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## ABSTRACT

A Diagnostic and Remedial Reading Center was organized at the District Office to service 160 pupils in District 22, Brooklyn, elementary schools who were diagnosed as non-learners. A total of 60 pupils were given remediation and therapeutic services four sessions a week during the regular school day. An additional 20 pupils received intensive remediation in reading by Brooklyn College students, and another 20 pupils in attendance at public and non-public elementary schools in District 22 were serviced by the Center three afternoons a week on an after-school basis. Diagnoses were made and an instructional program devised for the remaining 60 pupils; followup programs for these participants were instituted by the home schools. The State Urban Education "Reading Laboratory" Program was designed to improve the reading skills of selected elementary and junior high school students. Reading Laboratories were organized in one elementary school and four intermediate and junior high schools. A total of eight educational assistants was assigned initially to provide intensive individualized and small group instruction in reading and mathematics to eligible underachieving pupils in attendance at four schools in District 22, Brooklyn. An additional four assistants were allocated in December, 1973. Overall, the educational assistants have provided important services for participants, and it is recommended that the program be recycled.  
(Author/JM)

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EVALUATION - FINAL REPORTS

JULY, 1974

STATE URBAN EDUCATION PROGRAMS, SCHOOL YEAR 1973-1974:

Elementary Diagnostic and Remedial Reading Center  
Function #75-46404

Reading Laboratories  
Function #75-46405

Educational Assistants To Aid Underachievers  
Function #75-46406

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COMMUNITY SCHOOL DISTRICT 22  
ELEMENTARY DIAGNOSTIC AND REMEDIAL READING PROGRAM  
STATE URBAN EDUCATION PROGRAM, 1973-1974  
FUNCTION #75-46404

FINAL REPORT

PREPARED BY:

Linda Lyons  
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July, 1974

## ELEMENTARY DIAGNOSTIC AND REMEDIAL READING PROGRAM

### SUMMARY

A Diagnostic and Remedial Reading Center was organized at the District Office to service 160 pupils in District 22, Brooklyn, elementary schools who were diagnosed as non-learners. A total of 60 pupils were given remediation and therapeutic services four sessions a week during the regular school day. An additional 20 pupils received intensive remediation in reading by Brooklyn College students, and another 20 pupils in attendance at public and non-public elementary schools in District 22 were serviced by the Center three afternoons a week on an after-school basis. Diagnoses were made and an instructional program devised for the remaining 60 pupils; followup programs for these participants were instituted by the home schools.

The Diagnostic Center in operation during the regular school day was staffed by a psychologist, a reading teacher, and three educational assistants. The psychologist provided diagnostic and therapeutic services and, in conjunction with the reading teacher, made reports and recommendations for participants. The teacher and the educational assistants provided small group instruction in reading, utilizing a variety of software and hardware equipment available at the Diagnostic Center.

The sessions held after-school three afternoons a week were under the direction of a reading teacher and two educational assistants. Regular attendance at this after-school program was difficult to maintain.

Pupil gains in reading were substantial, particularly when considering the deficiencies demonstrated by pupils prior to placement in the program. Program strengths focused on the efficient utilization of personnel to provide reading and psychological services so vitally needed by youngsters with long-standing difficulties, not easily amenable to treatment by the home

schools. Program weaknesses centered on attendance at the after-school program, and, in some instances, lack of optimal followup procedures by the home schools. It was recommended that followup measures be carefully implemented by the home schools, that ongoing conferences with Center personnel be maintained, and that incentives be devised to encourage better attendance at the after-school Center. Services provided by the Diagnostic and Remedial Reading Program are vitally needed, and it is recommended that the program be recycled once again.

#### 1. PROGRAM DESCRIPTION

A total of 160 pupils in attendance at District 22 elementary schools were to receive intensive remediation services in reading at the Diagnostic and Remedial Reading Center, located at the District Office. This program was recycled from the 1972-73 school year. Priority for selection was to be given to non-learners in grades 2 through 6 who were unable to function satisfactorily within a classroom situation. Of the 160 participants serviced by the program, 60 pupils - 30 during the fall term, and 30 during the spring term - were to be given remediation in reading at the Center four sessions a week during regular classroom hours. An additional 20 pupils were to receive remediation instruction by Brooklyn College students in conjunction with a graduate course, under the supervision of the teacher of the Diagnostic Center. Instruction was to be given one afternoon a week during the fall term, and two during the spring term. An educational assistant was to be provided to help with tutorial functions. Further, a total of 20 eligible pupils in attendance at public and non-public schools were to receive diagnostic and remediation services at the Center, three afternoons a week from 3 to 5 p.m. For the remaining 60 pupils, specific deficiencies were to be diagnosed and individual programs planned to be implemented in the home schools by the corrective reading teacher and/or guidance counselor.

The Diagnostic Center, operative during the regular school day, was to be staffed by a teacher, three educational assistants, and a psychologist who was allocated three days per week. The teacher was to train and supervise the assistants, who worked with participants on a 1:1 to 1:3 basis. The psychologist was to administer the WISC, Bender, and figure drawing tests and to give therapy to those pupils in need of these services. Initially, the staff was to give diagnostic tests to all participants. The teacher and psychologist were to compile individual reports to be discussed with the appropriate staff at the home school. These pupils selected for remediation at the Diagnostic Center were to receive individual and small group instruction by the teacher and educational assistants. A variety of hardware and software materials were provided, to be utilized according to pupil need. Counseling sessions were to be held as necessary. Those pupils selected for services provided by the home school were to be assigned a program to be followed by appropriate personnel at the home school. A reading teacher and two educational assistants were also allocated for the after-school program at the Diagnostic Center. The teacher was to supervise instructional services offered to these additional 20 pupils.

## II. OBJECTIVES AND EVALUATION DESIGN

Program Objectives: As a result of the diagnostic and remediation services, pupils were expected to show significant improvement in reading skills.

The following evaluation procedures were employed:

- (1) Observations were made of all aspects of the program, and interviews were held with administrative, teacher and paraprofessional staff, as well as a sampling of pupils.
- (2) Slosson Oral Reading and Spache Reading Tests were administered and analyzed on a pre- and post-test basis. It was expected that participants would show significant improvement in reading during the course of the program.

### III. PROGRAM IMPLEMENTATION

The program at the Diagnostic Center, designed to improve the skills of pupils considered to be non-learners, got underway in mid-October. At that time, a total of 30 pupils was serviced four days a week by the Center; 15 in the morning, and 15 in the afternoon. A comparable number of pupils was accepted in February, although the reading/adjustment level of eight of these youngsters was such that continued remediation at the Center throughout the course of the 1973-74 term was warranted. Pupils from 12 schools within the district were serviced in the morning sessions. Due to transportation difficulties, all pupils in the afternoon sessions attended P.S. 269, which was within walking distance of the Center.

The teacher and two of the three educational assistants were experienced in providing small group instructional services. The teacher diagnosed specific reading deficiencies and made recommendations to the home school for either counseling or remediation. Pupils selected for intensive instruction at the Diagnostic Center demonstrated severe reading disability not easily amenable to treatment by regular school personnel. The Center reading teacher made visits to the home school and conferred with the corrective reading teacher. A followup report was also prepared jointly with the psychologist for each pupil and sent to the home school. The teacher conferred on an informal basis with reading teachers and educational assistants at the home schools throughout the term, with regard to followup measures instituted for participants. A sizable proportion of parents attended conferences at the Center during the fall term and again in the spring.

The room provided for instructional services was sufficiently large to adequately accommodate groups of students working with the psychologist as well as the reading staff. A variety of hardware and software materials was available so that instructional sessions could be tailored according to pupil need.

Equipment in use in the Diagnostic Center included EDL Aud-X and Controlled Reader, Hoffman Machine, Borg-Warner Systems 80, Spellbinder, Skillpacers, S.R.A. Diagnostic Kits, Sullivan Programmed Readers, Miami Linguistic Readers, and additional perceptual development materials. There were sufficient workbooks to allocate one for each pupil, as necessary.

The assistants conferred with the Center reading teacher with regard to lesson plans and progress of each participant. The psychologist who provided diagnostic and therapeutic services was new to the program this year. After having initially tested all participants, the psychologist drew up reports detailing pupils' academic/perceptual problems, and made recommendations for special placement and followup procedures by the guidance staff of the home school. Additionally, the psychologist held group sessions, in which pupils discussed school-related attitudes in an atmosphere of openness and acceptance.

In the fall, teachers who were enrolled in graduate studies of diagnosis and reading remediation at Brooklyn College held weekly sessions, and in the spring, bi-weekly sessions, to provide intensive remediation, on a 1:1 basis, to 18 pupils under the supervision of the Center reading teacher. Pupils selected attended 11 schools within the district and demonstrated a need for 1:1 assistance. The graduate students prepared written lesson plans for each session, to include vocabulary, comprehension and word attack skills. Materials and the instructional format were selected in consultation with the Center reading teacher. Attendance on the part of the 18 teachers/graduate students and 18 youngsters remained high throughout the school year. Three separate rooms were available for the instructional sessions, so that distraction was minimal. The educational assistant assigned to this program took attendance and prepared necessary materials.

After-school sessions at the Diagnostic Center were also held three days a



week to accommodate 18 pupils in need of remediation who did not receive these services during the regular school day. All participants were 5th graders who resided in the area, who attended P.S. 269, P.S. 198, and St. Jerome's School. The program was staffed by a teacher and two educational assistants, one of whom was also assigned to the Diagnostic Center during the regular school hours. The teacher planned and coordinated instructional procedures and kept records of pupil performance. Materials utilized were those provided in the Center during the regular school day, although materials designed for middle grades were utilized more frequently. Generally, there has been an attendance problem at the after-school center, and much time was spent to follow up on pupils who did not attend regularly. In fact, as the school term progressed, attendance became increasingly poorer, despite followup efforts on the part of Center personnel.

#### IV. PROGRAM EFFECTIVENESS

Pupil performance on Slosson Oral Reading Tests and Spache Diagnostic Reading Scales was analyzed on a pre- and post-test basis . Because of the grade levels of participants, it was not feasible to obtain predicted post-test scores based on pupils' previous performance. Therefore, pupils' actual post-test scores were compared with scores obtained prior to placement in the program, to determine if significant reading gains were made. These results for all participants except those serviced by the after-school center, are summarized in Table 1. (See next page.)

Data indicate that mean gains in reading were significant for pupils serviced on a half-term, as well as a full-term basis. It is apparent that this program objective was met. These results must be considered to be impressive, in view of the severe deficiencies in reading initially demonstrated

Table 1

Mean Scores for Participating Pupils  
Slosson Oral Reading Test and Spache Diagnostic Reading Scales

Test	Pupils Serviced On Full Year Basis			Pupils Serviced On Half Year Basis				
	N	Pre-Test Scores	Post-Test Scores	Sandler's A	N	Pre-Test Scores	Post-Test Scores	Sandler's A
Slosson	46	1.28	2.21	0.0374**	21	1.20	1.83	0.0731**
Spache	23	2.29	3.46	0.0597**	9	1.96	2.41	0.2302*

\* significant at the .05 level  
\*\* significant at the .01 level

by participants. The intensive individualized program devised by the reading teacher for each youngster facilitated mastery of many basic reading skills. The intensive instruction given on a one-to-one basis, as well as interest and warmth on the part of the Center staff and Brooklyn College graduate students fostered the development of many essential reading skills. Additionally, counseling offered by the psychologist to youngsters in a supportive setting facilitated an enhanced self-concept which contributed to favorable attitudes toward learning.

Reading tests administered on a pre- and post-test basis to youngsters at the after school center were also analyzed. These results are presented in Table 2.

Table 2

Mean Scores for After-School Participants (Grade 5)  
Metropolitan Achievement Tests in Reading

Test	N	Pre-Test Scores	Predicted Post-Test	Obtained Post-Test	Sandler's A
Metropolitan	13	2.72	3.04	4.29	0.1231**

\*\* significant at the .01 level

Pupil gains in reading exceeded those shown by the children prior to their participation in the program. Yet, despite substantial growth, attendance of many of the youngsters initially placed in the program was not high, and followup measures were consistently employed by the staff at the after-school center to foster better attendance.

## V. PROGRAM STRENGTHS AND WEAKNESSES

Individualized instruction provided by an experienced and efficient reading staff, and coordination of reading/psychological services appeared to be the greatest program strengths. The greatest program weakness was the attendance problem at the after-school center. The staff spent a considerable amount of time in making followup telephone calls to pupils. In some cases, it was difficult to motivate youngsters to attend the after-school center on a regular basis.

## VI. RECOMMENDATIONS

If possible, incentives may be offered, perhaps in the form of activities youngsters particularly enjoy, to encourage greater participation in the after-school program.

It is further recommended that adequate followup measures be maintained, whenever possible, by the home schools, so that pupils may derive maximum benefit from diagnostic services. Because many youngsters attend schools within the district that are not within walking distance of the Center, it may be preferable to schedule meetings with reading teachers or educational assistants on an ongoing basis. Contact with personnel at the home schools on a regular basis may ensure adequate followup measures.

Overall, the services offered to pupils who demonstrated severe reading and adjustment problems are vitally important in enabling them to function adequately within a classroom situation. It is recommended that the Diagnostic Center programs be recycled once again.

COMMUNITY SCHOOL DISTRICT 22

READING LABORATORIES

STATE URBAN EDUCATION PROGRAM, 1973-1974

FUNCTION #75-46405

FINAL REPORT

PREPARED BY:

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July, 1974

## READING LABORATORIES

The State Urban Education "Reading Laboratory" Program was designed to improve the reading skills of selected elementary and junior high school students. Reading Laboratories were organized in one elementary school (P.S. 139) and four intermediate and junior high schools (I.S. 14, J.H.S. 234, 240, 278).

### Evaluation Procedures

Two visits were made to each program site by the evaluator. Informal interviews were held with project personnel, and with students. Each of the Reading Laboratories was observed in session.

Testing with the Metropolitan Achievement Test in Reading was carried out by classroom teachers, and furnished to the evaluators for analysis. Data were analyzed using the historical regression procedure for estimating non-treatment post-test scores, and Sandler's A tests.

### Program Operation - Junior Highs

Each junior high school Reading Laboratory was staffed by a reading teacher, paraprofessional assistants, and a part-time guidance counselor. Additional paraprofessionals were employed in the Spring semester, so that the Laboratories had the services of three or four such persons. The Laboratories were furnished with Educational Development Laboratory (EDL) equipment, and organized for small group work with Aud-X machines, Controlled Readers, Tachistoscopes, and books and materials designed for use with the EDL equipment. In addition to the EDL materials, other reading materials and equipment were available and in use.

In most cases, four or five students from each of several classes were assigned to the Laboratory. In one school, however, assignment to the Laboratory was on a half-class basis. Flexibility was maintained at some schools where children were encouraged to use the Laboratory on their own, and some students were retained or readmitted for additional Laboratory work beyond the usual single semester. Typically, each Laboratory served approximately 100 students

in five groups of about 20 each on a daily basis. First priority was given to students two years or more retarded in reading.

Typically, the classroom designed for Laboratory use was set up with three tables (desks pushed together) and a separate section for a mini-auditorium with chairs facing a screen. There were, in addition, carrels or individual desks for independent work. On each of the tables, headsets and a viewer were available and in frequent use. In most settings, students were organized into three groups of about six students each. Each group was led by the teacher or by one of the paraprofessionals. In several cases, one or more children were working independently, supervised closely by one of the adults in the room. Most instruction, however, was given in small groups. With the addition of extra paraprofessional help during the Spring semester, more individualization of instruction was possible, aimed at overcoming specific learning difficulties.

The personnel in the program were experienced and judged to be highly competent and sensitive to the cognitive and emotional needs of their students. The newly added staff members were welcomed and the program adjusted to make maximum use of their help. The complex organizational demands of such a program were met with skill. The presence of numerous organizational charts and discussions with the teachers and paraprofessionals indicated that individual student's needs for special instruction were recognized. The instructional skills of the experienced paraprofessionals were indistinguishable from those of the capable, experienced teachers, and rapport between teachers and their assistants appeared to be excellent. Student interest, attention and motivation to succeed was maintained by careful preparation, fast pacing, involvement of all students at all times in a supervised learning activity, and continuous reinforcement of student responses. "Yay, I got it right!" was a typical student comment. Also contributing to the maintenance of a task-oriented atmosphere was the highly controlled, highly structured nature of

the instructional patterning, and the ability, through judicious use of the audio-visual equipment, to reduce the visual, auditory, and emotional distractions present in this situation which involved several small groups, individual needs, and a number of highly distractible and potentially disruptive children.

The advantages and limitations of the Reading Laboratory program must be viewed in the light of knowledge of the nature of the groups of students assigned for Laboratory work. Each group of twenty children represents at least twenty different learning difficulties and these diverse problems are not resolved as simply as determining which final consonant or initial blend the students have failed to master. The Reading Laboratory situation, is, by its nature, a group learning situation and not an individual diagnostic and remedial center. Many of the students enrolled in the program need services - physical, perceptual, psychological - far beyond that which can be provided within the Laboratory. For most of these students, the Laboratory, as a structured, supportive environment, is necessary, but not sufficient. For other students, the Laboratory supplies an opportunity to proceed at a slower pace without the sense of failure experienced in the competitive atmosphere of the regular classroom. For students who are well on their way to overcoming earlier learning handicaps or language barriers, the Laboratory provides the opportunity to "catch up" with their abilities and to rejoin their peers with a mastery of previously unlearned skills. For students whose problems are emotional, the closely supervised, structured environment and relative freedom from pressure and from distraction in the Laboratory is an aid to learning. However, it would be a mistake to expect all children to make similar progress, and, for a good many of them, outside services should be made available. Differential diagnosis and individualized instruction of the type needed by many

participants is difficult in the Laboratory, although with additional para-professional help, progress has been made toward the ability to provide such services.

The recognition of this difficulty is evidenced by the presence on the Reading Laboratory staffs of the guidance counselors. These counselors assist the program through testing of new arrivals, individual counseling of troubled students, helping students with study skills, and contacting of parents and referrals of students for such outside services as are deemed appropriate. The process of obtaining such help for the students, however, seems inordinately time-consuming and beset with obstacles.

#### Program Operation - Elementary School

The Reading Laboratory in the elementary school served 4th, 5th and 6th grade children. Each child participated, typically, with 15 - 17 others, four times per week for 40 to 45 minutes per session. Children were observed working individually using Junior Controlled Readers and followup activities. While the physical space in the Laboratory was limited, there was a wide variety of equipment in regular use (i.e. Hoffman, Tach-X, tape recorders, cassettes, earphones, library books, spelling and phonics materials, etc.).

The children seemed very interested in their work, comfortable with each other, responsive to the teacher and to the educational assistant, and responsible in the use of the equipment. Several children were reluctant to leave the Laboratory. No incidents of "behavior problems" occurred during the observed sessions, even among children who had characterically found school activities and routines difficult to tolerate. The learning climate in this setting obviously provided specific learning tasks as well as the emotional support the children needed.

Considerable interest in building and maintaining close liaison with classroom teachers was evident in the fact that the teacher held regular



conferences and provided classroom teachers with clear , concise, written summaries of the children's needs in reading, the Laboratory activities selected or designed to meet these needs, and illustrative activities for classroom followup. The teacher was observed during a lunch hour conference she had prepared for the 5th and 6th grade teachers to introduce them to some new materials designed to teach specific skills. This appeared to be an excellent illustration of the way in which specific professional expertise can be well used to aid staff members in gaining new skills to use with children.

#### Analysis of Reading Test Data

Scores on the Metropolitan Achievement Test in Reading were obtained for participating students. Data were analyzed using a "historical regression" technique, in the following manner. First, an "anticipated" score was obtained for each participant. Each student's anticipated score represents an estimate of the score that he would have achieved had he not participated in the program, and is based upon his previous rate of growth and the length of time that had elapsed between the pre-test and post-test measures. The set of "anticipated" or predicted post-test scores is then compared statistically with the scores actually achieved, at the end of the program, on the post-test measure, using a Sandler's A test. A significant difference between the actual post-test and the predicted post-test scores in favor of the scores actually achieved is considered indicative of program success. In other words, the students' average achievement is said to be higher following program participation than it would have been had they not been in the program.

Table 1 presents the pre-test, predicted post-test, and achieved post-test scores of all participants in the program at each grade level for whom both pre-test and post-test scores were available. (see next page)

Table 1 Analysis of Metropolitan Reading Achievement Test Data					
Grade	Number of Scores	Pre-Test Means	Predicted Post-test Means	Achieved Post-test Means	Sandler's A Test
4	14	2.84	3.23	3.48	.39
5	24	3.45	3.85	4.48	.11**
6	40	3.63	3.99	4.40	.11**
7(a)	63	5.55	5.91	5.90	347.45
7	195	4.53	4.93	5.17	.10**
8(a)	8	4.99	5.27	5.73	.34*
8	87	4.92	5.31	5.58	.14**
9	22	5.15	5.54	6.75	.07**

\*p < .05, one-tailed test  
 \*\*p < .01, one-tailed test  
 (a) students participating in Spring semester only

With the exception of the 14 students in 4th grade and the 7th grade group that participated only in the Spring semester, students at each grade level scored significantly higher, on the average, at the end of the program than would have been expected had they not participated in the program.

### Conclusions and Recommendations

In the opinion of the evaluator, the Reading Laboratory program is highly successful. Its effectiveness is evident through observation and through analysis of the test data.

Recommendations for modification of this program must take the form of questions raised for the consideration of those persons involved with this and other district programs, and with the schools in which the programs function. As constituted, the instructional services of the Reading Laboratories are most necessary, and are provided in an exemplary manner. The

recommendations which follow involve primarily the extension of services to a larger number of students, and additional individualized services to the students enrolled.

1. Students whose reading scores are less than two years below average, and whose needs (for specific skills, for structure, for more individualized attention) could be met by the program, are not being served. These students might make highly significant and long-lasting gains in the program within a short period of time, and it is recommended that the program be extended to serve them.

2. Little provision has been made for the followup of students who have "graduated" from the program. Occasional contact with the Laboratory might be helpful to them. Selected "alumni" might even be assigned as "monitors" or helpers of other classes, reinforcing their skills as well as maintaining their contact with the staff and giving them a successful experience in helping others.

3. Although a complete program of individualized diagnosis and remediation may not be feasible, more effort might be made in this direction, and an effort made to accelerate the process of referral for outside help. Written anecdotal records on each child enrolled would be useful to others who are working to meet his needs. This task might well be assigned to the guidance counselors, but could be handled by other personnel in the program.

4. The assignment of additional paraprofessional help recommended in the interim report, and carried out in the Spring, has permitted the release of the teacher for more individual attention to students, planning, and articulation with the subject matter teachers of participating students. With the availability of an additional room and additional equipment, the reading teacher should be able to organize, coordinate and supervise the activities of two Laboratories simultaneously, with no reduction in instructional services to the students enrolled. The possibility of attaining tax-levy funds

for the teaching position and utilizing State or Federal funds for the extra equipment and paraprofessional help should be considered.

5. Future evaluation designs might incorporate followup studies to see if gains made in the program in earlier years are maintained. This would also make possible some determination of individual student characteristics related to learning difficulties which might be most amenable to remediation within the Laboratory program, and which might require more specialized help at an earlier date.

COMMUNITY SCHOOL DISTRICT 22  
EDUCATIONAL ASSISTANTS TO AID UNDERACHIEVERS  
STATE URBAN EDUCATION PROGRAM, 1973-1974  
FUNCTION #75-46406

FINAL REPORT

PREPARED BY:

Linda Lyons  
Evaluation Director

July, 1974

## SUMMARY

A total of eight educational assistants was assigned initially to provide intensive individualized and small group instruction to eligible underachieving pupils in attendance at four schools in District 22, Brooklyn. An additional four assistants were allocated in December, 1973. Additional changes in personnel were made later in the school term, so that continuity of services was not always readily maintained. A variety of materials was provided for instructional services in reading; mathematics supplies were somewhat less ample. Supervision was provided by classroom teachers, and in most cases, by corrective reading teachers. A majority of participants showed significant gains in reading and mathematics over the course of the program. Effectiveness was enhanced by the efficiency and interest shown by many of the educational assistants, which constituted the greatest program strength. Discontinuity of services in some instances, as a result of changes in personnel, constituted the greatest program weakness. It was recommended that the mathematics component be more broadly developed and coordinated, wherever feasible, and that instructional services of educational assistants be continued.

### I. PROGRAM DESCRIPTION

A total of eight educational assistants was to be assigned to four schools to provide intensive instruction in reading and mathematics to eligible underachievers who could derive maximum benefit from these services. The educational assistants were to work with individuals and small groups under the direction of teachers and administrative personnel. The teachers were to be responsible for training and supervising the paraprofessional staff, for assigning materials, and for instructing the educational assistants in the use of the materials. A total of 160 pupils in grades one through six were to be serviced by the program. The staff-participant ratio was to be 1:1 to 1:3, with instructional sessions scheduled according to pupil need.

## II. OBJECTIVES AND EVALUATION DESIGN

Program Objectives: As a result of the utilization of educational assistants to provide remediation services, participants were expected to show significant improvement in reading and mathematics skills.

The following evaluative measures of program effectiveness were employed:

- (1) Observations were made of all aspects of the program, and interviews were held with administrative, teacher and paraprofessional personnel.
- (2) Metropolitan Achievement Test Scores in Reading and Mathematics were analyzed on a pre- and post-test basis. It was expected that pupil gains in reading and mathematics would exceed those shown prior to participation in the program.

## III. PROGRAM CHANGES

Initially, eight educational assistants were assigned to four schools in District 22. Four assistants were assigned to P.S. 139; two were assigned to P.S. 198, and one each to P.S. 222 and P.S. 277. Approximately 165 pupils in grades one through six were serviced by the program. Under a modification approved in December, 1973, funds were provided for an additional four educational assistants. Two assistants were allocated for P.S. 198, and one each for P.S. 139 and P.S. 277. As a result, additional pupils were given instruction in reading and mathematics, so that approximately 240 pupils received remediation services. Further, the program, as it was initially set up, was reorganized within the schools to effectively utilize the additional personnel.

#### IV. PROGRAM IMPLEMENTATION

The program got underway early in the school term, yet the thrust of instructional services in reading and mathematics provided by the educational assistants underwent considerable change throughout the first half of the school year, in terms of personnel, staff-pupil ratio, number of participants serviced, and the emphasis placed on reading and mathematics components. Personnel: The assignment of additional personnel at P.S. 198 and P.S. 277 enabled a greater number of pupils to receive remediation services. The two educational assistants initially assigned to P.S. 198 were experienced and capable of utilizing a variety of methods to provide small group instruction, particularly in reading. With the allocation of two additional positions in January, 1974, one full-time and two half-time assistants were added to the staff at P.S. 198. The full-time assistant offered instruction in reading and mathematics to groups of two or three pupils, who were scheduled for remediation three or four sessions a week. The half-time assistants each serviced nine pupils; one assistant provided reading instruction to a group of 6th graders; the other provided remediation in reading and mathematics, as well as English language instruction to pupils in need of these services. At P.S. 277, the educational assistant initially assigned to the program was experienced and offered small group reading and mathematics services to approximately 22 pupils during each instructional session. Due to an unanticipated, extended illness, this paraprofessional had to relinquish her position at mid-year, and her duties were assumed by several substitutes for the remainder of the school year. The second paraprofessional, whose position was allocated in January, serviced a total of 29 pupils in grades two through six, who were scheduled for instruction primarily in reading, three to five times a week. The assistant who began



in January had worked in the school prior to assuming this position. Although there were no additions to the staff at P.S. 222, the educational assistant who initially filled this position transferred to another school in early December. Her replacement had been employed at P.S. 222 as an audio-visual operator prior to accepting this position in January. This educational assistant instructed 18 pupils in reading and mathematics. Pupils were scheduled for bi-weekly sessions on a 1:1 or 1:2 basis. The greatest program reorganization took place at P.S. 139. The four educational assistants initially assigned to the program each provided weekly instruction in reading to a fairly large group of 1st graders. In mid-November, the instructional program was modified; three of the four assistants transferred to other schools, and their replacements scheduled more frequent sessions with youngsters on a 1:1 or 1:2 basis. With the addition of a fifth paraprofessional in early January, the program was modified once again to accommodate a larger number of pupils who received reading instruction, primarily. As of mid-year, approximately 66 1st, 2nd and 3rd graders were scheduled for instructional sessions, four periods a week. Staff-pupil ratio was 1:1 or 1:2, which was quite favorable for intensive remediation.

Physical Facilities: Although the educational assistants at P.S. 277 and P.S. 222 utilized a classroom allocated solely for remediation services, lack of space at P.S. 198 and P.S. 139 precluded this type of optimal arrangement. Paraprofessionals initially assigned to P.S. 198 utilized available classroom space in working with youngsters in the Distar program. However, these educational assistants who assumed their positions at mid-year often held instructional sessions wherever suitable space was available. Materials, then, were often taken from place to place, as no permanent facility was provided

for small group instruction. At P.S. 139, the paraprofessionals utilized several teachers' rooms. Although this setting was not optimal, space was at a premium at this school.

Supervision and Training: In three of the four schools, ongoing supervision in reading was provided by corrective reading teachers. Additionally, the educational assistants conferred with classroom teachers, either on a regularly scheduled or informal basis. Instructional techniques in mathematics were offered, primarily, by classroom teachers, for none of the schools was staffed by a mathematics cluster teacher. Training sessions were also held at the District Office in both mathematics and reading.

Materials and Activities: The educational assistants picked up and returned pupils to their classrooms and kept records of activities undertaken, skills completed or in need of further reinforcement, and followup lesson plans. These forms, as well as additional materials, were kept in individual folders. In this way, educational assistants were able to monitor the progress of each participant and to plan instructional sessions according to pupil need. Record keeping, for the most part, was completed more efficiently as the term progressed. Results of Reading Diagnostic Tests administered to participants were usually made available to the paraprofessional staff, so that remediation techniques could be designed to improve specific skill deficiencies. Materials provided for reading instruction at P.S. 198 included software necessary for sequential instruction in the Distar Program, and hardware equipment utilized by one paraprofessional in the reading laboratory. The equipment utilized in the laboratory consisted of Controlled Reader, Hoffman Machine, Borg-Warner Systems 80, Spellbinder. These materials were also available to the educational assistants at P.S. 277, although pupils had to utilize the reading resource room for this purpose. Similar software materials were provided for remediation

in reading within the four schools. These instructional supplies included phonics workbooks, rexographed sheets, flash cards. Reader's Digest Skill Builders, Sullivan Programmed Reading Books, Barnell-Loft Specific Skills Series to develop word attack and comprehension skills. Glass Analysis for Decoding materials were introduced at mid-year, as well as Bowmar Monster Books, which the pupils particularly enjoyed reading. Instruction in mathematics was offered on an ongoing basis in two of the four schools. The assistants often utilized McCormick-Mathers Gaining Math Skills, as well as rexographed sheets, pupils' classroom texts, and homework assignments, or various mathematics workbooks. Manipulative materials such as the balance, figures for counting, etc. were purchased for the program by the Title I Supervisor.

#### V. PROGRAM EFFECTIVENESS

As a measure of program effectiveness, the mean growth of participants in reading and mathematics during the course of the program was determined. The performance of 1st and 2nd graders in reading and mathematics was analyzed on a pre- and post-test basis. Because it is not possible to obtain predicted post-test scores for 1st and 2nd graders, based on past performance prior to placement in the program, pupils' actual post-test scores were compared with scores obtained on a pre-test basis, to determine if significant gains in these curriculum areas were made. These data are presented in Tables 1 and 2. (See next page.)

Results indicate that gains in reading and mathematics for participants in grade 1 were significant. Overall, there was improvement for most youngsters in grade 2, although for a small proportion of 2nd graders post-test scores on several reading sub-tests of the Stanford Early School Achievement Test

were not significantly higher than pre-test scores.

Table 1  
Mean Scores for Participating Pupils in Grades 1 and 2  
Stanford Early School Achievement Test-Level II

Sub-Test	<u>Grade 1</u>				<u>Grade 2</u>			
	N	Pre-Test Scores	Post-Test Scores	Sandler's A	N	Pre-Test Scores	Post-Test Scores	Sandler's A
Letters and Sounds	72	25.85	30.74	0.0289**	6	33.00	35.33	2.0408
Aural Comprehension	75	12.27	14.93	0.0367**	6	16.17	19.00	0.2664*
Word Reading	73	27.36	40.08	0.0228**	6	50.33	56.67	0.3601
Sentence Reading	69	12.78	17.90	0.0469**	6	17.00	32.83	0.1796**
Mathematics	22	27.86	41.50	0.0664**	6	36.67	49.00	0.2352*

\* significant at the .05 level  
\*\* significant at the .01 level

Table 2  
Mean Scores for Participating Pupils in Grade 2  
Metropolitan Achievement Test in Reading

N	Pre-Test Scores	Post-Test Scores	Sandler's A
30	1.50	2.10	0.130**

\*\* significant at the .01 level

The reading growth of participants in grades 3 through 6 was also determined. Predicted post-test scores, based on pupils' previous performance, were compared with actual performance on Metropolitan Achievement Tests in Reading. These results are summarized in Table 3 (See next page ).

Table 3					
Mean Scores for Participating Pupils, Grades 3 - 6 Metropolitan Achievement Tests in Reading					
Grade	N	Pre-Test Scores	Predicted Post-Test	Obtained Post-Test	Sandler's A
3	31	1.81	2.06	2.25	0.1689*
4	25	3.76	4.36	4.58	1.6641
5	22	3.22	3.65	4.50	0.1358**
6	18	4.41	4.91	4.94	71.6407
* significant at the .05 level ** significant at the .01 level					

For a majority of pupils in grades 3 through 6, mean gains in reading were greater than would be expected on the basis of their prior performance. Although 6th graders showed some improvement, overall growth in this curriculum area was not significantly better than predicted performance.

Performance of pupils in grades 3 through 6 in mathematics was also analyzed on a pre- and post-test basis. These results are presented in Table 4.

Table 4					
Mean Scores for Participating Pupils in Grades 3 - 6 Metropolitan Achievement Tests in Mathematics					
Grade	N	Pre-Test Scores	Predicted Post-Test	Obtained Post-Test	Sandler's A
3	14	2.01	2.25	3.09	0.1224**
4	22	3.22	3.70	3.95	0.1612*
5	22	3.45	3.84	5.44	0.1079**
6	18	4.96	5.72	5.98	2.9944
* significant at the .05 level ** significant at the .01 level					

Performance in mathematics for pupils in grades 3 through 5 was significantly higher than predicted performance. Although 6th graders showed some growth in mathematics, gains did not exceed those shown prior to placement in the program.

Overall, a majority of participants showed significant improvement in reading and mathematics. The one-to-one or small group instructional services provided by the educational assistants fostered development of basic skills in the two curriculum areas. The assistants concurred that the ongoing supervision provided by the corrective reading teachers enhanced program effectiveness and contributed to efficient utilization of instructional materials. Although many of the educational assistants found the keeping of records to be somewhat cumbersome, most admitted to greater ease in devising plans and records as the term progressed. Additionally, the warmth and interest shown by many educational assistants fostered an instructional setting which facilitated learning and contributed to an enhanced self-concept.

For a small proportion of pupils, gains in reading and mathematics were not statistically significant. This fact may be attributed to the discontinuity of services in several schools as the result of changes or additions in personnel, staff-pupil ratio, scheduling of instructional sessions. Growth in reading, particularly, must be assessed in light of these changes in program staffing and format. Instruction in mathematics, although effective in raising the mathematics skills of many participants, was generally assigned a less central role. Coordination of this component was often undertaken by classroom teachers, and instructional supplies were somewhat less abundant than was the case for reading materials. Nonetheless, there was substantial growth in mathematics for pupils serviced in grades one through five.

#### VI. PROGRAM STRENGTHS AND WEAKNESSES

The efficiency, as well as the interest in providing quality instruction shown by many of the educational assistants constituted the greatest program strength.

Additionally, in-service training and supervision provided by the corrective reading teachers, as well as several classroom teachers, contributed to the overall effectiveness of instructional services. Perhaps the greatest program weakness was the discontinuity of services in some instances, as the result of changes or additions in personnel. Further, in several schools, instructional facilities that were relatively free from distractions were less than optimal. However, lack of additional classroom space in these schools precluded other arrangements.

#### VII. RECOMMENDATIONS

It may be advantageous to develop more fully instructional procedures in mathematics. Coordination of this component, as well as the provision of materials designed to meet the needs of individual participants, would enhance instructional services in mathematics. Additionally, training offered to educational assistants to facilitate record keeping and lesson plans would contribute to more efficient utilization of preparation periods. Overall, the educational assistants have provided important services for participants, and it is recommended that the program be recycled.