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AUTHOR Simon, Alan J.; And Others

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ABSTRACT

This evaluation deals with three programs funded under the 1969 New York State Urban Education Program. The three objectives of the Diagnostic Reading Program were as follows: (1) to raise the reading level by one grade of 80 percent of those children in the second grade who were below reading level; (2) to raise the reading level of one-half grade of 80 percent of those children in the fifth or sixth grade who were below reading level; and, (3) to develop reading skills and knowledge of technique in the use of materials on the part of 80 percent of the paraprofessionals, and that a similar percentage of the paraprofessionals should show a significant positive difference in attitude toward their jobs. Operation Search, which has just completed its second year of operation, attempts to raise the levels of educational and vocational aspiration and scholastic achievement for disadvantaged youth. The program operates in four junior high schools and three elementary schools. About 450 students are intensively involved in the program and receive all of its services. The Aerospace Education Resource Center is designed to improve the aspirational level of the pupils, to provide a supplementary educational experience, to motivate students in their learning attitudes towards reading, mathematics, and science, and also to provide career information in the aerospace industry. (Author/JM)

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FINAL REPORT

AN EVALUATION

OF THE

STATE URBAN EDUCATION PROGRAMS

COMMUNITY SCHOOL DISTRICT 27

NEW YORK CITY BOARD OF EDUCATION

DIAGNOSTIC READING PROGRAM

OPERATION SEARCH

AEROSPACE EDUCATION RESOURCE CENTER

JULY, 1972

An Evaluation of a New York City school district educational project funded by the "New York State Urban Education Program" enacted at the 1969 legislative session of the New York State Legislature for the purpose of "meeting special educational needs associated with poverty". (Chapter 685, Section 9, subdivision 11, laws of 1969, performed under contract with the Board of Education of the City of New York for the 1971-72 school year.)

TEACHING & LEARNING
RESEARCH CORP.

91-31 Queens Boulevard/Suite 611/Elmhurst, New York 11373/212-478-4340

Diagnostic Reading Program

Executive Summary

It would appear that at the completion of this evaluation of the Diagnostic Reading Program of District 27 most of the program objectives have been met. The first objective was to raise the reading level by one grade of 80 percent of those children in the second grade who were below reading level. Although this objective was not met, it should be remembered that the duration of the instructional period in this study was approximately six months. As a result it would be extremely difficult to attain an objective of one year's growth in reading by 80 percent or more of the participants in the study. When one considers the fact that the second grade sample of this study had progressed far less than a year in reading over a full year's instruction, the objective of one year's growth during a six-month period in second grade is totally unrealistic. Nevertheless, there was a significant gain in reading as evidenced by a statistical comparison of the pre and post test results. Even more important, there was a significant change in the relative status of the pupils in the second grade sample between the pre and post test periods. This change in stanine is most significant as it reflects progress by a significant increase in percentile rank relative to the normative population.

The second objective of this study which stated that a sample of fifth and sixth grade participants would raise their reading levels by a half grade was a most realistic one. In fact, over 80 percent of the sample of intermediate grade participants improved their reading by one-half grade or more. An examination of Table 1 in the body of this report would indicate that a sizeable number of children made gains of one grade or higher. As might be expected, there was a significant difference between the pre and post test results, suggesting that these children had made a significant gain in reading in the Diagnostic Reading Program. More significantly, there was a change in stanine for these children that was also significant beyond the .01 level of confidence. As was true of the second grade participants, the intermediate grade children also changed their relative standing within the normative group improving it significantly.

The third objective contained two parts, the first of which was to develop the reading skills and knowledge of techniques on the part of 80 percent of the paraprofessionals while the second part was that 80 percent of the paraprofessionals would show a significant, positive difference in attitude toward their jobs. Both of these objectives appear to have been met. Observation of the paraprofessionals in a work-sample performance of their tasks reflected that they exhibited a significant improvement in the number of characteristics of a good idagnostic reading lesson displayed during the post observation as compared to the pre observation. There were some relatively minor weaknesses exhibited which could be corrected through in-service training during the following year. Training paraprofessionals is a difficult task. It would appear that Mrs. Spar and her staff have done

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The information in this study could not have been compiled without the cooperation of many District 27 personnel. Special appreciation is extended to Marvin Aaron, Deputy Community Superintendent; Dorothy Spar, Coordinator of the Diagnostic Reading Program; Paul Friedman, Coordinator of Operation Search; and Bernard Spar, Coordinator of the Aerospace Education Program, and to their respective staffs.

The gratitude of the evaluation staff is also extended to all the teachers, paraprofessional and children participating in the projects who assisted in compiling the evaluation data.

EVALUATION STAFF

EVALUATION DIRECTOR: ALAN J. SIMON

DIAGNOSTIC READING PROGRAM

PRINCIPAL INVESTIGATOR: HARVEY ALPERT

OPERATION SEARCH

PRINCIPAL INVESTIGATOR: LESTER SCHWARTZ

AEROSPACE EDUCATION PROGRAM

PRINCIPAL INVESTIGATOR: PHILIP WHITE

RESEARCH ASSOCIATE: SIMONE STERNBERG

an excellent job in preparing the paraprofessionals to use materials intelligently and diagnostically. However, the paraprofessionals are still performing their tasks in a relatively inflexible manner and are not devoting sufficient time to transferring the skills learned into the textbooks employed within the classroom. These are undoubtedly areas that could be corrected through further in-service work. The attitude of the paraprofessionals toward their jobs also improved significantly over the year. The Job Attitude Questionnaire that was administered in the fall and in the spring revealed strongly positive feelings on the part of the paraprofessionals toward the tasks they had been asked to perform, the reaction of the children to their efforts, and the appreciation of their efforts by the teachers and children alike.

The upper grade classroom teachers also strongly support the paraprofessional program as indicated by the Questionnaire designed to elicit their attitude toward the use of paraprofessional assistants in the teaching of reading. There were a few cases of dissatisfaction, but in general the teachers seemed to feel the program is working well; that the paraprofessionals have made a positive impact upon the children; that they have been of aid and assistance within the classroom, and have not been an obstructive force within the classroom in any way. As a result, the fourth objective was also satisfactorily attained.

The final objective stated that 80 percent of the pupil participants would show a significant positive difference in attitude toward reading. It would appear that this objective was not met. Most of the children in this study were seriously retarded in reading at the beginning of the year. Although there was substantial improvement on the part of many of these children, they were still reading below grade at the conclusion of the year. Obviously, they still require considerable follow-up in the years to come and should certainly be continued in the Diagnostic Reading Program. The statistics reveal that these children are closer to average now than they were when they began the program. However, they are still materially below the average expected for their age and grade. Consequently, they still view themselves as being somewhat inadequate in reading and still find the reading act a difficult enough one so that reading is not necessarily pleasurable. There seemed to be some evidence that the attitudes of the children were improving with resepct to reading but they certainly have not improved sufficiently to have attained the objective stating that 80 percent of these pupil participants would show positive differences in their reading attitudes.

Executive Summary

Operation Search, which has just completed its second year of operation, attempts to raise the levels of educational and vocational aspiration and scholastic achievement for disadvantaged youth in District 27, Queens. The program operates in four junior high schools and three elementary schools and broadly services approximately 1,300 students. Of these, about 450 students are intensively involved in the program and receive all of its services.

The major components of the project consisted of field trips to schools, colleges, business enterprises and community agencies; guest speakers, and individual and group counseling related to life goals. During the past year the tutoring program for Search students was enlarged and systematically developed in each of the target schools.

The project staff was comprised of a coordinator, a licensed guidance counselor in each school and a paraprofessional assistant in each of the junior high schools.

Specific Program Objectives were:

1. To achieve, through project activities, a meaningful increase in the academic achievement of the students who participate in the project.

2. To achieve, through project activities, a more positive attitude towards school in the students who participate in the project.

3. To increase, through project activities, the educational and vocational levels of aspiration of the students who participate in the project.

In addition to these immediate objectives the program has as its ultimate goals a significant increase in the number of students completing high school, entering college or other post high school training; and enhancing student opportunities for acquiring skilled, managerial, or professional jobs.

Evaluation Objectives and Method

The approximately 450 students receiving intensive project services were used as the sample for this study. The evaluation employed a pre and post test design involving standardized achievement tests, grades, attendance records, questionnaires and on-site observations and interviews. The evaluation objectives were:

A. 1) To determine whether 60% of the project participants achieve a five month increase in reading and mathematics levels as measured by standardized achievement tests.

2) To determine whether the mean achievement scores in reading and mathematics of the project participants significantly improves.

3) To determine whether 60% of the participants achieve a significant improvement in report card grades in curricula subjects.

B. To determine whether the participants achieve a statistically significant more positive attitude towards school as measured by school attendance and a questionnaire.

C. 1) To determine whether 60% of the participants demonstrate an increase in the amount of schooling they expect to attain.

2) To determine whether 60% of the participants demonstrate an increase in their level of vocational aspiration.

Major Findings

A. The mean increase between pre and post measures for reading was 1.2 years, and 1.7 years for mathematics. 82% of the students increased reading scores by a half a year or more and 64% by a year or more. 91% increased mathematics scores by a half a year or more and 55% by a year or more.

The objectives related to achievement in basic skills were met by a wide margin.

B. 44% of the sample increased their grade point averages by .5 or more. This satisfied the evaluation objective. 53% increased their Grade Point Average by .25 or more. This result fell short of the evaluation objective by six percentage points.

C. There was no evidence to indicate that students' attitudes towards school had changed although students felt positively about the project itself.

D. There was no change in the attendance records of the students in the sample. However their attendance as a group had been relatively good during the preceding year and there was not too much room for improvement.

E. The expressed educational and vocational aspirations of students were high at the start of the school year - only 5% did not expect to graduate from high school; only 20% expected to obtain semi-skilled and unskilled jobs - and, therefore, showed little or no change by the end of the year.

Conclusions and Recommendations

The project was successful in meeting its academic objectives. Whether its aspirational objectives were met is unclear. The project, apparently had little effect on students' school attitudes probably because the project had little influence on the classroom experiences of the students.

The results of this year's evaluation combined with last year's evaluation recommendation indicate that the project was generally successful and should be continued.

Recommendations

For a full exposition of these recommendations see the recommendations section of the report.

1. The Search Program should be integrated more with curriculum.
2. Teachers should be included in project planning.
3. School administrations should be told not to encroach on Search prerogatives.
4. The totally inadequate counselor facilities in one school should be corrected.
5. The use and professional development of paraprofessionals should be broadened.
6. Consideration should be given to the use of selected high school students and parents in the tutoring program.
7. An in-service training program in group counseling should be initiated.
8. The program should begin to employ the Search model more widely in the district.

AEROSPACE EDUCATION RESOURCE CENTER

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EXECUTIVE SUMMARY

The Aerospace Education Resource Center is a State Urban Education funded project now in its second year of operation. The program is designed to improve the aspirational level of the pupils, to provide a supplementary educational experience in Aerospace Education, to motivate students in their learning attitudes towards reading, mathematics and science and also, to provide career information in the aerospace industry. This evaluation was designed to collect and examine data relevant to these project objectives.

In the course of conducting the evaluation, eight on-site observations were made at the Aerospace Center located in P.S. 90 and Kennedy International Airport. In addition, a random sampling of 20% of the participating classes, representing 10 schools in District 27, Queens, were given a battery of pre and post tests designed to measure the effectiveness of the program. These schools were P.S. 42, 45, 47, 51, 63, 66, 90, 96, 105, and 124. Out of this sample a total of 6 classes from P.S. 45, 96, and 105 were randomly chosen for personal visitation by the principal investigator (See Appendix A).

A description of the program, an analysis of the pre and post test score results, a review of the teacher perception questionnaire and the reactions of teachers and children offered in on-site interviews are contained in this evaluation. While none of the program objectives were achieved at the proposed 80% level, positive results were noted for each objective. Specifically, 71% of the subjects showed equal or higher post test scores than pre test scores in Mathematics and Science; 67% scored equal or higher in post test scores than pre test scores on an Aerospace Career inventory; 65% showed positive increase in their attitude toward reading, and finally 57% showed an increased positive attitude on a "My School" attitude questionnaire. Results of t tests for paired comparisons of pre and post test scores were significant* for Mathematics/Science concepts (N=275), Career Information Inventory (N=274), and attitude toward the Aerospace Center compared with "My School" attitude survey (N=283) No significant differences were found in attitude toward reading.

* .05 level of significance

LIST OF TABLES

DIAGNOSTIC READING PROGRAM

Function No. 85-2-6455

FINAL REPORT OF THE DIAGNOSTIC READING PROGRAM

COMMUNITY DISTRICT NO. 27, QUEENS

Program Description

On the basis of the results of the Metropolitan Achievement Test Reading Section administered to all second, fifth and sixth graders of District 27, a determination was made as to the number of children reading below grade level. Approximately 500 second grade children and 410 fifth and sixth graders reading below level were selected for intensive help with their reading. In an attempt to raise the level of those children reading below the national average, assignment was made to classrooms specially selected so that these children would have available specialized reading instruction on an individual basis. In each of the classrooms a selected paraprofessional was placed, after having been provided with initial training by the Program Director, Mrs. Dorothy Spar. Each of the diagnostic reading aides was provided with on-going in-service instruction in the use of materials and techniques required for the remediation of reading difficulties. The aides were given very specific instructions in the use of the materials and results obtained from the initial administration of the Metropolitan Reading Tests Reading Section. For each child in a classroom with a diagnostic reading aide, a careful analysis of the test results was accomplished according to a diagnostic form provided by the Program Director and her assistant. The diagnostic reading aide prepared a folder for each child in the classroom containing the diagnostic information obtained from the reading test and very careful records of each contact with that child, the materials utilized in instruction, and the results of the child's performance in those materials for purposes of recording his on-going progress. The materials employed were chosen on the basis of the diagnostic test information in terms of the area of difficulty and the child's reading level. During the classroom day, the diagnostic reading aide would call children to her desk and teach an individual lesson, the results of which would be recorded in each child's record folder.

The official program as described contained the following objectives:

1. To raise the reading level by one grade of 80% of those children in the second grade who were below reading level.
2. To raise the reading level by .5 grade of 80% of those children in the fifth or sixth grade who were below reading level.
3. To develop reading skills and knowledge of technique in the use of materials on the part of 80 percent of the paraprofessionals and that a similar percentage of the paraprofessionals should show a significant positive difference in attitude to their jobs.

4. Eighty per cent (80%) of the upper-grade classroom teachers should show a positive attitude toward the use of paraprofessional assistance in the teaching of reading.
5. Eighty percent (80%) of the pupil participants should show a significant positive difference in attitude toward reading.

Procedure

To evaluate the first objective, a sample of 20 percent of the participants in the second grade reading below grade level were selected. Every one of these children was administered the Metropolitan Achievement Test in Reading in October. These results will serve as the pre-test material for determination of progress in the post test. Approximately 165 children were in the original sample for evaluation of Objective #1. In April the post test was administered to all children. Mrs. Spar provided the results for all children in the original sample who were still enrolled in school. The final sample size was 97.

In order to evaluate Objective 2, a random sample of 20 percent of the participants in the fifth or sixth grade reading below grade level were chosen. The approximate number in this sample is 85. As in Objective 1, the Metropolitan Achievement Test in Reading was administered to each of these subjects on a pre-test basis in October. The results of the post test at the end of April was provided. The final sample of children on whom pre and post test data was available was 77.

In the original proposal, a random sample of 20 percent of the paraprofessionals participating in the program was to be selected; but as the number participating in the second and upper grade programs was very small, it was decided to include as many of the paraprofessional participants as possible. Approximately 25 paraprofessionals were observed and rated on a behavioral observation scale which detailed their performance in an actual teaching situation, and were given an attitude questionnaire to provide pre and post test information for the evaluation of Objective 3. In some cases, the questionnaire was administered orally by the Principal Investigator. In other situations the paraprofessional was asked to fill out the questionnaire and was given aid in interpretation when necessary. The evaluation of the performance of each of the paraprofessionals in terms of using knowledge of reading skills and techniques in application of the materials remedially, was also individually observed by the Principal Investigator.

In order to evaluate Objective 4, a questionnaire was submitted to the toal number of upper grade classroom teachers with diagnostic reading aides to obtain information about their attitudes

toward the use of paraprofessional assistance in the teaching of reading. All but one of these questionnaires have been returned. This procedure was repeated in May.

The fifth objective (to improve the attitude of the pupil participant toward reading) was evaluated by utilizing a sample of children involved in Objectives 1 and 2. Each child was given a reading attitude questionnaire and a modification of the "My School Questionnaire" on a pre and post test basis. All of the children were seen individually by members of the Teaching & Learning staff. These questionnaires have been analyzed to provide the pre test data to determine any changes in attitudes which will result from the program.

A meeting was held on October 6 with Mrs. Dorothy Spar, the Program Director, to familiarize the Principal Investigator with the administrative organization of the program. Plans were made to select the sample of upper grade and lower grade children participating in the program and to obtain a schedule for school visits. Suggestions for possible changes and improvements in the evaluation instruments were made at that meeting. The questionnaires contained in the appendices were prepared and submitted for final approval the following week.

Commencing the last week of October, visits were made to the following schools by the Principal Investigator and two members of the professional staff of Teaching & Learning Research Corp.:

Fifth and Sixth Grades	Second Grades
P.S. 124	P.S. 96
P.S. 197	P.S. 155
P.S. 45	P.S. 42
P.S. 123	P.S. 45
P.S. 42	P.S. 106
P.S. 96	P.S. 183
P.S. 106	P.S. 123
	P.S. 124
	P.S. 197

Approximately three hours were spent in each school although this varied with the number of children, diagnostic reading aides, and classrooms participating in the study in the school being visited. The school visits were completed by the end of November 1971.

In the spring, each school was revisited during the last week of April and first week in May. Because of absences, and other assorted problems, some of the schools had to be returned to by the Research Associate with final observations and testing completed by

the end of May. The Principal Investigator observed each of the paraprofessionals during a teaching lesson and rated their performance with respect to the presence or absence of the Characteristics of a Good Diagnostic Lesson Instrument. The Job Attitude Questionnaire was handed to each of the paraprofessionals who completed it with assistance provided in interpretation when requested. The Research Associate and other members of the professional staff of Teaching & Learning administered the Questionnaires entitled "Self-Concept of Abilities," and the modified "My School Questionnaire." The teacher questionnaire designed to elicit information with respect to the attitude of the teacher toward the paraprofessional was mailed in April. The teachers completed the questionnaire at their leisure and returned them to Teaching & Learning. All the questionnaires were returned.

Instrumentation

The first objective was to raise the reading level by one grade for 80 percent of those children in the second grade who were below reading level. The instrument utilized was the Metropolitan Achievement Test. This test was administered by Mrs. Spar and her staff and the results were provided to Teaching & Learning.

The second objective was to raise the reading level by .5 grade of 80 percent of those children in the fifth or sixth grade who were below reading level. The instrument utilized for this evaluation was also the Metropolitan Achievement Test which was administered in October and at the end of April by Mrs. Spar and her staff who provided the pre and post test scores on each child in the sample to the evaluators.

The third objective was to improve the performance of the paraprofessionals in their knowledge of techniques and application of techniques in teaching a reading lesson. The instrument utilized to evaluate this objective is contained in Appendix A. A subsidiary objective was the improvement in attitude toward their jobs by the paraprofessionals through the course of the year. For each of these objectives the criterion set was that 80 percent of the paraprofessionals who would improve their skill in teaching techniques in similar percentage, would show a significant positive difference in attitude. The instrument used to evaluate the subsidiary objective is contained in Appendix B.

The fourth objective was that 80 percent of the upper grade classroom teachers should show a positive attitude towards the use of paraprofessional assistants in the teaching of reading. The questionnaire designed to ascertain these attitudes is contained in Appendix C.

The final objective related to the pupil participants and their attitude toward reading. These attitudes were ascertained through

a modification of the "My School Questionnaire" and a Self-Concept of Abilities Questionnaire. These are contained in Appendices D and E.

Results

General Impressions:

During the initial visits the Investigator noted a considerable difference in confidence and security between those paraprofessionals working in the upper grades program and those working in the second grade program. Those paraprofessionals working at the primary grade level had been in the program for a year and had also been through a year of training. The intermediate grade paraprofessionals had been through an initial workshop run by Mrs. Spar and her staff and as a result, seemed quite secure in their knowledge of responsibilities, materials, and initial diagnostic techniques. However, their lack of experience was clearly evidenced by their mechanistic application of lessons and use of materials which had been presented in the workshops. It was gratifying to note that during the second visit to each of the paraprofessionals in the spring, they had become far more people -than technique- centered in their teaching. They had developed considerable confidence and security in their ability to perform the tasks required of them and were much freer and creative in their use of materials. Every one of the paraprofessionals in the upper grade and second grade programs kept extensive records on each of the children and utilized these records in following through the program laid out by Mrs. Spar and her staff. Materials were related to the diagnostic tests provided by Mrs. Spar; the paraprofessionals utilized the detailed directions for scoring these instruments accurately and seemed to have a good understanding of the materials correlated with deficits determined through the diagnosis. Hence, in the Fall, most of the paraprofessionals were working in the area of word recognition and analysis only. By Spring an examination of the records indicated that there had been a broadening of objectives to include many areas of comprehension as well. Most of the paraprofessionals had their own little area in the rear of the classroom which they utilized as their base of operations. Careful record keeping insured that each child received equivalent amounts of instruction. They unobtrusively would call children to their desks and work with them quietly for a brief period of time at which point the child would be sent back to his regular seat and another youngster would be called. There were a few instances where some of the paraprofessionals were working with small groups of children. They had determined that a few of the children in the class were reading on the same level and had the same needs. As a result they would call these children in groups of two or three and would work with them simultaneously. In a few cases the paraprofessionals were observed assisting the classroom teacher during the reading part of the day by working with one of the

reading groups within the class. How extensive this practice was could not be ascertained during the brief visits made to each class. There were paraprofessionals who were assigned to a remedial reading teacher. In all these situations the paraprofessionals seem to have been given excellent direction by the remedial teacher and as a result a team approach seemed most evident within the remedial setting. The remedial classroom contained far more materials than were available to those paraprofessionals working in a regular classroom situation. In particular, the remedial reading teachers were well equipped with a wide variety of books, workbooks, charts and audiovisual materials. The paraprofessionals were observed utilizing all of these materials and seemed very secure and confident in their use of them. There were some situations where paraprofessionals were observed accepting incorrect answers and providing incorrect information to the children they were tutoring. Also, some of the paraprofessionals seemed far too tied to the answer key in the teacher's edition of the workbook. Fortunately, these instances were rare and were certainly not the norm of behavior for the paraprofessionals as a group. In many cases students were allowed to score their own work following which the paraprofessional would discuss their errors and attempt to aid the child in overcoming the obstacle to understanding. The paraprofessionals as a group would be characterized as conscientious, persistent, and persevering. They seemed to have learned a great deal in Mrs. Spar's workshops and all seem genuinely desirous of furthering their knowledge and improving the techniques in teaching reading. From the amount of growth in the performance of the paraprofessionals observed during the year, the Principal Investigator feels that a very high level of competence could be attained if this program were to be continued.

The pupils within the classrooms seemed very eager to come for instruction when they were called. With a few exceptions, the paraprofessionals seemed warm and responsive to the children's needs and the children responded in kind. During the observations there was only one instance where a paraprofessional seemed to be having difficulty with a child behaviorally. In this one instance, the child exhibited extreme negativism by refusing to respond and seemed hostile. This same behavior seemed evident when the child returned to the regular classroom situation. The rapport between the paraprofessionals and children was generally excellent. Pupils would arrive for a lesson, find their books, and begin working immediately. As a result, very little time seemed to be wasted. The amount of time the paraprofessionals spent in actual instruction seemed much higher by comparison than that which is normally attainable in a classroom situation with all of its attendant distractions. The time spent instructionally in the area of reading is thus markedly increased in such a program. Since children who are retarded in reading require more instructional time, this program is unquestionably effective in meeting that need. It is very

difficult to generalize with respect to the relationship that the paraprofessionals had developed with the teachers. In over half the classrooms there seemed to be an air of cooperativeness with good communication between the teacher and the paraprofessional and in many of these situations there seemed to be a genuine warmth existing between them. In these situations the teachers would make suggestions and provide aid when necessary in maximizing the effectiveness of the paraprofessional's work with the children. In return, the paraprofessional would provide the teacher with information with respect to the child's progress and needs in his work with her. In a small percentage of classrooms the teacher and the paraprofessional seemed to be going their own separate ways. The teacher would be willing to provide help if asked and the paraprofessional would aid the teacher if specifically requested to do so. There did not appear to be good rapport, but in these situations there did not seem to be bad rapport either. Hostility between the teacher and the paraprofessional was evident in only one situation. In that specific instance the teacher seemed to feel somewhat threatened by the aide's presence. In one other instance, the paraprofessional was hostile toward the teacher but this did not seem to be reciprocated. This particular paraprofessional felt the teacher was not able to control the class and had asked to be transferred to another class. This aide also exhibited some hostility towards the children and had the poorest rapport of any of the paraprofessionals with the children with whom she worked.

Summary

From this observer's standpoint the Diagnostic Reading Program in District #27 has been an efficient and successful one. A considerable amount of direction was provided by Mrs. Spar's office. This included the scoring of tests administered in the fall by an elaborate procedure which allowed categorization of each item in terms of the skills required for a successful response. Materials were provided that correlated with the diagnostic information. As a result, a paraprofessional could administer a test, score it, determine the deficit areas of each child, obtain the materials correlated with those deficits, and provide a structured program designed to eliminate problem areas. The diagnostic breakdown was accomplished in the comprehension area and in the word recognition and analysis area. As a group, the aides seemed very effective in applying the materials provided since they did not require a great deal of expertise. Much of the material was self-correcting and labeled as to level. Consequently, the paraprofessional was able to begin at the level indicated by her prior test information in workbooks correlated with a child's specific difficulty and to work developmentally through the series during the school year. The paraprofessionals kept accurate records of contact and the progress of each child. This observer found the paraprofessionals to be conscientious, persistent,

and persevering in their efforts to help the children. Many of the children exhibited a high degree of motivation when working with the diagnostic reading aide and most of the aides seemed able to channel this motivation in goal-directed activities relating to reading. There was a genuine warmth between the children and the paraprofessionals with strong evidence that rapport had improved during the year between the fall and spring visits. There appeared to be no conflict with the teachers in the classroom; the paraprofessionals seemed to know what their job was and they did it. The few cases where conflicts arose these seemed to be the result of individual personality rather than rivalries resulting from tasks required of the paraprofessionals by the program. The paraprofessionals were not all equally effective during the lessons, but there is no doubt that there was considerable growth during the year. The workshop held by Mrs. Spar seemed to have a very positive effect as evidenced by the fact that skills learned and matters discussed were observed being implemented by the paraprofessionals in their work with the children. It would appear that those paraprofessionals who were working within the classroom setting rather than with the remedial reading teacher were able to make a more significant impact upon a larger number of children. On the other hand, those paraprofessionals who were working with remedial reading teachers seemed to have developed a higher degree of effectiveness in their teaching procedures. This probably results from the continued opportunity to observe a trained remedial reading teacher in action and to model their own behavior in relation to it. In conclusion, the Diagnostic Reading Program is viewed by this observer as a highly effective one which should not only be continued but expanded.

FINDINGS

The sample for this study was chosen from an alphabetical list from which every fifth child in class participating in the diagnostic reading program was selected. Although there was some attrition a comparison of the pre and post test ends reveal that this was not severe.

Objective A

The first program objective was to raise the reading level by one grade of 80 percent of those children in the second grade who are below reading level. As can be seen in Table 1, 84 percent of the children improved their reading scores by .5 to .9 tenths of a grade. Only 16 percent of the children in the second grade sample improved their performance by one grade or higher. It was undoubtedly unrealistic to expect a gain of a full grade when the duration of the study and the instruction program was approximately six tenths of a year.

TABLE 1

DIAGNOSTIC READING DISTRICT 27 - PRE-POST GROWTH 1971-72

Pre-Post Growth	Primary Frequency	%	Cumu. Freq.	Cumu. %	Intermediate Frequency	%	Cumu. Freq.	Cumu. %
.0	1	1	97	100				
.1	1	1	96	99	8	10	77	100
.2	2	2	95	98	1	1	69	90
.3	2	2	93	96	3	4	68	88
.4	10	10	91	94	3	4	65	84
.5	21	22	81	83	3	4	62	81
.6	14	14	60	62	5	6	59	77
.7	17	18	46	47	3	4	54	70
.8	7	7	29	30	4	5	51	66
.9	6	6	16	23	2	3	47	61
1.0	3	3	13	16	6	8	45	58
1.1	3	3	10	13	6	8	39	51
1.2	4	4	6	10	4	5	33	43
1.3	2	2		6	6	8	29	38
1.4					1	1	23	30
1.5					5	6	22	29
1.6	2	2	4	4	2	3	17	22
1.7					1	1	15	19
1.8					3	4	14	18
1.9					3	4	11	14
2.0	1	1	2	2	2	3	8	10
2.1								
2.2	1	1	1	1	1	1	6	8
2.7					1	1	5	6
2.9					1	1	4	5
3.2					2	3	3	4
3.3					1	1	1	1

Correlated pre & post		Correlated pre & post	
means pre	1.56	means pre	3.28
means post	2.26	means post	4.35
stan. dev. pre	0.31	stan. dev. pre	0.93
stan. dev. post	0.53	stan. dev. post	1.26
t	19.58	t	11.97

In light of the number of months spent in the instructional program these gains are viewed as better than normal considering that most of these children gained less than one month per month of instruction during the first grade. In an attempt to further analyze the pre and post test standardized test results, the pre and post test means on the Metropolitan Achievement Test were calculated. Since the pre and post test results were obtained from the same children a correlated means test was employed. The results are contained in Table 1.

The mean pre test score for the second grade sample was 1.56 while the mean post test score was 2.26. The calculated t for this difference in means is 19.6. This suggests that these gains were significant and well beyond the .01 level of confidence. It would be assumed that there would be a significant gain between the pre and post test results and that this type of gain would have occurred whether the children had been in a diagnostic reading program or not. In general the normal instructional program of the school year should produce a significant gain in reading performance. As a result, the stanine placement for each child on a pre test was determined as well as a stanine placement on the post test. Since the stanine is a score which indicates a child's relative status, a change in the stanine would indicate that a child had changed in relative status in relation to the rest of the group. Hence a child who was a stanine 2 on the pre test, and in stanine 3 on the post test, would indicate that he had changed in relative status and had improved relatively in relation to the total group.

TABLE 2

DIAGNOSTIC READING - PRE-POST STANINE SCORES

	Pre	Post
Primary - mean -	2.463	3.525
standard deviation	1.225	1.392
t=	10.164	
Intermediate - mean -	2.662	3.441
standard deviation	1.323	1.650
t=	6.381	

As can be seen in Table 2 the mean pre test score on the Metropolitan Achievement Tests in stanines was approximately 2.5 for the second group while the post test stanine was 3.5. A t test was performed

to determine whether this difference was significant. The calculated t of 10.2 would indicate that this difference was significant and well beyond the .01 level of confidence. This would strongly suggest that the diagnostic reading program was successful; that the gains made by children in the diagnostic reading program exceeded those gains made by children who were not in the diagnostic reading program. If children progress at the same rate as in the past, their stanine and percentile ranks should remain the same. When a significant difference in percentile rank of stanine occurs it suggests that the children have made greater gains than would be expected for children within the normative group.

In summary, although 80 percent of the second grade children did not show reading gains of one grade or higher, well over half the children made normal progress for the number of months they were in instruction, whereas they have not made this type of progress during the preceding year. The most significant statistic, the children's comparative ranking within a normative group, suggests very strongly that the children in the diagnostic reading program made much greater gains than would have been expected in a normal instructional program. The change in the stanine placement of the second grade children on the pre and post test is strongly indicative of the success of the diagnostic reading program.

Objective B

The second objective was to determine whether 80 percent of the sample of fifth or sixth grade participants would raise their reading levels by .5 grade. As can be seen in Table 1, 81 percent of the fifth and sixth grade participants in the study did improve their Metropolitan Achievement Test reading scores by one half grade or higher. As a matter of fact, slightly over half the children gained one grade or higher in reading. This is an excellent gain and obviously exceeds the program objective. In an attempt to further verify the significance of this gain a pre post t test comparison, using correlated means, was calculated on the Metropolitan Achievement Test reading scores of the fifth and sixth grade children. As can be seen in Table 1 the pre test mean was 3.28 and the post test mean was 4.35. The t calculated on this difference was 11.97 which is significant at well beyond the .01 level of confidence. Again it would be expected that a significant difference would result when comparing the pre and post test scores. Hence the stanines for each child in the pre test were determined as were the stanines for the post test. This is similar to the analysis done on the second grade sample. Hence an attempt was made to determine whether children had changed their relative status in relation to the normative group over the period of

instruction. As can be observed in Table 2 the mean stanine for the intermediate grade children was 2.7 while on the post test it was 3.4. The t calculated on this mean difference was 6.4 which is significant and beyond the .01 level of confidence.

In summary, the objective of the diagnostic reading program to raise the reading level by .5 grade of 80 percent of those children in the fifth and sixth grade who are below reading level was achieved. This was further verified by a statistical examination of the pre and post test results which reveals a significant gain from pre to post test on the basis of grade equivalent scores and a similar gain on pre and post test stanine scores also significant beyond the .01 level of confidence. This is a remarkable performance.

Objective C

The third objective of the diagnostic reading program was to develop reading skills and knowledge of techniques in the use of innovative materials on the part of 80 percent of the paraprofessionals. A second aspect of this objective was that 80 percent of the paraprofessionals would show a significant positive difference in attitude toward their jobs. In order to determine whether 80 percent of the sample of paraprofessionals developed improved reading skills and knowledge of techniques in the use of innovative materials each paraprofessional was individually observed by the principal investigator while teaching a sample lesson. The instrument used for structuring this observation, "Characteristics of a Good Diagnostic Lesson," is a modification of an instrument developed by Dr. Rauch published in The Reading Teacher in an article entitled "Evaluating Reading Programs." During the observation the investigator looked for the presence or absence of each of the characteristics of a good diagnostic reading lesson. On statement 1 the assistant has a definite goal or purpose for a lesson and that purpose is evident to the students. 75 percent of the paraprofessionals on the pre test exhibited that characteristic while 97% did so on the post test. On the second statement which is that the lesson is planned, systematic, yet flexible, 50 percent of the paraprofessionals exhibited that characteristic on the pre test while 70 percent exhibited that characteristic on the post test. In all cases the paraprofessionals exhibited lessons that were planned and systematic. The fact that the percentages on both the pre test and post test are not higher is a reflection of the general lack of flexibility within the lessons.

TABLE 3

(N=22)

PRE AND POST PERCENTAGES

OF PARAPROFESSIONALS SHOWING

CHARACTERISTICS OF A GOOD DIAGNOSTIC LESSON

	Pre	Post
1. The Asst. has a definite goal of purpose for a lesson and that purpose is evident to the students.	75	97
2. The lesson is planned, systematic, yet flexible.	50	70
3. The atmosphere projected by the Asst. is pleasant and optimistic.	85	97
4. Attention is paid to individual differences.	75	95
5. Rapport between Asst. and students is evident.	80	96
6. The Asst. is diagnosing as she is working with children.	40	70
7. There is readiness for the lesson.	65	85
8. Pupils are motivated.	73	88
9. Materials are varied (basals, library books, workbooks, kits, mimeographed materials, etc.)	30	71
10. Use is made of available audiovisual aids.	85	95
11. Questions are varied to check different levels of comprehension.	30	50
12. Material is at appropriate level for students.	75	96
13. Skills are taught to the point of application in content.	10	35
14. Efficient record keeping is done by the Assistant.	100	100
15. There is evidence of review and relationship to previously learned material.	60	89

As can be seen in Table 3, the third characteristic was exhibited by 85 percent and 97 percent of the paraprofessionals respectively on the pre and post observations. In general the paraprofessionals tended to present a positive attitude toward the children and seemed to gain rapport with them relatively easily. In the few cases in the pre test where this was not observed it appeared that some of the paraprofessionals were tense and anxious as a result of the observation.

Almost all of the paraprofessionals paid attention to individual differences in the post observation but approximately 25 percent of them were not too attentive to individual differences when they were observed originally. As can be observed characteristic 5 was exhibited by practically all of the paraprofessionals in the post observation and by most of them in the initial observation. Characteristic 6 was one of the weaker ones as less than 50 percent of the paraprofessionals seemed to be diagnosing while working with the children. Many of them were relying upon their original diagnosis and were relatively inflexible in modifying their approaches in relation to the types of responses obtained from the students. This did improve considerably in the post test observation as 70 percent of the paraprofessionals seemed to be attending to the degree to which children were responding and learning the skills they were presenting. Nevertheless 30 percent of the paraprofessionals were still not exhibiting good diagnostic techniques. It may be asking too much of paraprofessionals to expect them to do the kind of diagnosing that would be expected of a trained remedial specialist or teacher. Characteristics 7 and 8 were similar in percentage, with over half the paraprofessionals exhibiting them during the pre test observation, while a very high percentage, approximately 85 percent, did so on the post observation. Characteristic 9 deals with the materials employed. In the initial observation, most of the paraprofessionals were working directly out of workbook materials. At the time of the post observation there were many paraprofessionals using library books, a wider variety of workbooks and mimeographed materials while working with their children individually. Those paraprofessionals assigned to remedial teachers had more materials to work with, and under the direction of the remedial teacher, were employing them. Use was made of available audiovisual aids although those paraprofessionals working in the classroom setting did not have many audiovisual aids available. The reason for the high percentages in this case results from the work "available." Those paraprofessionals who were working with remedial teachers made the widest use of audiovisual aids but, of course, they had many more such aids available. It would be extremely helpful if some of these audiovisual aids were made available to paraprofessionals working within the classroom setting. One of the weakest characteristics was the questions used by the paraprofessionals with respect to comprehension of materials read. Although in most cases the questions employed were contained in workbooks or other books available to the

aides, there were situations where they constructed their own questions. There seemed to be very little attempt to vary the questions or modify them in an attempt to elicit different levels of comprehension. Even in cases where paraprofessionals were working on inferential understanding in the Barnell Loft materials when a youngster was unable to respond accurately they were not able to lead with proper questions to the expected response. In general material was at the appropriate level for students during the initial observation. There were some incorrect placements but very few that were incorrect to a large degree. By the time of the post observation the paraprofessionals seemed to be working with children at the appropriate level in almost all cases. The 13th characteristic seemed to be the weakest among the paraprofessionals both in pre and post observation. Skills were generally not taught to the point of application in content. The paraprofessionals worked with materials provided but did not seem to make an attempt to find out whether a youngster was able to apply those same skills in the text books that he would be expected to read in the classroom. Only 35 percent of the paraprofessionals were working with children in texts employed within the class. Characteristic 14 deals with efficiency of record keeping done by the paraprofessionals. As can be observed all of the paraprofessionals kept excellent records on each of the children with whom they were working both in the pre and the post observation period. On the final characteristic 60 percent of the paraprofessionals gave evidence of reviewing and relating the material being learned to previously learned material while on the post observation close to 90 percent of the paraprofessionals exhibited that characteristic.

In general it would appear that the paraprofessionals performed extremely well on the post observation. Their performance on the original observation reflects the excellent job of preparation done by Mrs. Spar and her staff. The chief weaknesses exhibited by the paraprofessionals were a general lack of flexibility during the process of teaching, variety of materials employed, varying questions to check different levels of comprehension, and most seriously, a lack of developing transfer and application of skills into the content area textbooks of the classroom. For each of the paraprofessionals a percentage score was calculated of the number of characteristics exhibited during the pre and post observation periods. In each case there was an improvement in the characteristics of a good diagnostic lesson exhibited during the post observation. Hence, over 80 percent of the sample of paraprofessionals appear to have developed and improved reading skills and knowledge of techniques in the use of materials. These results may be observed in Table 4.

TABLE 4

Percent of Characteristics of a Good Diagnostic Lesson

Exhibited by Paraprofessionals

	Pre	Post		Pre	Post
1.	66	94	16.	87	100
2.	54	80	17.	80	94
3.	73	87	18.	73	87
4.	66	80	19.	80	94
5.	66	73	20.	66	73
6.	60	80	21.	73	80
7.	73	80	22.	73	87
8.	60	94	23.	66	80
9.	80	87	24.	54	73
10.	73	80	25.	73	94
11.	60	73	26.	66	80
12.	54	80	27.	100	100
13.	73	87	28.	73	80
14.	54	80	29.	54	73
15.	60	73	30.	73	94

The second part of the third objective stated that 80 percent of the paraprofessionals would show a significant positive difference of attitudes toward their jobs. To ascertain the attitudes of the paraprofessionals a job attitude scale was administered on a pre and post basis. On the first question of the scale 78 percent of the paraprofessionals said that they kept records on the individual children most of the time while 82 percent reported similarly on the post test* This would confirm the principal investigator's observations with respect to the excellent job of record keeping on the part of the paraprofessionals. With respect to the second question, 58 percent of the paraprofessionals indicated that they felt that they were an important part of the educational program in the classroom while in the post test this percentage increased to 82 percent. The third question yielded similar results with 62 percent of the paraprofessionals indicating they were allowed to use their own initiative in working with individual children on the pre test, while 90 percent reported a similar result on the post test. There was a sharp increase on the report of the paraprofessionals with respect to whether their opinions of a child's progress were sought after and respected by the teacher. On the pre test 32 percent of the paraprofessionals reported that their opinions were sought most of the time while 68 percent reported a similar attitude on the post test. With respect to the selection of remedial materials none of the paraprofessionals reported that they were allowed to do this "most of the time" on the pre test whereas 50 percent reported this on the post test, a significant change suggesting an increase in confidence on the part of the paraprofessionals over the year. With respect to whether the teacher determines the level of materials

*See Table 5

used with each child, none of the four categories was chosen over 36 percent of the time. The percentages combined for a self report of "most of the time" and "sometimes" were similar on the pre and post test measure. There was also very little difference on statement 7 that "the teacher could instruct this class without me." 86 percent of the paraprofessionals reported that they agreed with that statement "most of the time" or "sometimes" on the pre test and a similar percentage was found on the post test, 60 percent of the paraprofessionals report that they aid in maintaining discipline within the classroom "most of the time" or "sometimes" while on the post test report 86 percent of the paraprofessionals indicated they aid in maintaining discipline within the classroom. Statement 9 exhibits significant results as 54 percent of the paraprofessionals reported that they performed menial tasks "most of the time" or "sometimes" while on the post test report only 22 percent of the paraprofessionals picked the same categories. An increase was observed on statement 10 where 58 percent of the paraprofessionals indicated they felt responsible for the ongoing diagnosis of the individual needs of children "most of the time" or "sometimes" while 78 percent of the paraprofessionals chose the same categories on the post test. This would suggest that the paraprofessionals felt a greater sense of responsibility for diagnosis at the end of the year. The next statement dealt with the feeling of the paraprofessionals with respect to the preparation received for the role they were asked to play in the classroom. On the pre test 37 percent of the paraprofessionals indicated that "most of the time" or "sometimes" they felt unprepared for the role they were asked to play while on the post test only 18 percent of the paraprofessionals provided a similar report. On the post test 59 percent of the paraprofessionals reported they never felt unprepared for the role they were asked to play while on the pre test only 25 percent on the paraprofessionals chose the same category.

The next three statements dealt with the relationship of the paraprofessionals to the children. The aides generally felt the children enjoyed their sessions with them with a slight improvement in their attitude towards the child's enjoyment of the sessions noted. 91 percent of the paraprofessionals reported that the children seek their assistance when they were available. This corresponds to a 72 percent selection of the similar category of "most of the time" on the pre test. For the most significant statement, "whether the children feel that they have been helped," 25 percent of the paraprofessionals reported that the children felt they had been helped "most of the time" on the pre test while on the post test 73 percent of the aides chose the same category. This suggests that the paraprofessionals felt that the children appreciated their efforts. The final statement on whether the teacher has

TABLE 5

Pre and Post Attitudes of Paraprofessionals Toward Their Jobs, Recorded in Percents

(N=22)

		Pre	Post		Pre	Post
1.	I keep records on individual children					
	Most of the time	78	82	Rarely	0	0
	Sometimes	12	18	Never	0	0
2.	I am an important part of the educational program in the classroom					
	Most of the time	58	82	Rarely	12	4
	Sometimes	30	14	Never	0	0
3.	I am allowed to use my own initiative in working with individual children					
	Most of the time	62	90	Rarely	14	0
	Sometimes	24	10	Never	0	0
4.	My opinions of a child's progress are sought after and respected by the teacher					
	Most of the time	32	68	Rarely	0	0
	Sometimes	68	32	Never	0	0
5.	I select my own remedial materials					
	Most of the time	0	50	Rarely	36	10
	Sometimes	50	36	Never	14	4
6.	The teacher determines the level of materials used with each child that I see individually					
	Most of the time	26	36	Rarely	14	24
	Sometimes	36	26	Never	24	14
7.	The teacher could instruct this class without me					
	Most of the time	36	50	Rarely	0	4
	Sometimes	50	36	Never	14	10
8.	I aid in maintaining discipline within the class					
	Most of the time	24	36	Rarely	30	14
	Sometimes	36	50	Never	10	
9.	I perform menial tasks					
	Most of the time	24	14	Rarely	36	32
	Sometimes	30	8	Never	10	36
10.	I am responsible for the ongoing diagnosis of the individual needs of my students					
	Most of the time	22	36	Rarely	30	14
	Sometimes	36	42	Never	10	8
11.	I feel unprepared for the role I am asked to play in the classroom					
	Most of the time	14	4	Rarely	38	23
	Sometimes	23	14	Never	25	59
12.	The children enjoy their sessions with me					
	Most of the time	75	82	Rarely	0	4
	Sometimes	25	14	Never	0	0
13.	The children seek my assistance when I am available					
	Most of the time	72	91	Rarely	8	4½
	Sometimes	20	4½	Never	0	0
14.	The children feel that I have helped them					
	Most of the time	25	73	Rarely	15	0
	Sometimes	60	27	Never	0	0
15.	The teacher has helped me to be more useful to the children					
	Most of the time	50	73	Rarely	20	4½
	Sometimes	10	18	Never	20	4½

helped the paraprofessional in becoming more useful to the children, 60 percent of the paraprofessionals reported that statement true "most of the time" or "sometimes" whereas 91 percent of the paraprofessionals gave a similar report on the post test.

As can be observed in Table 5, on the preceding page, on 12 questions the aides exhibited a more positive attitude toward their job and the tasks they were asked to perform. On the other 3 statements there was no change in the aides' attitude. An examination of each paraprofessional's pre and post test responses to the questionnaire reveals that over 80 percent indicated improved attitudes toward the teacher in the classroom, the tasks they were asked to perform, and the respect they had earned from the children and the teachers. In only one case does there appear to be a deterioration in attitude toward the job in general. In two cases the attitude toward the teacher had become more negative. In one case the attitude toward the tasks the paraprofessional is asked to perform became more negative while in no cases did the attitude toward the children or the feelings which the paraprofessionals felt the children held toward them had become more negative.

In an attempt to verify the observed positive change in attitude on the part of the paraprofessionals toward their jobs, each one of the 15 statements on the job attitude questionnaire was examined and points were assigned to the 4 possible choices with respect to that response which reflects the most positive attitude and that which reflects the least positive attitude. As an example, on statement 2 "most of the time" as a category was assigned a point total of 3 whereas "never" was assigned a point total of zero. On statement number 11 the category "never" was assigned a point total of +3 while the category "most of the time" was assigned a value of zero. The highest possible score for the 15 statements indicating the most positive attitude was 45 while the lowest possible score indicating the least positive attitude was zero. The results are contained in Table 6. As can be observed, out of the total of 22 paraprofessionals, 18 exhibited a more positive attitude on the post questionnaire than on the pre questionnaire. Of the remaining 4 paraprofessionals, 2 indicated a slightly more negative attitude toward their job while with 2 there was no change. Consequently 82 percent of the paraprofessionals exhibited a more positive attitude toward their jobs at the end of the year that when the year began. It should be noted that the job attitudes at the beginning of the year were generally positive. They, however, became even more positive by the conclusion of the program. Hence the second part of Objective 3 was also attained.

TABLE 6

Observed Positive Change in Paraprofessionals' Attitudes Toward Their Job, Tabulated on a 45 Point Scale

	Pre Score	Post Score	Attitude Change		Pre Score	Post Score	Attitude Change
1.	25	35		12.	26	39	+
2.	32	41	+	13.	26	34	+
3.	18	36	+	14.	29	38	+
4.	23	32	+	15.	36	35	-
5.	19	26	+	16.	23	37	+
6.	37	42	+	17.	29	34	+
7.	35	29	-	18.	31	31	0
8.	25	36	+	19.	25	35	+
9.	24	35	+	20.	29	37	+
10.	25	35	+	21.	32	32	0
11.	28	37	+	22.	28	39	+

Objective D

The fourth objective stated that 80 percent of the upper grade classroom teachers would show a positive attitude toward the use of paraprofessional assistants in the teaching of reading. In evaluating this objective, the results of the teacher attitude questionnaire (Table 7, following page), initially were tabulated for all of the teachers in the sample, both primary and intermediate. The first five statements in the questionnaire deal with the educational assistant's contribution to the classroom and the classroom teacher. As can be observed in Table 7, there is general agreement among the teachers that the paraprofessional does contribute to the classroom by working with individual children's specific problems in reading by maintaining accurate records and by providing information about the progress of the individual children with whom they worked. With respect to the maintenance of discipline and providing the classroom teacher with diagnostic information, slightly over half of the teachers report that the paraprofessionals are of some assistance while 96 percent of the teachers report that this was done at least occasionally. Statements 6 and 8 deal with the amount of time that a classroom teacher must give to a paraprofessional for training purposes within a classroom situation. As can be seen in statement 6, 57 percent of the teachers feel that the paraprofessional did not require careful supervision. 68 percent of the teachers felt that the paraprofessional needed time "sometimes" for training purposes. It is interesting to note that the paraprofessionals were not considered to be an exceptional burden on a teacher as none reported spending a significant amount of time for training purposes. The general relationship existing among the paraprofessionals and the teachers may be observed in statement 9 where 89 percent of the teachers

TABLE 7

Teacher Perceptions of Paraprofessional Aides,

Recorded in Percents

(N=29)

1. The Educational Asst. contributed to the classroom by working with individual children's specific problems
   - Most of the time 64 — Rarely ____
   - Sometimes 36 — Never ____
2. The Educational Asst. contributed to the classroom by maintaining discipline
   - Most of the time 35 — Rarely 27
   - Sometimes 27 — Never 11
3. The Educational Asst. contributed to the classroom by keeping records
   - Most of the time 68 — Rarely 5
   - Sometimes 22 — Never 5
4. The Educational Asst. contributes to the classroom by providing information about the progress of the individual children they work with
   - Most of the time 79 — Rarely ____
   - Sometimes 21 — Never ____
5. The Educational Asst. contributes to the classroom by providing the teacher with diagnostic information
   - Most of the time 33 — Rarely 4
   - Sometimes 63 — Never ____
6. The Educational Asst. requires careful supervision
   - Most of the time 5 — Rarely 54
   - Sometimes 25 — Never 3
7. The Educational Asst. can work successfully with all types of problem readers
   - Most of the time 50 — Rarely 7
   - Sometimes 43 — Never ____
8. The Educational Asst. needs my time for training purposes
   - Most of the time ____ — Rarely 32
   - Sometimes 68 — Never ____
9. There is good communication between the Educational Asst. and myself
   - Most of the time 89 — Rarely ____
   - Sometimes 11 — Never ____
10. The Educational Asst. has good rapport with the students
    - Most of the time 86 — Rarely ____
    - Sometimes 14 — Never ____
11. The Educational Asst. shares responsibility for the reading improvement of the children with whom she works
    - Most of the time 78 — Rarely ____
    - Sometimes 22 — Never ____
12. The Educational Asst. is capable of choosing her own materials
    - Most of the time 47 — Rarely 17
    - Sometimes 36 — Never ____
13. The Educational Asst. approaches her task with confidence and enthusiasm
    - Most of the time 75 — Rarely 7
    - Sometimes 18 — Never ____
14. The Educational Asst. motivates students and keeps them interested
    - Most of the time 72 — Rarely ____
    - Sometimes 28 — Never ____

report good communication between the educational assistant and themselves. The other 11 percent reported that communication was good "sometimes." Statements 10 through 14 dealt with the tasks required of the paraprofessional in her work with individual students and her performance of those tasks. As can be observed in Table 7, 86 percent of the teachers report that the paraprofessional had good rapport with the students "most of the time" while the other 14 percent report that the paraprofessional had good rapport "sometimes." The fact that teachers feel the paraprofessional is an important part of the educational program can be observed by the 78 percent agreement with statement 11 that the paraprofessional shares responsibility for the reading improvement of the children with whom she works. 83 percent of the teachers report that "sometimes" or "most of the time" the educational assistant is capable of choosing her own materials. Only 17 percent of the teachers report that the paraprofessional is rarely capable of making this kind of choice. 75 percent of the teachers felt that the paraprofessional approached her task with confidence and enthusiasm "most of the time," 18 percent felt that this was true "sometimes," and 7 percent indicated that this was rarely true. All of the teachers felt that the paraprofessional was able to motivate the students and keep them interested "most of the time" or "sometimes", with close to three-quarters of the teachers reporting that this statement was true "most of the time." It would appear from statements 10, 13, and 14 that the paraprofessionals had good rapport with the students, generally approached their tasks with confidence and enthusiasm, and were able to motivate students and keep them interested from the teacher's point of view.

In order to determine whether the upper grade classroom teachers were exhibiting a positive attitude towards the use of paraprofessional assistants in the teaching of reading the teacher attitude questionnaire was scored according to the following scale. For all statements except 6 and 8 a scale score of 3 was assigned to the most positive attitude expressed, 2 for the next most positive attitude, 1 for a slightly negative attitude and 0 for the most negative attitude. On statements 6 and 8 because of the nature of the questions the category "never" was assigned a point value of 3, the category "rarely" was assigned a point value of 2, the category "sometimes" was assigned a point value of 1, and the category "most of the time" was assigned a point value of 0. Following the assignment of the point values a score was calculated for each of the intermediate teachers on the pre and post test questionnaire. In a few cases teachers did not answer 1 or 2 of the items within the questionnaire. As a result, the number of points were totaled on the questionnaire and the number of questions answered was divided into that total. Thus, the score in each question represents the average point value per statement. Hence a perfect score of 3.0 would indicate a totally

positive point of view while a score of zero on the other hand would represent a totally negative point of view. Since 2.0 would be considered a neutral attitude any scores higher than 2.0 were considered as representing a positive attitude and all scores below 2.0 were taken as representing a negative attitude. Table 8 presents the results for each of the teachers on the pre and post test questionnaire. The change from the pre to the post test questionnaire is noted in column 3 with a plus representing an increment, a minus representing a decrement, and a 0 representing no change. The nature of the attitude expressed is represented in the 4th column with a positive attitude being represented by a plus, a negative attitude being represented by a minus, and a zero representing a neutral attitude.

TABLE 8
Changes in Teachers' Perceptions of Paraprofessionals, Tabulated on a 3 Point Scale

	Pre	Post	Change	Att. Exp		Pre	Post	Change	Att. Exp.
1.	1.21	2.57	+	+	9.	2.85	2.85	0	+
2.	2.71	2.84	+	+	10.	2.28	2.42	+	+
3.	2.31	1.61	-	-	11.	2.07	2.15	+	+
4.	2.49	2.78	+	+	12.	2.36	2.49	+	+
5.	1.84	2.42	+	+	13.	2.36	2.28	-	+
6.	2.83	2.84	+	+	14.	2.42	2.00	-	0
7.	2.49	2.78	+	+	15.	2.85	2.85	0	+
8.	2.36	2.15	-	+	16.	2.26	2.78	+	+

As can be observed in Table 8, 10 of the intermediate teachers improved in their attitudes toward their paraprofessionals over the course of the year. Two, both of whom were highly positive at the beginning of the year, maintained that positive attitude throughout the year so that no change was exhibited, while 4 of the teachers exhibited a less positive attitude toward their aides in the final attitude measurement. As can be observed, 75 percent of the teachers had more positive feelings toward their paraprofessionals or maintained a highly positive attitude over the course of the year. In 2 of the cases where the teacher's attitude had become less positive over the year, the attitudes expressed was still generally in the positive direction. In one case, the attitude became negative after having been generally positive early in the year whereas in the other case a positive attitude became neutral at the end of the year.

In examining the attitude expressed by the teacher toward the paraprofessional at the end of the year a score of 2.0 was taken as the neutral point, with a score above 2 representing a positive attitude and scores below 2.0 representing a negative attitude. The

mean attitude score, calculated as 2.49, would suggest that the overall attitude expressed by the teachers was strongly positive. In examining the score of each of the teachers it may be observed that 14 of the 16 responses to the attitude questionnaire were positive, with one neutral and one negative response. Consequently 87 percent of the teachers exhibited positive attitudes toward the use of paraprofessionals in the classroom for the teaching of reading. Hence Objective D was realized. The degree to which positive attitudes were expressed may be observed in the fact that 56 percent of the teachers had attitude questionnaire scores of approximately 2.5 or higher, representing a strongly positive attitude. Hence not only did 87% of the teachers exhibit a positive attitude toward the use of paraprofessionals but 56% of them felt very strongly that these paraprofessionals were performing a useful function. The fourth objective was to determine whether 80 percent of the pupil participants show a significant positive difference in attitude toward reading. To evaluate this objective two scales were used. Data for the "Self-concept of abilities", scale appears in Table 9.

Table 9

Pre & Post Percentages of Student "Self-Concept of Abilities" Responses
P = Primary I = Intermediate

	Pre(P) %	Post(P) %	Pre(I) %	Post(I) %
1. Think of your friends your own age. Do you think you can read better, the same or less well than your friends?				
a) Better	26	43	27	28
b) Same	32	35	48	53
c) Less well	42	22	25	19
2. Think of the students in your class. Do you think you can read better, the same or less well than they can?				
a) Better	28	31	18	25
b) Same	44	48	59	59
c) Less well	28	21	23	16
3. When you finish this school, do you think you will be one of the best, one of the average or one of the less good readers?				
a) Best	60	58	26	12.5
b) Average	28	29	64	75
c) Not so good	12	13	10	12.5
4. Forget how your teachers mark your work. How good do <u>you</u> think your own work is?				
a) Very good	58	50	26	28
b) O.K.	28	31	61	59
c) Not too good	14	19	13	13
5. Do you go to the library more, the same as, or less than your friends?				
a) More	36	34	33	22
b) Same	32	40	37	33
c) Less	32	26	30	45

Table 9 - continued

6. Do you read at home more than, the same as, or less than your friends?

	Pre(P) %	Post(P) %	Pre(I) %	Post(I) %
a) More	50	51	51	28
b) Same	22	28	19	52
c) Less	28	21	30	20

7. Do you think the teacher feels that you're learning the material that he is teaching?

a) Most of time	59	60	64	56
b) Sometimes	39	34	30	41
c) Never	2	6	6	3

8. Do you think you could finish high school? *

a) yes			64	79
b) maybe			31	21
c) no			5	0

9. It you go to college, do you think that you would be one of the best, average or poorest students? *

a) Best			25	38
b) Average			71	59
c) Poorest			4	3

Attitudes about school

1. How do you feel about coming to school every day?

	Really loves going to school %	Doesn't seem to care one way or another %	Hates school Wants to stay home %
Pre(P)	88	3	9
Pre(I)	80	13	7
Post(I)	69	19	13
Post(P)	78	10	11

2. Feelings of acceptance by others at school

Who do you think cares about how well you do in school?

	Teachers %	Parents %	Peers %	Others %
Pre(I)	51	84	28	20
Pre(P)	58	60	37	18
Post(I)	61	84	20	8
Post(P)	48	64	29	7

3. Do you think that your teachers in this school are glad to see you each day?

Coding: 2 if yes
1 if don't know
0 if no

	2 (%)	1 (%)	0 (%)
Pre(I)	69	17	14
Post(I)	64	27	9
Pre(P)	95	3	2
Post (P)	86	9	5

* Self-concept questions administered only to intermediate classes

Table 9 continued

		2 (%)	1 (%)	0 (%)
4. Repeat for principal				
	Pre(I)	59	25	16
	Post(I)	49	47	4
	Pre(P)	94	4	2
	Post(P)	86	9	5
5. Repeat for teacher's aide				
	Pre(I)	82	13	5
	Post(I)	76	22	2
	Pre(P)	97	3	0
	Post(P)	84	6	10
6. Repeat for classmates	Pre(I)	70	17	13
	Post(I)	72	22	6
	Pre(P)	81	4	15
	Post(P)	79	9	12

This questionnaire is designed to determine the child's attitude toward his own self-concept in relation to school, teachers, and reading and the child's feelings of acceptance at school in relation to his peers and school personnel.

The second questionnaire employed to evaluate this objective, the modified "My School Questionnaire" appearing in Table 10, contains a series of statements relating to the child's attitude towards school, reading, his teacher and the paraprofessional.

As can be seen in Table 9, regarding the first question, there was a marked improvement in the second grade children's feelings with respect to their reading ability. 17% more children on the post observation report that they feel they can "read better than their friends" than on the pre-questionnaire. Whereas 42% of the second grade students reported that they read "less well than their friends" in the fall, only 22% of these same youngsters reported this in the spring, suggesting a sizeable improvement in attitude. Among the intermediate grade children, a similar attitude change was not observed. When these children were asked whether they can read better, the same, or less well than their friends, there was virtually no difference in percentage between the fall and spring evaluations with the exception that 6% less children felt they read "less well" in the spring.

When children were asked to compare their reading ability to students in their class, 3% more of the children at the primary level felt they read better than their classmates in the spring than in the fall, while 7% fewer primary grade children felt they read less well than the children in their class in the spring than in the fall. Although this difference is not significant, it does suggest a slight improvement in attitude at the end of the year. A similar result may be observed for the intermediate grade children as 7% more of these youngsters felt they read better than the students within their own class in the spring, while there was a decrease of 7% in the number of children feeling they read less well than their classmates in the spring.

On question three, children were asked to project themselves into the future and to evaluate their own reading when they complete elementary school. As can be observed among the primary grade children, very little difference in attitude was exhibited in the fall as compared to the spring

Table 10

Percentage of Pre & Post Responses to Diagnostic Reading Questionnaire

		Pre%	Post%		Pre%	Post%		Pre%	Post%
1.	The teachers in this school try to help you with your reading.								
	Most of time	61	72	Sometimes	33	24	Never	6	4
2.	The teacher aides in this school want to help you with your reading								
	Most of time	51	54	Sometimes	42	35	Never	7	11
3.	The teachers in this school expect you to work too hard.								
	Most of time	27	21	Sometimes	54	32	Never	29	47
4.	The teacher aides in this school expect you to work too hard.								
	Most of time	24	13	Sometimes	46	31	Never	30	56
5.	The teachers in this school are really interested in helping you to read better.								
	Most of time	73	73	Sometimes	22	23	Never	5	4
6.	The teacher aides in this school are really interested in helping you to read better.								
	Most of time	61	60	Sometimes	29	32	Never	10	8
7.	The teachers in this school know how to explain things clearly.								
	Most of time	65	59	Sometimes	32	34	Never	3	7
8.	The teacher aides in this school know how to explain things clearly.								
	Most of time	59	59	Sometimes	38	37	Never	3	4
9.	The teachers in this school are fair and square.								
	Most of time	55	53	Sometimes	38	40	Never	7	7
10.	The teacher aides in this school are fair and square.								
	Most of time	56	54	Sometimes	40	37	Never	4	9
11.	My classroom is a pleasant place.								
	Most of time	58	50	Sometimes	33	36	Never	9	14
12.	The books they ask me to read are too hard.								
	Most of time	17	17	Sometimes	52	37	Never	31	46
13.	The books they ask me to read are too easy.								
	Most of time	29	19	Sometimes	50	50	Never	21	31
14.	I work hard in reading but don't seem to get anywhere.								
	Most of time	31	17	Sometimes	52	40	Never	17	43
15.	I've learned more in reading this year than in any other year.								
	Most of time	59	68	Sometimes	36	22	Never	5	10

while this was not true of intermediate grade children. When asked to evaluate their own work on Question 4 the primary grade children in the spring seemed to evaluate their own work slightly lower than in the fall, while intermediate children gave similar pre and post responses.

Questions 5 and 6 asked children to compare their library and reading habits with those of their friends. Among primary grade children, differences in percentage from fall to spring fell well within the possibility of chance, while for intermediate children there seemed to be a report of poorer library habits than those of their friends. In relation to the amount of reading done at home in comparison to their friends, primary grade children show very little discrepancy between fall and spring attitudes, while for intermediate children, there is a sizeable difference reported. Whereas 51% of the intermediate grade children felt they read more than their friends in the fall, only 28% reported this in the spring. While 19% of the intermediate grade children reported they read the same amount as their friends at home, 52% of the intermediate grade children gave a similar report in the spring. 30% of the intermediate grade children reported reading less than their friends at home on the fall pre-test, with this figure dropping to 20% in the spring. It would appear that in relation to question 6 the intermediate grade children feel less positively about the amount of reading they do in comparison to their friends at the present time, than they did in the fall.

Children were asked whether they perceive the teacher as thinking that they are learning the materials being taught. Among the primary and intermediate grade children there appears to be very little difference between the fall and spring percentages. In the fall, 98% of the primary grade children reported that the teacher was satisfied with their learning "most of the time " and "sometimes" with a similar combined percentage of 94% for the spring. Among the intermediate grade children 94% reported that the teacher was satisfied with their ability to learn the material being taught in the fall, while 97% reported a similar feeling in the spring.

Questions 8 and 9 were administered only to the intermediate grade children as they dealt with their attitude toward their educational future. When asked whether they thought they could finish high school, 64% of the intermediate grade children said "yes" in the fall, while 79% answered affirmatively in the spring. 31% of the intermediate grade children answered "maybe" in the fall, while 21% reported a similar feeling in the spring. In the fall, 5% of these children felt that they would not be able to finish high school; none felt so in the spring. When asked about their future in college and what kinds of students they thought they would be, on the pre-test 25% felt they would be among the best students in college, while 38% felt so in the spring. 71% of the intermediate grade children thought they would be average students in college when asked in the fall, while 59% felt so in the spring. Questions 8 and 9 seem to reflect a slightly more positive attitude toward the educational future of the children in the Diagnostic Reading Program although the percentage differences are certainly not great enough to be conclusive.

When asked how they feel about coming to school every day, there was a slight decrease for both primary and intermediate children in desire to go to school, from fall to spring. Whereas eighty eight percent of the primary children reported that they felt positively toward school in the fall, there was a ten percent decrease to 78 percent in the spring. For intermediate children, 80 percent reported positive feelings towards going to school in the fall while the percentage in the spring was 69 percent.

When children were asked "Who do you think cares about how well you do in school?", there was an increase of 10 percent in mention of teachers among the intermediate grade students from fall to spring. However, among the primary grade children there was a slight decrease in their inclusion of teachers as those who care about how well they do in school, with a decrease of 10 percent reported. In the fall, 58 percent of the children mentioned teachers as caring how well they do in school, while in the spring, only 48 percent of the children at the primary level felt similarly. The percentages mentioning parents and peers or others as caring about how well they do in school, did not differ substantially from the pre to the post test measurement.

When asked whether the children thought their teachers were glad to see them each day, there was no significant difference in percentage among the primary or intermediate grade children from fall to spring. This also held true for a similar question in relation to the principal. When asked whether the teacher aide was glad to see them each day, there was again no significant difference from fall to spring, although there was a slight decrease among both the primary and intermediate grade children answering affirmatively to that question in the spring. For a similar question with respect to whether their classmates are glad to see them in school each day, again there was no significant difference for either the intermediate or primary grade children from the fall to the spring reporting period.

In examining the Self-concept of Abilities Questionnaire in its totality no significant conclusions may be drawn. There were a few instances which suggested that the youngsters had improved their self-concept, but there were certainly no indications that this was reflected in improved attitudes towards school or teachers or toward reading and books.

Table 10 presents the results of the modified "My School Questionnaire". In order to evaluate this questionnaire, it is frequently useful to combine the percentages reported in the "most of the time" category and the "sometimes" category. When this is done it may be observed that the pre and post questionnaire results on questions 1 and 2 do not exhibit any significant difference. There was not a material change in attitude among the children with respect to whether the teachers or paraprofessionals attempted to help them with their reading. It is interesting to note that close to 90% of the children felt that this statement was true. With re-

spect to whether the children felt they were worked too hard by the teachers or the paraprofessionals, there was a significant change from fall to spring. The children distinctly seemed to feel that the teachers did not expect them to work too hard at the time of the spring report, whereas this attitude was not exhibited too strongly in the fall report. A similar result was found for the paraprofessionals. It would thus appear that the teachers were able to adjust their work to the level of the child quite successfully as the year went along. Most of the children felt that the teachers and the paraprofessionals were interested in helping them to read better but there were no sizeable differences in these feelings from fall to spring. With respect to both explaining things clearly and whether teachers and paraprofessionals are fair in their dealings with the children, there seemed to be very little difference in attitude between the fall and the spring with the vast majority of children, well over 90%, expressing positive responses to both of those statements. About half of the children felt that their classroom was a pleasant place. Combining the "most of the time" and "sometimes" category for statement 11, it would appear that the children's attitude became less positive over the course of the year. Statements 12 and 13 exhibit some change from the fall to spring reporting period. It would appear that the adjustment of reading levels to the child's reading ability and the assignment of books improved over the year. In the fall, 31% of the children reported that they were never asked to read books that were too hard, while the percentage reporting a similar feeling in the spring was 46%. With respect to whether the books they were asked to read are too easy, 21% expressed this view in the fall, while 31% did so in the spring. Hence, it is possible that in their attempt to avoid frustration for the children in the reading act, some of the teachers might have been using materials that were too easy. The greatest improvement in attitude expressed was on statements 14 and 15. On both those questions there appears to be a significant improvement with respect to the child's feeling about his reading progress. It would appear that fewer children feel that their efforts in reading are unrewarded in progress, and more of the children feel they have learned more in reading this year than in any other year.

In summary, an examination of the My School Questionnaire would exhibit slightly more positive attitudes at the end of the school year than at the beginning, but as was true in the Self-concept of Abilities Questionnaire, this improvement of attitude would appear to be slight. It is, of course, highly possible that when children are retarded in reading to the degree that children in this program were, the gains in reading made over the course of six months will not be sufficient to effect a change in attitude. Even though the child may have improved his reading ability and relative status in reading within the classroom, he still perceives himself as being a less than adequate reader. The improvement of the children in the Diagnostic Reading Program was significant, but many of the children were still below grade at the end of the year and

it is probably not realistic to expect marked changes in their attitudes or self-concepts at this stage in their reading development.

TABLE 11

Percentage of Changes in Student Attitudes Toward Reading

	Improved Attitude	Poorer Attitude	No Change
Percent	49	46	5

Summary and Conclusions

Generally it would appear that the program objectives have been met. The first objective was to raise the reading level by one grade of 80% of those children in the second grade who were below reading level. Although this objective was not met, it should be remembered that the duration of the instructional period in this study was approximately six months. As a result it would be extremely difficult to attain an objective of one year's growth in reading by 80% or more of the participants in the study. When one considers the fact that the second grade sample of this study had progressed far less than a year in reading over a full year's instruction, the objective of one year's growth during a six-month period in second grade is totally unrealistic. Nevertheless, there was a significant gain in reading as evidenced by a statistical comparison of the pre and post test results. Even more important, there was a significant change in the relative status of the pupils in the second grade sample between the pre and post test periods. This change in stanine is most significant as it reflects progress by a significant increase in percentile rank relative to the normative population.

The second objective of this study which stated that a sample of fifth and sixth grade participants would raise their reading levels by a half grade was a most realistic one. In fact, over 80% of the sample of intermediate grade participants improved their reading by one-half grade or more. An examination of Table 1 in the body of this report would indicate that a sizeable number of children made gains of one grade or higher. As might be expected, there was a significant difference between the pre and post test results, suggesting that these children had made a significant gain in reading in the Diagnostic Reading Program. More significantly, there was a change in stanine for these children that was also significant beyond the .01 level of confidence. As was true of the second grade participants, the intermediate grade children also changed their relative standing within the normative group improving it significantly.

The third objective contained two parts, the first of which was to develop the reading skills and knowledge of techniques on the part of 80% of the paraprofessionals while the second part was that 80% of the paraprofessionals would show a significant, positive difference in attitude toward their jobs. Both of these objectives appear to have been met. Observation of the paraprofessionals in a work-sample performance of their tasks indicated that they exhibited significant improvement in the number of characteristics of a good diagnostic reading lesson displayed

during the post observation as compared to the pre observation. There were some relatively minor weaknesses exhibited which could be corrected through in-service training during the following year. Training paraprofessionals is a difficult task and Mrs. Spar and her staff appear to have done an excellent job in preparing them to use materials intelligently and diagnostically. However, the paraprofessionals are still performing their tasks in a relatively inflexible manner and are not devoting sufficient time to transferring the skills learned during training to their work with textbooks in the classroom. These are undoubtedly areas that could be corrected through further in-service work. The attitude of the paraprofessionals toward their jobs also improved significantly over the year. The Job Attitude Questionnaire administered in the fall and spring revealed strongly positive feelings on the part of the paraprofessionals toward the tasks they had been asked to perform, the reaction of the children to their efforts, and the appreciation of their efforts by the teachers and children alike.

The upper grade classroom teachers also strongly support the paraprofessional program as indicated by the Questionnaire designed to elicit their attitude toward the use of paraprofessional assistants in the teaching of reading. There were a few cases of dissatisfaction, but in general the teachers seemed to feel the program is working well; that the paraprofessionals have made a positive impact upon the children; that they have been of aid and assistance within the classroom, and have not been an obstructive force within the classroom in any way. As a result, the fourth objective was also satisfactorily attained.

The final objective stated that 80% of the pupil participants would show a significant positive difference in attitude toward reading. It would appear that this objective was not met. Most of the children in this study were seriously retarded in reading at the beginning of the year and although many showed substantial improvement they were still reading below grade at the conclusion of the year. Obviously, these students require considerable follow-up in the years to come and should certainly be continued in the Diagnostic Reading Program. The statistics reveal that these children are closer to average now than when they began the program, but still materially below the average expected for their age and grade. Consequently, they still view themselves as being somewhat inadequate in reading and continue to find the reading act sufficiently difficult so that reading is not necessarily pleasurable. There seemed to be some evidence that the attitudes of the children were improving with respect to reading but they certainly have not improved sufficiently to have attained the objective stating that 80% of these pupil participants would show positive differences in their reading attitudes.

One of the characteristics of a good remedial program is careful selection of the participants. The Diagnostic Reading Program in District 27 employed standardized tests for this purpose which were carefully evaluated from a diagnostic standpoint. The selection of the sample in the diagnostic reading program appears to have been done with care and intelligence. Another important characteristic of a good remedial program is careful diagnosis. In the District 27 program, standardized

tests were carefully analyzed by the paraprofessionals on forms provided by Mrs. Spar. This diagnosis was designed to ascertain skills difficulties in the word recognition and analysis area and later in the year, a careful analysis of the comprehension skills. Materials were selected to correlate with skills difficulties derived from the diagnostic work sheets. The Barnell Loft materials chosen for this study are particularly appropriate for remedial personnel whose training in the teaching of reading is not extensive. Another important aspect of diagnosis is the determination of the child's reading level so that materials may be adjusted to avoid prolonged stress, or the problem of working in materials that produce no obstacle, thereby obviating the need for skills learning. The Diagnostic Reading Program again performed the necessary tests and evaluations to accurately ascertain reading levels. As a result, there was a considerable amount of individualizing in meeting the needs of the students and although the instructional procedures appeared to be relatively mechanistic, they certainly seemed adequate for the extent of training which the paraprofessionals had received. Materials provided varied somewhat. Some of the paraprofessionals were working with remedial reading teachers in the primary program. These reading centers seemed to be extremely well equipped with workbooks, audiovisual aids, and texts of various kinds. Within the classroom situation, the paraprofessionals were provided with a wide variety of workbooks and program materials which were generally adequate for the remedial program as designed. However, the paraprofessionals would certainly be aided by the addition of audiovisual materials and devices as well as a wider variety of textbooks and workbooks.

The paraprofessionals as a group were extremely conscientious, exhibiting high motivation and contagious enthusiasm. They seemed generally concerned with the children who were placed in their care and appeared to have good rapport with the children generally. Their enthusiasm did not wane during the year and resulted in considerable improvement in their expertise in teaching. This was certainly aided by the group meetings held with Mrs. Spar and her staff where problems were discussed and in-service instruction provided in improving skills. There seemed to be some degree of on-going evaluation with an extraordinary amount of record keeping. Although the paraprofessionals might have found this somewhat burdensome, any question concerning the reading progress of an individual student and the extent to which his diagnosed needs were being met could be answered effectively by going to the record. The keeping of records provided a constant visual reminder of the child's needs and the paraprofessional's success in meeting those needs. Good remedial programs always provide for some kind of liaison with classroom work. Although this is an area which could certainly be improved in District 27's Diagnostic Reading Program, the placement of the paraprofessionals within the class produced a degree of flexibility rarely seen in any remedial reading program. There are many lulls during the classroom day which can be utilized in more effective ways. When the remedial instructor is placed within the classroom setting these can be used to good advantage. It is also important to have adequate communication between a remedial teacher and a classroom teacher. In the District 27 program the placement of the remedial individual within the classroom setting provided for an easy on-going liaison between the classroom

teacher and the work being done in remedial reading. This was one of the more effective features of the Diagnostic Reading Program. In summary, the District 27 Diagnostic Reading Program is an extremely effective one. It is a program that certainly should be continued and hopefully expanded.

APPENDIX A

District 27

Name of Asst. _____ School _____

Observer _____

Characteristics of a Good Diagnostic Lesson

1. The Asst. has a definite goal or purpose for a lesson and that purpose is evident to the students.
2. The lesson is planned, systematic, yet flexible.
3. The atmosphere projected by the Asst. is pleasant and optimistic.
4. Attention is paid to individual differences.
5. Rapport between Asst. and students is evident.
6. The Asst. is diagnosing as she is working with the children.
7. There is readiness for the lesson.
8. Pupils are motivated.
9. Materials are varied (basals, library books, workbooks, kits, mimeographed materials, etc.)
10. Use is made of available audio visual aids.
11. Questions are varied to check different levels of comprehension.
12. Material is at appropriate level for students.
13. Skills are taught to the point of application in content.
14. Efficient record keeping is done by the Assistant.
15. There is evidence of review and relationship to previously learned material.

TEACHING & LEARNING

APPENDIX B

Diagnostic Reading

JOB ATTITUDES OF EDUCAIONAL ASSISTANT

Name of Educational Asst. _____

1. I keep records on Individual children
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

2. I am an important part of the educational program in the classroom
   Most of time_____ Rarely_____
   Sometimes_____ Never _____

3. I am allowed to use my own initiative in working with individual children
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

4. My opinions of a child's progress are sought after and respected by the teacher
   Most of time _____ Rarely_____
   Sometimes_____ Never_____

5. I select my own remedial materials
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

6. The teacher determines the level of materials used with each child that I see individually
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

7. The teacher could instruct this class without me
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

8. I aid in maintaining discipline within the class
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

9. I perform menial tasks
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

10. I am responsible for the ongoing diagnosis of the individual needs of my students
    Most of time_____ Rarely_____
    Sometimes_____ Never_____

Job Attitudes of Educational Assts. (Cont.)

11. I feel unprepared for the role I am asked to play in the classroom
Most of time_____ Rarely _____
Sometimes_____ Never_____

12. The children enjoy their sessions with me
Most of time_____ Rarely_____
Sometimes_____ Never_____

13. The children seek my assistance when I am available
Most of time_____ Rarely_____
Sometimes_____ Never_____

14. The children feel that I have helped them
Most of time_____ Rarely_____
Sometimes_____ Never_____

15. The teacher has helped me to be more useful to the children
Most of time_____ Rarely_____
Sometimes_____ Never_____

APPENDIX C

Diagnostic Reading

TEACHER EVALUATION OF EDUCATIONAL ASSISTANT

Teacher_____.

School_____

1. The Educational Asst. contributes to the classroom by working with individual children's specific problems
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

2. The Educational Asst. contributes to the classroom by maintaining discipline
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

3. The Educational Asst. contributes to the classroom by keeping records
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

4. The Educational Asst. contributes to the classroom by providing information about the progress of the individual children they work with
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

5. The Educational Asst. contributes to the classroom by providing the teacher with diagnostic information
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

6. The Educational Asst. requires careful supervision
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

7. The Educational Asst. can work successfully with all types of problem readers
   Most of time _____ Rarely_____
   Sometimes_____ Never_____

8. The Educational Asst. needs my time for training purposes
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

9. There is good communication between the Educational Asst and myself
   Most of time_____ Rarely_____
   Sometimes_____ Never_____

Teacher Evaluation of Asst. (Cont.) (P2)

10. The Educational Asst. has good rapport with the students
    Most of time_____ Rarely _____
    Sometimes_____ Never_____

11. The Educational Asst. shares responsibility for the reading improvement of the children with whom she works
    Most of time_____ Rarely_____
    Sometimes_____ Never_____

12. The Educational Asst. is capable of choosing her own materials
    Most of time_____ Rarely_____
    Sometimes_____ Never_____

13. The Educational Asst. approaches her task with confidence and enthusiasm
    Most of time_____ Rarely_____
    Sometimes_____ Never_____

14. The Educational Asst. motivates students and keeps them interested
    Most of time_____ Rarely_____
    Sometimes_____ Never_____

APPENDIX D

TEACHING & LEARNING

Student_____ Teacher_____

School_____ Interviewer_____

Diagnostic Reading

"MY SCHOOL" REVISED"

1. The teachers in this school try to help you with your reading.

   Most of time_____ Sometimes_____ Never_____

2. The teacher aides in this school want to help you with your reading.
   Most of time_____ Sometimes_____ Never_____

3. The teachers in this school expect you to work too hard.
   Most of time_____ Sometimes_____ Never_____

4. The teacher aides in this school expect you to work too hard.
   Most of time_____ Sometimes_____ Never_____

5. The teachers in this school are really interested in helping you to read better.
   Most of time_____ Sometimes_____ Never_____

6. The teacher aides in this school are really interested in helping you to read better.
   Most of time_____ Sometimes_____ Never_____

7. The teachers in this school know how to explain things clearly.
   Most of time_____ Sometimes_____ Never_____

8. The teacher aides in this school know how to explain things clearly.
   Most of time_____ Sometimes_____ Never_____

9. The teachers in this school are fair and square.
   Most of time_____ Sometimes_____ Never_____

10. The teacher aides in this school are fair and square.
    Most of time_____ Sometimes_____ Never_____

11. My classroom is a pleasant place.
    Most of time_____ Sometimes_____ Never_____

12. The books they ask me to read are too hard.
    Most of time_____ Sometimes_____ Never_____

13. The books they ask me to read are too easy.
    Most of time_____ Sometimes_____ Never_____

14. I work hard in reading but don't seem to get anywhere.
    Most of time_____ Sometimes_____ Never_____

15. I've learned more in reading this year than in any other year.
    Most of time_____ Sometimes_____ Never_____

APPENDIX E

Dist. #27

Student_____ Teacher_____

School_____ Tester_____

Self-concept of abilities

1. Think of your friends your own age. Do you think you can read better, the same or less well than your friends?

   a) Better
   b) Same
   c) Less Well

2. Think of the students in your class. Do you think you can read better, the same or less well than they can?

   a) Better
   b) Same
   c) Less Well

3. When you finish this school, do you think you will be one of the best, one of the average or one of the less good readers?

   a) Best
   b) Average
   c) Not so good

4. Forget how your teachers mark your work. How good do you think your own work is?

   a) Very good
   b) O.K.
   c) Not too good

5. Do you go to the library more, the same as, or less than your friends?

   a) More
   b) Same
   c) Less

6. Do you read at home more than, the same as, or less than your friends?

   a) More
   b) Same
   c) Less

7. Do you think the teacher feels that you're learning the material that he is teaching?

   a) Most of time
   b) Sometimes
   c) Never

Self-concept questions to be administered only to Intermediate classes

8. Do you think you could finish high school?

   a) Yes
   b) Maybe
   c) No

9. If you go to college, do you think that you would be one of the best, average or poorest students?

   a) Best
   b) Average
   c) Poorest

Attitudes about school

1. _____, how do you feel about coming to school every day?
(1st name)

(Interviewer: please probe and rate student along the following scale:)

Really loves going to school				Doesn't seem to care one way or another				Hates school Wants to stay home
9	8	7	6	5	4	3	2	1

2. Feelings of acceptance by others at school

Who do you think cares about how well you do in school? (Open end question. Interviewer please note who persons mentioned are. Please do not provide any cues and at the end of 15 seconds of silence, stop recording answers.)

List in order mentioned: _____

_____

_____

3. _____, do you think that your teachers in this school
(1st name)
are glad to see you each day? (Probing if necessary)

Coding: 2 if yes
1 if don't know
0 if no _____

4. Repeat for principal: _____

5. Repeat for teacher's aide: _____

6. Repeat for classmates: _____

OPERATION SEARCH

Function No. 85-2-6453

FINAL REPORT OF THE OPERATION SEARCH PROGRAM

COMMUNITY DISTRICT NO. 27, QUEENS

I. Introduction

Operation Search, launched in the fall of 1970, has now completed its second year. The program was conceived as part of the efforts of District 27 Queens to imrove achievement levels and to raise the educational and vocational aspirations of its disadvantaged students. The program is based on the assumption that student progress is goal directed and that goals, in large measure, are vocationally oriented. If a student, then, has no vocational goals or has no expectation of formulating vocational goals, his involvement in school would be minimal. Many of these students would show unsatisfactory levels of achievement and tend to "drop out" as soon as they could do so legally.

Lack of goals or expectations of formulating goals is seen as a particular problem among disadvantaged youth. Experts in the field have pointed out that vocational choice involves a process of identifications which enables young people to establish occupational possibilities for themselves. If reality factors such as interests, aptitudes, values, and opportunities do not support these identifications, then the person will change or alter his tentative choice and move on to a second tentative choice based on another identification. Disadvantaged children tend to find very limited and lower level occupational roles among the adults in their environment with whom they can identify. The adults who are objects of identification for disadvantaged youth, if not unemployed or under-employed, generally work at unskilled or, at best, semi-skilled jobs. Because these identifications are vocationally impoverished, self-concepts are formed which include low levels of vocational aspiration and, in turn, little motivation to work and progress in school.

If this analysis has some validity, then disadvantaged youth must be provided with experiences that will compensate for the process that results in low levels of vocational expectation. This was the original purpose of Operation Search.

It is of interest that well after the inauguration of the program the U.S. Office of Education under the leadership of Commissioner Marland made a major policy decision to encourage the development of career education throughout the country. This policy has received widespread attention and a good deal of criticism as well as praise. The critics of the policy fear that vocational choices may be forced at too early an age and thus be unrealistic and inappropriate. They also fear that an emphasis on job opportunities and vocational choice will result in a watering down of other important curricula. Finally, they fear that as far as disadvantaged youth are concerned, the approach might be counterproductive in that children may be manipulated into a range of occupations reflecting some upward mobility, but that would place a ceiling on vocational opportunity.

In view of this controversy, Operation Search assumes added importance; its outcome can shed some light on the issues raised in connection with career education.

II. Program Description

During its record year, the program operated in much the same way it had during its first year, with one important change. Although, during 1970-71 tutoring was a component of "Search", it did not receive major or systematic attention. In two of these schools tutoring had been carried on in a systematic manner while in the remaining two junior high schools tutoring had been more informal because of personnel limitations. The proposal for 1971-72 gave tutoring a much more prominent position. It was felt that the motivations provided by vocationally directed activities was vitiated in many students because of their inability to perform scholastically at reasonably satisfactory levels. Therefore, tutoring became a proscribed activity for all the "Search" schools.

The structure, components, and program activities for 1971-72 follow.

A. Organizational Structure

The project is directed by the Supervisor of Guidance in District 27 Queens. The six schools which comprised the target schools in 1970-71 were again designated as project schools for 1971-72. These included four junior high schools and two elementary schools. A third elementary school was added for the 71-72 year. Both levels were included because the project was envisioned as a longitudinal process to provide continuing reinforcing experiences for the target students.

Project guidelines for the target schools were general rather than specific, and the project director apparently gave his staff a great deal of latitude in applying the project in each school. In part this practice was based on the diversity among the students in the district. District 27 is, geographically, one of the largest districts in the city and includes a wide variety of ethnic groups and social classes. Even among the economically disadvantaged population residing in the district, there appears to be a striking diversity of life styles.

B. Target Students

The population of Operation Search was to consist of "those pupils attending schools in District 27, and residing in Queens as designated by the local poverty agencies." The poverty agencies delegated this function back to the counselors, who were rather free to use their own judgements in the selection of students for the program. During the 1970-71 project year this meant that an extremely heterogenous group was selected, including emotionally disturbed and acting-out youngsters. The only common criterion for selection during that year was that each student selected was deemed to have a potential for dropping out of school. During the past year the selection criteria were more highly formalized. While each student selected for the program was still a potential drop-out he or she was judged to have "potential" for change. Generally, the counselors interpreted this dual potential (for dropping out and favorable change) to mean youngsters who were:

a) not seriously disturbed

b) not serious behavior problems (truancy however was not a counter indicator)

c) achieving significantly below grade level

d) economically deprived

In each of the seven schools, a nucleus group of students was selected. The members of each group were to participate in all of the project activities. In the junior high schools and one elementary school, the nucleus group consisted of 75 students. In the other two elementary schools the groups numbered about 40 students. This nucleus was part of a larger group of students in each school who, although designated as "Search" students, did not receive project services as extensively as did those in the nucleus group. The numbers in these larger groups varied from 100 to 250.

The formation of the nucleus groups was an adaptation of a recommendation made in the evaluation report of the preceding year indicating that services were being spread too thin.

C. Project Staff

In the target schools, licensed Vocational and Educational Guidance Counselors direct Operation Search. In three of the junior high schools a single counselor handles the project while in the fourth, two counselors work on the project half time and devote the remainder of their schedules to other guidance duties. On the elementary level. a counselor was assigned to "Search" in one elementary school while two other elementary schools share a counselor.

A paraprofessional was assigned to each junior high school in the project and each counselor appears to use the paraprofessional in different ways. Two paraprofessionals are used as assistant counselors, arranging trips, screening students, seeing parents and conducting group discussions. Another paraprofessional performs clerical duties for the most part, while the fourth assists the reading teacher in the school's reading laboratory. The use of any given paraprofessional is dependent on her ability as perceived by the counselor, the counselor's personality, and the wishes of the school principal.

D. Field Trips

Field trips are conducted in all target schools and are a major component of the program. The trips included visits to schools, hospitals, manufacturing plants, retail business, and media houses, and are used to expose the students to the work world and to stimulate their perceptions and thinking regarding specific job possibilities. Generally 25 to 50 youngsters go on a field trip and transportation is provided by chartered buses.

E. Tutoring

Tutoring became a proscribed element of the program for the years '71-'72 but it was implemented quite differently in the various schools. In three junior high schools the counselors supervised the tutoring the "Search" students received and relied largely on college students to provide the actual tutoring. In one of these schools a peer tutoring program was also in operation, while in another the tutoring was supervised by a reading teacher who also employed college students. These college student tutors were unpaid and usually performed the work in conjunction with courses in teacher education programs at nearby colleges.

In two of the three elementary schools, the counselor handled tutoring as an inherent part of the program. She concentrated on reading and carried out reading activities on a small group basis, relating them to vocational exploration. In the remaining elementary school, "Search" students were tutored in the classroom by paraprofessionals not on the "Search" payroll.

The tutoring programs generally emphasized reading but all subjects received attention in varying degrees in each school. The amount of tutoring received by each student also varied considerably according to the school, the needs of the student, and the availability of tutoring assistance.

F. Counseling

Counseling was conducted in three modes; individual counseling, small group counseling, and large group (class size) counseling. Small group or large group counseling was carried on systematically in all the schools. Most often, the focus was educational and vocational and was related to the field trips, guests, and film strips. The most common procedure involved a group discussion prior to taking a trip. Subsequent to the trip another group session took place where the trip was analyzed in relation to the group members' interests, aptitudes, and values.

Individual counseling was conducted in a more traditional way. Here the focus was on the individual problems--social, family, school, etc.,--presented by the students. The students came to the counselor voluntarily or the counselor asked to see students on the basis of information received from teachers or parents.

G. Other Activities

In each school the counselor organized a number of activities on his or her own initiative. These included charm clubs, a photography club, guest speakers, films, peer tutoring, a sign-in system to discourage truancy, and libraries. All of these activities were vocationally oriented. During the '70-'71 project year a special film strip machine and turntable were purchased for each junior high school. It had been hoped that they would be an effective way to provide vocational and educational information as well as to stimulate discussion. Only one of the schools continued to use the machine during the '71-'72 year because all but one of the counselors felt the available film strips were inappropriate for their students and that the technique itself was boring.

III. Program Objectives

Operation Search has as its stated objectives:

1. To achieve, through project activities, a meaningful increase in the academic achievement of the students who participate in the project.

2. To achieve, through project activities, a more positive attitude towards school in the students who participate in the project.

3. To increase, through project activities, the educational and vocational levels of aspiration of the students who participate in the project.

IV. Evaluation Objectives

A. 1) To determine whether 60% of the project participants achieve a six-month increase in reading and arithmetic levels as measured by standardized achievement tests.

2) To determine whether the mean achievement scores in reading and arithmetic of the project participants significantly improves.

3) To determine whether 60% of the participants achieve a significant improvement in report card grades in curricular subjects.

B. To determine whether the participants achieve a statistically significant more positive attitude towards school as measured by school attendance and a questionnaire.

C. 1) To determine whether 60% of the participants demonstrate an increase in the amount of schooling they expect to attain.

2) To determine whether 60% of the participants demonstrate an increase in their level of vocational aspiration.

Methods and Procedures

A. Populations and Samples

Operation Search includes two groups of students; those who engaged in all Search activities and those who participated in some activities and were assigned to the Search counselor. For the purposes of this study the nucleus groups participating in all activities were considered to be the target population. This was a group of 468 students distributed over four junior high schools and three elementary schools. 323, or about two thirds of the students were in the junior high schools while 145 or about one third were in the elementary schools. All the elementary Search students were sixth graders.

For this evaluation it was decided to study the entire population. Table 1 presents the distribution of the sample according to the characteristics of grade, age, and sex.

Table 1: Distribution of the Sample by Grade, Age, and Sex

Grade	N	%	Age	N	%	Sex	N	%
6	145	31	11-12	44	9			
7	109	23	12-13	192	41	Male	243	52
8	184	40	13-14	167	36	Female	225	48
9	30	6	15-16	65	14			
Total	468	100		468	100		468	100

Most of the students in the "Search" program were concentrated in the eighth grade, as last year most "Search" students were seventh graders. The percentage of seventh grade Search students last year was 40.5%, approximately the same percentage as this year's eighth graders. This does not, however, mean that last year's seventh graders and this year's eighth graders are an identical group, as there was turnover among the student population. Although the exact turnover figure was not available it was estimated to be between 25 and 40%. Three quarters of the students range in age between 12 and 14 years and slightly more than half of the students are male.

B. Design

To study evaluation objective A 1 the results of the Metropolitan Achievement Tests in Reading and Mathematics were administered in the Spring of 1971 and Spring 1972 were compared. The objective would be met if 60% of the students in the sample showed an increase of five months or more in their scores. (The proposal and the evaluation objectives use the figure of six months but the intention was a half year increase. On the Metropolitan tests a half year is represented by five months - hence the change.)

To study evaluation objective A 2 the means of the pre and post achievement test results were compared using a correlated t test. The objective would be met if an observed increase is significant at the .05 level.

To study evaluation objective A 3 the students' report card grades in the curricular areas were converted into a common four point scale and averaged. The grade point averages recorded in 1971 and June 1972 were compared. The objective would be met if 30% of the sample achieve a .5 increase and if an additional 30% achieve a .25 increase in grade point average.

To evaluate objective B "The Students Ideas about School" questionnaire (see Appendix A) was administered in October and again in June. Each item on the questionnaire was analyzed with the statistical procedure of chi-square. To meet this objective, significant improvement on a majority of items was to be shown at the .05 level. The attendance records for the 1970-71 and 1971-72 school years were also reviewed and the mean number of absences for each year was computed and compared by means of a t-test analysis. This objective would be met by a significant improvement at the .05 level.

For the purpose of evaluating objective C 1 the Vocational and Educational Aspiration Questionnaire (see Appendix B) was administered in October and June. It elicited the student's expectation of the level of education he or she would attain. The objective criterion would be met if 60% of the sample raise the level of educational aspiration by two years or more.

To study objective C 2 the results of the Vocational and Educational Aspiration Questionnnaire were compared in reference to vocational aspiration. All occupations were converted to a five point scale which was a modification of the U.S. Census Bureau classification. The objective criterion would be met if 60% of the participants raise their vocational aspiration by one or more levels.

For purposes of the evaluation we attempted to collect and analyze data for the entire sample for all the evaluation objectives except those relating to achievement and scholastic performance (objectives A 1, 2 and 3). For objectives A 1, 2 and 3 the design called for study of those students who maintained an attendance record of 75% or better.

Results
Questionnaires and School Records

This section presents the results obtained from questionnaires, school records and achievement test scores. The reported findings relate to:

1. Achievement levels as measured by standardized test scores

2. Scholastic performance

3. Attitudes toward school

4. Attendance records

5. Educational aspirations

6. Vocational aspirations

1. Achievement Test Results - Reading and Mathematics

Reading

There were 294 pairs of Metropolitan Reading Test pre and post test scores available for analysis and meeting the criteria for inclusion in the sample. The missing pairs of scores were mainly a result of the student not having taken the pre or post test. Some scores were missing because of improper notation on the record cards. Finally, a small number of students' paired scores were excluded because the students had not met the 75% attendance criterion. The increase or decrease in reading scores was classified into 5 month (half year) intervals. Table 2 presents these findings.

Table 2: Distribution of Changes in Metropolitan Reading Test Scores Between Spring 1971 and Spring 1972 (N = 294)

Increase or Decrease in Months	Number	Percent
-10 or more	6	2
- 5 to - 9	9	3
- 1 to - 4	10	4
No change	8	3
+ 1 to + 4	16	6
+ 5 to + 9	52	18
+10 to +14	54	18
+15 to +19	54	18
+20 to +24	47	16
+25 to +29	18	6
+30 or more	20	6
Total	294	100

82% of the sample students achieved a gain in reading scores of a half year or more. This is a substantially greater percentage than the 60% criterion in the evaluation objective. 64% of the sample made gains of a year or more and 28% registered gains of two years or more. These results exceeded what would be expected in a normal population distribution.

In mathematics only 139 pairs of scores were available for comparison. This was largely because the Metropolitan Mathematics Test was not administered to the "Search" students in one junior high school during the 1970-71 school year and very few were administered during that year in a second school. Table 3 presents the comparisons of the 139 pairs.

Table 3: Distribution of Changes in Metropolitan Mathematics Test Scores Between Spring 1971 and Spring 1972

Increase of Decrease in Months	Number	Percent
-10 or more	0	0
- 5 to - 9	0	0
- 1 to - 4	3	2
No change	0	0
+ 1 to + 4	10	7
+ 5 to + 9	50	36
+10 to +14	26	19
+15 to +19	22	16
+20 to +24	6	4
+25 to +29	10	7
+30 or more	12	9
Total	139	100

91% of the available sample met the evaluation criterion of increasing their mathematics score by a half a year. More than a third of the sample increased their scores by two years or more. Because all of the comparisons for one school and many for a second school are missing, caution might be indicated in assessing these gains, but the magnitude of the results make it very unlikely that the missing scores would bring the totals below the 60% criterion.

The difference between the means of the pre and post test scores were tested for significance.

Table 4: Pre Test and Post Test Values of Standardized Achievement Tests

	Reading		Mathematics	
	Mean	S.D.	Mean	S.D.
Spring 1971	4.76	1.46	4.39	1.03
Spring 1972	5.93	1.72	6.09	1.35
Increase	1.17		1.70	
t	19.69 *		20.32 *	

* Significant at the .01 level

Table 4 indicates that the increase in the means between pre and post tests in both reading and mathematics was more than one year. These differences proved to be highly significant.

2. Scholastic Performance

To study the scholastic performance of the sample, end of 1971-72 grade point averages were compared to end of 1970-71 grade point averages for the scholastic areas of English or Language Arts, Social Studies, Mathematics and Science. All grades, both numerical and letter, were converted into a common four point scale. Table 5 presents the increases and decreases in grade point average between the two years.

Table 5: Distribution of Changes in End of Year Grade Point Averages from 1970-71 to 1971-72 (N = 317)

Increase or Decrease in Grade Point Average	N	%
+2.0 or more	1	0
+1.5 to +1.9	28	9
+1.0 to +1.4	54	17
+ .5 to + .9	58	18
+ .25 to +.4	28	9
- .24 to +.24 (no change)	73	23
- .25 to -.4	13	4
- .5 to - .9	40	13
-1.0 to -1.4	7	4
-1.5 to -1.9	2	1
-2.0 or more	0	0

Table 5 indicates that 44% of the students raised their grade point average by .5 or more. This surpasses the evaluation criteria of 30% by a wide margin. 53% increased their grade point average by .25 or more which falls short of the 60% evaluation criterion. Only 18% of the students decreased their grade point average between the two years by .5 or more. Thus more than twice as many students showed increases of at least .5 as did students who showed decreases of the same magnitude. Approximately one student in four increased his grade point average by 1.0 or more while only one in twenty decreased his grade point average by that amount.

To determine whether the increase in grade point average for the entire sample was significant, means for the two years were compared and tested.

Table 6: Pre and Post Test Values of the Grade Point Averages

	Mean	S.D.
End of 1970-71	2.28	.53
End of 1971-72	2.40	.52
Increase	.12	
t	3.9 *	

* Significant at .05 level

Table 6 indicates that the mean grade point average of the entire sample increased a small but a significant amount. It should be kept in mind that this increase is in addition to the increase achieved by the project pupils last year and that a good number of the students have been in the project since its inception. Thus even a small increase this year reflects a continuing upward trend in scholastic performance.

3. Attitudes Toward School

The pre and post test results of the "Student Ideas About School" questionnaire are presented in table 7.

Table 7: Item Analysis of Student Responses to the "Students Ideas about School" Questionnaire

Item	Pre test Yes N	Pre test Yes %	Pre test No N	Pre test No %	Post test Yes N	Post test Yes %	Post test No N	Post test No %
1. The teachers in this school want to help you.	392	98	6	1	270	96	9	3
2. The teachers in this school expect you to work too hard.	199	50	198	49	122	44	153	55
3. The teachers in this school are really interested in you.	327	82	73	18	201	72	75	27
4. The teachers in this school know how to explain things clearly.	326	81	71	18	209	75	70	25
5. The teachers in this school are fair and square.	243	61	156	39	149	53	127	45
6. The boys and girls in this school fight too much.	276	69	121	30	165	59	112	40
7. This school building is a pleasant place.	247	62	154	38	147	54	127	45
8. The principal in this school is friendly.	313	81	74	19	229	83	43	16
9. The work at this school is too hard.	76	19	323	81	41	16	232	83
10. What I am learning will be useful to me.	372	93	27	7	255	91	22	8
11. The trip to and from school is too long.	64	16	334	83	32	12	242	87
12. I wish I didn't have to go to school at all.	89	22	309	77	52	19	221	80
13. This is the best school I know.	144	36	252	63	77	28	199	71
14. The work at this school is too easy.	111	28	296	71	72	26	202	73
15. I work hard in school but don't seem to get anywhere.	176	44	220	55	115	41	162	58
16. I've learned more this year than any earlier year.	290	72	109	27	187	67	86	32

Seven of the items (2, 6, 8, 9, 12, 4, 15) might seem to reflect a small improvement in attitude for the sample group. Only item 6 shows a percentage shift of more than five points. Nine items would seem to reflect a shift in a negative direction and these negative percentage shifts are of a somewhat greater magnitude than are the positive ones. When all of the changes were subjected to chi-square tests, nine achieved significance at the .05 level. With these mixed findings and the lack of significance there is no evidence, based on the questionnaire, to support the evaluation objective of a positive change in attitude towards school.

4. Attendance Records

Attendance was also used as an indicator of attitude. The mean number of days present for the 1970-71 school year was compared to the mean number for the 1971-72 year. Complete attendance records for both years were obtained for 383 sample students.

Table 8: Comparison of Mean Attendance Records for 1970-71 and 1971-72 (N = 383)

Year	Mean of Days Present	S.D.
1970-71	163.6	19.7
1971-72	164.6	20.2
t	1.04 *	

* NOT significant at .05 level

Table 8 indicates a slight but insignificant increase between the means of the two years. During both years, however, attendance was rather good, especially for a population of economically disadvantaged students. On the average, a youngster missed less than two days a month of school. The lack of improvement might merely be a reflection of the fact that attendance was good to begin with.

5. Educational Aspirations

The Vocational and Educational Aspiration questionnaire asked the students two questions concerning their educational future. The first question asked the students how far they wished to go in school, regardless of financial constraints. The second question asked, how much schooling they expected to attain, reality factors considered. Table 9 reflects the students' wishes in respect to their education and table 10 presents their reality expectations.

Table 9: Level of Schooling Students Wish to Attain (N = 257)

	Pre test		Post test	
	N	%	N	%
Drop Out as Soon as Possible	2	.8	3	1
Completion of High School	52	20	44	17
Attendance at a two year junior college or equivalent	67	26	86	33
Attendance at a four year college	135	53	117	46
No response	1	.4	7	3
Total	257	100.2	257	100.0

Table 10: Level of Schooling Students Expect to Attain (N = 252)

	Pre test		Post test	
	N	%	N	%
Drop out During High School	5	2	3	1
Completion of High School	61	24	53	21
Attendance at a two year junior college or equivalent	68	27	88	35
Attendance at a four year college	115	46	104	41
No response	3	1	4	2
Total	252	100	252	100

Tables 9 and 10 indicate that the students wishes and expectations about schooling were high both at the start and the end of the school year. Two percent or less wished or expected to drop out of school regardless of when they were asked the question. Even at the start of the project year 82% wished, and 73% expected to attend either a 2 or 4 year college. These figures changed little by the end of the year with 79% wishing and 76% expecting to attend college. The "wish" level shifted downward three percentage points while the expectation level was raised by the same amount. At the end of the year there was little noticeable discrepancy between wish and expectation.

The evaluation objective called for a two year increase in expectation level by 60% of the students. Table 11 presents the shifts in expectation exhibited by the sample student population.

Table 11: Changes in Students Expectations of Level of School Attainment Pre test and Post test (N = 252)

	N	%
Decrease of two years or more	57	23
No change	134	54
Increase of two years or more	57	23
Total	252	100

A little more than half of the students showed no change in educational expectation while equal numbers - about one student in four - demonstrated two year increases and decreases. None of the decreases went below the level of high school graduation.

The evaluation objective was not met but it should be noted that the students had high levels of expectation at the start of the project year. Actual changes that did occur may have been due to shifts towards greater reality or towards levels more commensurate with newly formed goals.

6. Vocational Aspirations

Two additional questions asked the students what jobs they would like to have as adults and what jobs they actually expected to hold. Each specified job was converted on a five point classification scale as follows:

1. Professional, technical and managerial

2. Semi Professional and Semi Technical

3. Skilled and Skilled Clerical

4. Semi Skilled and Semi Skilled Clerical

5. Unskilled

Table 12: Vocational Level Students Wished to Attain (N = 245)

Level	Pre test N	Pre test %	Post test N	Post test %
1. Professional, technical & managerial	96	39	108	44
2. Semi professional & semi technical	28	11	24	10
3. Skilled	35	14	38	16
4. Semi skilled	35	14	29	12
5. Unskilled	18	7	19	8
No choice	33	13	27	11
Totals	245	100	245	101

Table 13: Vocational Levels Students Expect to Attain (N = 242)

Level	Pre test N	Pre test %	Post test N	Post test %
1. Professional, technical & managerial	67	28	80	33
2. Semi professional & semi technical	25	10	21	9
3. Skilled	35	14	32	13
4. Semi skilled	29	12	34	14
5. Unskilled	17	7	19	8
No choice	69	29	56	23
Totals	242	100	242	100

Although the percentages for vocational "wishes" was somewhat higher than those for vocational expectations, both reflect large numbers of students interested in skilled trades or some level of professional, technical or managerial work. By the end of the project year seven students in ten wished for such work and better than five students in ten expected to attain such vocational levels. These figures represent an increase of 6% in the "wished for" category and an increase of 13% in the expectation of holding

levels 1, 2, or 3 jobs. About one fifth of the students wished and expected to hold semi skilled or unskilled jobs both at the start and the end of the project year. By the end of the year there was a small decrease in the percent of students who had no choice. This figure, in any event, means little, as making a vocational choice during early adolescence is not necessarily a sign of vocational maturity.

Findings

Interviews and On-Site Observations

The findings in this section are based on the visits to the target schools made by the evaluation staff of the Teaching & Learning Research Corp. Each school was visited during the Fall term and again in the Spring. Students and teachers, as well as project staff were interviewed during these visits. An evaluator also accompanied students on two field trips.

A. The Tutoring Program

The tutoring program was a vast improvement over the one observed during the 1970-71 school year. During that year tutoring received less emphasis in the program as a whole and each Search counselor in turn gave it different levels of priority. For this past year tutoring was given high priority and became a basic part of the proposal design. Counselors were encouraged to stress tutoring, and they did so. By the Spring of this year, and in most cases earlier, all Search students were involved in very active tutoring programs. The best of these programs involved the use of a number of college students fulfilling their educational course requirements for field work by working as volunteers in the program. In one junior high school there were as many as 65 college student tutors, thereby enabling each Search student in the school to receive two 45 minute periods a week of individual tutoring. This junior high was exceptional, and the other schools had to rely on a far smaller number of tutors. The average number of college students available to a school ranged from two to seventeen with a modal number of six. Due to course and semester changes the numbers fluctuated slightly during the year.

In one of the two schools where college students were not available the counselor made reading a part of the search program by having children read materials about career development, but this could hardly be considered a tutoring program. In one other school the tutoring was done by two paraprofessionals who were regularly assigned to classes consisting entirely of Search students. In still another school the college tutors worked exclusively under the direction of a reading teacher.

The most successful tutoring programs appeared to be those where the tutors worked under the direction of the counselor rather than the reading teachers. The counselors were able to provide supervision including approaches to a child's personality as well as subject area weaknesses. The reading and the classroom teachers did not seem to be able to communicate the same kind of direction and personal interest that the counselors were able to, probably because most of the counselors were deeply involved and experienced so much personal investment in their Search students.

The peer tutoring program in one school that had been so successful initially during the 1970-71 year seemed to collapse this year. Although 20 peer tutors were still involved in the program, pairs were meeting together less and less often, apparently due to competition from other activities and some embarrassment on the part of students being tutored. The peer tutoring program might still be effective if it were restructured to provide more status to the activity and more privacy to the process.

Student reaction to tutoring seemed very positive particularly where the tutors were college students. The youngsters indicated that they felt they had "friends who took a real interest in them." Thus, the tutoring program provided far more than the strengthening of skill areas.

B. Field Trips

There was a wide variation in the number of trips undertook by each school. Two elementary schools sharing the same counselor made six trips each. The other elementary school had 60 trips - a remarkable number considering that this same school had made none the previous year. The four junior high schools went on between 15 and 35 trips each. The following list accounts for over 90% of the sites to which trips were made.

Colleges: Queens College
LaGuardia Community College
St. John's University
Wagner College
Hofstra University

Special Schools:
Harlem Prep.
The Police Academy
Fire Training Station
N.Y. Institute of Technology
Special Public N.Y. City High Schools

Businesses and Banks:
J.C. Penny
General Motors
Sperry Rand
Roosevelt Savings Bank
Curver National Bank
A clothing factory
New Breed Shop
I.B.M.
McGraw Hill

Miscellaneous:
A music studio
Columbia Broadcasting System
International Ladies Garment Workers Union
Kennedy Airport
N.Y. Stock Exchange
A police station

A firehouse
A post office
Long Island Daily Press
N.Y: State Employment Service
The Aquarium
National Broadcasting Company

The trips were carefully planned and all the counselors provided some sort of briefing before each trip. One elementary school counselor arranged for a representative from the organization the class was about to visit to speak to them before the visit. There was also a group discussion following each trip with the objective of relating what had been seen to the students' own future vocational options.

The typical "Search" student made six or seven trips during the year - (more or less depending on the school). The students were very enthusiastic about the trips, and only disappointed in not being able to go on more of them although part of their motivation was, of course, spending the day with their friends removed from the school setting. They also seemed genuinely interested to learn more about experiences beyond their daily environment. One student's comments exemplify what many communicated. She spoke of her self perception of limited ability. On a trip to a business office she saw a woman operating a business accounting machine, and suddenly realized that she was capable of doing the same thing. Thus, her self perception was altered.

Through comments to the evaluators it was clear that the students often made partial identifications with workers they saw and talked to on these visits.

The counselors were gratified with the results of the trips, feeling that the students became very involved in what they experienced.

C. Other Program Activities

Tutoring and trips were prescribed components of the program for all the participating schools. Outside of these two areas counselors were free to develop the program as each saw fit. In all the schools group counseling or class discussion was in evidence, apparently as a result of one of the recommendations in last year's evaluation report. The increased emphasis on group counseling enabled counselors to work with more students. As they have had little training or experience running small groups two of the counselors, although engaged in group work, feel uncomfortable with this activity. In one elementary school the counselor could not conduct small groups as her office can only accomodate two people and there was no other space at her disposal. She did, however, carry on a comprehensive program of class discussion.

Beyond the activities already described counselors developed programs best suited to their individual modes of functioning. One counselor assumed the "good father" role, keeping very close watch over all his "Search" students. He knew who was absent each day and why, and was in constant touch with parents, phoning them at their places of business when necessary. This counselor was endowed with the personality and "paternal wisdom" to carry out this role effectively and students reacted very positively to him. He set standards which they seemed eager to measure up to, not wanting to disappoint him.

In another school the counselor acted as a facilitator, working in terms of guidance strategies. She paired "Search students" for mutual support and assistance; established a vocational library; trained a paraprofessional to serve as a link between parents and the school; and organized a peer tutoring program.

A similar role was played by a counselor in a third school, who felt that curriculum should be an integral part of the "Search" program. This counselor was instrumental in creating "Search" classes. On any given trip, a resource teacher would serve as trip leader; i.e. the science teacher led the trip to Sperry Rand. Teachers were encouraged to base their class work around the trips. The counselor also organized a graphic arts-photography club, and, through the music department, a band of "Search" students. The students exhibited a great deal of pride in, what was for most of them, their newly discovered talents.

In the fourth school the counselor was highly organized and efficient. She planned many more trips than any other counselor; showed a film a week to the "Search" classes (followed by group discussion); led a weekly charm club for girls; and accumulated an impressive vocational library by systematically writing for free pamphlets each week. It should be noted that this counselor had the most improved program in the project, probably because her role last year was ill defined and she was not aware - due to an administrative mix-up - that whe was responsible for the Search program until the middle of the 70-71 school year.

In the fifth school, the counselor was an interventionist and a strong student advocate. On the Investigator's two visits to the school her office was filled with Search students seeking her help and advice. Her approach sometimes created conflicts with teachers but the students found her to be a person they felt they could rely on in their moments of difficulty. It is unfortunate that some teachers could not accept her role as advocate without feeling personally threatened. On the other hand some teachers worked closely with her. When interviewed by the Investigator they indicated that they were most appreciative of the counselor's efforts and were able, with her help, to incorporate their students' personal and scholastic needs into their classroom work.

In the remaining two elementary schools, serviced by one counselor, the program had settled into a fixed and limited program of group discussion based in part on reading assignments. The evaluators gained the impression that the program was not being related to the students' total school experiences, as was the case in the other schools in the program. The counselor was working under two severe handicaps. She was serving in a temporary capacity as the original Search counselor had taken a leave of absence in mid-year. Also she served in two schools, which made it far more difficult for her to become involved in a total basis in either school.

D. Use of Paraprofessionals

In only three schools did the counselors have a paraprofessional to help them. In two of these schools the paraprofessionals were of invaluable assistance and served as assistant counselors. They were women living in the school communities and very much attuned to the needs and problems of the students and their families. They were particularly effective with parents who were fearful or uncomfortable about coming into the school, and also helpful in feeding information to the counselors. One paraprofessional led student discussion groups and both engaged in a great deal of informal student counseling. Unfortunately during the year paraprofessional funds were cut by a third, reducing their effectiveness.

A third paraprofessional did not possess the necessary personal characteristics to be effective in a guidance capacity, and consequently was used for clerical tasks. In the remaining schools, there were either no paraprofessionals on the Search payroll or in one case, the principal assigned the Search paraprofessional to tutorial duties.

E. Student Reactions

Almost all students interviewed were enthusiastic about the program. Students' comments indicated that they were generally very involved in program activities and wanted more of them. They felt they were gaining a great deal from "Search", particularly from the trips and their work with the counselors. Although a number of the students indicated they were more interested in school in general and more hopeful about their future lives, a larger number did not generalize positive feelings to the non-Search aspects of school. This latter group expressed the wish that all of their school activities could be as interesting and meaningful as Search activities.

Conclusions and Recommendations

Conclusions

1. The project was very effective in increasing the level of student achievement in reading and mathematics. The mean increases over the past school year of 1.2 and 1.7 years respectively was greater than would be expected for economically disadvantaged students and compares very favorably to gains that would be made by a more affluent middle class group of students of comparable age. Further, the percentages of students who made gains well surpassed the percentages set in the evaluation objectives.

2. Although the students fell just short of one objective - raising their grade point averages by .25, a large number - better than four students in ten - did raise their grade point averages substantially. It appears that the project was very effective in positively influencing the classroom performance of about half the group. This, again, is a noteworthy accomplishment considering this group's history of failure before becoming part of the "Search" project.

3. While during the past year, the project appeared to have little impact on the student's attitudes towards school, they seem to feel very positively about the Search program itself. For many, it is the only bright spot in their school day. With few exceptions, "Search" has had little influence on the schools, and for this reason Search students discriminate between their enthusiasm for project activities and the rest of their school day.

4. Although "Search" student attendance records changed insignificantly, there was little room for improvement as attendance records for the group were relatively good during the preceding year.

5. The students did not significantly increase their levels of educational aspiration, as these levels were quite high at the start of the year. The data did not indicate whether the initial high levels represented unrealistic or wishful thinking or were the result of their previous year's exposure to the Search program.

6. The students in the Search program showed little change in vocational expectations over the school year. Again this was probably a function of the high levels of aspiration expressed at the start of the year.

7. Overall the program has been highly successful in reaching a segment of the school population classed as non achievers, who were felt to be functioning under potential. Large numbers of these students now seem to be on their way to a successful school career and a vocational future. Although the program seemed to have little impact on about a quarter of its students, the program is, on the whole, a very creditable one.

Recommendations

1. Except in one school, the Search program is too isolated from the rest of the educational program. This is unfortunate as the program could have a positive effect on the rest of the school. Although the idea of placing all Search students in separate classes, thereby creating a kind of school-within-a-school, has merit, it is recommended that the Search project be studied in relation to such problems as segregation, school morale, and the variety of offerings available to the "Search" students.

2. It is recommended that teachers be included in project planning and selection of students. This would involve them in the program to a greater degree and hopefully result in their greater cooperation and support.

3. Although almost all of the Search counselors are of high quality it is recommended that they be given more opportunity to share experiences and results with each other. Each counselor is doing some noteworthy things which merit consideration by the other counselors. Also, the effectiveness of many of these activities should be studied systematically.

4. In two schools, the administration still encroaches on the counselors' prerogatives and decisions thus weakening the program. It is recommended that in these schools the counselors be given strong central office support.

5. A Search counselor in one elementary school has grossly inadequate facilities and resources. It is recommended that a heated office large enough for small groups; a decent film projector and screen (for the many films she shows) be made available to this counselor.

6. It is recommended that the use of paraprofessionals be developed, and their selection made by the counselor, with the criterion of professional potential in mind. Where a paraprofessional is found to be particularly helpful, the counselor should be permitted to have her services for as many hours a week as she is needed, as this is a most worthwhile investment.

7. The tutoring programs appeared to be effective especially where a number of college students were used. As this resource is limited however, it is recommended that consideration be given to the use of selected high school students and parent volunteers. The "fringe benefits" of the positive personal relationships formed with these tutors were of great value to the Search students.

8. Some of the counselors seemed to lack sufficient training to do an optimal job in group counseling. It is recommended that an in-service training program in group counseling should be included in their training.

9. The value of the Search program has been well established and it is recommended that the program be continued in the district under a recycled grant.

10. It is recommended that the district consider employing the Search model more widely throughout the district under the leadership of experienced "Search" counselors.

APPENDIX A

Name _____ Class _____
School _____

We would like you to find out how you feel about your school. Here are some things that some boys and girls say about their school. Are these things true about your school? If they are very true for your school, circle the big "YES!" If they are true some of the time, but not all of the time, circle the little "yes." If they are mostly not true, circle the little "no". If they are not at all true, circle the big "NO!"

1.	The teachers in this school want to help you.	YES!	yes	no	NO!
2.	The teachers in this school expect you to work too hard.	YES!	yes	no	NO!
3.	The teachers in this school are really interested in you.	YES!	yes	no	NO!
4.	The teachers in this school know how to explain things clearly.	YES!	yes	no	NO!
5.	The teachers in this school are fair and square.	YES!	yes	no	NO!
6.	The boys and girls in this school fight too much.	YES!	yes	no	NO!
7.	This school building is a pleasant place.	YES!	yes	no	NO!
8.	The principal in this school is friendly.	YES!	yes	no	NO!
9.	The work at this school is too hard.	YES!	yes	no	NO!
10.	What I am learning will be useful to me.	YES!	yes	no	NO!
11.	The trip to and from school is too long.	YES!	yes	no	NO!
12.	I wish I didn't have to go to school at all.	YES!	yes	no	NO!
13.	This is the best school I know.	YES!	yes	no	NO!
14.	The work at this school is too easy.	YES!	yes	no	NO!
15.	I work hard in school but don't seem to get anywhere.	YES!	yes	no	NO!
16.	I've learned more this year than any earlier year.	YES!	yes	no	NO!

APPENDIX B

THE VOCATIONAL AND EDUCATIONAL ASPIRATION QUESTIONNAIRE

NAME_____ SEX_____

SCHOOL_____ DATE OF BIRTH_____

GRADE_____

Your guidance counselor is interested in what you think you want to do in the future. So that your counselor can be more helpful to you, say what you really think in your answers.

1. First underline the sentence that best says what you would like to happen in the future in school. Don't worry about the money you would need or how you are doing in school.

   I would like to quit school as soon as I can.

   I would like to finish high school.

   I would like to go to a trade school or a two-year college after high school.

   I would like to go to a four-year college after high school.

2. Now underline the sentence that best says what you think will happen to you. Here keep in mind the real chances and opportunities that you think you will or will not have.

   I probably will quit before I finish high school.

   I probably will finish high school.

   I probably will go to a two-year college or a trade school after high school.

   I probably will go to a four-year college.

3. Now tell what you wish for a job. When I am grown up, I wish I can work as a._____.

4. Now tell what you think will happen. When I grow up I will probably work as a _____.

   If you have no idea about this put a check here _____.

AEROSPACE EDUCATION PROGRAM

Function No. 85-2-6454

FINAL REPORT OF THE AEROSPACE EDUCATION PROGRAM

COMMUNITY DISTRICT NO. 27, QUEENS

Program Description

The Aerospace Education Resource Center project is funded under a Quality Incentive Grant (State Urban Education). The Center began its operation in P.S. 90, District 27, Queens in September 1970. It is located in a classroom which serves as both instructional center and resource library in Aerospace Education. It is operated under the direction of Mr. Bernard Spar.

Fifth and sixth grade teachers throughout District 27, Queens are invited to participate in the program. The program is divided in two parts which require a visit by the children to the center where they receive instruction from Mr. Spar and a field trip to Kennedy International Airport which reinforces the presentation at the center. Occasionally the order is reversed but this is not typical.

The classroom is decorated with a series of seven brightly colored murals depicting various great moments in myth and history of manned flights. Located across the front and one side of the room is a variety of mobiles and stationary models used by Mr. Spar as visual and manipulative teaching aids. The stationary models consist of actual parts from airplanes such as a wooden 2-blade propeller, an airplane carburator and commercial models of airplanes, rockets, and cutaway displays. Among the pieces of manipulative equipment are: working wind tunnels which allow students to "feel" the effects of an airplane's control surfaces.

Other equipment in the room includes a film strip projector, a special radio receiver tuned to airplane communication frequencies, maps, lists of prefixes, suffixes and compound words related to aerospace vocabulary.

There is also a chalkboard and sufficient seating for approximately two classes of children and their teachers.

During the visit to the center the children are given a brief history of man's attempt at flight. In addition to the lecture and slide film presentation, the children are allowed to examine and manipulate a variety of models designed to contribute to their understanding of the principles of drag, thrust, lift, and inertia. Particular attention is given to flight control surfaces. Demonstrations include a guided toy rocket powered by a carbon dioxide cartridge. Mr. Spar reviews simple mathematical relationships in navigation, direction, speed and payload capacity. In this way he touches on the mathematics, science and social studies aspects of flight. Through the introduction of new vocabulary

and the artful murals, language arts, and reading are also clearly entwined in the presentation. The entire focus is on the interdisciplinary nature of aerospace. The presentation also includes a discussion of career opportunities in the airplane industry. At the conclusion of the lesson the children listen to live transmissions between planes in flight and the control tower of Kennedy International Airport. A question and answer period follows.

As the children leave they are given a variety of materials and a paperback book. The teachers are given a Teachers Guide and an airplane model kit to help them in their follow-up lessons. A list of distributed materials follows:

A. One per child:

1 Balsa wood glider model.
Rocket Genius (Scholastic Book Services)
The Wright Brothers at Kitty Hawk (Scholastic Book Services)
Conquest of the Moon (Wonder Books)

B. One per school:

Teach-a-Chart Series 103 (Eye Gate House, Inc.) - on loan
Air Age Education Materials Kit --Cessna Aircraft/American Airlines
Teachers Guide for SST..T.T (FAA, Dept of Transportation)
Story of Flight Poster (United Airlines)
Age of Flight (United Airlines)
Jet Age Flight (United Airlines)
Man and Space (RCA)
Scholastic Record and Book Companion Series (Scholastic Records)
Assorted pamphlets and brochures from various members of the Aerospace industry
Outline map
Bibliography of books, charts, and film strips available for loan from the Aerospace Education Center

A Teacher Guide prepared by the Aerospace Education Resource Center is distributed to each teacher and describes the program. The Table of Contents lists:

Visit to Aerospace Center
Trip to LaGuardia Airport (used during 1970-71)
Vocabulary
Follow-up Lessons
Language Arts
Science
Mathematics
Evaluation
Map of LaGuardia Airport
Answer Sheet

Follow-up Lessons

Teachers are expected to develop follow-up lessons based on the concepts covered in the Guide. These concepts are in the form of short-answer test items. Also, each class is expected to construct one airplane from the kit distributed at the end of the visit to the center.

In principle, the field trip to the airport takes place approximately one week after the visit to the center at P.S. 90, although on a rare occasion the order was reversed, or the time interval between visits was longer.

At the airport an official guide meets the bus and directs the driver to various locations on the tour. Because the airlines take turns hosting classes, the trips are not completely uniform. Typically, however, each class sees the maintenance building and equipment, isolation and holding buildings for animals, and a close-up look at a plane in a hangar. Various career opportunities are pointed out during these trips.

Visits to the center and the airport are generally made by two classes from one school at the same time.

Program Objectives

As stated in the proposal, the program objectives are as follows:

A. 80% of the pupils in the program will show a significant increase of their knowledge in Mathematics and Science as it relates to aerospace education.
B. 80% of the pupils in the program will show a significant increase in their knowledge of careers in the aerospace industry.
C. 80% of the pupils in the program will show a significant positive difference in their attitude toward reading.
D. 80% of the pupils in the program will show a significant positive attitude toward their experience in the Aerospace Education Center.

Evaluation Objectives

The Evaluation Objectives for each part of the program are as follows:

A. To determine whether 80% of a sample of pupils in the program show a significant increase of their knowledge in Mathematics and Science as it relates to aerospace education.

B. To determine whether 80% of a sample of the pupils in the program show a significant increase in their knowledge of careers in the aerospace industry.
C. To determine whether 80% of a sample of pupils in the program show a significant positive difference in their attitude toward reading.
D. To determine whether 80% of a sample of the pupils in the program show a significant positive attitude toward their experience in the Aerospace Education Center.

Evaluation Procedures

A random sample or 20% of the participating classes were selected for the evaluation of each of the program objectives. In the interest of clarity, each program objective and its evaluation procedure will be discussed individually.

A. A mathematics and Science Concept Test (See Appendix B) relating to aerospace was developed in consultation with the program director, Mr. Bernard Spar. A pilot sample of this test was administered to a class randomly chosen outside of the sample. The test was judged to be effective and was administered on a pre-post basis to the 20% sample chosen for this study. Test scores were then tabulated to see whether 80% of the students increased significantly in post test over their pre test scores.

T-tests were used for paired comparisons*, N=275. Teachers were asked to administer pre test forms to their students one week prior to the class visit to the Aerospace Education Resource Center and to mail completed ungraded tests to Teaching & Learning Research Corp. where they were hand scored. Aerospace program classes completed post tests in their classrooms within a week after the tour to the airport. Results were again mailed to Teaching & Learning and hand scored. In isolated instances this time schedule was not strictly followed, but in no case was the delay sufficient to interfere with test results.

B. A Careers Inventory (see appendix C) was developed in consultation with the program director, Mr. Bernard Spar and was administered on a pre-post test basis to the 20% sample chosen for this study. Scores were then tabulated to see whether 80% of the students increased in their post test scores over their pre test scores.

T-tests were used for paired comparisons*, N=274. Pre and post tests were administered at the same time as the Mathematics and Science

* .05 level of significance

Concepts Test by the classroom teachers and hand scored by Teaching & Learning Research Corp.

C. A Reading Attitude Questionnaire (see Appendix D) was administered on a pre-post test basis to the 20% sample chosen for this study. Scores were tabulated to determine whether 80% of the students increased in their post test scores over their pre test scores.

T-tests were used for the paired comparisons*, N=278.

Pre and post tests were administered in the same battery as the Mathematics and Science Concepts Test and the Careers Inventory and were hand scored by Teaching & Learning Research Corp.

D. A "My Center" questionnaire (see appendix E) regarding attitudes toward the Aerospace Center was administered on a post test basis only to the 20% sample chosen for this study. A "My School" (see appendix F) attitude questionnaire was administered on a pre and post test basis to the children in the sample, along with the rest of the battery. Scores were tabulated to see whether 80% of the students increased in their post test scores over their pre test scores.

T-tests were used for paired comparisons*, N=278.

Another instrument entitled "Teacher Perceptions of the Aerospace Program (see appendix G) was included with the post test battery. This instrument was designed to evaluate each teacher's impressions of the impact of the program on his or her class.

Finally, the principal investigator visited six of the participating classes at their home schools in order to interview children and teachers and to find visible evidence of their participation in the program.

Findings

The tables in this section will discuss statistical analyses in terms of Number (N), Percent (%), Means ($\bar{X}$), Standard Deviations (S.D) and "t" scores (t).

Table I shows the percentage of students whose post-test scores equaled or were greater than their pre-test scores for each evaluation instrument used in the project.

* .05 level of significance

TABLE I

Instrument	Percentage of Post Test Scores Equal to or Greater than Pre-Test Scores %	N
Math/Science Concepts	71	192
Careers Inventory	67	180
Reading Attitude	65	175
My School Attitude	57	152

None of the program objectives were achieved at the proposed 80% level. It is clear however, that most children in the program had improved post-test scores for each objective.

Table 2 presents the mean standard deviations with statistical comparisons of pre and post test measures on the Mathematics and Science Concepts Test.*

TABLE 2

Math/Science Concepts Test	N	$\overline{X}$	S.D.	t
Pre	275	12.1	4.5	6.6*
Post	275	14.2	6.2	

This would suggest that the program does indeed have a positive effect on acquisition of Mathematics and Science knowledge as it relates to aerospace education.

* significant at .05 level

Table 3 shows t test results on paired comparisons of the Careers Inventory.*

TABLE 3

Careers Inventory	N	$\bar{X}$	S.D.	t
Pre	274	11.0	7.2	5.7*
Post	274	13.7	8.0	

Here again the program appears to be effective in significantly increasing the subjects' knowledge of careers in the aerospace industry.

TABLE 4

T Test Results on Paired Comparisons of

Reading Inventory Pre and Post

Test Scores

Reading Attitude	N	$\bar{X}$	S.D.	t
Pre	278	10.7	3.3	1.6
Post	278	10.9	3.2	

In the case of Program Objective C, (80% of the students will show a positive significant increase in their attitude toward reading) Table 4 shows no significant difference in the t tests in paired comparisons of the Reading Inventory pre and post test scores. In view of the fact that so little time in the program is directly related to improving attitude toward reading this result is not surprising. Based on on-site interviews

* significant at .05 level

with the classroom teacher and their students, and personal observations in the classroom, the reading aspects of the program are almost incidental. This is especially true in those classes which the teachers identify as generally low achievers.

Because the "My Center" questionnaire was given only once as a post test, a t test of paired comparison was made between it and the "My School" questionnaire to determine if there was a significant difference in the positive attitude of the subjects toward the center and toward the school

TABLE 5

Test	N	$\overline{X}$	S.D.	t
My Center	283	23.8	4.8	5.4*
My School	283	26.9	5.35	

The results in Table 5 show a significant difference in positive attitude of the subjects toward the center as compared to their attitudes to school. This would appear to be reasonable in view of the excitement and interest generated by field trips, which tend to break up the routine of usual school activity.

"The Teacher Perceptions of the Aerospace Program" questionnaire (Appendix G) asks teachers to list three adjectives that best describe their overall impression of the value of the aerospace program to their students. The response was overwhelmingly positive. This same attitude was expressed by the children in those classes visited by the principal investigator. Typical comments were: interesting, enjoyable, informative, well devised, challenging, relevant and worthwhile. A recapitulation of teacher responses can be found on the following page. There were ten teachers responding to this questionnaire.

* significant at the .05 level

Seven of the ten responding teachers made suggestions. In summary, they expressed the feeling that they would like greater personal preparation prior to their visit to the center. Such preparation would include:

A. Content background
B. Specific suggestions for follow-up lessons and activities.

Based on the observations and impressions of the principal investigator during visits to the sampled schools, these suggestions seem valid. Some of the teachers interviewed expressed a willingness to continue the unit and would do so with some additional guidance had it been made available. Children responded to the experience with varying degrees of enthusiasm but no strong negative feelings were expressed. Their interest in aerospace was apparently high and the general impression was that they were sufficiently motivated to continue learning--especially in the area of science.

The children seemed to enjoy both parts of the program, i.e., the Center and the trip to Kennedy International Airport. An informal poll taken in those classes visited by the principal investigator gave a slight edge to those who enjoyed the Airport experience more.

Science concepts relating to flight, such as airplane control surfaces and principles of lift, thrust and drag appeared to be most clearly remembered. The single most recalled experience was the controlled flight of a carbon dioxide-powered rocket at the Aerospace Center.

Vocabulary and the meaning of prefixes in words such as biplane and triplane appeared to be the least well remembered.

While some children read the paperback books distributed at the center, it was clear that the vast majority had not in those classes visited by the principal investigator. Similarly, few children claimed to have done any additional reading connected with aerospace since their experience with the program. Of those who claim to have done such reading, most could not cite specific titles.

Finally, by show of hands, almost every child said they would like to visit the center again.

This program appears to be close to meeting some of its objectives and seems to have had a positive effect on its visitors.

It can probably be made more effective with the following recommendations:

Recommendations

1. The Aerospace Resource Center physical facilities are minimal. In view of its potential it is recommended that the center be expanded both in materials and physical space.
2. It is recommended that two separate programs for 5th and 6th grades be developed to avoid repetition for those children who visit for two consecutive years. Where possible, more activities should be incorporated to increase student involvement.
3. It is recommended that the Project Director develop more specific follow-up lesson plans and provide consultant services to encourage use of these materials. The present guide is best used as a test instrument and review rather than a source of follow-up plans and activities.
4. Closer cooperation with the airport is urged to make trips uniform. There is considerable variation in the quality of the trips. This recommendation may be beyond scope of the Project Director.
5. It may be unreasonable to expect as much change in attitude toward reading as suggested in the proposal. Unless a greater effort is made in stressing reading and reading instruction in the program, it is recommended that this project objective be modified or eliminated. If the reading attitude objective is retained, it is recommended that a greater variety of paperback childrens books be made available for distribution to visiting classes, so that the individual student will have a better chance of choosing a book of particular interest.

APPENDIX A

COMMUNITY SCHOOL BOARD 27
HORATIO PROCE, PRESIDENT

OFFICE OF DISTRICT SUPERINTENDENT ROSE L. SCHWAB

DISTRICT 27
P.S. 63, Queens
90-15 Sutter Avenue
Ozone Park, N.Y. 11417

December 1, 1971

To: Principal of P.S. 42, 45, 47, 51, 63, 66, 90, 96, 105, 124

From: Bernard Spar, Aerospace Education Resource Center

The State Department of Education requires an evaluation of all state funded programs. The Aerospace Education Program of District 27 is being evaluated by Teaching & Learning Research Corp. of New York City.

Dr. Philip White, a member of their organization, will be mailing a pre and post series of tests to be administered by the two teachers whose classes will participate in the visitation to the Aerospace Center and Kennedy Airport. The tests do not have to be marked inasmuch as Teaching & Learning will do the marking. Please note that Teaching & Learning is not evaluating the school or the teacher but rather the impact of the pupils' experiences with the Aerospace program. The pre test must be administered prior to the class visitation to the Center and the Airport. In addition to the testing as such, Dr. Philip White will be visiting P.S. 45, 96 and 105 as a follow-up to the testing part of the evaluation.

Approved: Rose L. Schwab

District Superintendent

TABLE 6

TEACHER PERCEPTIONS OF THE AEROSPACE PROGRAM

1. How would you characterize any effect the aerospace experience has had on the students in your class?

   POSITIVE (7) NO NOTICEABLE CHANGE (3) NEGATIVE (0)

2. Which part of the aerospace program do you feel generated the most interest on the part of your class?

   _____ Aerospace Center (6)

   _____ Kennedy Airport visit (4)

   _____ follow up material (0)

3. In terms of your overall math and science program, how would you rate the aerospace experience?

   very worthwhile 1 2 3 4 5 no direct value

   No. of responses (3) (0) (3) (3) (3) (1) (0)

4. If the aerospace program is recycled next year, would you request a visit?

   YES (10) NO (0)

5. What suggestions do you have on modifying the role of the classroom teacher in the aerospace experience?

   _____

   _____

   _____

   _____

   _____

6. List three adjectives that best describe your overall impression of the value of the aerospace program to your students.

   _____

   _____

   _____

TEACHING & LEARNING

APPENDIX B

AEROSPACE EDUCATION RESOURCE CENTER
P.S. #90
86-50 109 STREET
RICHMOND HILL, N. Y. 11418

SCIENCE AND MATH INFORMATION TEST

1. In a propeller driven plane, the propeller provides the

   a. drag b. gravity c. thrust 1. _____

2. The control surface controlling turning right or left is

   a. the landing gear b. the rudder c. the elevator 2. _____

3. In a jet engine the burning fuel produces energy. The plane moves forward as the exhaust gases

   a move out of the rear end of the engine
   b. help the engine operate
   c. move out of the front end of the engine 3. _____

4. The force of gravity acting on the plane is balanced by

   a. thrust b. lift c. drag 4. _____

5. The ailerons help the plane

   a. go faster b. go slower c. turn left or right 5. _____

6. The demonstration with the air escaping from the balloon illustrates a simple

   a. jet engine b. steam engine c. control surface operating 6. _____

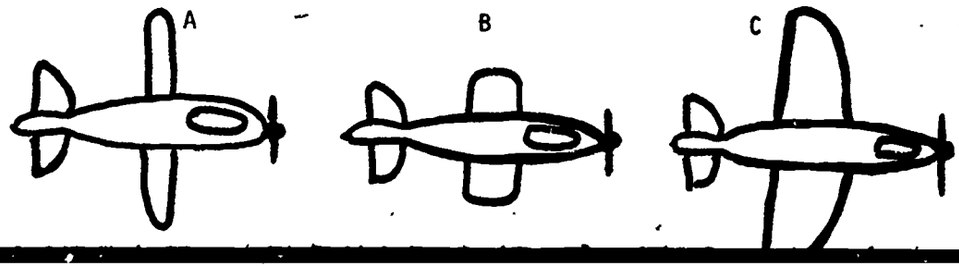
7. When a plane is in flight the force of

   a. the wind b. inertia c. fuel pushes against the rudder to make the plane turn left or right. 7. _____

8. Which craft does not depend on thrust to obtain lift?

   a. Boeing 707 b. Red Baron Triplane c. Zeppelin 8. _____

9. Which aircraft will provide the greatest lift? 9. _____



TEACHING & LEARNING

Appendix B - continued

10. Your plane will carry 120 passengers with an average weight of 150 lbs. per passenger. What is the total weight of all the passengers? 10. _____

11. The wing of an airplane is 100 feet long and 8 feet wide. How many square feet are there on the wing? 11. _____

12. Select the word that means the number of square feet on a surface.

    a. weight b. area c. volume 12. _____

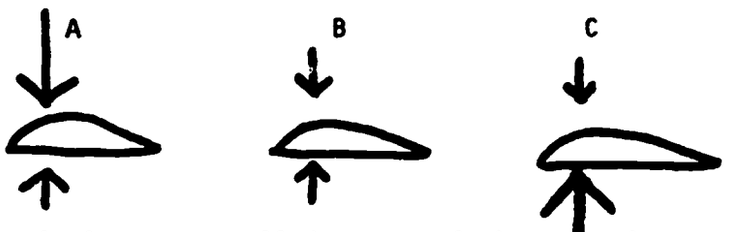
13. In what heading will the pilot direct his ship if he is flying due East. (Your answer should be expressed in degrees of a compass.) 13. _____

14. A plane may carry 500 gallons of fuel. If each gallon weighs 8 lbs. what is the total weight of the fuel? 14. _____

15. If a plane is flying at 600 miles per hour for 5 hrs. how far will it travel at the end of 5 hours? 15. _____

16. Indicate with an "arrow line" how the force of gravity acts on a plane in flight (the direction of the force of gravity). 16. _____

17. Select the diagram which shows lift. 17. _____



18. Some airplanes are called supersonic because they travel faster than

    a. sound b. light c. rockets d. radio waves 18. _____

19. A flying machine that has wings but no motor is called a

    a. helicopter b. glider c. jet 19. _____

Appendix B - continued

20. An airplane that can take off or land on either land or water is called a

    a. helicopter b. sea plane c. an amphibian 20. _____

21. Men first flew by using

    a. balloons b. gliders c. airplanes 21. _____

22. Streamlining an airplane reduces the force called

    a. weight b. lift c. drag 22. _____

23. An engine which gets its power from burning fuel and carries its own oxygen supply is the

    a. rocket engine b. jet engine c. solar engine 23. _____

24. The newest aircraft are powered by jet engines because

    a. they are lighter than other kinds of engines
    b. they run smoothly without much noise
    c. they fly much faster than airplanes with propellers 24. _____

25. We can not use jet planes to go to the moon because

    a. they are too light b. they do not travel fast enough
    c. there is an empty airless space between us and the moon. 25. _____

APPENDIX C

CAREERS INVENTORY

1. Besides Pilot and Stewardess, list 10 jobs in the aerospace industry.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

2. Imagine you are a passenger on an airplane. List some of the people you will meet from the moment you arrive at the airport who help make your ride possible.

_____ _____

_____ _____

_____ _____

3. List some of the people you will probably <u>not</u> meet but who help make the airplane ride possible.

_____ _____

_____ _____

_____ _____

4. Can you name any other jobs people have at airports?

_____ _____

_____ _____

_____ _____

APPENDIX D

TEACHING & LEARNING

Self-Concept of Reading Ability

Student_____ Teacher_____

School_____ Tester_____

1. Think of your friends your own age. Do you think you can read better, the same or less well than your friends?

   a) Better b) Same c) Less well

2. Think of the students in your class. Do you think you can read better, the same or less well than they can?

   a) Better b) Same c) Less well

3. When you finish this school, do you think you will be one of the best, one of the average or one of the less good readers?

   a) Best b) Average c) Not so good

4. Forget how your teachers mark you work. How good do you think your own work is?

   a) Very good b) O.K. c) Not too good

5. Do you go to the library more, the same as, or less than your friends?

   a) More b) Same c) Less

6. Do you read at home more than, the same as, or less than your friends?

   a) More b) Same c) Less

7. Do you think the teacher feels that you're learning the material that he is teaching?

   a) Most of the time b) Sometimes c) Never

8. Do you think you could finish high school?

   a) Yes b) Maybe c) No

9. If you go to college, do you think that you would be one of the best, average or poorest students?

   a) Best b) Average c) Poorest

APPENDIX E

MY CENTER QUESTIONNAIRE

Name_____ Class_____ School_____

Circle the answer that tells how you feel.

1.	The teachers at the Aerospace Center want to help you.	YES	SOMETIMES	NO
2.	The teachers at the Aerospace Center expect you to work too hard.	YES	SOMETIMES	NO
3.	The teachers at the Aerospace Center are really interested in you.	YES	SOMETIMES	NO
4.	The teachers at the Aerospace Center know how to explain things clearly.	YES	SOMETIMES	NO
5.	The teachers at the Aerospace Center are fair and square.	YES	SOMETIMES	NO
6.	The boys and girls at the Aerospace Center fight too much.	YES	SOMETIMES	NO
7.	The Aerospace Center is a pleasant place.	YES	SOMETIMES	NO
8.	I learned more this year than any earlier year.	YES	SOMETIMES	NO
9.	The work at the Aerospace Center is too hard.	YES	SOMETIMES	NO
10.	What I am learning will be useful to me.	YES	SOMETIMES	NO
11.	The trip to and from the Aerospace Center is too long.	YES	SOMETIMES	NO
12.	I wish I didn't have to go to the Aerospace Center at all.	YES	SOMETIMES	NO
13.	This is the best place to learn that I know.	YES	SOMETIMES	NO
14.	The work at the Aerospace Center is too easy.	YES	SOMETIMES	NO
15.	I work hard at the Aerospace Center but don't seem to get anywhere.	YES	SOMETIMES	NO

APPENDIX F

MY SCHOOL QUESTIONNAIRE

Name_____ Class_____

School_____

Circle the answer that tells how you feel.

1.	The teachers in this school want to help you.	YES	SOMETIMES	NO
2.	The teachers in this school expect you to work too hard.	YES	SOMETIMES	NO
3.	The teachers in this school are really interested in you.	YES	SOMETIMES	NO
4.	The teachers in this school know how to explain things clearly.	YES	SOMETIMES	NO
5.	The teachers in this school are fair and square.	YES	SOMETIMES	NO
6.	The boys and girls in this school fight to much.	YES	SOMETIMES	NO
7.	This school building is a pleasant place.	YES	SOMETIMES	NO
8.	The principal in this school is friendly.	YES	SOMETIMES	NO
9.	The work at this school is too hard.	YES	SOMETIMES	NO
10.	What I am learning will be useful to me.	YES	SOMETIMES	NO
11.	The trip to and from school is too long.	YES	SOMETIMES	NO
12.	I wish I didn't have to go to school at all.	YES	SOMETIMES	NO
13.	This is the best school I know.	YES	SOMETIMES	NO
14.	The work at this school is too easy.	YES	SOMETIMES	NO
15.	I work hard in school but don't seem to get anywhere.	YES	SOMETIMES	NO
16.	I've learned more this year than any earlier year.	YES	SOMETIMES	NO

APPENDIX G

TEACHER PERCEPTIONS OF THE AEROSPACE PROGRAM

1. How would you characterize any effect the aerospace experience has had on the students in your class?

   POSITIVE NO NOTICEABLE CHANGE NEGATIVE

2. Which part of the aerospace program do you feel generated the most interest on the part of your class?

   _____ Aerospace Center

   _____ Kennedy Airport visit

   _____ follow up material

3. In terms of your overall math and science program, how would you rate the aerospace experience?

   very worthwhile 1 2 3 4 5 no direct value

4. If the aerospace program is recycled next year, would you request a visit?

   YES NO

5. What suggestions do you have on modifying the role of the classroom teacher in the aerospace experience?

   _____

   _____

   _____

   _____

   _____

6. List three adjectives that best describe your overall impression of the value of the aerospace program to your students.

   _____

   _____

   _____