethno-cultures did not differ among themselves for kind of questions (conceptual style), rate of information

processing (conceptual tempo), and kind of implicit solution procedures (strategy). The middle SES males performed at a significantly higher cognitive level as inferred from the higher frequency of conservative focusing and the greater mean difference for analytic responses. The conceptual tempo of each ethno-cultural group was statistically equivalent.

Main effects of age were observed for conceptual categorizing variables, of nominal-functional questions, and descriptive questions. The grade six males display conservative focusing more frequently than grade three males. Only in specific-hypothesis responses did the grade three boys surpass the grade six boys. Correlational analysis revealed that the conceptual tempo affected the quality of cognitive products.

* * * * * * *

Another intellectual skill under investigation at the Center is memory. Bergan, Zimmerman, and Ferg are studying factors influencing individual variations in ability to memorize. Their study is based on the position that individual variations in memory as measured by a visual memory test are influenced by two variables: the content category of information to be remembered and the grouping of the stimuli.

It is known that content and grouping affect mean level of performance. For example, with regard to content, it is known that meaningful verbal material is easier to memorize than non-meaningful material.

* * * * * * *

Effects of Stimulus Grouping and Stimulus Content on Visual Memory Ability

John Bergan, Barry Zimmerman and Maureen Ferg

The present study seeks to determine whether or not content and grouping effects individual variation in performance. The effects of content are being assessed by exposing students to three types of stimuli: figural, numerical and verbal. Grouping affects are being measured by presenting stimuli in single, double and triple groupings.

Approximately four hundred and fifty students selected at random and in equal numbers from first, third and fifth grade classes are participating in the study.

* * * * * * *

Individual characteristics of the teacher have recently received attention. Several investigators have focused particularly on the problem of establishing the effects of expectancy set or bias upon the perception of behavior. Recently this work has focused on the effects of teacher bias on the intellectual skills in children. It has been found that the concept of self-fulfilling prophecy is not one to be cast aside lightly. Several studies have shown that classroom teacher expectations concerning the student's intellectual capabilities have a far more significant impact than previously thought. Such research endeavors have suggested that given some type of expectancy concerning a child's performance or ability certain changes do in fact occur in the direction of the teacher's expectations. An important question which remains largely unanswered concerns the precise teacher behaviors which exert such impact on student behavior.

* * * * * * *

The Effects of Three Conditions
of Experimentally Induced Expectancy
Upon Specific Aspects of Teacher Behavior

Mary Leslie

The present study attempts to systematically assess certain aspects of teacher verbal behavior as a function of an expectancy set. Ninety female subjects from classes in Educational Psychology (required of all perspective teachers) are viewing a ten-minute video tape individually. After observing an eight-year-old child engaging in several concept formation tasks of one minute duration, the subjects are asked to respond verbally into a tape recorder before them. The importance of speaking directly to the child and commenting about his performance and/or whatever the subject feels relevant, as if the child were actually present in the room, has been stressed to each subject. All of the ninety subjects were randomly assigned to three experimental conditions of high, average and low child intelligence expectancy. Subjects were actually exposed to the same tape featuring the same child.

The response measures chosen for their relevance and for their measurability are the following: the number of positive statements, the number of negative statements, the number of questions, and the number of imperative statements. All tapes will be coded according to previously determined criteria.

* * * * * * *

SUPPLEMENTARY TECHNOLOGY

The development of the Tucson Early Education Model with Mexican-American children has stimulated a search for standardized tests that might be suitable for the evaluation of their development.

* * * * * * *

The Use of the Van Alstyne Picture Vocabulary Test
with Six-Year-Old Mexican-American Children   (A-CD)
Maure Hurt, Jr.

The Van Alstyne Picture Vocabulary Test was given to two large groups of six-year-old Mexican-American children in the Tucson Early Education Model. The Van Alstyne was chosen as a measure of the intelligence of these culturally disadvantaged children because it is easily scored, rapidly administered, and appears to discriminate well at the lower end of the scale. Other researchers have found the test valuable in measuring abilities of minority and handicapped groups (Moore; Dunn and Hardly; Snyderman). A basic assumption in this test is that picture pointing behavior demonstrates vocabulary comprehension from which is inferred mental ability and intelligence. The revised instrument has sixty cards each with four pictures and the child responds by pointing to the picture that best illustrates the word or phrase given orally by the examiner for each card.

The results of this investigation suggest that the Van Alstyne Picture Vocabulary Test is both reliable and valid (as correlated with other intellectual task measures) for use with culturally disadvantaged Mexican-American six-year-olds. A normalized frequency distribution of the raw scores showing corresponding percentile ranks was developed for the purpose of offering another set of norms which might be used to describe other culturally disadvantaged children.

* * * * * * *

* * * * * * *

Standardized Tests and the Disadvantaged (A-CD, appendix)
Richard Rankin and Ronald Henderson

The purpose of this study was to evaluate the reliability of the

<u>Wechsler Preschool and Primary Scale</u> of Intelligence when administered to disadvantaged Mexican-American children. The subjects were twenty-five male and twenty-four female Mexican-American children from neighborhoods designated as poverty areas in Tucson. The sample was composed of all the five and one-half-year-olds, plus or minus six months, contained within a large group of children who have been tested with the Wechsler Preschool Scale as a pre-treatment measure used in evaluating the Tucson Early Education Model.

The range of chronological age was restricted in order to reduce the possibility of obtaining spuriously inflated reliabilities. Each subtest was split using an odd-even technique and reliability was computed using the Spearman-Brown Prophesy formula. Total and subskill scores were analyzed separately for males and females to determine whether there were significant differences.

The WPPSI was shown to be highly reliable with this sample of disadvantaged Mexican-American children and not significantly different from the reliability norms reported in the manual. For the Mexican-American females, the similarity tests did show a reliability coefficient significantly lower than that reported in the manual. On this test, the Mexican-American female also showed a lower reliability than did the Mexican-American males. The Mexican-American females were also significantly lower in reliability than the norming group on the math subtest. The reliability of the Mexican-American sample of females on the total verbal scale was significantly less than reported in the manual. This was probably a reflection of the lower reliabilities of the arithematic and similarities tests. Reliability data are not broken down by sex in the manual which reports only males and females combined.

Although the Mexican-American jointly scored significantly lower than the norming sample mean for this age range, the scale generally demonstrated adequate reliability and compared favorably with the results yielded by so-called culture fair tests reported in the literature. Uses of standardized tests with disadvantaged children are discussed.

* * * * * * *

Periodic evaluation of the Tucson Early Education Model as an

instructional program has taken place over the last two years. These evaluations have involved the comparison of experimental groups with the norming groups of the standardized tests employed. With the help of Dr. Richard Rankin, a design has been evolved allowing for comparisons of experimental groups with control groups resembling the children in the Tucson Early Education Model on several criteria, but who have either not been exposed to the Tucson Model curriculum or who have not been exposed since the first grade. (A-CD)

The design calls for four groups. Group I consists of forty fourth grade children from the Tucson Model classrooms who have had at least one academic year in the experimental classroom immediately preceding the fourth year at Ochoa Elementary School (the Research School). Group II is composed of formally non-model fourth grade children presently in the same rooms as group I. Group III is composed of 1-C* students in non-model fourth grade classrooms in schools other than Ochoa. Group IV consists of forty fifth grade students drawn from 1-C students in Ochoa.

The design consists of pre and post tests with the following instruments: (1) The Ammons Full-Range Picture Vocabulary Test, (2) The Wide-Range Achievement Test, and (3) The Metropolitan Achievement Tests. In addition, the Sarason General Anxiety Scale for Children was administered to all groups in the fall, but no significant differences were found and the scale was discontinued in the spring testing period.

At the time of this report the pretesting has been completed and the post testing almost so. Analyses will be performed during the early summer to measure the initial entry level at fourth grade as well as progress obtained during the 1968-69 academic year. In the following year Group I will be retested for more direct comparisons with the results of the current year's testing of Group IV.

Since language is an important goal of the Tucson Early Education Model, the Center has been involved in the language program of the National Laboratory. A pilot language comprehension test was developed by

---

* The 1-C program was instituted in the local school district to cope with the child who did not speak English well enough to profit from the regular instruction in the first grade. 1-C children are particularly low achieving groups. The Tucson Early Education Model was designed to replace the 1-C classroom and has done so throughout the city of Tucson.

Dr. Potts of Cornell, Dr. Hughes and Mrs. Hobson based on earlier work by Dr. Bellugi. Standard stimuli for both the testing and teaching situations were selected. (A-CD)

A linguistic inventory of syntactical patterns related to the Bellugi work was developed by Dr. Potts and Mrs. Hobson. Using this inventory, Dr. Potts and her staff devised a test of production of syntax. The test items were designed to elicit specific syntactical patterns with a story completion technique in response to a picture. Work in Tucson in the collaborative research design was altered, however, after it was discovered that certain cultural confusions and regional problems made the test difficult to use in this area. (The Cornell item analysis based on an N of sixty children is currently available.)

Dr. Lavatelli, Dr. Hughes, Dr. Wayne Carroll, Mrs. Coxon, Mrs. Weaver, Dr. Potts, and Mrs. Hobson in April studied the revision of the comprehension test further. The production test received no attention at that time although it was recognized by both Dr. Potts and Mrs. Hobson that intensive work in revision of both tests was necessary along with extensive piloting on several populations. Dr. Henderson, the Director of Follow Through Implementation Project has agreed that the multi-ethnic Follow Through populations might be used in the standardization of this instrument.

Eventually it may be possible to determine the position of the child on such a scale of syntactical competence and such data could suggest to a teacher kinds of syntax she might model to facilitate the child's acquisition of language competence. The teacher can therefore use such instruments to plan for specific intellectual syntactical demands in her instructional program.

Studies of the language competence of third, fourth, and fifth graders have begun.

* * * * * * *

The Response Picture Test (A-CD)
Marie Hughes and Arline Hobson

A picture showing a family situation was presented to each of thirty-eight students and the students were asked to tell a story. The stories were

recorded and transcribed. The stories are being analyzed for the following: (1) total word count, (2) number of prepositions, (3) lexical variety of prep., (4) total number of conjunctives, (5) lexical variety of conjunctives, (6) total number of verbals, (7) lexical variety of verbals, (8) total count of "and," and (9) count of "and" used as fillers. Several ratios, e.g. total number of verbals to total count of words, will be used to assess the linguistic skill of the subjects.

At this point, only linguistic intercoder reliability is available. In all categories of analysis intercoder agreement exceeded ninety percent with the exception of the conjunctive class category. Further attempts are being made to operationally define the conjunctive class category with more precision. After this standardization of the picture test on variety of groups will continue.

* * * * * * *

Classroom and teacher variables are the objects of three more instruments.

* * * * * * *

Tucson Early Education Model Classroom Checklist (A-CC, appendix)
Jerry Gray

This checklist is a quick way of assessing the degree to which classroom organization, materials, and other facilities meet the requirements of the Tucson Early Education Model.

* * * * * * *

* * * * * * *

The Teacher Behavior Analysis Model (A-CC, appendix)
Barry Zimmerman

The Teacher Behavior Analysis Model is a ten-category system based on Flander's (1960) concept of matrix analysis and interpretation. The ten categories were developed to analyze teacher verbal behavior in the Tucson Early Education Model. The categories are as follows:

(1) praise, (2) expand on student idea, (3) open-ended questioning, (4) closed-ended questioning, (5) non-valenced feedback, (6) information giving, (7) directions, (8) punishment, (9), student response, and (10) sounds or confusion.

Preliminary results suggest that the instrument can be used with high intercoder reliability (in excess of ninety percent agreement). In addition, the results of inservice workshops designed to expose teachers to the need and use of the model suggest that the instrument is readily apprehensible by teachers and considered by them to be a feasible system for providing feedback and studying classroom interaction patterns.

* * * * * * *

* * * * * * *

Survey of Educational Attitudes   (A-D[3] appendix)
Mary Coxon, Charles Grubbs, Maure Hurt, Jr.,
Ted Rosenthal, and Barry Zimmerman

The seventy-five items of this survey were devised both for their general educational interest and to reflect the philosophy and principles of the Tucson Early Education Model. All items are in the form of positive assertions to which teachers respond on a ten-point scale ranging from strong agreement to strong disagreement. The Tucson Model principles concur with some of these assertions and disagree with others.

A pilot study compared the pedagogical attitudes of sixty-seven experimental program teachers and some eight hundred non-program teachers regarding the classroom implications of contemporary reinforcement and social learning principles and the needs and natures of culturally disadvantaged youngsters. Preliminary analysis indicates that major differences between the two groups are reflected in the experimental teachers' optimism and environmentalistic philosophy regarding the education of culturally disadvantaged youngsters.

* * * * * * *

* * * * * * *

Target-Incentive-Action Instrument (TIA) (A-CC, appendix)
Ted Rosenthal, Billie Underwood and Marian Martin

The TIA samples several classes of teacher reinforcing behavior
and the frequency of student's solicitation of attention. The classes of rein-
forcement behavior include approval and disapproval, verbal, physical,
gestural, and the like. Also recorded are the targets of the action, e.g.,
individuals vs. groups. Pilot data comparing Tucson Early Education Model
teachers with non-program conventional classroom teachers revealed that
the instrument does discriminate between the two groups. Experimental
classroom teachers are characterized by significantly more teacher approval
and less teacher disapproval. More student solicitation of teacher attention
is found in conventional classrooms. The differences are observed in the
verbal, gestural, and physical contact response modes.

* * * * * * *

* * * * * * *

Matching-to-Sample Apparatus $(A-F^6)$
Joseph Patterson

A five-choice automated Match-To-Sample apparatus using basic
Gerbrands components has been installed in the research trailer. The
apparatus can be used for simultaneous or successive stimulus presentations
and can be keyed to a variety of advancement and backup com. nations and
reinforcement schedules.

* * * * * * *

* * * * * * *

A Matching-to-Sample Program
for the Study of Number Concept Development $(A-F^7)$
Joseph Patterson

Composed of one hundred and eighty slides, this program includes
reduced error and increased error sub-programs. Frames systematically
vary color, size, form, position, configuration and other stimulus properties.

* * * * * * *

Work on number concept has been interrupted by the drafting of Mr. Joseph Patterson. Work has stopped on $(A-F^5)$ and $(A-F^8)$.

V. FUTURE DIRECTIONS

A primary goal of this Center is to develop a body of research data and technology which can be articulated simultaneously with a developing educational program. To date, the gap between research and actual classroom implementation has been alarming and exasperating. Even the data-derived specialized curricula are often distorted by the complex forces operating in an actual educational system. Only when the research process is a legitimate aspect of the system itself will this gap begin to close.

Educational program is not easily renovated and changes are difficult to maintain. The Tucson Early Education Model, after four years, is now sufficiently defined operationally that the parameters of the accompanying research program have begun to emerge with clarity. Each year the congruence of the research activity and program development has increased.

With this congruence, research and program development interact. A product of the research is a data basis for the refinement of the goals and principles of the program. But as these are refined and modified, so do new research thrusts become identified. Educational research and program development cannot always be sequential events.

The research orientation for the educational program can be viewed as a grid in which the goals of the program; language, intellectual skills, motivational base, and societal arts and skills, are attendant upon environmental characteristics, individual characteristics, and group characteristics. The environmental characteristics encompass the study of process and organizational influences of the school, home and community on the child as a learner. These influences are viewed as behavior-environment transactions as reflected in the writings of Brunner, Skinner, Gagné, Hunt, and others. Such transactions also may determine internal processes which mediate the complex repertoire. These mediating or cognitive processes are essential if the individual is to be effective in coping with environmental demands. The curriculum emerges as a series of behavior-environment transactions rather than as a product or a set of materials. A "process curriculum" is not necessarily identified with a set collection of materials.

School process research includes the study of adult (teacher, aide) and child interactions, quality and quantity of cues signaling task relevant

behavior, reinforcers in interaction systems of effective others and the child, instruction sequences and task arrangement, inter-task relationship affecting transfer, environmental arrangements inducing practice and application of acquired behavior and the like.

Home process variables, in particular those within the bicultural family, are a continuing research focus of the Center. Future research will attempt to isolate those unique and general processes in the home related to language, intellectual skills, the motivational base, and societal arts and skills. The contingencies which parents employ regarding these behaviors are a particular focus. Parental behavior links home and school at the instructional level. Efforts will be devoted to developing levels and patterns of parental involvement in classroom activities.

Community processes include those differential factors influencing learning which operate within types of community structure (e. g. , rural vs. urban arrangements). Other concerns are parental involvement and identification with community organizations, community influence on school issues, parent participation in policy decisions, and communication paths affecting school-community cooperation. Unless these processes are studied and understood, all the research and development activity in the country may touch actual educational program not one whit.

Behavioral analysis of individual characteristics is an engrained feature of the educational model. The methodology undergirding the instructional techniques specify continual diagnosis of the child's performance level in order to enhance the match between child and task (dealing with the "problem of the match" to use J. McV. Hunt's term). By continually describing performance, it is hoped to construct instructional environments which stimulate increasingly complex instrumental behavior. Also, contained in the methodology are organizational patterns which permit individualization of instruction. The need for orienting schooling to the individual and his cognitive processes is evident in the rapid explosion of knowledge which no longer permits concentrated focus on facts and specific information for efficient education.

Research of individual characteristics will be related to the assessment of individual abilities and psychological traits which influence the child's approach to environmental configurations. Some of the questions being

raised are:

1. Can individual educational management be conducted on a level at which record keeping doesn't become prohibitive of teacher engagement?

2. What is the interaction between reinforcement and ability instruction?

3. What are effective groupings of children for instruction?

4. What is the influence of the child's initial language on intellectual skill acquisition?

5. What are some of the personality parameters of reinforcement?

6. What are the antecedent and concurrent variables influencing independence and self-initiation?

Other research in this area will evaluate developmental changes, predictability of conceptual styles and sex differences.

Group characteristics embrace social class and ethnicity variables with an attempt to clarify process factors unique to these natural populations. Sufficient anthropological evidence of cultural influence on patterns of behavior exist in the literature. The school can be viewed as a cultural system, and this system influences and is influenced by other cultural systems. It is important to understand and specify the mutual relations between the school culture and other cultures in order that both may capital-ize upon these associations. Further, knowledge of stress points would permit more effective handling of the strains on the systems. The purpose of the study of group process variables is to permit the school to utilize cultural patterns for instructional goals. The notion subtending the various projected studies is that of developing a school culture congruent with the surrounding culture.

The Center has unique opportunity for cross-cultural research. Some of the facets designated for study are contrasts of psychological traits, familial patterns, preferential approaches to the environment, and effective reinforcers. Other facets to be studied are the influence of values on selection of activities, forces which provoke value changes, and attitudes toward language and language use.

The teacher training program and the training of change agents emphasize the acquisition of teacher behavior necessary for effective

implementation of the instructional program. Analysis of teacher education has been a continuous feature and will continue with the explicit purpose of developing professional responses. Particular consideration will be given to teacher language patterns from which are inferred the cognitive demands for the child and to more effective use of natural events for evolving complex cognitive behavior.

The assignment of priorities to the potential research thrusts rests on several factors. The state of the literature, past research investments, felt needs of the participating educators, researcher interest, clarity of instructional processes, available funds, and the like. The continuation of this Center's strategy is incumbent upon its articulation with ongoing program with classrooms, educational personnel, and parents. Without some kind of programmatic link to an extant educational enterprise, large portions of any research effort will be ineffective. The total process of education must be part of the context of research.

APPENDIX

A. Personnel Roster
B. Implementation at the Fourth Grade: A Case Study
C. Papers and Materials List

ARIZONA CENTER
FOR EARLY CHILDHOOD EDUCATION

PERSONNEL ROSTER

Mr. Hector M. Ayala	Research Assistant
Mrs. Mary L. Coxon	Research Associate
Mrs. Kathleen P. Durning	Research Assistant
Mrs. Jane E. Evans	Research Associate
Miss Angela Garcia	Research Assistant
Mr. Michael Giffin	Research Assistant
Mrs. Johanna Hildebrandt	Research Assistant
Mrs. Arline B. Hobson	Research Associate
Dr. Marie M. Hughes	Director
Mr. Maure Hurt, Jr.	Research Associate
Mrs. Ava Dale Johnson	Research Associate
Mrs. Mary Lev	Secretary
Miss Joan Loitz	Research Assistant
Mrs. Sadie Mallory	Research Assistant
Mrs. Marian Martin	Graduate Associate, Research
Mrs. Eleanor Mills	Research Assistant
Dr. Shitala P. Mishra	Research Associate
Miss Linda Murphy	Executive Secretary
Mrs. Violet Nelson	Research Associate
Mr. James C. Petersen	Graduate Assistant, Research
Mrs. Guadalupe Romero	Research Assistant
Dr. Ted L. Rosethal	Research Associate
Mr. Allyn G. Spence	Graduate Associate, Research
Mrs. Billie Jean Underwood	Graduate Associate, Research
Mrs. Halene M. Weaver	Research Associate
Mrs. Margaret A. West	Secretary
Dr. Ralph J. Wetzel	Associate Director
Mr. Mark J. Winheld	Research Assistant
Dr. I. Roger Yoshino	Research Associate

Follow Through Implementation Program

Dr. John Bergan	Research Associate
Miss Shirley Campbell	Research Assistant
Mrs. Maureen Ferg	Graduate Assistant, Research
Dr. Joseph Fillerup	Research Associate
Mrs. Jean Godier	Executive Secretary
Mr. Jerry Gray	Graduate Associate, Research
Dr. Ronald W. Henderson	Director
Mr. Ben Jacobs	Research Assistant
Miss Margie Mariscal	Secretary
Mrs. Elaine Nicholson	Research Associate
Mrs. Alice Paul	Research Associate
Dr. Esther Plank	Research Associate
Mrs. Elizabeth Treadwell	Research Associate
Mrs. Janita Wonacott	Secretary
Mr. Adolph Wright	Research Associate
Dr. Barry Zimmerman	Research Associate

IMPLEMENTATION AT THE FOURTH GRADE: A CASE STUDY

by

Ava Dale Johnson

As the teachers and I began curriculum-planning in the fall of 1968, our immediate concerns were the organization of the physical classroom, the schedule, the focus of studies, and collection of suitable learning materials.

My main task was to help the teachers understand the whys and hows of a language-centered environment, their role as a resource-person rather than a master-of-ceremonies, and the importance of individualizing instruction.

In the early stages, I collaborated closely with the four fourth grade teachers. We discussed the children in each class and the foci of interest needed to replace textbook units they had taught for years.

We could not predict how this particular mixture of children[1] would perform nor how soon we would find ourselves proficient in operating the program with them. Still, as pioneers in developing the fourth grade curriculum, we felt a need to establish goals.

In LANGUAGE, including speaking, writing, reading, spelling, we'd teach the old things in a new way. We'd extend labeling to relatedness: homonyms, antonyms, figurative language, puns, transformation. We'd work for spontaneity and poise in asking questions and discussing.

Allowing both manuscript and cursive writing, we'd aim at legibility, and promote editing-for-a-purpose, especially by members of the class.

---

1. Pupils comprising the new fourth grade program classes had moved up from third grade in two streams. Some had followed academic studies since first grade; while others, having been siphoned off as slow-learners, had participated in the evolving stages of the Model. The latter children had experienced the Model only as practiced by teachers beginning to understand it, and only with peers of fairly similar limitations.

We'd model and reinforce children's use of infinitives, conjunctions, and adverbials. Providing language for conditional cause and result clauses, we'd lead into thinking about and research into problem-solving. Each day we'd find a reason to read aloud from some reference book.

Continuing use of intellectual task kits, familiar in the lower grades, we'd try to follow leads provided by the children working with them, to discuss time, distance, and variety. In these ways we'd attempt to guide the fourth graders more into the realm of the abstract. This would not mean, of course, we intended to leave manipulation behind. Manipulation would demand somewhat less time than previously, and be increasingly more purposeful than exploratory.

In MATH, we'd stay alert for chances to estimate and measure, compare sizes and prices, communicating results in graphic representations. As with language, we'd integrate concepts and calculations into pupil assignments, providing frequent times for skill drill--often with games or records--particularly in multiplication and fractions.

As to MATERIALS, we would have to collect and adapt an almost completely new wardrobe. Class and hall cupboards bulged with textbooks, workbooks and more textbooks.

Pooling the teachers' ideas with mine, we ordered, or I set out to find:

catalogs
telephone books
paper backs
books from several libraries
charts, maps
woodworking tools and
  benches
woodburning needles
soft and hard wood scraps
plastic models
Lego, tinkertoys, Lincoln
  logs
Ethnic diaramas, graphic
  woven, sculptured art
  objects
varieties of reference
  books and dictionaries
filmstrips, tape and disk
  recordings

several kinds of scales, measuring tapes, thermometers, measuring cups and spoons
large print sets
typewriters
dominoes, money games, play money
vocabulary and sentence-building
  games
sequence and problem-solving games
Bingo and math flash cards
Role-playing equipment
Shop, office, sewing scraps
Cuisenaire rods and manual
SOUND OF LANGUAGE books on
  2, 3, 4th levels
NUFFIELD math manuals
R. Van Allen's SOURCEBOOK, III.

I also compiled, at their request, an inventory of all the science and social studies resource books in Ochoa classroom and closets, and indexed

it by subject matter and reading level.

After the school year got under way, some of our materials needed replenishing; there were also special materials required by certain projects as they arose. (For example, hundreds of kinds and sizes of shoes and foot-measuring devices when we focused on shoes.)

Having established basic goals and collected material, projected some schedules and sketchy organization, we proceeded. Some essential curriculum elements emerged as needing continued focus and development: interaction of all persons in the classroom and the room's learning environment.

I attacked what appeared to me the most pressing need of the moment by demonstrating individualization, showing how, one-by-one or in small groups, childrens' interests can be followed and skills furthered by an adult's planning and executing with children door-charts, talking murals, lists and charts related to class activities.

With the children, I took numerous walking trips, unearthing all kinds of learning potential within a 1 1/4 mile radius of Ochoa School. We followed these excursions with discussions, news-sheets, and class books so that every one could share my experts' accounts of the shoe-repair shop, the grocery and Goodwill stores, etc.

I initiated tasting experiences with a watermelon, (and its vine for estimating and measuring) which we compared with a cantelope. This provided a basis for collecting individual responses, as well as extending learning. (One teacher moved into tasting and comparing other members of the melon family. Another helped children taste and classify vegetables in general, going on to foods for health, a dairy visit, purchase and preparation of Thanksgiving meal.)

In my own work I began to move toward strengthening the total language environment. I brought in visitors as resource people to stimulate oral and written expression. I visited other program classrooms and brought back notes from them as well as from lectures and workshops to share. I filled in for the four teachers, in turn, so they would observe the language atmosphere (individualized reading in particular) in other program rooms. The teachers and I frequently tried to assess our progress.

We felt strongly that the children were more curious on walks, more interested in identifying and describing landmarks and directions. (One girl

on a bus trip wanted me to sit by her, not because of the usual "you're pretty," or "you're nice," but, "you ask me to tell you things as we go along.")

There seemed to be marked growth in vocabulary but not enough in sentence structure. There was more clarity, fluency, and interest in writing but not as much use of clauses as we had hoped.

More than half the children still read below grade level, but my check evidenced at least a nine-month gain for those identified as non-readers in the fall.

Greater effort is needed in the total language environment. This would imply such things as changing most announcements and displays, (with heavy emphasis on children's work), every couple of days. Teachers would need to continue to find chances to record and reproduce children's language for them to read. They would need to continue modeling not only correct, but rich, exciting, language with adjectives, adverbs and figurative idioms.

Considerable attention ought to go into transformation of sentences, at committee and impromptu times. Emphasis should extend to aiding a pupil to do simple research (transforming others' ideas into the words of the child.)

Teachers would need more adeptness in operating an individualized reading program.

We need to develop better record-keeping, in some cases simpler, for all language. As originated by some other program teachers, our fourth grade staff could profit by comparing a dictated as well as written rendition of each pupil to the same two pictures in September and again in June. (One picture situational, one aesthetic.) Provision for manipulation should be extended to physical involvement. I suggest more attention to physical education experimentation and interpretive dance.

In math, the children gained interest in estimating and measuring. Some still needed a companion's assistance in turning the ruler the right way, in writing the dollar mark in front instead of behind the price. Others measured swiftly, and while their friend struggled with the dollar mark, went on to jot down what substitute electrical appliances one might procure for the same sum as the colored T. V. pictured on the sales sheet.

Teachers need to continue with the imaginative and orchestrated projects they have devised this term (easier for them to be creative where math is concerned, than language).

Attention should be maintained on employing games and recordings, on helping children find palatable ways of drill, particularly in multiplication. As in the language area, teachers need to be alert to adding depth for faster learners who do not always benefit from committee work on projects.

As to personal interaction, children in all but one classroom grew in ability to share ideas and information with each other, with the aides, and the teacher and program assistant In my opinion another year would show greater results in beneficial interaction, with cultivation of individual interests, more specific and positive recognition of childrens' efforts, so that children experience less need to vie for others' attention. Demonstration continued to be the most effective way to communicate new ideas to teachers.

Since the fourth grade teachers had a long-standing custom of eating lunch together in one of their rooms, I joined them there two or three times a week. This kept me up with trends in their activities, triggering ideas for materials or projects I could bring in.

This was also a time for discussing special pupil-needs, and for a communication of how the teachers were feeling about the children, the program, and them selves. The following quotes illustrate a range of feelings and attitudes.

"Well, it's pretty good for the slow ones, but the better students call it 'baby stuff'. "

"Oh, I'm going out of my mind; I get so many things going at once--how can I be everywhere at the same time? These children just can't go ahead on their own. "

"I've never seen such destructive children! They just don't take care of anything. "

"I just don't have enough time. I worked 'til eleven o'clock last night, and it was the same all last week. "

"No, there's something to it. The children like it. I wish some of those kids I had last year could try it and see what they think of it. "

"How do you use these tools? I don't want to bother the class next door. I can't feel right about letting a group work on the proch alone. How could I tell what they were doing? "

"It isn't working. I can't see that the children are learning a thing. If I can't do it working more than twelve hours a day, how <u>can</u> I do it?"

"Why, that child is like a first-grader! He should be in special ed. What can I do with him? He has no future outside manual labor anyway. He needs to be where they'll teach him to do something like that."

"I think we need to be training our country's brains."

"My better readers aren't getting what they need. David can do fourth-grade books, and yesterday, again, he checked out two copies of Seuss stuff."

"This is the right way to teach, but it sure is hard."

"The kids are all right; it's me. If I could just make myself calm down."

"I wouldn't have cared <u>who</u> came into my room this morning-- I looked around the room; the children were working. There was talking, but not too much noise. I thought it was pretty good."

""These children need so much. I wish I could get them into homogeneous groups and teach them things they just have to know."

"Our trouble is, we try to go too fast."

"Sometimes I feel I've been sold a bill of goods."

"I can't see that my children have learned a thing."

"It's really going. What a pity! Here it's the end of the year and the children are really saying, 'Let's study this,' and, 'Let's study that.'"

"Patsy is trying so hard. Did you see her? You remember how she used to come in at the beginning of the year, crying all the time? Now she's smiling and busy as she can be."

"These children do a lot more writing than any of mine ever did before."

"Boy, I'm sure chalking off the days until the end of the school year."

"I wouldn't take those kids to <u>my</u> house! Who knows what they might have? I think it's a mistake to have headphones in a school like this, with everything possible they could pass around."

"No, I'm not interested in paper-weaving. I'm just not mechanical. I mean it; I'm not--just ask my husband."

"Working on that book did more for Rosemary! Remember at the first of the year how she was out of pocket and wanted to run to the bathroom all the time?"

"I'm not interested in inviting parents; haven't I got enough troubles?"

"Well, maybe they are learning something different. I used one of the kits, and I thought they were getting something out of it--but not in the way we used to think."

"But by this grade, don't you think kids ought to write in cursive?"

"They don't appreciate what we're doing for them."

"Who's taking responsibility for those art objects in the hall? What will you do when some of those valuable things are taken? These children aren't used to good things; they don't know how to take care of them."

"Well, I had committees out all by themselves, and there weren't any problems. Do you think that's O. K.?"

During September and October, I spent equal time with each teacher, in the classroom, working with one of her committees. Then I moved into a pattern of some scheduled and some unscheduled classroom work, which required a certain flexibility.

They accepted this, as well as my request that they help me know how to best employ my role to benefit our common task. The four made general and specific requests--some more than others. I made general and specific suggestions and brought materials--some were adapted, some not.

By May, my efforts were almost entirely with the two more discouraged teachers, in need of concrete boosts with learning environment and pupil involvement. Our relationship was one of experimenting together and productive enough that both women anticipate next year with less fear and antagonism to children.

We evaluated the classroom environments. Two rooms suggested at a glance many things to do. The two others issued scarcely any invitation for involvement at all. Another year, setting up and maintaining adequate interest centers around the room would be very important. There would need to be varieties of materials for writing, with provocative come-ons. There should be oft-changed nature objects for observation and experimentation. There must be art supplies, well-displayed printed matter, selected games, files or books with suggestions for special projects, so that free-choice time could be expanded and allow for perusal of diverse study projects arising from individual interests.

Children ought to be included in contributing objects, helping display and keep them in order.

Some materials seemed to help us move toward our goals better than others. The teachers found money games, woodwork tools, and typewriters particularly satisfactory. I was glad we had used the catalogs and phone books to advantage, but believed we should not continue the once-or-twice weekly viewings of movies with a total class or two combined classes.

Another year, we would need to attend to the rotation of the stock of games and to their upkeep as well as motivational value. We ought to analyze them for varied teaching potentials and continue using them, after taking time to teach them, at committee, free-choice and reading time. I suggest teaching dominoes so that they are used for more than number-matching by most pupils.

The following sourcebooks, having already been introduced, would need to be studied by the teachers before next September:

NUFFIELD Math - Experience-centered procedures: Use committee
and interest-centers

Cuisenaire rods - For concretizing math concepts at committee and
free-choice time

R. Van Allen, SOURCEBOOK - For ideas at writing center, reinforcing
theory on language environment.

SOUNDS OF LANGUAGE - For reading aloud of rhythmic language. Use
teacher's edition for help in understanding
transformation techniques.

The implementation of methods and activities in these books, which assume readiness to provide children with learning experiences and materials would improve staff effectiveness. We have in no sense exhausted the materials available to us, or the learning inherent in them. The more we can open ourselves to their possibilities, the better our curriculum can become.

ARIZONA CENTER
FOR EARLY CHILDHOOD EDUCATION

PAPERS AND MATERIALS LIST

Title	Author
The Tucson Early Education Model	Marie Hughes, Ralph Wetzel, Ronald Henderson
Teachers and the Education of Aides	Arline Hobson
Systematic Language Modeling	Arline Hobson
Social Strata and Perception of Magical and Folk-Medical Child-Care Practices	Ted Rosenthal, et al
Techniques of Training Assessment (AERA)	Marian Martin, Joseph Patterson, Ralph Wetzel
Arizona Center for Early Childhood Education Annual Report	Marie Hughes, Ralph Wetzel, et al
Behavioral Research Relevant to the Classroom	Marian Martin
The Relationship Between Teacher Classroom Behavior and Student School Anxiety Levels	Barry Zimmerman
Positive Effects of a Bicultural Preschool Program on the Intellectual Performance of Mexican-American Children	Ronald Henderson, Richard Rankin, Mary Frobisher
Pluralism in the Family: The Public and Private Worlds of the Tucson Mexican-American	Allyn Spence, Mark Winheld
Behavior Management Trainer's Manual Outline	
Attitude Change After Behavior Training	Marian Martin
Sample Materials for the Training of Classroom Aides	Arline Hobson
Standardized Tests and the Disadvantaged	Richard Rankin, Ronald Henderson
Tucson Early Education Model Classroom Checklist	Jerry Gray

APPENDIX

Selected Papers and Materials Abstracted in the Annual Report
(in order of presentation)

1.   Program Assistant Case Study: Implementation at the Fourth Grade
Ava Dale Johnson

2.   Behavioral Research Relevant to the Classroom
Marian Martin

3.   The Relationship Between Teacher Classroom Behavior and Student
School Anxiety Levels
Barry Zimmerman

4.   Positive Effects of a Bicultural Preschool Program on the Intellectual
Performance of Mexican-American Children
Ronald Henderson, Richard Rankin, Mary Frobisher

5.   Pluralism in the Family: The Public and Private Worlds of the
Tucson Mexican-American
Allyn Spence and Mark Winheld

6.   Pluralism or Assimilation: The Mexican-American of Tucson, Arizona
Mark Winheld

7.   Sample Materials for Aide Training Manual

8.   Aide Training Material by Trainer Trainees

9.   Attitude Change After Behavior Training
Marian Martin

10.   Techniques of Training Assessment
Marian Martin, Joseph Patterson, and Ralph Wetzel

11.   Sample Materials for the Training of Classroom Aides
Arline Hobson

12.   Standardized Tests and the Disadvantaged
Richard Rankin and Ronald Henderson

13.   Tucson Early Education Model Classroom Checklist
Jerry Gray

14.   Teacher Behavior Analysis Model
Barry Zimmerman

15.   Survey of Educational Attitudes
Mary Coxon, et al.

16.   Target-Incentive-Action Instrument
Ted Rosenthal, et al.

Additional Papers and Materials

1.   Sample Materials for Teacher Training: Language

2.   Orchestrated Instruction: A Cooking Experience

3.   Classroom Observation Material

4.   Training Materials for Migrant Opportunity Program Aides

   a.   Observation Materials

   b.   Prepared Material for Reading

5.   Five Families: A Pilot Study

6.   Classroom Child Behavior Recording Instruments

Additional Activities of the Arizona Early Education Center
(list will accompany additional papers)