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ABSTRACT

As part of the Ability Development Project to identify 4-year-old Mexican American children with learning disabilities and develop appropriate curricular materials for them, 99 children (3-5 years old) attending city day care centers were assigned to the Bilingual Early Childhood Program, Level II. Twenty-nine children (final results included data on only 22 of this group) identified by Project staff as having the most severe learning disabilities were selected as the target population. Identification instruments and supplementary activities were developed or adapted using a pre-posttest research design which compared results from the target group with results from non-handicapped classmates and handicapped children who had not received supplementary assistance. The following products resulted: Spanish/English Language Preference Screening, Observational Checklists for Referral, Criterion Referenced Test, Supplementary Activities, the Instructional materials manual "How to Fill Your Toy Shelves Without Emptying Your Pocketbook--70 Inexpensive Things to Do or Make", and a manual on working with parents of handicapped children. Findings included that project children made significant gains on criterion-referenced and norm-referenced tests; and target children who had received Supplementary Activities made greater gains than target children who had not, and in some areas made gains comparable with those of their non-handicapped peers. (Numerous tables with statistical information are provided.) (Author/SB)

FINAL REPORT
VOLUME 1 OF 2 VOLUMES

Project No. H33-3640
Grant No. OEG-0-74-0550

A Project to Develop Curriculum for Four-Year-Old Handicapped Mexican American Children

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November 29, 1974

The research reported herein was performed pursuant to a grant with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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

Office of Education
Bureau of Education for the Handicapped

ABSTRACT

The Project to Develop Curriculum for Four-Year Old Handicapped Mexican American Children (Ability Development Project) was carried out to identify handicapped four-year-old Mexican American children enrolled in a regular bilingual program and to develop appropriate curricular materials for them. For a one-year period program efforts focused on development and limited test of materials for the children, their teachers and parents. The program was characterized by a developmental rather than a deficit approach to problems in learning and was directed at maximizing learning that can occur when children of differing abilities interact in the same classroom. The basic research design was pre-post test with an intervening learning period of approximately six months.

The basic program was the Bilingual Early Childhood Program, Level II, developed by Southwest Educational Development Laboratory.

Supplementary Activities were developed and administered to the targeted children. Results for these children were compared with those of non-handicapped classmates and handicapped children who had not received supplementary assistance. Pretesting revealed 40 children with evidence of handicapping conditions; 29 were selected as target children. Target children in two classrooms received assistance in the form of Supplementary Activities, while target children in the other three classrooms were served indirectly through consultation with their teachers. The project included teacher materials.

The following products resulted: (1) Spanish/English Language Preference Screening (2) Observational Checklists for Referral (3) Criterion Reference Test (4) Supplementary Activities (5) Instructional Materials Manual: "How to Fill Your Toy Shelves Without Emptying Your Pocketbook--70 Inexpensive Things to Do or Make" (6) Working with Parents of Handicapped Children.

Project children made significant gains on criterion-referenced and norm-referenced tests. Target children who had received Supplementary Activities made greater gains than target children who had not, and in some areas made gains comparable with those of their non-handicapped peers.

SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY
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November 30, 1974

Dr. Max Mueller
Bureau of Education for the Handicapped
U. S. Office of Education
Washington, D. C. 20202

Dear Dr. Mueller:

The Southwest Educational Development Laboratory is pleased to submit its Final Report, Volumes 1 and 2, of A Project to Develop Curriculum for Four-Year-Old Handicapped Mexican American Children, funded under contract to the Bureau. Enclosed with 15 copies of this final report is one finished copy of each of the six products developed during the 12-month project.

The Fiscal Report required by contract will be submitted to the Bureau per time specifications in the original contract.

We are pleased for the opportunity to assist the Bureau of Education for the Handicapped in this endeavor. If you desire further information please contact Dr. Joyce S. Evans, Director of this project.

Thank you.

Sincerely,

James H. Perry

James H. Perry
Executive Director

JHP/lab

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INTRODUCTION

The Ability Development Project (ADP), a project to develop curriculum for four-year-old handicapped Mexican-American children, focused on the special needs of handicapped children enrolled in bilingual preschool classes with non-handicapped peers. The Project, working under a grant from the Bureau of Education for the Handicapped, was characterized by a developmental rather than a deficit approach to problems in learning, and was directed at maximizing the learning that can occur when children of differing abilities interact in the same classroom.

The need for this developmental effort was critical for several reasons: the number of children involved, the social significance, and the absence of existing materials. In the Southwest (Arizona, California, Colorado, New Mexico, and Texas), there are more than 720,000 Mexican-American children five years of age and under. No exact data exist on the number who 1) speak Spanish as their first language, and 2) are handicapped. In one state, Texas, it is estimated that some 16.1 percent of the school population is handicapped to one degree or another,[1] and that of the 163,983 Spanish-surnamed three- to five-year-olds, some 26,401 are potentially handicapped.[2] Approximately 8,000 of these children are four years old.

In Lau v. Nichols (January 21, 1974), the Supreme Court affirmed the right of the child to initial instruction in his native language, so he can achieve more effective participation in the educational process. At the same time, state legislation and lower court decisions have mandated that initial instruction for the non-English-speaking child be provided

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[1] Information based on figures provided by the Director of Special Education, Texas Education Agency, 1972.

[2] Information from the Texas Education Agency, based on 1970 U. S. Census data.

in his native language. Not all Mexican-American children speak Spanish as their first or only language, and no data are available to determine how many are Spanish speakers and how many are bilingual speakers. There is probably some variation in degree of Spanish usage and bilingualism in the different regions of the Southwest.

Physical isolation of children, particularly slow learners and the educable retarded, into special education classes has been sharply criticized as an homogeneous grouping practice which is discriminatory. In the District of Columbia, Judge Skelly Wright's decision resulted in the order that tracks be abolished because they discriminate against the racially different and/or economically disadvantaged. Referring to this decision, Dunn (1968, p. 7), states that "clearly special schools and classes are a form of homogeneous grouping and tracking... Self-contained special classes will probably not be tolerated under the present court ruling..." In response to these and other criticisms, Texas and some other states have mandated that handicapped children be placed in regular classes whenever possible, with a continuum of added services as needed.

The educational advantage of special education class placement, especially for the mildly and moderately handicapped child, has also been sharply questioned. Research on the comparative achievement of mentally retarded children in special and in regular classes has consistently failed to demonstrate the efficacy of special class placement (Johnson, 1962; Blatt, 1970). Categorization of children by handicapping conditions has also been challenged (Dunn, 1968). These questions and studies have resulted in a trend away from placing mildly and moderately handicapped children in special classes. This trend is clearly illustrated by the adoption of Plan A for Special Education in Texas and at the preschool level by the Head Start guidelines for the inclusion of handicapped children in regular Head Start classes.

Developments in the legal, social, and educational aspects of education for the handicapped have created a critical need for materials and programs geared for handicapped children in general and for handicapped minority children in particular. These needs are apparent in many areas of educational concern: teacher training for working with handicapped children in the regular classroom; non-categorical curriculum materials geared for use in the regular classroom; and unbiased test instrumenta that focus, not on labeling and placement, but on educational needs of children.

Such materials, especially materials for the handicapped Mexican-American child, are virtually nonexistent. A recent search of 13,000 individual curricular materials revealed only 19 series that were classified as either "bilingual" or "English as a Second Language." The only replicable, comprehensive full-day program for four-year-old Spanish-speaking children is the Southwest Educational Development Laboratory's (SEDL's) Bilingual Early Childhood Program, Level II (BECP), and this program is designed for normally functioning children.

The value of early intervention in handicapping conditions is well documented (Weikart, 1967; Karnes, 1969; Evans and Bangs, 1972). Though the long-term effects of particular programs are sometimes questionable, the mass of available evidence suggests that appropriate and carefully planned preschool intervention can significantly contribute to the child's development and later achievement. Therefore, the need for appropriate materials for <u>preschool</u> handicapped children is particularly critical.

The overall purpose of the Ability Development Project was to address the aforementioned needs by developing curricular materials for four-year-old handicapped Mexican-American children. The project took a non-categorical approach to problems in learning, focusing on failure to meet educational objectives rather than on handicapping conditions. Curricular materials

were to interface with the BECP, Level II Curriculum activities and objectives, in keeping with the goal of maintaining the handicapped child in the regular classroom. In the framework of the development process used by SEDL, Project efforts for the year were to be directed at product design and initial test, with further testing in succeeding years as required by feedback data.

PROJECT OVERVIEW

The purpose of the Ability Development Project was to identify and assist four-year-old handicapped Mexican-American children within a regular bilingual preschool program. The assistance provided the children by the ADP would result in the development of Supplementary Activities and other materials which would interface with Southwest Educational Development Laboratory's BECP, Level II and which could be used effectively with other children having similar disabilities. The focus of this Project was to develop products and submit them to limited design testing. It was expected that products would require more extensive testing later.

The original intent of the Project was to include only children with mild to moderate learning disabilities according to an exclusive definition: disabilities which "... do not include learning problems which are due primarily to visual, hearing, or motor handicaps, [or] to mental retardation ..." (preliminary definition, U.S. Office of Education, 1968). The reality of the situation encountered by the Project required that this exclusive definition be waived. Many of the children had not only demonstrable learning disabilities, but also additional problems such as auditory or visual loss. The Project staff determined that to exclude them from the Project would be unrealistic. Therefore, the Project served 1) those children with learning disabilities and 2) those children with combined learning disabilities and physical disabilities.

In order to develop appropriate activities for four-year-old handicapped Mexican-American children, the following objectives were formulated:

1. To identify and/or develop assessment instruments suitable for young Mexican-American children. Both norm-referenced and criterion-referenced tests would be considered.

2. To administer identified instruments to Project children; test results would serve two functions of the project:
   a. Identify target children (those with problems in learning).
   b. Evaluate Project effectiveness by providing measures of pre- and post-learning period performance.
3. To develop instructional materials for the target children; these materials should be in the form of supplementary activities to SEDL's Bilingual Early Childhood Program, Level II curriculum.
4. To develop appropriate materials to aid teachers with a minimum of formal training in working with handicapped children in the regular classroom.
5. To develop strategies for working with parents of preschool handicapped children.

The procedures employed to meet these objectives are summarized here and discussed in detail in succeeding sections. The Project used the SEDL developmental process. (See Appendix D.)

In Austin all publicly supported Head Start and Model Cities Day Care Centers are administered through Child, Inc., a non-profit organization. There were five Model Cities Day Care Centers with large enrollments of Mexican-American children. SEDL contracted with Child, Inc., to place all the four-year-old Mexican-American children attending these centers in Project classrooms with bilingual teachers. Five Project classrooms were thus organized within the existing Model Cities Day Care Centers. The five Project classes were located at three Centers: two at Canterbury Center, two at Allen Center, and one at Riverside Center. Also located at these Centers were non-project classrooms for three- and five-year-olds and for those four-year-olds who did not require a bilingual program.

The initial enrollment in Project classes (N = 99) included 57 boys and 42 girls ranging in age from three years, nine months to five years, 10 months. No attempt had been made to select handicapped children for these classes. After extensive testing and clinical evaluation by Project staff, 40 children were found to have evidence of disabilities according to a non-categorical definition (handicapped to the extent that they were unable to learn at a level commensurate with their peers). The twenty-nine children with the most severe disahilities were selected as target children and comprised the group for whom Supplementary Activities were developed. The target children at Canterbury Center were the experimental group (Target-Intervention) with whom Project staff worked directly and design-tested activities. The target children at Allen and Riverside Centers (Target- No intervention) did not receive Supplementary Activities, but Project staff monitored their progress and consulted with their teachers on working with them. The 59 non-target children received no special treatment but often served as comparison subjects.

In January the initial sample consisted of 99 children, but this number fluctuated during the Project. Children dropped out of the program or were moved to other classes by Child, Inc. New children also entered the Project classes. Children who enrolled after the initial testing period were not included in any statistical analyses, but were in all other respects full participants in the Project classes. In June, at the end of the Project period, 24 of the original 29 target children were still enrolled. Twenty-two of these were included in the final data analysis (two children were untestable). Twenty-two non-target children were selected on the basis of language preference, age, and sex to serve as a comparison group. Although all Project children received the pretest, only target children and the 22 non-target comparison sample received the posttest.

The first objective of the Project was to identify and/or develop appropriate testing instruments. Project staff conducted an instrument survey among 232 public schools and 20 Regional Service Centers to identify assessment instruments currently being used with Mexican-American preschoolers. The survey did not identify any instruments appropriate to the needs of the Project; i.e., in Spanish. The survey results indicate that Mexican-American preschoolers are usually tested in English. Project staff therefore developed and/or adapted the necessary instruments. (See Appendix H for a complete report of the results of the survey.)

In order to assess the children's progress in Level II of the BECP, a criterion-referenced test (CRT) was developed for the first 15 units of the curriculum. The CRT was designed to assess the child's performance on visual, auditory, motor, and conceptual tasks. It was administered to all Project children at the initiation of the Project. A complete description of the CRT is found in the "Identification Instruments" topic, and the test itself in Appendix F.

In addition, the staff made use of norm-referenced tests. The use of norm-referenced tests for minority children has been criticized both for the unfairness which they represent (Matluck and Mace, 1973) and for the inaccuracy of conclusions drawn from such test results (Meisgier, 1966; Calzoncit, 1971). However, the use of norm-referenced instruments provides for a standard method of scoring certain kinds of behavior and for comparing children's performance with others taking the same test. Therefore, a battery of subtest items from norm-referenced tests was developed and administered to all Project children, primarily for the purpose of identifying target children. Scores were converted to age equivalents and were used to compare children within the Project without

reference to the norm group (see Appendix I). A complete discussion of the norm-referenced battery also is found in the "Identification Instruments" topic in the following section.

In order to determine whether to test the children in English or in Spanish, it was necessary to develop an instrument which would quickly determinc a child's preferred language. The Spanish/English Language Preference Screening (S/ELPS) was developed to meet this need. The S/ELPS includes expressive and receptive language tasks in Spanish and in English. Because there appeared to be widespread applicability for an instrument of this nature and because initial design test data were positive, the S/ELPS was further developed and pilot tested by the Project. Procedures and results are presented in the following section and in Appendix E.

In order to gather information from Project teachers about possible pupil problems they may have observed in the classroom, the Observational Checklists for Referral (OCR) were developed by Project staff. The OCR is a checklist-type screening instrument. Consisting of an instructional guide, one general and six specific checklists in the areas of health, vision, hearing, speech, motor, and social/emotional development, the OCR is designed to aid teachers in identifying children who should be referred to other professionals. The OCR was administered to all Project children during the pretesting period. See the following section and Appendix G for a more complete discussion of the OCR.

The basic educational program for all Project children was the Bilingual Early Childhood Program, Level II (BECP, Level II). This is a comprehensive program for four-year-old disadvantaged Mexican-American children. Tested and validated over a five-year period, the BECP is the

only full-day bilingual program for four-year-olds currently available. A complete discussion of this program is included under "Instructional Activities" in the "Product Methodology" section and in Appendix C. The BECP was the basic program for which Supplementary Activities were developed by the Project.

The design and design test of the Supplementary Activities began soon after program implementation and continued into the summer after the posttesting was completed. Supplementary Activities were developed by Project staff and design tested with target children at Canterbury Center. The activities were revised, based on the feedback of the Project staff members who had taught the activities and on the performance of the children on the activities. Approximately 47 additional activities were developed for the last 10 units but were not design tested with children. A complete discussion of the BECP and the development of the Supplementary Activities is found in the following section under "Instructional Activities."

One objective of the Project was to develop materials to help teachers in working with handicapped children in the regular classroom. The manual that accompanies the OCR was designed to accomplish this purpose as well as to provide a guide for completing the checklists. Working with Parents of Handicapped Children is a manual designed to help teachers understand parents' feelings and to provide guidelines for making referrals and for working with the child's parents in order to maximize his home-school learning. The manual was reviewed by external consultants (see Appendix B) and revised according to their suggestions. How to Fill Your Toy Shelves Without Emptying Your Pocketbook was designed as a guide for making inexpensive learning materials for home and school use out of common household objects, discarded materials, or inexpensive variety store items. Accompanying the directions for making each item are suggestions for activities using items to develop various skills. (See Appendix K.) The activities and

instructions for making the materials were design tested in a parent-teacher workshop conducted by Project staff, and revised based on feedback from workshop participants.

The final objective of the Project was to develop strategies for working with the parents of handicapped children. In addition to developing the manual Working with Parents of Handicapped Children, the Project staff utilized two approaches: 1) an individual approach focusing on the exchange of information between parents and the teacher, and 2) a group approach directed at all Project parents and utilizing workshops and special programs to attract the parents of target children. A complete discussion of these procedures is found in the following section under "Activities with Parents."

All major Project activities involving teachers and children were conducted between January and June.[1] Posttesting was conducted in June.

Data analysis was performed for 22 of the 24 target children remaining in the program and a sample of 22 non-targeted children. (Two target children had been untestable on either the pre- or the posttest.) Pre- and posttest data were available for the battery of norm-referenced test items, the CRT, and the S/ELPS. For the purpose of the analysis, the target group was further divided into two groups: those who had received Supplementary Activities (Target- Intervention) and those who had not (Target- No intervention). The non-target children were considered as a single group.

Given the objectives and limitations stated at the beginning of this section, the results of the data analysis were positive. The total sample

[1]By the end of June so many children had left the Centers, that only limited work with children could be done. During the remaining summer months revision of products and additional design were completed by the staff.

made significant gains on the CRT. Within groups, gains were significant for the Non-target and the Target-Intervention groups, whereas, gains for the Target-No intervention group were not significant. Between-group differences were mostly non-significant with a few exceptions. Target-Intervention children performed significantly better than the Target-No intervention children on the motor items of the CRT. Non-target children tended to make greater gains than did target children, and target children who had received intervention tended to gain more than children who had not.

The children also made gains on some items of the norm-referenced measures. On the pretest, the total group of children scored below their age level on seven of the norm-referenced items; on the posttest they scored below their age level on only two items. There were few significant differences between the groups with regard to pre- and post-learning-period gains on the norm-referenced test battery. Complete details of the statistical procedures used and the results are found in the section on "Findings."

PROJECT METHODOLOGY

Subjects and Setting

The Children. In order to obtain a group of approximately 100 four-year-old Mexican-American children, all Mexican-American children attending Model Cities Day Care Centers in Austin, Texas, were assigned to one of the three centers where the Bilingual Early Childhood Program (BECP, Level II) was being installed. There were 38 Project children in two classes at Canterbury Center, 38 in two classes at Allen Center, and 19 at Riverside Center. All children had attended the Day Care Centers for at least four and up to 18 months at the time the BECP was initiated. No type of special educational identification or instruction had been provided.

Families of the Project and other Model Cities children were from the most economically disadvantaged of all the groups served by Child, Inc., Day Care Centers, the administrative organization for all publicly-supported day care centers in Austin. All families resided in the Model Cities area and met the income criteria of $4,321 for a family with one child to $9,451 for a family of 10. Many were recipients of AFDC. Thus, for all of the children, the problems of belonging to an ethnic and linguistic minority were compounded by the problems of poverty.

Although all the children were Mexican-American, the language characteristics of the Project children were varied. Some spoke only Spanish and some only English; some were bilingual and others mixed English and Spanish freely in the same utterances. Of the 78 children who received the Spanish/English Language Preference Screening (S/ELPS) at the beginning of the Project, there were 22 Spanish speakers, 46 English speakers, and

10 bilingual or mixed speakers. Additional specific information on the language characteristics of the children is included in the following section under "Identification Instruments" and in Appendix E.

Information on individual children was limited. All had received medical evaluations prior to their enrollment; no serious medical problems had been identified among the Project children. After enrollment, blood samples were taken by Child, Inc. to test for anemia. Four Project children were found to be anemic and were given iron supplements. Vision screening had been conducted by a local volunteer group, but many Project children had not been screened. Hearing screening was not available, though teachers noted a high incidence of colds and other upper respiratory infections often associated with hearing loss. Funding constraints prevented more extensive diagnostic and therapeutic services.

Although the Ability Development Project was funded to develop materials rather than to provide direct services, the needs of the children were so great that effort was made to address them. Vision screening was conducted by Project staff for the children at Canterbury Center (N = 34). Hearing screening was conducted at Canterbury Center (N = 40) and for children at the other Centers (N = 19) who were checked for hearing or speech on the Observational Checklists for Referral (OCR). Project staff conferred frequently with the teachers and with the Child, Inc., staff on referrals and other ways of obtaining services for the children.

The need for special services was supported by the high incidence of problems found in the group by the Project staff themselves. Early estimates had projected the incidence to be 20 to 25 percent. Testing and screening conducted by Project staff, however, indicated that fully 40 of the original 99 children showed evidence of some type of problems. An

additional nine children were perceived by their teachers as having problems, according to the results of the OCR. Most of these additional problems identified by the teachers were related to developmental differences in speech and were not serious enough to be considered disabilities. Of the 40 children identified by Project staff, 29 were selected for the target sample. This group represented, in the opinion of the staff, the most seriously handicapped of the identified children.

Of the target children, 22 performed one year below their age level on the norm-referenced tests, and the remainder had wide discrepancies in their performance on the items; seven had evidence of hearing loss; four had visual problems; and 13 had speech/language problems serious enough to impair intelligibility or normal language development. Sixteen children showed evidence of problems in more than one area. All of the target children had difficulty meeting lesson objectives, and these difficulties did not vary precisely according to the child's "problem area." For example, children with hearing loss might have difficulty not only with auditory activities, but also with motor and conceptual activities as well.

The Teachers. The selection and assignment of teachers for the Project classes was made by Child, Inc. Teachers were selected on the basis of their ability to speak Spanish. Like the children, all Center teachers were residents of the Model Cities area and eligible for Model Cities services. Because the teachers shared the social and economic problems of the students and their families, they were perhaps more understanding of the home situations than teachers not residing in the Model Cities area.

Model Cities guidelines for Day Care Centers do not specify an educational level for teachers and assistants. The Centers provide a means for talented and dedicated teachers who lack formal training to work

in a non-school setting. This lack of training, however, had to be taken into account when materials for the Centers were developed. Specific skills, such aa observation techniques, following a lesson plan or curriculum guide, classroom management, and grouping for language and ability, could not be assumed.

The educational levels of Project teachers and assistants ranged from fourth grade to 2-1/2 years of college. Those who had attended college had studied elementary education or child psychology. One was attending a child development course at Austin Community College. One had been a teacher assistant in high school, and another had completed a course in child care. The education and training of the teachers and assistant teachers were therefore varied. The only salient differences between teachers and assistants was that all the teachers spoke Spanish, whereas only one of the assistants was a Spanish speaker.

The entering experience of the Project teachers was zero to two years. Child, Inc. provided both preservice and inservice training. During the preservice training period, the newly-hired teacher was assigned to the administrative office for an overview of the Center's educational program and its objectives. The length of preservice varied according to when the teacher was needed in the classroom. This was usually a week. Then the Center Director provided the new teacher with inservice training. As part of the inservice training, workshops for teachers were conducted approximately six times a year. These included training in child-care subjects such as nutrition and hygiene, as well as teaching techniques.

For the purposes of the Project, the teachers attended preservice training conducted by the Field Relations staff of SEDL. The training provided by SEDL consisted of a systematic introduction to the BECP, Level II.

It included an overview of the program, discussion of the four elements (visual, auditory, motor, and ideas and concepts), the purpose and techniques of testing, classroom arrangement and management, and use of equipment. Discussions of the BECP were augmented by films demonstrating teaching strategies, testing techniques, classroom arrangement, and use of equipment. The preservice training sessions were followed by visits to the classrooms by SEDL Field Relations and Project staff. Suggestions for management, teaching, and physical assistance were given. Project staff also located or donated needed equipment, such as area rugs, toys, learning materials, and clothes for the housekeeping areas.

Classroom Setting. The classroom settings were provided by Child, Inc. This organization handles funding, personnel policies and assignments, procurement, and record keeping for Model Cities and Head Start Day Care Centers. Requirements for the two kinds of Centers varied, and services which were available to Head Start Centers were not always available to Model Cities Centers. For example, funds provided through Head Start for integration of the handicapped were not available to Model Cities Centers.

The Model Cities Centers' income criteria required that the children served be economically disadvantaged. The Center provided two meals a day, supervised child care, and an educational program. Funds were not available to provide special services to individual children, but children were not excluded from the Centers because of physical problems or handicaps. Funds for materials and supplies were also limited. Centers were located in existing buildings, often donated by a church or some other organization.

The classrooms provided for the ADP by Child, Inc. were at Canterbury Center, Allen Center, and Riverside Center. The two Project classes at Canterbury

Center were housed in a building which served as a church meeting hall, including a long room divided into thirds by movable partitions. The classrooms were at each end of the room, with the central area used for shared block and housekeeping activities. Several adjacent rooms were available for storage, small-group activities, and testing.

Two Project classes were located at Allen Center where five classes (two Project and three non-Project) shared a single very large room. A very small side room was also available to each teacher.

One Project class was organized at Riverside Center in a small, self-contained classroom.

Problems. Problems were encountered in implementing the basic Bilingual Early Childhood curriculum. Although 10 to 15 units had been envisioned by Project staff, by the end of June the classes had completed only four of the 25 units, seven at Riverside. Several factors contributed to this. The teachers were not accustomed to using a structured teaching system and did not know how to integrate the curriculum into the existing Center programs. Center Directors had not attended the preservice training sessions, despite encouragement from Project staff. The Directors therefore were unfamiliar with the curriculum and unable to help the teachers with their problems. Although fully bilingual, the teachers were not accustomed to teaching in Spanish, and often taught lessons in English that were designed to be taught in Spanish. Grouping for language and ability was also a difficult task for the teachers, who did not fully understand the importance of grouping. Classroom arrangement and management also presented difficulties, especially for the teachers at Allen Center, where a single large classroom was shared by five teachers. Difficulties in implementing the program at the Allen Center were encountered immediately,

although the curriculum has been used quite successfully in open classrooms at other sites. Project teachers were not free to rearrange the classroom, since the materials and furniture were used by other teachers. The children in the BECP program were carefully taught to use and care for equipment; however, the presence of 60 other children without similar training provided some disruptive activity. The two classes at Allen had been designated the experimental classes where target children would receive intervention. To insure the success of the program at Allen Center, the pilot version of the BECP, Level II curriculum was supplied to the three non-Project teachers along with preservice training. Commitment to the program was never achieved by the non-Project staff, however, and attempts to design test Supplementary Activities at Allen Center were unsuccessful. The experimental efforts were therefore moved to Canterbury.

The problems encountered by the teachers were due in large part to factors beyond their control or that of Project staff. These factors included physical facilities, lack of materials, lack of support from Center Directors, and the absence of services for the children. For instance, at one site, Canterbury Center, the building also served the needs of a church congregation. Therefore, the teachers had to remove all classroom material and furniture several evenings each week and replace them on the following mornings.

The teachers had difficulty in implementing the program. That the teachers themselves perceived the needs for detailed and comprehensive pre- and inservice training and for continuous supervision and support was clear from their responses to a questionnaire administered as an interview at the end of the Project. The teachers were unanimously enthusiastic about the program but mentioned that there were specific activities that

they did not understand. They also said that their participation in the work of the Ability Development Project had been informative and had provided some services to the children that would have been otherwise unavailable. The Project staff determined that the needs of the teachers for training, supervision, and support are clearly as critical as the needs of the children for services, particularly when handicapped children are included in the program.

The BECP, Level II program has been used successfully in a wide variety of settings, but its previous use did not prepare the Project staff for difficulties encountered in this Project. The isolation of the bilingual classes in Centers where the other teachers and the directors were not familiar with the program was perhaps the most serious problem. The high incidence of handicaps in the children, which may have been true for non-Project classes as well, made the teachers' attempts to use the program especially difficult. The teachers expressed the idea and the desire for a fully bilingual Center where the teachers, the Center Director, and the parents would all be committed to bilingual education.

Identification Instruments

Identification instruments were developed or adapted in the Ability Development Project in order to: 1) identify the target children--those with handicaps or problems in learning, and 2) evaluate Project effectiveness by measuring pre- and post-learning period gains. Tests developed for the Project were the Spanish/English Language Preference Screening (S/ELPS) and the Observational Checklists for Referral (OCR). Existing tests adapted by the Project were the Norm-Referenced Measure made up of subtests from various standardized tests and the Criterion Referenced Test

adapted from the Bilingual Early Childhood Program, Level II. These tests will be discussed in the following pages with full program results presented in the Results section.

Spanish/English Language Preference Screening (S/ELPS). The Project staff was faced in January with the task of testing 99 four-year-olds of whom some spoke Spanish, some English, and some both languages. The first problem was to determine which was the child's stronger language for test administration. Because some children were newly-assigned to the Project classes, and because most teaching had been in English prior to the introduction of the Bilingual Early Childhood Program, teacher judgments concerning which language was appropriate for test administration were not necessarily accurate. In order to develop a procedure to determine the child's preferred language for testing, the Spanish/English Language Preference Screening (S/ELPS) test was developed.

The S/ELPS was designed to be administered by the child's classroom teacher in a short period of time, preferably no more than 10 minutes. The tasks sample a variety of receptive and expressive language behaviors well within the developmental capabilities of four-year-olds. Stimuli include verbal questions, objects, directions, and pictures. One set of stimuli is presented first in Spanish; then an equivalent, but not identical, set is presented in English. A comparison of the child's performance on the two parts of the test indicates the child's preferred language and to some extent the degree of preference. The screening does not measure the degree of the child's linguistic development in either language, since the tasks were designed to be easy for a four-year-old.

An initial pool of items was design-tested by a linguist who administered the screening to five children. The tasks were found to be at an appropriate developmental level and stimulating, and the children's

responses provided a guide for the design of a recording form. Use by teachers was tested in a second cycle of design test. Their feedback and the children's performance resulted in several revisions.

The third version of the instrument was evaluated by an external consultant who listened to tape recordings and made an independent judgment of the children's preferred language. He also provided the criteria by which he had made the judgments; these criteria supported the response categories used on the recording form. The instrument was also tested for the equivalency of the Spanish and English sections. Further details of these procedures are found in Appendix E.

While the test procedures were being developed, a manual of instructions was prepared. The manual was written and revised according to an in-house review. The manual was then design-tested by eight teachers who administered the S/ELPS and provided feedback for subsequent revisions. During the development process, all Project children received some form of the S/ELPS, though some received special experimental versions (see Appendix E). Each was later tested in the language indicated by the S/ELPS to be his preferred language.

A review of the literature did not reveal the existence of an instrument like the S/ELPS, an instrument which could be administered in a short period of time by a classroom teacher to determine language preference for initial learning or testing. Since there appeared to be a widespread need for such an instrument, pilot testing for validity and reliability of the S/ELPS was undertaken in the late Spring. Thirty Project children who had not received the S/ELPS during the previous three months were the subjects for this study. A test-retest procedure was used with the linguist and the Project teachers doing the testing. A scoring system for analyzing the

results was developed. Tester judgments of each child's language preference were compared with each other and with teacher judgments made according to set criteria after having worked with the children in the bilingual program for several months. Complete details of the procedures used are in Appendix E.

The results of the pilot test, using teacher judgment as the criterion, indicated that the S/ELPS, through a correlation between continuous data and categorical data, has a validity of 0.8582. Test-retest reliability was also high with a correlation range of 0.850 to 0.945. These results must be interpreted with caution because of the small sample size and the fact that the sample was heavily weighted with English speakers. It appears, however, that the S/ELPS does give an estimate of the child's preferred language which may be used with some confidence by a teacher or examiner unfamiliar with the child. The estimate must be taken as tentative, and careful observation is required to confirm the findings of the S/ELPS.

Criterion-Referenced Test (CRT). Criterion-referenced tests specify an absolute level or quality of acceptable performance. The BECP, Level II makes extensive use of criterion-referenced tests to assess the children's performance and to measure their progress through the program. The Level II program includes criterion-referenced tests for each eight units of the curriculum. In order to obtain measures over a greater span of time, the Project staff prepared a criterion-referenced test for the first 15 units of the program.

The CRT developed by the Project consists of 23 items which yield a total score, as well as four subtest scores (Visual, Auditory, Motor, and Ideas and Concepts) corresponding to the four areas of the curriculum.

Each item is pass-fail but the degree of success can also be recorded for information on teaching needs. It is designed to be administered at the beginning of the school year and at the end of 15 units. The Project children in this case received the posttest after only four units (seven at Riverside), because the testing had to begin before the children began leaving for the summer.

Experience with the CRT gave important information for revision. Some items were expanded to test a given skill in more depth. Others were revised for ease and speed of administration. Two items were added to provide additional information: a copying-geometric-designs item and a draw-a-person item. The items were regrouped according to form of administration with some items being suitable only for individual administration, some for small group administration, and some for total group administration. A new scoring sheet was also designed. This revised form was not administered to Project children; the revisions were made after the posttest period according to feedback from the examiners and the results. A complete discussion of the test results is found in the Results section, and a copy of the CRT used in this Project is in Appendix F.

Norm-Referenced Measures. Selected items from several norm-referenced measures were also administered to the Project children. Criteria for selection of items were: 1) items must be culturally unbiased; 2) items must be linguistically unbiased; that is, they must convert to Spanish without substantial change of meaning or developmental level; 3) items must measure abilities and skills addressed by the bilingual curriculum. The rationale for the use of an item pool rather than a single test is documented (Bangs, 1968; Evans and Bangs, 1972). The use of an item pool was particularly appropriate for the group in

question, since frequently some, but not all, subtests of a given norm-referenced test might meet the stated criteria. For example, some items on the Illinois Test of Psycholinguistic Abilities test skills and structures peculiar to English and would therefore be inappropriate for Spanish-speaking children. Certain items, such as Visual Sequential Memory, however, do not directly involve the use of language and might therefore be very appropriate for non-English speakers.

The initial pool of items included items from the Stanford-Binet, The Hiskey-Nebraska Test of Learning Ability, The Illinois Test of Psycholinguistic Abilities, the Wechsler Preschool and Primary Scale of Intelligence, and the Vallett Developmental Scales. This battery was administered to Project children and revised. The items from the Stanford-Binet and the Vallett were deleted because all the children passed them. The final battery consisted of five items from the Hiskey-Nebraska: Memory for Color, Picture Identification, Picture Association, Paper Folding, and Visual Attention Span; one item from the WPPSI: Block Design; and three items from the ITPA: Visual Sequential Memory, Visual Closure, and Manual Expression. The battery focuses on visual, motor, and conceptual skills; auditory subtests appeared in general to be language biased. This battery was administered to the remaining children.

During the pretest period, several children were given the norm-referenced items in both English and Spanish. Five were given the battery twice in Spanish and five others received it twice in English. Though the number was too small in each case to be amenable to statistical analysis, the results were inconsistent. The children who received the test twice in the same language showed some differences in the retest, but these were few and small. The children who received the test in both languages,

however, made widely variable results. The variations were not consistent with language; the same child might score higher on one item in English and higher on another item in Spanish. The items had been carefully chosen, evaluated, and converted to Spanish by persons who were skilled teachers and examiners. These findings raised serious questions not only about the equivalency of the two forms of this battery but also about the use of translation for norm-referenced tests in general.

During the posttest period serious consideration was given to the use of the norm-referenced items. The same battery was administered to all remaining target children and a sample of non-target children matched for language preference, sex, and age. At the same time, the Hiskey-Nebraska in its entirety was examined by a group of bilingual teachers and examiners. Each item was examined for cultural bias, for relevance to the experiences of Mexican-American preschool children, for convertibility to Spanish without change of meaning and for relationship to the objectives of the BECP. Based on the recommendations and feedback of this group, and with the permission of Dr. Hiskey, a Spanish version of the Hiskey-Nebraska was prepared. This version was administered to 10 Spanish-speaking Mexican-American children and 10 bilingual children. The English version was administered to 10 English-speaking Mexican-American children and 10 Anglo children. The bilingual children also received the English version with an interval between tests of approximately two weeks. The English version was administered first to half the bilingual children and the Spanish version first to the other half. Although there were no statistically significant differences among the four groups, the study led to refinement of the Spanish version and some direction for further investigation using the Hiskey-Nebraska Test of Learning Aptitude.

Observational Checklists for Referral (OCR). The Observational Checklists for Referral (OCR) were designed for the classroom teacher. Since the teacher works with the child in a variety of situations, she is in a unique position to identify potential problems in learning. Though the Project teachers often appeared to have an intuitive idea that "something might be wrong," they did not always act on this feeling and refer the child to a professional. They needed to learn the behavioral signs of various disabilities and the observational skills to notice them. They also needed some procedure for making referrals and some way of communicating with the professionals to whom they referred children. These needs also are critical for preschool teachers in general, because in many cases if the preschool teacher does not identify a problem and make a referral, the child will not be identified until he is older and already failing in school. The OCR was developed to address these needs.

The OCR consists of a General Checklist, six Specific Checklists (Health, Vision, Hearing, Speech, Motor, and Social/Emotional), and a manual of instructions. The general checklist, designed to be completed for all the children in a class, contains 20 items, each describing a range of behaviors in a certain area. For example, a speech item is "Doesn't speak clearly; speech is hard to understand." The Specific Checklists were designed to describe in detail those behaviors which may indicate potential problems in young children. The Speech Checklist, for example, has items describing articulation, rhythm, voice, and language. All items are stated in non-technical behavioral terms. In addition to helping the teacher focus her observations, the Checklists are designed to serve as a vehicle of communication between the teacher and the professionals to whom she refers the children. The accompanying manual describes observation

techniques, discusses checklist items in detail, and provides suggestions for referral. The manual is discussed in detail under "Materials and Activities for Teachers."

Before being used in Project classrooms, the Checklists were design tested by three non-Project teachers at Allen Center. Following revision and preparation of the accompanying manual, the OCR was reviewed by an external consultant and design tested at Canterbury Center. In the design test the teachers completed the General and Specific Checklists as instructed in the manual. They then completed all Specific Checklists for all children in their class. The design test results and the consultant's suggestions were incorporated into a revised version. The Health Checklist was reorganized to reflect the conditions of observation rather than diagnostic categories; items were grouped according to the part of the body involved rather than the system (i.e., respiratory). Items on the other checklists were reordered and some additions were made. The General Checklist items were revised to refer to more than one Specific Checklist. All design test procedures and results are presented in Appendix G.

Following these revisions the OCR was design tested by Project teachers at Allen and Riverside Centers. The teachers completed the General and Specific Checklists as directed in the manual. They then completed all Specific Checklists for a random sample of children not checked originally on the General Checklist. Several revisions were made following this design test. A description of the OCR results for Project children follows with additional details in Appendix G.

Of the 99 children rated on the OCR, 44 were checked by their teachers as having problems. These 44 children were checked a total of 90

times on the General Checklist. Twenty-one children were checked once; 12 were checked twice; six were checked three times; four were checked four times; and one child was checked 11 times. The number of children checked in each classroom varied. The two teachers at Canterbury checked 33% and 27% of the children in their classes. The two Allen teachers checked 60% and 55% of their children. The teacher at Riverside checked 47% of the children in her class. Of the 90 items checked, the Health items accounted for 19 (21%); the Vision items for one (1%); the Hearing items accounted for five (6%); the Speech for 18 (20%); the Motor items for seven (8%); and the Social/Emotional for 40 (44%).

The number of children perceived by their teachers as having problems was surprisingly high. The Social/Emotional, Health, and Speech items received the greatest number of checks, indicating perhaps that teachers readily perceive problems in these areas. Some of the children checked in the Social/Emotional area had performed very well on testing and were regarded by Project staff as potentially gifted. These children may have been bored by the slow pace at which the curriculum was being taught in the classrooms. The high incidence of other problems is consistent with the Project's finding that a large number of these children appeared to have problems severe enough to interfere with their learning.

The OCR provided the Project staff with valuable information about the children as they were observed by their teachers. Facilities were not available, however, to collect validation data. In its present state of development, the OCR can supply information about classroom behavior and assist with referrals. It can be used cautiously as an initial screening instrument. OCR results, however, should not be interpreted for diagnostic or prescriptive purposes. Further study is necessary in order to validate the OCR and to determine the number of over- and under-referrals which occur.

Instructional Activities for Children

One objective of the ADP was to develop instructional materials for the target children. These Supplementary Activities were designed to assist those children who could not meet the objectives of the BECP, Level II. In this section, an overview of the BECP is followed by an overview and description of the Supplementary Activities developed by the ADP.

The BECP. The BECP is a basic instructional program designed for preschool Mexican-American children who are disadvantaged. Level II of the BECP is part of a two- or three-year sequential curriculum designed for four-year-olds who may or may not have been exposed to the Level I program for three-year-olds. The Level III program was designed only for five-year-olds who have completed the Level II program. The final version of the BECP, Level II curriculum, the version used in the ADP, was published in 1974 by the National Educational Laboratory Publishers.

The BECP was the basic educational program for all Project children, including the target children. Research-based and validated over a five-year period using the development process described in Appendix B, the general goals of the BECP are:

1. To develop the child's sensory-perceptual skills
2. To develop the child's language skills in both English and Spanish
3. To develop the child's thinking and reasoning abilities
4. To help the child develop a positive self-concept

The BECP program includes six instructional elements--Visual, Auditory, Motor, Ideas and Concepts, Syntax of English, and Building Vocabulary--organized into 20 instructional units. While the last two kinds of

lessons are introduced in the Level II curriculum, the Visual, Auditory, Motor, and Ideas and Concepts elements appear at all levels of the BECP and remain the major focus of the program. The ADP developed Supplementary Activities for the four major focus elements.

The design of the BECP instructional program was based upon available theoretical and developmental knowledge of how young children learn. The sequences of activities were tested and revised on the basis of actual classroom use and feedback information from teachers and observers, as well as from evaluation of the children's performance. The six types of lessons covering different content or skill areas are organized into 20 instructional units built around a single theme, like Community Helpers, Food, and Musical Instruments. Whenever possible, the lessons in each unit complement and reinforce each other by relating to the unit topic or to a particular skill.

Instructional Units. Each of the 20 instructional units contains 20-35 planned lessons and activities, utilizing puzzles, transparencies, filmstrips, audio tapes, games, line drawings, posters, and photographs. Each unit includes curriculum-based unit and mastery tests which enable teachers to monitor the child's progress. Teacher's guidebooks are printed in both English and Spanish so that lessons can be taught in either language.

The units were carefully designed so that content relates meaningfully to the child's previous experience and builds upon his prior knowledge before introducing new concepts. The unit approach familiarizes him with these concepts in several types of lessons and allows him to apply them in various contexts, thus ensuring that he thoroughly masters basic concepts and skills and that he can transfer or generalize his learning as needed.

Because of the systematic buildup and integration of skills, it is essential that instructional units be presented in order. Within each instructional element the lessons begin with the lowest order of skill and proceed systematically to increasingly higher levels. New lessons build sequentially upon earlier lessons and encourage progress toward still higher behavioral objectives. Such lessons do not necessarily occur sequentially within one unit or one curriculum element. For example, the concept of color is introduced in the Visual element in early units through simple matching exercises. In later units color labels are taught in a strand of auditory lessons. The concept of color is also reinforced in other instructional elements, such as Ideas and Concepts, where the child is expected to describe or classify objects according to color.

Instructional Elements. The six instructional elements in the BECP, Level II curriculum are Visual, Auditory, Motor, Ideas and Concepts, Syntax of English, and Building Vocabulary. All the lessons in these elements teach skills important for general intellectual development and for later school success. The Visual lessons teach the child to develop his powers of observation and make visual discriminations. Because the development of certain visual skills has been found to relate directly to successful academic learning, the Visual element of the BECP curriculum is concerned with these skills. They are: 1) visual constancy for properties of materials, 2) classification of visual stimuli, 3) figure-ground relationships, 4) spatial relationships, 5) visual memory, and 6) part-whole relationships. These six skills are closely related; therefore, the lesson objectives in the Visual element deal with each skill area on an individual basis as well as integrating them.

Because auditory skills play an integral part in the development of all oral language skills and in the child's acquisition of reading and writing skills, auditory training is critical in a preschool program. The lessons in the Auditory element have been divided into six skill areas: 1) identification, 2) discrimination, 3) imitation, 4) listening comprehension, 5) memory, and 6) word and sound analysis. Although the objective of each lesson is directly related to a specific auditory skill, no skill is learned in isolation. Integration of skills is facilitated by lesson procedures. Also, visual and motor stimuli are used to reinforce the learning of auditory skills.

The Motor element is divided into eight skill areas: 1) body concept, 2) gross motor skills, 3) laterality, 4) directionality, 5) fine motor skills, 6) ocular-motor coordination, 7) tactile discrimination, and 8) memory. Although the children's gross motor skills are usually well developed by the age of four years when they enter the BECP, Level II, they often need practice in the fine motor skills required for school learning. Also, they need practice in using language to describe movement. The Motor element provides this practice.

The Ideas and Concepts element is organized into seven areas of training: 1) recognition, 2) labeling, 3) association, 4) comparing, 5) categorizing, 6) describing, and 7) synthesis and application. Generally, the activities in the Ideas and Concepts element deal directly with the unit topic: Clothing, Animals, Transportation, etc. The activities introduce certain concepts, expand ideas related to a concept and introduce skills related to a concept or its application. Many of the activities develop the child's imagination or creativity. The child's reasoning skills are developed by modeling, thinking through problems,

and testing solutions. The lessons are also directed at improving the child's concept of self.

The Syntax of English and the Vocabulary elements concentrate on teaching Spanish-speaking children to understand and speak English. Language development is crucial for children who know little or no English when they start school. To be effective, therefore, the BECP must teach these children English. While English is taught informally throughout the three levels of the program, the formal teaching of English begins at Level II. The Syntax element follows a linguistic approach to learning basic language patterns, rather than focusing on particular words or phrases. These lessons strongly emphasize that the child speak for himself; they teach him to internalize and generalize basic structures so that he will more quickly learn to express himself in English.

The Building Vocabulary element teaches English language content--vocabulary words. This is done through songs, games, and other informal group activities, rather than through formal lessons. This element teaches words needed for lessons in the other instructional elements, as well as key words and phrases that children frequently use in social interaction or in school situations.

Sequential Organization. In all its aspects the BECP program moves sequentially from what the child knows to what he does not know. Language and concept development are systematically incorporated throughout each instructional element. Concepts appear first in Spanish, then in English; content begins with concrete objects, moves to pictures and two-dimensional representations, and concludes with the use of words only. Within each skill level the child builds gradually, in small steps, adding new skills or learning new applications for skills acquired in other contexts. Because of the way the instructional units are constructed, new

knowledge and skills in one element can be reinforced in the other elements. All these features provide an integrated program which ensures that the child's learning is firmly grounded, meaningful to him, and useful for thinking, problem solving, and language development.

Supplementary Activities of the ADP

Rationale. The Supplementary Activities were designed to be used with Level II of the BECP. While the lessons in the BECP are carefully sequenced to enable children to learn and progress, differences in children's ability to learn and the inclusion of a percentage of handicapped children in the preschool classroom create a need for activities and materials to augment the regular curriculum. For a child to meet the objectives of the lessons in the regular BECP, Level II curriculum, he must acquire and utilize a complex array of skills. Some children, because of disabilities which affect their ability to learn or because of experiential deficits, require extra assistance to learn; the Supplementary Activities are designed for them.

Purpose. Designed and design tested within a limited situation, under the direct supervision and/or administration of Project staff, the Supplementary Activities were developed to augment the teaching of certain basic concepts by:

1. Breaking down BECP, Level II lessons into smaller units,
2. Providing training for the child in areas essential to mastering the lessons in the regular curriculum,
3. Providing the teacher with alternative materials and procedures which can be used to assist children with various types of handicapping conditions which affect their learning.

Selection of BECP lessons to be supplemented was based on reports from teachers using the curriculum and from the children's performance. Lessons with which the children encountered the most difficulty were selected to be supplemented. Activities were provided for lessons which present difficult concepts, which present concepts for the first time, and/or for which small-step prerequisite lessons are not provided in the basic program.

Guidelines for designing additional activities are also included in the Introduction to the Supplementary Activities. These guidelines are provided for situations in which the child has difficulty with a lesson that has no supplement or needs additional assistance beyond that provided in a supplementary activity.

Design Test & Review. The writing and design-testing the Supplementary Activities were carried out in six stages: design, role playing, testing with children, revision, editing, and conversion into Spanish. (See Appendix D for a fuller description of the basic developmental process.) Throughout the process, the activities were subject to constant review and critique by SEDL staff. In the design stage guidelines were developed for the initial writing of the activities. These took into consideration the following:

1. The activity should teach the child the steps leading to the point at which the regular lesson begins.
2. The activity should provide the child practice in the basic skills necessary for success in meeting the objective of the regular lesson.
3. The activity should be designed to be administered in either English or Spanish.

4. The procedures and media should, as much as possible, take into consideration the topic of the unit being studied.

After a Supplementary Activity was written following the guidelines, it was role-played by the staff. A staff member who had not been involved in the writing took the part of the teacher, another the part of the child. The activity was then reviewed by an internal consultant for clarity, accuracy, and relevance to the goal of the regular lesson. Afterwards, the activity was tested, using one child or a small group of children, depending on the design of the activity. Both the responses of the children and the reaction of the teacher were noted. Following a review by an editor for clarity of writing and consistency of style and form, a conference was held with the writer, the editor, and the internal consultant. A revised text, incorporating all feedback to this point, was then converted into Spanish, and changes were made. Media designed to accompany the activities were suggested by the writer, then developed and revised following the same design test process.

Although each of the design test and review steps has been described as discrete and sequential, in practice each was interwoven, so that all aspects of the process were considered at all times. For example, the appropriateness of the lesson when used in English and in Spanish was considered at each stage.

Description. The Supplementary Activities are coordinated with the BECP and comprise four volumes, covering units one through 20. Each volume contains five units in Spanish and five units in English, an overview sheet for each unit, a checklist for each unit designed to help teachers select appropriate activities, and a packet containing the media for the five units. Detailed instructions for the use of the Activities,

a description of some of the problems children may have, and suggestions for grouping children to present an activity are found in the "Introduction to the Supplementary Activities" in the first volume.

At the beginning of each unit an overview sheet summarizes the lessons in the regular curriculum, identifying the lessons for which supplementary activities are provided, and briefly describing the Supplementary Activities for that unit. The activities in each unit are arranged in the order in which the regular BECP lessons appear. Materials provided by SEDL for the supplementary activities are listed on the overview as well. Other materials required are listed in the lesson, along with the procedural instructions for the activity. An example of an overview sheet follows in Figure 1.

The checklist at the beginning of each unit provides a space for the teacher to indicate when a child fails to meet the objective of a lesson in the regular curriculum. The first column of the checklist is for the child's name; the succeeding columns list the four training areas and provide a block for the four regular lessons in each area. A shaded column means that a supplementary activity is included for that lesson. By checking the appropriate box on the checklist, the teacher can determine the supplementary activity for that lesson. Figure 2 is an example of a Supplementary Activity.

Each Supplementary Activity is identified by the BECP, Level II Unit to which it relates, and by the lesson title and code from the regular curriculum (for example, Visual (a), or Ideas and Concepts (d)). The purpose of each lesson is stated in terms of the task which it is designed to teach, rather than the category of the child's disability. For example, a purpose will be stated as "FOR THE CHILD WHO HAS DIFFICULTY DRAWING A SQUARE," rather than "FOR THE CHILD WHO HAS VISUAL-MOTOR DEFICITS."

VISUAL	AUDITORY	MOTOR	IDEAS & CONCEPTS
*(a) Constancy: Matching Colors (Sp) Give the child a tray of 9 classroom objects of 3 colors (orange, green and purple)/Show him a color card (orange, green, purple)/Tell him to select an object of the same color as the card. The child will select from the tray an object of the same color as the card shown to him. *(b) Constancy: Matching Colors (Sp) Give the child a picture of a classroom object and 3 crayons (red, yellow and blue)/Show him a color card (red, yellow or blue)/Tell him to match his picture with the crayon of the same color as the card. The child will mark his picture with the same color as that of the card shown to him. Materials: 9 colored sheets/split master of classroom objects (c) Constancy: Color Lotto (Sp) Give the child 6 markers in 6 colors and a color lotto card in 4 colors/Show him a color card of one of the 6 colors/Tell him to place his markers on his lotto card spaces of the same color. When shown a color card of each of the colors, the child will correctly match at least 2 of the 4 colors on his card. Materials: 9 colored sheets/6 colored cards (orange, purple, green, red, yellow, blue)/5 sheets (2 copies of 1 sheet, 3 copies of 1 sheet) of color lotto cards	(a) Identification: Names of Classmates and Self (Sp) Tell the child to say the names of 2 classmates. The child will say the names of at least 2 children in the group. *(b) Identification: Walking to Music, On-Off (Sp) Tell the child to walk when he hears music and to stop walking when the music stops/Play and stop the music several times. The child will walk when the music is on and stop when the music is off, at least 2 times each. Materials: Record, "Identification: Walking to Music, Caminando Así" (c) Identification: Clapping to Music, On-Off (Sp) Tell the child to clap when he hears music and to stop clapping when the music stops/Play and stop the music several times. The child will clap when the music is on and stop when the music is off, at least 2 times each. Materials: Record, "Identification: Clapping to Music, Vamos a Aplaudir" (d) Identification: Classroom Sounds (Sp) Place 3 sound-producing objects behind a screen, and place duplicates in front of the child/Tell him to listen as you make a sound and to point to the object like the one used to make the sound/Make a sound behind the screen. The child will point to the object like the one used to make the sound. sound.	(a) Gross Motor: Fun with Playground Equipment (Sp) *(b) Fine Motor: Manipulating Clay (Sp) *(c) Gross Motor: Walking Board Activity (Sp) Demonstrate how to walk on a walking board/Tell the child to walk on the walking board. The child will walk on the walking board.	(a) Association: Classroom Objects and Areas (Sp) Give the child a brown bag containing 5 classroom objects/Have him select 2 of the objects without looking into the bag/Tell him to point to the place in the room where each kind of object belongs. The child will point to the place where each of the 2 objects is kept. *(b) Categorizing: Classroom Objects and Areas (Sp) Show the child 6 objects from different areas of the classroom/Tell him to select those objects belonging to the area you describe/Describe an area of the classroom. The child will select the 3 classroom objects that belong in the classroom area described. (c) Recognition: Activities and Classroom Areas (Sp) Tell the child to listen as you describe an activity performed in a specific classroom area/Describe the activity/Tell the child to point to the area where the described activity takes place.

SUPPLEMENTARY ACTIVITIES

1. Orientation: Demonstration of Colored Inch Cubes (Matching inch cubes to a pattern) (Day 4) For the child who is unable to match inch cubes to a pattern. 2. Constancy: Matching Colors (Vis. a, b) For the child who is unable to match colors.	3. Identification: Walking to Music, On-Off (Aud. b) To help the child who has difficulty with sound awareness.	4. Fine Motor: Manipulating Clay (Mtr. b) To help the child who has difficulty with fine motor coordination. 5. Gross Motor: Walking Board Activity (Mtr. c) For the child who has difficulty with walking board activities.	6. Categorizing: Classroom Objects and Areas (I. & C. b) To help the child who has difficulty categorizing classroom objects and areas.

Figure 1. Example of an Overview Sheet

TO HELP THE CHILD WHO HAS DIFFICULTY NAMING AND MOVING BODY PARTS

Activity	Materials	Procedure
Memory: Identifying Body Parts (Vis. a) 2 children	For each child: (y) Large picture of boy or girl--one for each child [from BECP, II-2-Visual (d)] 10 markers (construction paper, bottle caps, etc.)	1. Give each child a picture of either a boy or a girl and 10 markers. 2. Tell the children that as you name a body part, they are to find it on their own picture and place a marker on it. Point out that there are two eyes and two ears. 3. Check each child's response as you name each body part. 4. When all the parts have been named, tell each child to remove his markers, one at a time, and name the body part underneath that marker.

Figure 2. Example of a Supplementary Activity

Materials required for the lesson are specified in detail. Coding for the materials corresponds to that used in the regular BECP. Any necessary special instructions are included. For instance, seating arrangement may be specified if it affects the presentation of the lesson. The procedure for the teacher to follow is written in sequential steps. This facilitates not only the teacher's presentation of the lesson, but her ability to identify the step at which a child may have difficulty grasping the concept or skill.

All the Supplementary Activities designed by the Ability Development Project were written to be meaningful to the classroom teacher. Their central hypothesis, which is communicated to the teacher in each activity, is that the classroom teacher can effectively work with handicapped children, given the proper materials and information in meaningful terms.

Materials and Activities for Teachers

The materials and activities designed by the ADP for the use of teachers provide the teachers with meaningful information for working with handicapped children in the preschool classroom. The Observational Checklists for Referral (OCR), How To Fill Your Toy Shelves Without Emptying Your Pocketbook, and Working with Parents of Handicapped Children, are characterized by a non-categorical approach to handicapping conditions in young children, a non-technical vocabulary aimed at teachers with a wide range of expertise, and a concrete, practical approach to the subject.

Observational Checklists for Referral. The Observational Checklists for Referral (OCR) was designed by Project staff to assist the classroom teacher in identifying problems in children through observation of the children. The initial design test of the checklists was with non-Project teachers at Allen Center. The results of the design test suggested that some training was needed to help the teachers know what signs of problems in young children to look for and to help the teachers develop observation techniques. The teachers who participated in the first design test were also very interested in improving their management techniques in classrooms having children with problems. In order to meet the teachers' needs for instruction and to satisfy their interests, a manual was prepared to accompany the OCR.

The OCR Manual includes instructions for completing the checklists, a general discussion of each checklist and the problem area, and a list of sources tor referral, information, and services. A General Checklist is provided for the teacher to complete on every child in the class. Children identified on the General Checklist are also administered the Specific Checklist(s) that corresponds to the problem area identified by the general item(s) that was checked. Specific Checklists are provided for problems in health, vision, hearing, speech, motor skills, and social/emotional development. The checklist items are written in non-technical, concrete terms and describe behaviors that may signify problems.

Following the instructions is a general discussion of each specific checklist and the problem area it is designed to identify. Each section begins with a discussion of problems in each of the specific areas and explains how these problems can affect the child's ability to learn. A description of the common behavioral signs of such problems follows. Techniques of observation are built into each discussion of the signs the teacher is to look for. Thus, observational skills are presented in practical terms. The next consideration is where and to whom the child should be referred if he shows signs of problems. This section tskes into account the fact that some services may be more readily available than others and discusses various strategies for making referrals snd locating services. Finally, some practical techniques for dealing with a child with a particular problem in the classroom are presented. These suggestions follow up on the earlier section of how these problems affect learning.

The final section of the OCR Manual lists various organizations which provide information and services. The list includes general sources, such as State departments of education and also organizations which deal with

specific problems such as the National Cystic Fibrosis Foundation. The complete addresses of the various organizations and a brief description of their focus and purpose are also included.

The manual and checklists were subjected to several cycles of design test and revision. They were reviewed by an external consultant, an expert in early childhood education for the handicapped and in teacher training for this field, and by a group of Day Care teachers attending a child development course at Austin Community College. They were then design-tested at Canterbury Center. The teachers read the manual, completed the checklists on the children, and provided feedback for revision. Following the revisions, a similar design test was conducted at Allen and Riverside Centers.

Responses from the consultant, the teacher-reviewers, and the Project teachers were largely favorable. The teachers cited the clarity and simplicity of the manual as positive features. Project teachers were stimulated to ask many questions of Project staff about problems in their own students.

Revisions based on consultant review applied mainly to the checklists themselves and are discussed in the section on "Identification Instruments." There were suggestions for simplification of wording in the manual and for emphasizing identification rather than diagnosis. The teacher-reviewers suggested that the discussions more closely parallel the checklists and that more information on classroom management be included. Experiences of the Project teachers revealed the need to address teacher expectations and to point out that a "problem" is present only when the child's behavior is clearly different from that of other children his own age. Extensive revisions were made encompassing all suggestions and design test results.

The consultant found the organization and content of the manual adequate and felt that the instrument as a whole had widespread applicability. Suggestions for revision were made by the consultant and the teacher-reviewers, though the Project teachers were more uncritically positive.

How To Fill Your Toy Shelves Without Emptying Your Pocketbook.

The manual, How to Fill Your Toy Shelves Without Emptying Your Pocketbook: 70 Inexpensive Things To Do or Make, was developed in response to the need for an inexpensive way to increase the number of instructional materials available to Project teachers. The parents also needed ways of making toys at home, since economic limitations often prevented them from buying toys. From a pool of ideas accumulated by the SEDL staff, items were selected which were relatively easy to construct, could be made from readily available materials, and could be used to teach relevant skills and concepts.

After a large number of items to be constructed were compiled and accompanying instructions and drawings for each prepared, an in-house review was conducted. Formative evaluation forms for each activity were developed. After necessary revisions were made, a workshop was conducted to design-test the instructions. All Project teachers were invited to the workshop; each was asked to bring a parent volunteer. The one-day workshop was attended by five members of Project and SEDL staff and 13 Child, Inc., staff members and/or parent volunteers.

The room for the workshop was set up so that all the painting could be done in one area and all the woodworking in another. The materials needed to construct the equipment were separated from the work areas. Several tables were placed in the center of the room to form a large work area. Each participant was assigned four pieces of instructional equipment to make and was provided with 1) a drawing of the item, 2) a list of the requisite materials, and 3) detailed instructions for its construction.

Following construction of each item, a staff member discussed the item's construction with the teacher or parent and completed the formative evaluation sheet. Any difficulties encountered in understanding or following the directions, or in understanding the illustrations were noted. Each participant was asked to respond to a questionnaire concerning the construction of the item, its usefulness in the classroom, and the likelihood that it could be made and used by parents at home.

Participants reactions to the workshop as a whole were also obtained. Everyone who responded to the questionnaire approved of both the equipment that was constructed and the idea of making it in a workshop setting. Examples of the participants' comments follow:

> "I can see how these (sound boxes) would help my daughter. She has a hearing problem"
>
> "I will definitely make this at home."
>
> "I can see that the teacher can make different uses of the same materials."

Both parents and teachers were stimulated to think of activities other than the ones suggested for the materials. They also thought of other things that could be made with the same materials. The instructions and drawings were revised on the basis of the data received from the workshop participants and the observations made by the Project staff.

Description. The manual is divided into two main parts. First there are general instructions and guidelines for setting up a workshop, collecting materials and using the items with children. Second are detailed directions for making and using each item. The items are grouped under seven headings: Helpful Items, Visual, Auditory, Touch and Smell, Fine Motor, Gross Motor, and Language and Concept Development. Item

grouping was based on the major instructional purpose of the item. The introduction emphasizes that some items can be used to teach a variety of skills. This is also re-emphasized by the inclusion of multi-purpose statements accompanying the suggested activities for each item.

Most items are accompanied by drawings which illustrate the equipment to be constructed with many drawings illustrating the sequence of construction as well. Following the drawing is a list of the required materials and step-by-step directions for making the item. The directions are detailed and are designed to be easy to follow. No particular skills are required for constructing the items, although experience in woodworking or in arts and crafts would be useful for a few items. Following the directions are statements which enumerate each of the purposes for which the item can be used to teach children. For example, one item may be used three ways: to develop fine motor coordination, visual-motor dexterity, and social skills.

Following the directions for making the item is a list of suggested activities describing ways to use the equipment to teach basic skills or to reinforce skills children have already acquired. For some items, suggestions are made on how to vary the activity for more interest, and questions are provided to help the teacher encourage language development. Finally, there is an estimate of the time required to construct the item.

Working with Parents of Handicapped Children. The manual Working with Parents of Handicapped Children, is designed to 1) increase a teacher's awareness of the feelings of the parents of children who have a disability, and 2) increase her effectiveness in working with these parents. The manual, written in a clear and straightforward style, emphasizes the need for a working partnership between the parents and the

teacher to provide the greatest opportunity for the child to learn and progress to his maximum ability. It focuses on ways to communicate with parents about such difficult subjects as testing, referrals for services, and the parents' reactions to their child's learning difficulty.

In addition to discussions concerning the parents' reactions to and feelings about a child with a disability, the manual offers suggestions for preparing for a meeting with the parents, helping the parent effectively observe in the classroom, and providing home activities which will benefit both the parent and the child. The manual considers possible ways to handle difficult situations which may arise when a parent and teacher are trying to work together, emphasizing the importance of remembering that the goal of establishing such a partnership is to provide the best possible learning experiences for the child. The manual a so contains brief suggestions for dealing with children with different kinds of disabilities.

Early versions of the manual were reviewed by the Project and SEDL staff from other divisions, and formative data were obtained. On the basis of this information, the manual was revised and submitted to four external consultants, all professionals in the field of parent counseling, teaching, and teacher training, with emphasis on the preschool years. One of the consultants was also a parent of a handicapped child. The questionnaire submitted to the consultants requested that they respond to detailed questions concerning the content of the manual, the affective tone of the manual (to determine if there was any stereotyping), and the style and format.

The response from the consultants was overwhelmingly positive. All saw the manual as a cont·ibution to a field where little practical information was available to teachers. The criticisms of the manual, which each

consultant stated were minimal, seemed to reflect the professional background of the consultant. For example, those consultants involved in teaching felt the role of the parent might be overemphasized, while the consultant who is a parent mentioned this as one of the strengths of the msnual. In the opinion of the consultants, the manual is appropriate not only for the preschool teachers for whom it was designed, but also for any teacher who has handicapped children in her classroom.

The aspects of the manual which received the most positive notice were the concreteness of the approach, the emphasis on the need for a partnership between the parent and teacher, the stress placed on using the child's behavior instead of labels as the basis for communication between the teacher and the parents, and the information provided for the teacher concerning the ways parents may feel about having a child who has a disability. Below are several quotations from the consultant's reviews:

> "The manual reads well and is direct and parsimonious in word choice."
>
> "I feel that it will be a valuable guide for the audience for which it is written."
>
> "The manual dispels anxieties which may have prevented teachers from working with parents of handicapped children."
>
> "The most positive aspects of the handbook are the emphasis on 'listening,' the absence of a categorization and labeling of children, the timely suggestions on understanding and empathizing with parents, and the varied ways by which teachers can help the parent set realistic goals for his child."
>
> "Parents are depicted positively and as supportive personnel to the teacher...however, additional examples would strengthen some of the sections."
>
> "The manual seemed to be devoid of racial and cultural stereotype. However, there threatened to be a 'parent bias' that seemed to permeate the manual at times."
>
> "The parents are characterized as diverse human beings who generally want the best for their child."

"Handicapped children are presented first as children and secondly as handicapped. This was an excellent characterization."

"This is perhaps the 'strongest suit' of the manual. Children are neither categorized nor labeled as retarded, trainable, brain injured, etc. ..."

The goal of the Ability Development Project was to develop appropriate materials for teachers to aid them in working with handicapped children. The fact that there were handicapped children in these classrooms made the need for additional training and materials all the more critical. The manuals and materials developed by Project staff represent an effort to meet some of these needs.

Activities With Parents

Although parents are a child's first teachers and the most significant persons in a child's world, schools frequently do not attempt to establish positive lines of communication between the parents and the school. The Ability Development Project staff were aware of the importance of this communication channel, not only as a means to increase the responsiveness of the school to the community but also as a means of gaining valuable information about the individual child that can assist the teacher in planning an educational program most relevant to the child's needs. The Project explored two strategies for working with parents: 1) an individual approach focused on the exchange of information between parent and teacher, and 2) a group approach focused on increasing the involvement of all parents in the school environment.

Individual Activities: Parent Interview. One goal of the Project was to develop a method of interviewing parents that 1) could be administered by a teacher without formal training in interviewing techniques; 2) could be conducted in a short period of time; 3) focused on the positive

attributes of the child; 4) provided information about demographic characteristics, at-home competencies, interpersonal relationships, play activities, and potential problems of the child as perceived by the parent; and 5) established positive patterns of communication between the family and the school.

A review of the literature indicated that no instruments were currently available that met these specified needs. Therefore, a major effort was expended to develop a suitable instrument. A total of five versions of a Parent Interview were developed and revised on the basis of feedback from internal review, consultant review, and data from 90 parents of children enrolled in Project classes at Canterbury, Allen, and Riverside Centers. A complete discussion of these procedures and outcomes is found in Appendix L, along with a sample of the Parent Interview itself.

Responses from consultants were generally positive. Suggestions for revision focused on the interview procedures rather than the content. Design-testing and revisions focused on trials of procedures and format. Item content was also considered. Though the number of parents interviewed with each version was small, it appeared that the parents responded positively to the interview situation regardless of the procedures used. They found the items positive in tone and appeared to answer questions freely. Teachers also found the use of the interview informative, though one thought it was too long.

Results of the interviews indicated that all parents saw their children as responsible, helpful children who cooperated well within the framework of the family. There were few differences between parents of target and non-target children. Target children appeared to have more trouble relating to siblings and peers than did non-target children. The families

of target children were more likely to be perceived by their parents as having negative personality characteristics and were occasionally expected to have trouble in school. These findings support the conclusions of Mercer (1973) and others, who suggest that some disabilities are not apparent until the child enters the more demanding atmosphere of school.

One purpose of the Parent Interview was to identify problems as perceived by the child's parents. The various interview forms employed in the Project, however, did not consistently differentiate between target and non-target children. More extensive work is still needed to develop a product which meets the criteria stated earlier in this section.

Group Activities: Workshops. Parent workshops are one means of developing a sense of community between parents and teachers. A program of parental and community participation should reduce the discontinuity between home and school by effecting significant changes in parent attitudes and behavior and in the attitudes and behavior of school personnel. Workshops provide a medium for productive interactions between parents, teachers, and other resource people. These interactions can lead to increased parent involvement in and understanding of the educational program. The Ability Development Project conducted several kinds of parent workshops with the specific purpose of attracting the parents of target children to become involved in the education of their children. No attempt was made to single these parents out, but their attendance at meetings and workshops was encouraged and observed.

A Parent Workshop Survey (Appendix M) was presented at a regular meeting of the Canterbury Center parents. This was the initial formal contact between parents and Project staff, and the goals and conduct of the Bilingual Early Childhood Program were presented and explained. The

interests and concerns of the parents were solicited for the planning of workshops. In their responses to the survey, the parents expressed interest in 1) building an Adventure Playground at Canterbury, 2) cultural enrichment programs, and 3) methods and techniques to promote parent-child interaction. Project staff planned several activities to respond to these interests.

The Adventure Playground was built in April. With assistance from Project staff, the parents collected discarded and donated materials and constructed nine new pieces of playground equipment and 10 painted tire flowerpots. They also arranged publicity for the building of the playground. At another meeting, parents and Project staff attended a meeting of the Mexican-American Chamber of Commerce. Two subsequent meetings became a cultural workshop in which Spanish songs, poems, stories, and finger plays were presented and discussed. In addition to assisting with these workshops, Project staff also made several contacts for the parents to follow up in planning other workshops.

During the time that the parent workshops were conducted, attendance at Canterbury Center Parent Meetings increased steadily. Attendance of parents of children in the BECP curriculum increased more markedly. Parents of target children also increased their attendance, but the workshops did not succeed in attracting the majority of parents of target children. Table 1 summarizes the attendance data.

Though most of the parent activities were conducted at Canterbury Center where the experimental classes were located, one workshop was conducted for parents from all Project classrooms. This was the Materials Workshop previously described. This workshop was planned in response to the need for additional learning materials in the Model Cities Day Care

Centers. Parents from each center were included to give them information on making inexpensive toys for their children at home. Response to this workshop was very positive with several of the parents planning to make similar materials at home. This workshop is described in detail in the section on "Materials and Activities for Teachers."

TABLE 1

CANTERBURY CENTER PARENT MEETING ATTENDANCE

Meeting Date	Total	Project Parents	Target Parents
October 4	16	1	1
November 20	13	4	2
January 29 (initial contact)	24	6	4
March 5 (workshop)	20	7	2
March 26 (workshop)	16	5	3
April 6 (playground)	30	8	4

Though the parent workshops did not focus specifically on the needs or problems of the handicapped child, they did appear to provide an opportunity for parents, teachers and staff to communicate about the school, the growth and development of the children, and each of their roles in this process. The workshops also provided information, cultural enrichment, entertainment, and an opportunity to create. These benefits were very general, however, and effective work with the parents of handicapped children requires individual attention to the strengths and weaknesses of each child and the needs of his parents. The Parent Interview, still in a formative state, would appear to meet part of this requirement.

RESULTS (FINDINGS)

Sample

The original Project sample consisted of 99 four-year-old Mexican-American children enrolled in five classrooms at three Child, Inc., Day Care Centers (Canterbury, Allen and Riverside) in Austin, Texas. Of the 99 children, 29 out of 40 identified were selected as target children according to their test results and the clinical judgment of Project staff. At the end of the project 24 target children were still enrolled, and two of the 24 had been untestable with standard tests. Of the 59 remaining children in the sample, 22 were selected as a comparison group (non-target). In selecting the comparison sample, an attempt was made to equate these children with the target children with respect to the variables of language preference, age, and sex.

There were 24 males and 20 females in the final sample. In Group 1 (Target- Intervention), there were seven males and three females. In Group 2 (Target- No intervention), there were five males and seven females, and in Group 3 (non-target), there were 12 males and 10 females. Table 2 shows distribution of children in sites and by grouping.

TABLE 2

DISTRIBUTION OF CHILDREN
BY TEACHER AND SCHOOL

School / Teacher / Group	Canterbury		Allen		Riverside
	1	2	3	4	5
1 Intervention	4	6			
2 No Intervention	1	1	2	3	5
3 Non-Target	6	4	5	5	2
Total	11	11	7	8	7

Children in the Intervention Group (Group 1) were all at Canterbury; those in the No Intervention Group (Group 2) were mainly at Allen and Riverside; the non-target children (Group 3) were located in all three centers.

Findings

The BECP, Level II curriculum, developed by SEDL, was used in all five classrooms. The classes at Allen and Canterbury, however, only completed four of the 25 units, and the Riverside class completed only seven units. The Project staff also developed Supplementary Activities for 20 units for use by target children. Activities from the early units were design-tested with children in Group 1 only between mid-January and mid-June.

The S/ELPS

The language preference of all children in the final sample, as determined by the S/ELPS (pre- and posttests), is presented below in Table 3.

TABLE 3

THE S/ELPS RESULTS

	Target				Non-Target			
Group / Test / Language	Moderate 1 Intervention		No Inter-2 tion		3		Total	
	pre	post	pre	post	pre	post	pre	post
English	1	4	4	6	8	8	13	18
Bilingual	4	3	2	1	9	9	15	13
Spanish	4	3	1	1	3	1	8	5
Total	9	10	7	8	20	18	36	36

There were eight children who failed to receive the pretest and eight who failed to receive the posttest. Of the total sample, only two subjects failed to receive either the pre- or the posttest administration. Because of this substantial amount of missing data, no statistical analyses were performed. A trend in the change from pre- to posttest in language preference, however, may be noted and is presented in Table 4.

TABLE 4

CHANGES IN LANGUAGE PREFERENCE ON THE S/ELPS FROM PRE- TO POSTTEST

pre / post	Group 1			Group 2			Group 3			Total		
	E	B	S	E	B	S	E	B	S	E	B	S
E	1	2		3	1		6	1		10	4	
B		2	1				1	6	1	1	8	2
S			3		1				1		1	4

As measured by the S/ELPS, the majority of children generally preferred the same language on both the pretest and the posttest. There were exceptions to this tendency, however. In Group 1 (Target- Intervention), two were judged bilingual on the pretest but were judged to prefer English on the posttest. In Group 2 (Target- No intervention), two were judged to be bilingual on the pretest and, of these, one was judged to prefer English on the posttest while the other was judged to prefer Spanish on the posttest. In Group 3, one child was judged to prefer English and one to prefer Spanish on the pretest. They were both judged, however, to be bilingual on the

posttest. In this same group, one subject was judged bilingual on the pretest and was judged to prefer English on the posttest. Of the total group, one child was judged to prefer English and two were judged to prefer Spanish on the pretest. All three of these children, however, were judged to be bilingual on the posttest. Five of the total group were judged to be bilingual on the pretest. Of these five, four were judged as preferring English and one as preferring Spanish on the posttest. No absolute conclusions can be drawn with regard to the direction of change. The data, however, indicate that language preference changes occur gradually and tend to change from Spanish to bilingual and from bilingual to English. No child's preference changed from English directly to Spanish or vice versa.

The Observational Checklists for Referral (OCR)

All children in the sample received the OCR. The problems perceived by the teachers in each group are presented below in Table 5.

TABLE 5

RESULTS OF THE OCR

		AREAS						
Subject Group		Health	Visual	Auditory	Speech	Emotional/ Social	Motor	Total
Target Intervention	G1	2	0	3	5	4	0	14
Target Non-Intervention	G2	0	0	3	4	3	0	10
Non-Target Comparison	G3	2	0	0	1	2	0	5
Total		4	0	6	10	9	0	29
Target	G1 & G2	2	0	6	9	7	0	24
Non-Target	G3	2	0	0	1	2	0	5

The first three rows of the table contain the number of problems checked for each of the three groups. Group 1 children were checked a total of 14 times. Group 2 children were checked a total of 10 times; and Group 3 children were checked a total of five times. An x^2 analysis of the three groups revealed significant differences (x^2=15.10, df=2, $p<0.01$). When target and non-target groups were compared, an x^2 analysis also revealed significant differences (x^2=12.45, df=1, $p<0.01$). Thus, both analyses indicated significant differences in the numbers of problems (as perceived by the teacher) between (a) target and non-target groups, and (b) among the three groups. Children in Group 1 were checked more frequently than were children in the other two groups. Children in Group 2 were checked more frequently than were children in Group 3. The target group children were checked more frequently than were the non-target group children.

Children were checked as having problems in the Speech area most frequently (N = 10). Children were checked as having problems in the Social/Emotional area nine times, in the Auditory area six times, in the Health area four times, and no children in the final sample were checked as having problems in the Visual or Motor areas.

Of the target children in Group 1, five were checked as having one problem, one as having two problems, one as having three problems, and one as having four problems. In Group 2, two were checked as having one problem and four were checked as having two problems. Of the children in Group 3, all five were checked as having only one problem.

The Criterion-Referenced Test

The Criterion-Referenced Test (CRT) was developed for the first 15 units of the Bilingual Early Childhood Level II curriculum for the purposes of this Project. The CRT is composed of 23 items which yield four subtest

scores (Visual, Auditory, Motor, and Ideas and Concepts) and a total score. This instrument was administered on a pre-posttest basis, with the interval between testing varying between five and six months. The language in which the test items were administered was the child's preferred language according to the S/ELPS results.

The differences between the pretest and posttest scores on each of the subtests and on the total score were compared utilizing a t-test for correlated means. Tables 6, 7, 8, and 9 following, summarize the results by the total sample and for each of the three subgroups separately.

Table 6 presents the results for the total sample. All of the t-values were significant. This indicates that the children scored significantly higher on the posttest than on the pretest on all the subtests as well as on the total score. This may be attributed to the effects of the Level II curriculum, to maturational factors, or to both.

Table 7 presents the results on Group 1 (Target- Intervention) All the t-values were significant--for all four subtests and for the total score. Thus, target children who received intervention treatment scored significantly higher on the posttest than on the pretest on all the subtests as well as on the total test.

Table 8 presents the results for Group 2 (Target- No intervention). All the t-values were non-significant except for that of the total score. This indicates a difference in the amount of gain between the two groups. This comparison will be presented later, utilizing the Analysis of Covariance.

Table 9 presents the results of the t-test on the difference between the pretest and the posttest scores for Group 3 (non-target). All the t-values were significant except for that of the Motor area.

TABLE 6

CRITERION-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST AND POSTTEST ADMINISTRATIONS

TOTAL GROUP

N = 44

Score	Pretest $\bar{X}_1$	Posttest $\bar{X}_2$	S_x	t *	p
Total	8.98	13.25	0.61	6.97	<0.005
Total Visual	5.32	7.11	0.31	5.80	<0.005
Total Auditory	0.61	1.18	0.14	3.97	<0.005
Total Motor	1.66	2.07	0.15	2.67	<0.005
Ideas & Concepts	1.39	2.89	0.27	5.46	<0.005

*: df=43

TABLE 7

CRITERION-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST
AND POSTTEST ADMINISTRATIONS

G_1 (TARGET- INTERVENTION GROUP)

N = 10

Score	Pretest $\bar{X}_1$	Posttest $\bar{X}_2$	S_x	t *	p
Total	6.30	12.30	1.23	4.88	<0.005
Total Visual	3.90	6.40	0.82	3.05	<0.01
Total Auditory	0.60	1.30	0.34	2.09	<0.05
Total Motor	1.20	2.40	0.33	3.68	<0.005
Ideas & Concepts	0.60	2.20	0.50	3.21	<0.01

*: df=9

TABLE 8

CRITERION-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST AND POSTTEST ADMINISTRATIONS

G_2 (TARGET- NO INTERVENTION)

N = 12

Score	Pretest $\bar{X}_1$	Posttest $\bar{X}_2$	S_x	t *	p
Total	7.67	10.33	1.47	1.81	<0.05
Total Visual	4.75	6.00	0.75	1.67	N.S.
Total Auditory	0.33	0.67	0.19	1.77	N.S.
Total Motor	1.50	1.58	0.29	0.29	N.S.
Ideas & Concepts	1.08	2.08	0.64	1.56	N.S.

*: df=11

TABLE 9

CRITERION-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST
AND POSTTEST ADMINISTRATIONS

G_3 (NON-TARGET GROUP)

N = 22

Score	Pretest $\bar{X}_1$	Posttest $\bar{X}_2$	S_x	t *	p
Total	10.91	15.27	0.70	6.23	<0.005
Total Visual	6.27	8.05	0.29	6.19	<0.005
Total Auditory	0.77	1.41	0.22	2.85	<0.005
Total Motor	1.96	2.18	0.19	1.23	N.S.
Ideas & Concepts	1.91	3.64	0.37	4.70	<0.005

*: df=21

Generally, all the groups scored higher on the posttest than on the pretest though the differences on subtest scores were not significant for Group 2 (Target- No intervention), or for the Motor subtest for Group 3 (non-target). This may be related to the nature of the assistance provided to Group 1 by the Supplementary Materials, developed by the Ability Development Project.

The results from the t-test analyses do represent gains on the CRT for each group. In order to determine whether any subgroup gained from pretest to posttest to a significantly greater extent than did other groups, an analysis of covariance was performed upon the data. The following findings represent the comparison of the posttest results for different combinations of pairs of two groups, using the pretest scores as the covariate. The results are presented in Tables 10, 11, and 12. In all of these tables, the first two columns contain the pretest mean ($\bar{X}_1$) and standard deviation (S_1). The second two columns contain the posttest mean ($\bar{X}_2$) and standard deviation (S_2). The fifth column contains the adjusted mean ($\bar{Y}$) by assuming a common slope. Column six contains the F-ratio and the probability value. For each subtest or for the total score, there are two rows. The first row represents the first group and the second row represents the second group for that particular comparison.

Table 10 contains the results of the analysis of covariance for the non-target children (N = 22) and for all target children (N = 22) regardless of whether or not intervention occurred. The non-target children, on the average, made consistently greater gains than did the target children. All except two of the F-ratios were significant. There were no significant differences between the two groups in the amount of gain in the Motor or the Auditory area. For the remaining subtests, and for the total score, the

differences in the posttest means were significant after statistically holding constant any differences between the pretest means of the two groups.

TABLE 10

CRITERION-REFERENCED MEASURES

ANALYSIS OF COVARIANCE
G_3 VS. $G_1 + G_2$

(NON-TARGET VS. TARGET)

$N_I = 22$ $N_{II} = 22$

Score		pretest		posttest		adj.	F & p*
		$\bar{X}_1$	S_1	$\bar{X}_1$	S_1	$M(\bar{Y})$	
Total	I	10.91	3.18	15.27	2.47	14.91	F=8.36
	II	7.05	3.05	11.23	3.75	11.59	p<0.01
Total Visual	I	6.27	1.57	8.05	0.77	7.91	F=8.80
	II	4.36	1.69	6.18	1.97	6.32	p<0.01
Total Auditory	I	0.77	0.79	1.41	0.72	1.38	F=2.93
	II	0.45	0.58	0.95	0.77	0.98	N.S.
Total Motor	I	1.95	0.56	2.18	0.78	2.16	F=0.48
	II	1.36	0.77	1.95	0.77	1.98	N.S.
Ideas & Concepts	I	1.91	1.24	3.64	1.75	3.48	F=4.49
	II	0.86	0.97	2.14	1.55	2.30	p<0.05

*: df=1,41

An analysis of covariance was also performed between Group 1 and Group 2 (Target- Intervention vs. No intervention). The results are presented in Table 11. The results indicated that in one area--Motor, Group 1 gained significantly more on the average than did Group 2. The results for the other three subtests and for the total score did not significantly differentiate the two groups. Thus, Group 1 had a significantly higher mean on the Motor subtest on the posttest than did Group 2, holding constant any differences in the pretest scores of the two groups.

TABLE 11

CRITERION-REFERENCED MEASURES

ANALYSIS OF COVARIANCE
G_1 VS. G_2

(INTERVENTION VS. NON-INTERVENTION)

$N_I = 10$ $N_{II} = 12$

Score		pretest		posttest		adj.	F & p*
		$\bar{X}_1$	S_1	$\bar{X}_1$	S_1	$M(\bar{Y})$	
Total	I	6.30	3.52	12.30	2.53	12.42	F=1.65
	II	7.67	2.43	10.33	4.33	10.24	N.S.
Total Visual	I	3.90	2.12	6.40	1.20	6.43	F=0.25
	II	4.75	1.09	6.00	2.42	5.97	N.S.
Total Auditory	I	0.60	0.66	1.30	0.78	1.27	F=3.12
	II	0.33	0.47	0.67	0.62	0.69	N.S.
Total Motor	I	1.20	0.87	2.40	0.66	2.41	F=7.47
	II	1.50	0.65	1.58	0.64	1.58	$p<0.05$
Ideas & Concepts	I	0.60	0.66	2.20	1.47	2.17	F=0.01
	II	1.08	1.12	2.08	1.61	2.11	N.S.

*: df=1,19

Table 12 summarizes the results of the analysis of covariance for Group 1 vs. Group 3 (Target group--Intervention vs. non-target group). The non-target group scored consistently higher on the posttest than did the Target-Intervention group in all areas except the Motor area. Only the F-ratio, however, for the Visual area was significant. That is, the non-target group had a significantly higher mean on the posttest in the Visual area than did the Target-Intervention Group 1, holding constant any initial pretest differences between the two groups.

TABLE 12

CRITERION-REFERENCED MEASURES

ANALYSIS OF COVARIANCE
G_1 VS. G_3

(EXPERIMENTAL VS. NON-TARGET)

$N_I = 10$ $N_{II} = 22$

Score		pretest		posttest		adj.	F & p*
		$\bar{X}_1$	S_1	$\bar{X}_1$	S_1	$M(\bar{Y})$	
Total	I	6.30	3.52	12.30	2.53	13.13	F=2.50
	II	10.91	3.18	15.27	2.47	14.90	N.S.
Total Visual	I	3.90	2.12	6.40	1.20	6.63	F=9.68
	II	6.27	1.57	8.05	0.77	7.94	$p<0.01$
Total Auditory	I	0.60	0.66	1.30	0.78	1.31	F=0.11
	II	0.77	0.79	1.41	0.72	1.41	N.S.
Total Motor	I	1.20	0.87	2.40	0.66	2.52	F=1.44
	II	1.96	0.56	2.18	0.78	2.13	N.S.
Ideas & Concepts	I	0.60	0.66	2.20	1.47	2.70	F=1.01
	II	1.91	1.24	3.64	1.75	3.41	N.S.

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*: df=1,29

The CRT items were next examined in terms of the percentage of various groups of pupils who passed each item on the pretest and on the posttest. The percentage of children described as "target" and as "non-target" who passed some items on the pretest item were virtually the same. This was true for Item 1 (Identifying Objects), Item 2b (Color Matching), Item 4b (Matching Size), and for Item 9 (Figure-Ground Discrimination). It should be recalled, however, that all the children had been in school from four to 18 months at the inception of the program and had therefore probably learned some skills that enabled them to pass some items of the pretest. On three of these items, the percentage gain on the posttest was greater for target than for non-target children. Five items were passed by more than 75% of the children on the pretest in both target and non-target groups. These were Items 1 (Identifying Objects), 2b (Color Matching), 3 (Matching Shapes), 4b (Matching Size), and 9 (Figure-Ground Discrimination). In addition, mastery was demonstrated on the pretest by non-target children only for Item 7 (Memory for Pictures).

On the posttest, 11 items were passed by more than 75% of target children and seven items by the target children (both intervention and non-intervention). Those items where mastery was achieved by both target and non-target children were: Item 1 (Identifying Objects), Item 2b (Color Matching), Item 3 (Matching Shapes), Item 4a (Labeling Size), Item 4b (Matching Size), Item 7 (Memory for Pictures), and Item 9 (Figure-Ground Discrimination). In addition, only the non-target children demonstrated posttest mastery for Item 2a (Color Naming), Item 8 (Pegboard Design), Item 10 (Sound Discrimination), and Item 19 (Ideas and Concepts--Contrast). The CRT was developed over 15 units of the BECP, Level II curriculum, and four of the five Project classes completed only Units 1-4.

Thus, the children had performed some activities leading to mastery, but only children who had relatively few learning problems would have been able to continue learning on their own even though these Units 5-15 were not covered.

The performance of target children only was examined in an attempt to determine any differences on the posttest due to the intervention strategy. Three differences were observed. For three items, the target children who received the Supplementary Activities achieved mastery on the posttest, while those who received no Supplementary Activities failed to achieve mastery. The items were: Item 4a (Labeling Size), 10 (Sound Discrimination), and 21 (Eye-Hand Coordination). On this last item, the target children receiving the Supplementary Activities outperformed the non-target children on the posttest.

A summary of these results may be found in Table 13.

The Norm-Referenced Measures

The norm-referenced measure consisted of nine subtest items from standardized tests. This battery is described in the section on "Identification Instruments." These items were identified as being related to the instructional program and previously evaluated for language and/or cultural bias.

These items were administered to each child in his preferred language as indicated by the S/ELPS results. All of the items were administered on a pretest-posttest basis with the interval between testing being between five and six months. The raw scores were converted into age equivalence scores as provided in the appropriate test manuals. The difference between each child's mental age and his chronological age at the time he was tested was then calculated. A t-test for correlated means was performed on the difference between the pretest and posttest means expressed in terms of months.

TABLE 13

CRITERION-REFERENCED MEASURES

PERCENTAGE OF CHILDREN ACHIEVING MASTERY
ON PRETEST AND ON POSTTEST FOR EACH ITEM

Item 1

	Pre	Post
Non-Target	91%	95%
Target	90%	100%
Target--No Intervention	100%	100%
Target--Intervention	78%	100%
Total Sample	90%	98%

Item 2a

	Pre	Post
Non-Target	41%	82%
Target	10%	20%
Target--No Intervention	18%	36%
Target--Intervention	0%	0%
Total Sample	26%	52%

Item 2b

	Pre	Post
Non-Target	82%	91%
Target	80%	95%
Target--No Intervention	82%	91%
Target--Intervention	78%	100%
Total Sample	81%	93%

Item 3

	Pre	Post
Non-Target	91%	100%
Target	75%	90%
Target--No Intervention	64%	91%
Target--Intervention	89%	89%
Total Sample	83%	95%

Item 4a

	Pre	Post
Non-Target	68%	100%
Target	60%	85%
Target--No Intervention	64%	73%
Target--Intervention	56%	100%
Total Sample	64%	93%

Item 4b

	Pre	Post
Non-Target	91%	100%
Target	90%	95%
Target--No Intervention	82%	91%
Target--Intervention	100%	100%
Total Sample	90%	98%

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TABLE 13 (Cont'd)

CRITERION-REFERENCED MEASURES

PERCENTAGE OF CHILDREN ACHIEVING MASTERY
ON PRETEST AND ON POSTTEST FOR EACH ITEM

Item 5

	Pre	Post
Non-Target	9%	9%
Target	0%	15%
Target--No Intervention	0%	9%
Target--Intervention	0%	22%
Total Sample	5%	12%

Item 6

	Pre	Post
Non-Target	41%	55%
Target	0%	20%
Target--No Intervention	0%	18%
Target--Intervention	0%	22%
Total Sample	21%	38%

Item 7

	Pre	Post
Non-Target	95%	91%
Target	65%	80%
Target--No Intervention	64%	82%
Target--Intervention	67%	78%
Total Sample	81%	86%

Item 8

	Pre	Post
Non-Target	18%	77%
Target	5%	55%
Target--No Intervention	9%	64%
Target--Intervention	0%	44%
Total Sample	12%	67%

Item 9

	Pre	Post
Non-Target	91%	100%
Target	85%	100%
Target--No Intervention	91%	100%
Target--Intervention	78%	100%
Total Sample	88%	100%

Item 10

	Pre	Post
Non-Target	45%	77%
Target	25%	65%
Target--No Intervention	18%	45%
Target--Intervention	33%	89%
Total Sample	36%	71%

TABLE 13 (Cont'd)

CRITERION-REFERENCED MEASURES

PERCENTAGE OF CHILDREN ACHIEVING MASTERY
ON PRETEST AND ON POSTTEST FOR EACH ITEM

Item 12

	Pre	Post
Non-Target	0%	14%
Target	0%	0%
Target--No Intervention	0%	0%
Target--Intervention	0%	0%
Total Sample	0%	7%

Item 13

	Pre	Post
Non-Target	36%	50%
Target	25%	25%
Target--No Intervention	18%	27%
Target--Intervention	33%	22%
Total Sample	31%	38%

Item 14

	Pre	Post
Non-Target	50%	50%
Target	20%	35%
Target--No Intervention	27%	36%
Target--Intervention	11%	33%
Total Sample	36%	43%

Item 15

	Pre	Post
Non-Target	32%	68%
Target	25%	55%
Target--No Intervention	36%	45%
Target--Intervention	11%	67%
Total Sample	29%	62%

Item 16

	Pre	Post
Non-Target	9%	18%
Target	0%	10%
Target--No Intervention	0%	9%
Target--Intervention	0%	11%
Total Sample	5%	14%

Item 17

	Pre	Post
Non-Target	23%	50%
Target	15%	20%
Target--No Intervention	27%	27%
Target--Intervention	0%	11%
Total Sample	19%	36%

TABLE 13 (Cont'd)

CRITERION-REFERENCED MEASURES

PERCENTAGE OF CHILDREN ACHIEVING MASTERY
ON PRETEST AND ON POSTTEST FOR EACH ITEM

Item 18

	Pre	Post
Non-Target	18%	50%
Target	10%	20%
Target--No Intervention	9%	27%
Target--Intervention	11%	11%
Total Sample	14%	36%

Item 19

	Pre	Post
Non-Target	32%	82%
Target	15%	50%
Target--No Intervention	9%	36%
Target--Intervention	22%	67%
Total Sample	24%	67%

Item 20

	Pre	Post
Non-Target	27%	41%
Target	5%	35%
Target--No Intervention	0%	45%
Target--Intervention	11%	22%
Total Sample	17%	38%

Item 21

	Pre	Post
Non-Target	14%	55%
Target	0%	40%
Target--No Intervention	0%	9%
Target--Intervention	0%	78%
Total Sample	7%	48%

All results by groups are summarized in Tables 14, 15, 16, and 17. The first column contains the mean difference between chronological age and age equivalent on the pretest (X_1). The second column contains the same information for the posttest. The third column contains the standard error of the mean. The fourth column contains the t-values and the fifth contains the probability associated with each t-value.

Table 14 presents the t-test results for the total sample. On the pretest, there were five subtests where the mean score was lower than that of the norm group. Of these five, Picture Association was the lowest (-12.28 months below the norm). The highest mean score was for Paper Folding (6.35 months higher than that of the norm group). On the posttest, only two subtest means were lower than that of the norm. The results of the t-test indicated that four subtest means were significantly higher on the posttest than on the pretest (Picture Association, Block Design, Visual Sequential Memory, and Manual Expression). This indicates that Project children, after being exposed to the Level II Early Childhood Curriculum and/or the Ability Development Project Supplementary Activities, showed greater gain than did the norm group on the four subtests mentioned above.

Table 15 presents the results of the correlated t-test for Group 1 (Target Group- Intervention). On the pretest, there were seven subtests where the mean score was lower than that of the norm group. Among the seven, Picture Association was the lowest (-17.11 months). Memory for Color and Visual Sequential Memory (-10.33 and -10.89 months lower than the norm, respectively) were the second and third lowest. On the posttest, only three subtest mean scores were lower than those of the norm group (Memory for Color, Picture Association, and Picture Identification).

Only four subtests had significant t-values (Picture Association, Visual Attention Block Design, and Visual Sequential). That is, for these four subtests, the posttest mean score was significantly higher than was the pretest mean score. These particular items may have related more directly than others to activities in the BECP, Level II and the Supplementary Activities. None of the other subtest means were significantly different.

Table 16 presents the results on Group 2 (Target Group- No intervention). On the pretest, there were six subtests where this group's mean performance was below that of the norm group. Picture Association and Block Design were the lowest (-8.83 months and -7.42 months, respectively). On the posttest there were three subtests on which the children's mean performance was below that of the norm group (Memory for Color, Picture Association, and Picture Identification). The mean score for Manual Expression was 10.58 months above that of the norm group. Only three t-values were significant (Block Design, Visual Sequential Memory, and Manual Expression). Thus, in these three areas, Group 2 gained significantly more than the norm group during this period of time. These items were related to skills taught in early units of the Level II curriculum.

Table 17 summarizes the results for Group 3 (non-target group). On the pretest, four subtest mean scores were lower than were those of the norm group (Picture Association, -12.18 months; Picture Identification, -0.91 months; Block Design, -2.91 months; and Visual Sequential, -2.86 months). The mean score for Paper Folding was the highest (+9.23). On the posttest only one mean score was lower than that of the norm group (-2.82 months): Memory for Color. Visual Sequential Memory was the highest ($\bar{X}_2$ = 14.32). Six subtests yielded significant t-values (Memory for Color, Picture Association, Picture Identification, Block Design, Visual Sequential Memory, and Manual Expression). Five of the six were significantly higher on the posttest, but one was significantly lower (Memory for Color).

TABLE 14

NORM-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST
AND POSTTEST ADMINISTRATIONS

TOTAL GROUP

Score	$\bar{X}_1$	$\bar{X}_2$	S_x	t*	p
Memory Color	-0.72	-5.07	3.04	-1.43	N.S.
Picture Association	-12.28	-1.33	2.89	3.79	<0.005
Picture Identification	-2.02	1.23	2.49	1.31	N.S.
Paper Folding	6.35	8.02	2.79	0.60	N.S.
Visual Attention	0.40	3.91	2.60	1.35	N.S.
Block Design	-5.49	2.60	1.52	5.31	<0.005
Visual Sequence	-4.60	9.51	2.57	5.50	<0.005
Visual Closure	1.87	2.49	2.07	0.63	N.S.
Manual Expression	0.37	10.58	2.74	3.73	<0.005

+: One subject's data were missing.

*: df=42

TABLE 15

NORM-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST
AND POSTTEST ADMINISTRATIONS

G_1 (TARGET- INTERVENTION)

N = 9+

Score	$\bar{X}_1$	$\bar{X}_2$	S_x	t*	p
Memory Color	-10.33	-7.56	7.82	0.36	N.S.
Picture Association	-17.11	-3.67	6.69	2.01	<0.05
Picture Identification	-4.00	-6.11	4.40	-0.48	N.S.
Paper Folding	6.78	4.78	7.26	-0.28	N.S.
Visual Attention	-8.56	1.89	5.13	2.04	<0.05
Block Design	-9.22	0.22	3.79	2.49	<0.025
Visual Sequence	-10.89	5.44	5.72	2.85	<0.01
Visual Closure	-1.56	0.78	4.77	0.49	N.S.
Manual Expression	2.33	6.11	7.31	0.52	N.S.

+: One subject's data were missing

*: df=8

TABLE 16

NORM-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST
AND POSTTEST ADMINISTRATIONS

G_2 (TARGET- NO INTERVENTION)

N = 12

Score	$\bar{X}_1$	$\bar{X}_2$	S_x	t*	p
Memory Color	-5.17	-7.33	3.94	-0.55	N.S.
Picture Association	-8.83	-4.75	6.25	0.63	N.S.
Picture Identification	-2.58	-6.25	3.65	-1.00	N.S.
Paper Folding	0.75	6.25	5.79	0.95	N.S.
Visual Attention	3.67	3.42	4.96	-0.05	N.S.
Block Design	-7.42	2.33	3.92	2.49	<0.025
Visual Sequence	-3.08	3.75	3.49	1.96	<0.05
Visual Closure	2.42	5.75	3.18	1.05	N.S.
Manual Expression	-0.58	10.58	4.64	2.41	<0.025

*: df=11

TABLE 17

NORM-REFERENCED MEASURES

CORRELATED T-TEST BETWEEN PRETEST AND POSTTEST ADMINISTRATIONS

G_3 (NON-TARGET GROUP)

N = 22

Score	$\bar{X}_1$	$\bar{X}_2$	S_x	t*	p
Memory Color	5.64	-2.82	4.5	-1.88	<0.05
Picture Association	-12.18	1.50	3.59	3.81	<0.005
Picture Identification	-0.91	7.05	3.60	2.21	<0.025
Paper Folding	9.23	10.32	3.46	0.32	N.S.
Visual Attention	2.27	4.86	3.78	0.69	N.S.
Block Design	-2.91	3.73	1.50	4.43	<0.005
Visual Sequence	-2.86	14.32	3.90	4.40	<0.005
Visual Closure	1.64	1.41	3.17	-0.07	N.S.
Manual Expression	0.09	12.86	3.62	3.53	<0.005

*: df=21

On the pretest there were a greater number of subtests on which the total group mean score was lower than the number of subtests on which the scores were higher than the norm. After exposure to Level II of the BECP and/or ADP Supplementary Activities, only two subtest mean scores were lower than those of the norm group. This suggests that this sample of children gained much more than did the norm group. This finding may be associated with the effectiveness of the Level II BECP curriculum and/or the developed Supplementary Activities.

In order to determine whether or not the rates of growth for the groups were significantly different, an analysis of covariance was again undertaken, using the pretest scores as the covariate. These results are presented in Tables 18, 19, and 20. The first two columns contain the pretest mean ($\bar{X}_1$) and standard deviation (S_1). The second two columns contain the posttest mean ($\bar{X}_2$) and standard deviation (S_2). The fifth column contains the adjusted mean ($\bar{Y}$) by assuming a common slope and the last column contains the F-ratio and the associated probability. For each subtest there are two rows, representing the two groups being compared.

Table 18 presents the results of the analysis of covariance on all of the norm-referenced subtests for Group 3 vs. Groups 1 and 2 combined (non-target vs. all target children). The purpose was to determine whether, when the pretest scores were held constant, there were any significant differences on the posttest between the non-target and the target groups. The adjusted means ($\bar{Y}$) indicated that almost all of the non-target mean posttest scores were higher than those of the target group, except in the case of Visual Closure. The F-ratio results, however, indicated that only one subtest showed significant differences--Picture Identification.

TABLE 18

NORM-REFERENCED MEASURES

ANALYSIS OF COVARIANCE
G_3 VS. $G_1 + G_2$

(NON-TARGET VS. TARGET)

$N_I = 22$ $N_{II} = 21^+$

Score		Pretest		Posttest		M($\bar{Y}$)	F & p*
		$\bar{X}_1$	S_1	$\bar{X}_2$	S_2		
Memory Color	I	5.64	19.09	-2.82	12.04	-3.43	F=0.69
	II	-7.38	13.84	-7.43	11.97	-6.79	N.S.
Picture Association	I	-12.18	16.14	1.50	14.46	1.47	F=1.58
	II	-12.38	15.51	-4.29	15.56	-4.26	N.S.
Picture Identification	I	-0.91	13.05	7.05	20.99	6.14	F=6.06
	II	-3.19	11.54	-6.19	13.78	-5.20	p<0.05
Paper Folding	I	9.23	15.32	10.32	12.38	9.15	F=0.31
	II	3.33	26.23	5.62	18.27	6.85	N.S.
Visual Attention	I	2.27	14.88	4.86	16.39	4.36	F=0.07
	II	-1.57	13.83	2.76	10.38	3.29	N.S.
Block Design	I	-2.91	7.90	3.73	9.18	3.32	F=0.04
	II	-8.19	7.99	1.43	10.88	2.90	N.S.
Visual Sequence	I	-2.86	13.51	14.32	15.12	13.65	F=3.42
	II	-6.43	11.92	4.48	15.19	5.18	N.S.
Visual Closure	I	1.64	13.13	1.41	13.73	1.17	F=0.55
	II	0.71	15.18	3.62	13.57	3.87	N.S.
Manual Expression	I	0.09	15.02	12.86	17.14	12.94	F=0.94
	II	0.67	12.78	8.67	11.84	8.58	N.S.

+: One subject's data were missing

*: df=1,40

Table 19 summarizes the results of the analysis of covariance on the norm-referenced subtests for Group 1 vs. Group 2 (Target Group- Intervention vs. Target Group- Non-intervention). None of the F-ratios were significant. As far as the adjusted means ($\bar{Y}$) are concerned, Group 1 had higher means on some of the subtests while Group 2 had higher means on the remaining subtests.

Table 20 presents the results of the analysis of covariance of the norm-referenced subtests for Group 1 vs. Group 3 (Target Group- Intervention vs. non-target Group). Again, none of the F-ratios were significant. And once again, there was no consistent direction when the adjusted means ($\bar{Y}$) were compared for the two groups.

Discussion

The results of the Ability Development Project were generally positive.

Summary. Of the 99 children tested in January, 40 were identified and 29 were selected as target children. The target children were further divided into Intervention (Group 1) and Non-intervention (Group 2) groups. The Intervention Group was originally located at Allen Center, but Project activities moved to Canterbury Center where conditions were more favorable. The remaining 59 Project children were designated non-target. At the end of June, 22 target children remained in the program. Twenty-two non-target children were selected at random to serve as a comparison (Group 3) group. Each child's language preference was determined, using the S/ELPS, an instrument validated for the sample in this Project. Each child was tested in his preferred language on both the CRT and the norm-referenced measures.

TABLE 19

NORM-REFERENCED MEASURES

ANALYSIS OF COVARIANCE

G_1 VS. G_2

(TARGET- INTERVENTION VS. TARGET- NON-INTERVENTION)

$N_I = 9^+$ $N_{II} = 12$

Score		Pretest		Posttest		M($\bar{Y}$)	F & p*
		$\bar{X}_1$	S_1	$\bar{X}_2$	S_2		
Memory Color	I	-10.33	16.65	-7.56	12.87	-7.39	F=0.00
	II	-5.17	10.77	-7.33	11.26	-7.46	N.S.
Picture Association	I	-17.11	16.78	-3.67	12.91	-2.96	F=0.09
	II	-8.83	13.44	-4.75	17.27	-5.28	N.S.
Picture Identification	I	-4.00	15.43	-6.11	18.09	-5.59	F=0.04
	II	-2.58	7.32	-6.25	9.31	-6.64	N.S.
Paper Folding	I	6.68	36.15	4.78	18.01	3.20	F=0.41
	II	0.75	14.42	6.25	18.43	7.43	N.S.
Visual Attention	I	-8.56	11.17	1.89	9.98	2.27	F=0.02
	II	3.67	13.31	3.42	10.62	3.13	N.S.
Block Design	I	-9.22	8.84	0.22	8.14	0.51	F=0.10
	II	-7.42	7.19	2.33	12.48	2.12	N.S.
Visual Sequence	I	-10.89	12.82	5.44	20.19	8.40	F=1.07
	II	-3.08	9.53	3.75	9.85	1.53	N.S.
Visual Closure	I	-1.56	7.41	0.78	15.84	2.10	F=0.30
	II	2.42	18.0	5.75	11.12	4.76	N.S.
Manual Expression	I	2.33	9.81	6.11	15.16	6.22	F=0.59
	II	-0.58	14.49	10.58	8.02	10.50	N.S.

+: One subject's data were missing

*: df=1,18

TABLE 20

NORM-REFERENCED MEASURES

ANALYSIS OF COVARIANCE
G_1 VS. G_3

(TARGET- INTERVENTION VS. NON-TARGET)

$N_I = 9^+$ $N_{II} = 22$

Score		Pretest		Posttest		M($\bar{Y}$)	F & p*
		$\bar{X}_1$	S_1	$\bar{X}_2$	S_2		
Memory Color	I	-10.33	16.65	-7.56	12.87	-6.78	F=0.44
	II	5.64	19.09	-2.82	12.04	-3.13	N.S.
Picture Association	I	-17.11	16.78	-3.67	12.91	-2.57	F=0.44
	II	-12.18	16.13	1.50	14.46	1.05	N.S.
Picture Identification	I	-4.00	15.43	-6.11	18.09	-4.03	F=2.52
	II	-0.91	13.05	7.05	20.99	6.19	N.S.
Paper Folding	I	6.78	36.15	4.78	18.01	5.49	F=1.07
	II	9.23	15.31	10.32	12.38	10.03	N.S.
Visual Attention	I	-8.56	11.17	1.89	9.98	4.65	F=0.02
	II	2.27	14.88	4.86	16.39	3.73	N.S.
Block Design	I	-9.22	8.84	0.22	8.13	2.87	F=0.00
	II	-2.91	7.90	3.73	9.18	2.65	N.S.
Visual Sequence	I	10.89	12.82	5.44	20.19	7.93	F=0.63
	II	-2.86	13.51	13.32	15.12	13.30	N.S.
Visual Closure	I	-1.56	7.41	0.78	15.84	1.94	F=0.03
	II	1.64	13.13	1.41	13.73	0.93	N.S.
Manual Expression	I	2.33	9.81	6.11	15.17	5.50	F=1.34
	II	0.09	15.02	12.86	17.14	13.11	N.S.

+: One subject's data were missing

*: df=1,28

Based on the correlated t-test data for the CRT, it was concluded that children did gain significantly after exposure to the BECP, Level II and/or to the Supplementary Activities developed by the ADP. Based on the results of the analysis of covariance, it was concluded that, for some subtests the Target-Intervention group gained more than did the Target-Non-intervention group. The Target-Intervention group gained as much as did the non-target group on all but one subtest, though non-target children generally gained more than did the target children. These findings indicate the effectiveness of the Supplementary Activities and the Project-developed materials.

Children also made significant gains on four of the norm-referenced test items. Posttest scores were higher than the norms for seven items, though pretest scores had been lower than the norms. It was concluded that, after exposure to the BECP, the children developed at a more rapid rate in some areas than did the norm population children. This was true for target as well as non-target children, and target children who received Supplementary Activities tended to make greater gains than did target children who had not. The analysis of covariance for the norm-referenced measures did not reveal significant differences between the groups, suggesting that they were developing at about the same rate. These findings were regarded as positive, because handicapped children tend to develop more slowly than non-handicapped children. The fact that target children gained as much as non-target children supports the effectiveness of the BECP and the Supplementary Activities. However, norm-referenced test results did not differentiate target and non-target children, suggesting that these tests may not be diagnostically appropriate for minority children.

These findings must be interpreted with caution because of certain limitations present from the outset. First, the Project was engaged in product design and design-test. This is an early stage in product development, and results do not represent the final products. Second, the target sample included 22 children with a variety of kinds and degrees of handicapping conditions. To consider them as an homogenous group is not precisely correct. Also, 44 children (22 target and 22 comparison) is a very small sample for statistical analysis and cannot be assumed to represent four-year-old Mexican-American children in general. Because the Project was initiated late in the school year, the learning period was very short and the children had already been exposed to school. Some gains might have been significant if the children had had a full school year with the BECP and the Supplementary Activities. Finally, there was no comparable group of four-year-old Mexican-American children not enrolled in the BECP, and program effects were not clearly differentiated from normal maturation.

The Project also encountered unforeseen problems which may have influenced the results. Though each child was tested in his preferred language according to the S/ELPS, the use of Spanish versions, especially of standardized tests, may not be justified. Bilingual children presented a special problem in this respect, since they often had different concepts in each of their two languages. Problems were also encountered in implementing the BECP and testing the Supplementary Activities at Allen Center. Because Canterbury Center was equipped with small rooms and a more controlled classroom environment, design test of the Supplementary Activities was relocated at Canterbury. Target children at Allen had already received some intervention, however, which may have enhanced their progress.

Teachers were not accustomed to using a structured curriculum and completed only four units of the BECP (seven at Riverside). Children might have made greater gains had the program been presented more intensively.

The results of the Ability Development Project were consistent with its objectives, as described in the Project Overview. This was true, even given the limitations presented above. Handicapped children were identified and provided with assistance which allowed them to make significant gains, in some areas commensurate with those of their non-handicapped peers. These findings support the effectiveness of the Supplementary Activities and the other materials developed by the Project.

CONCLUSIONS/RECOMMENDATIONS

The purpose of the Ability Development Project was to identify handicapped four-year-old Mexican-American children enrolled in a regular bilingual program, and to develop appropriate instructional activities for them. The focus of the Project was to develop products and to submit them to limited design test with a small sample of children. When the Project was initiated, Project staff identified many children who urgently needed services and teachers who needed training and support. These needs were critical. Project staff undertook, therefore, within the limits of program objectives, to respond to these needs by providing limited intervention for identified children and information and assistance to their teachers. The Project developed products which were specifically designed to serve the needs of Project children and their teachers.

Conclusions

The most important and unexpected finding of the Project was the very high incidence of handicapping conditions in this group of children. Based on experience with the Bilingual Early Childhood Program and Special Education enrollment in Texas, it was originally estimated that 20-25 percent of the children would be handicapped. However, of the original 99 children, 40 had evidence of handicapping conditions severe enough to interfere with their learning. The Project children were extremely disadvantaged economically; it may be that they had been deprived of even minimal services from the beginning. The children attended Model Cities Day Care Centers during the day while their parents worked; they could not afford to attend the Head Start Day Care Centers where services are provided to handicapped children. Though the original 99 children differed from other groups of preschool children in Austin, they may be similar to

children who attend Day Care Centers in other locations. It is possible that the number of unserved children in this population is larger than is generally assumed.

Varying kinds and degrees of handicapping conditions were encountered in the sample. The original intent of the Project was to serve only those children with mild to moderate learning disabilities, according to a definition which excluded physical handicapping conditions. The children, however, had not read the definition. The target group included children who had evidence of hearing loss, visual impairment and speech/language disorders severe enough to inhibit learning, as well as learning disabilities. Regardless of the contributing factors in each case, these children all had difficulty learning in the basic program and functioning effectively in the school setting. Their specific difficulties varied from child to child but did not fit into discrete diagnostic categories. In its only major departure from the original objectives, the Project undertook to serve all these children and to develop materials for them without reference to specific diagnostic categories. This non-categorical approach was supported by Project results.

Severely handicapped children also attended these Centers. The target group included one child with no speech; another child with a history and current evidence of malnutrition and other health problems, hearing loss, speech and motor disabilities, and not surprisingly, behavior problems; and several children who were significantly delayed in all developmental areas. Though Project efforts were aimed at mild and moderate conditions, there was a moral obligation to serve these children insofar as possible. Project experiences with these children suggested that teachers can work effectively with mildly and moderately handicapped children. It did

not appear, however, that severely handicapped children could be properly served in the regular classroom. The child's needs and the teacher's capabilities must be carefully considered in placing the severely handicapped child.

Project experiences and results raised serious question about the use of norm-referenced tests with this population. Such questions have been raised before, particularly with regard to the fairness of applying standardized tests to minority children. The conclusion of Project staff about the use of norm-referenced tests was, not so much that they were unfair or biased, but that they yielded very little information that was diagnostically useful. The child's behavior in actual learning situations appeared to reflect his abilities more accurately than did his test performance. Test results for bilingual and Spanish-speaking children were particularly difficult to interpret. These findings were strictly clinical in nature and merit more rigorous investigation.

The Project concluded that the role of the teacher in identifying and serving young handicapped children was crucial. Outside evaluation services for all children may not be available, and the teacher must be provided with material, training, and support for working with handicapped children. Project teachers, however, had few of these resources, and Project efforts were directed at providing them. Since diagnostic services were not available, the teachers needed materials they could use themselves to help them identify children's special needs for referral and for instruction. They needed meaningful instructional materials for handicapped children that could be used in conjunction with the regular instructional program. They also needed additional training which did not rely on the printed word and which focused on practical information rather than technical and

theoretical explanations. It should be emphasized that Project teachers were often sensitive and creative in working with their handicapped students--indicating that they were fully competent to serve these children given the proper resources for doing so.

There were several institutional factors which affected the handicapped children but which were not addressed by this Project. Though outside the scope of Project activities, these factors must be considered in planning programs for handicapped children. The Model Cities Day Care Centers were created for the purpose of providing care for children whose parents work and providing employment for Model Cities area residents. They were not intended, however, to provide a comprehensive educational program for children and training for teachers. Considering these conditions, the Center programs were remarkable, but the presence of handicapped children in the Centers created a need for additional support for educational programs and teacher training.

Though there is a wide range of services for handicapped children in the Austin area, these services were not readily available to children in the Day Care Centers. For example, the Austin Independent School District operates a program for handicapped preschoolers, but this program does not provide for the Spanish speaker and cannot serve children who also require day care. Though Head Start Day Care Centers could contract with community agencies for services, the Model Cities Centers could not. Thus, the children in the Model Cities Centers were excluded from services that were available to other handicapped children in the community.

The need for services to Spanish-speaking children is expected to increase because of the inclusion of preschool programs in the Bilingual Education Act Title VII (Education Daily, October 31, 1974). Handicapped

children will presumably be included in these programs though no special provisions for them have been made. Widespread implementation of bilingual preschool programs will create a critical need for materials for the handicapped children in these programs.

Recommendations

The following recommendations are based on Project results and clinical evidence from working with a group of four-year-old handicapped Mexican-American children.

It is recommended that the Spanish/English Language Preference Screening (S/ELPS) be further developed and validated for four-, five- and six-year-olds. This recommendation is based on the fact that Mexican-American children vary in their use of English and Spanish. Though not designed to identify handicapping conditions, per se, the S/ELPS can identify the handicapped child's stronger language for diagnostic testing and for initial instruction.

It is further recommended that instruments be developed for the teacher to use in identifying handicapped children and assessing their educational needs. The Observational Checklists for Referral (OCR) should be further developed and validated. Additional criterion-referenced tests which would assess children's special instructional needs early in the year and which can be used by the teacher should also be developed. The CRT used in this Project assessed skills learned in the first 15 units of the BECP rather than entry level skills. Though not useful to the classroom teacher, norm-referenced tests are firmly entrenched in educational research and evaluation. Therefore, the English and Spanish versions of the Hiskey-Nebraska Test of Learning Aptitude should be investigated further for relevance to this population.

It is further recommended that the Supplementary Activities be further developed and tested in conjunction with the Bilingual Early Childhood Program. This recommendation is important because the BECP, Level II curriculum is the only comprehensive bilingual program for four-year-olds currently available. Supplementary Activities based on this prcgram would serve a wide and varied population of handicapped children.

Finally, it is recommended that teacher-training materials be developed which present practical information in non-technical terms and do not rely exclusively on the written word to present information. These materials should focus on identification of handicapped children, assessing children's progress, teaching strategies such as simplification of lessons and classroom management techniques, and utilization and adaptation of equipment for handicapped children.

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