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AUTHOR	Taylor, Derek B.; Fleming, Margaret
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ABSTRACT

During the 1960-1970 school year, the Cleveland Public Schools began implementing a More Effective Schools (MES) Program in two elementary buildings. This report is the evaluation of the third year of operation of the program (1971-72 school year). The MES Program was designed to attack the poor achievement patterns of inner-city children through the alteration of organizational and instructional patterns across all grades within a given school. Unlike many compensatory education programs that are designed to serve those children with the greatest need within a given subject area, the thesis of MES is that all inner-city children have pressing educational needs, and that efforts to improve the performance of these children in school requires a comprehensive approach that involves all children in all grades. The rationale behind the program is that: (1) learning will be facilitated if the school services and staff are organized and coordinated to give priority to the individual needs of each child, and (2) teachers will teach effectively if they are given the time, the freedom from non-teaching duties, the necessary supportive personnel, and the variety of materials needed for more individualized instruction. The MES Program grew out of the meetings of a committee composed of representatives of the Cleveland Teachers Union and the Cleveland Board of Education. (Author/JM)

MORE EFFECTIVE SCHOOLS PROGRAM

DISADVANTAGED PUPIL PROGRAM FUND

FUND NUMBER 97-16

1971-1972 EVALUATION

(YEAR 3)

Prepared
By

Derek B. Taylor
Research Associate

Margaret Fleming
Directing Supervisor

Cleveland Public Schools

DIVISION OF RESEARCH AND DEVELOPMENT

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MORE EFFECTIVE SCHOOLS PROGRAM

I. INTRODUCTION

During the 1969-70 school year, the Cleveland Public Schools began implementing a More Effective Schools (MES) program in two elementary buildings. This report is the evaluation of the third year of operation of the program (1971-72 school year).

A. Needs and Rationale

The MES Program was designed to attack the poor achievement patterns of inner-city children through the alteration of organizational and instructional patterns across all grades within a given school. Unlike many compensatory education programs that are designed to serve those children with the greatest need within a given subject area, the thesis of MES is that all inner-city children have pressing educational needs and that efforts to improve the performance of these children in school requires a comprehensive approach that involves all children in all grades. The rationale behind the program is that (1) learning will be facilitated if the school services and staff are organized and coordinated to give priority to the individual needs of each child, and (2) teachers will teach effectively if they are given the time, the freedom from non-teaching duties, the necessary supportive personnel, and the variety of materials needed for more individualized instruction.

The program seeks to create optimal conditions for both learning and instruction by increasing the individualization of instruction through the following means:

- Reduced class size
- Expanded instructional and supportive staff
- Expanded supplemental services
- In-service development of teachers
- Increased instructional materials and equipment
- A team approach to instruction
- Increased parental involvement in the schools

1. Objectives

The objectives of the MES Program fall into the two broad categories of process objectives and product objectives. Process objectives are those objectives related to the implementation of the programmatic ingredients of the project. Product objectives are those objectives related to the expected outcomes or results of the implementation of the ingredients. Product objectives may be conceived of on two levels: (a) Staff product objectives are changes in teacher and administrator behavior which are expected to result from the implementation of the process and which may be viewed as initial products. (b) Pupil product objectives are changes in pupil behavior which are expected to result from the changes in staff behavior and which may be viewed as the final product.

a. MES Process Objectives

(1) A pre-service orientation program of two days duration covering the rationale, objectives and methods of the program will have been completed by each teacher and aide prior to the opening day of school.

(2) All proposed instructional and library equipment will have been ordered prior to the opening day of school.

(3) All proposed supportive personnel will have been recruited, assigned and scheduled by the opening day of school.

(4) Class registers will have been reduced to an average of no greater than 25 pupils by the opening day of school.

(5) The classes at each grade level will be organized into a cluster with a cluster team composed of the homeroom teachers from the classes in the cluster, their aides, and one extra teacher.

(6) Regular weekly time slots for cluster team planning meetings will have been scheduled by the opening day of school. Weekly planning meetings will be held throughout the year.

(7) In-service training activities covering interaction analysis, microteaching techniques, the use of new equipment, effective use of teacher aides, writing behavioral objectives, and test construction will be organized and scheduled. Time will be scheduled for teachers to attend these activities and teachers will attend regularly.

b. Staff Product Objectives

(1) Classroom observers will find the degree and the variety of ways in which instructional equipment, games and materials are used in the MES classrooms significantly greater than in Control schools.

(2) Classroom observers will find teacher organization and preparation of lessons significantly superior to that of teachers in Control schools.

(3) Classroom observers will find the degree of individual attention to students in MES classrooms significantly greater than in Control schools.

(4) Teacher questionnaires will reveal that teachers in MES schools spend significantly less time performing non-teaching duties than before the program.

(5) Project records will show the incidence of home visitation, open houses, parent-teacher meetings and other efforts to involve the parents in the education of their children to be significantly higher than in Control schools.

c. Pupil Product Objectives

(1) Pupils in MES schools will evidence achievement levels in reading and arithmetic which are significantly greater than the levels registered at Control schools.

(2) Attendance rates at MES schools will increase significantly beyond the previous five-year average in those schools.

(3) The incidence of parent-teacher meetings will increase beyond previous levels, as measured by project records and teacher questionnaires.

(4) Pre and post administrations of locally constructed attitude scales will indicate that student attitudes toward school have improved in MES schools to a sighificantly greater degree than in Control schools.

B. Historical Background

The More Effective Schools Program grew out of the meetings of a committee composed of representatives of the Cleveland Teachers Union and the Cleveland Board of Education. Planning for the implementation of the concept involved meetings of representatives of the two schools, the Directing Principal of the South District, the Assistant Superintendent in charge of curriculum and the Division of Research and Development. The detailed plans for each school were based on recommendations of committees from each school composed of the principal and teachers representing each grade level.

The evaluation reports for Year 1 (1969-70) and Year 2 (1970-71) of program operation revealed the following findings:

1. In Year 1 the program ingredients were judged incompletely implemented in that there were gaps between proposed and actual staffing patterns, delays in the arrival of staff, materials and equipment, a lack of in-service training, and confusion on the part of the staff as to the purpose of the program after the pre-service orientation session.

   In Year 2 notable improvement was made in implementation in that all elements of the program were provided as

proposed with the exception of in-service training in which several previously identified areas of need were not addressed.

2. In Year 1 comparisons of the performances of MES and Control teachers during Year 1 indicated that MES teachers provided more individual attention to students, exhibited more creativity in teaching, spent less time on non-teaching duties, and made substantial progress in increasing their contacts with parents. However, the results also showed that there was no difference between MES and Control schools in the use of media in instruction and that teachers in Control schools had better prepared and organized lessons. Further evidence indicated that there was little difference between the teaching in MES and Control schools. Although the MES teachers expressed a generally positive attitude toward the program, there was evidence of a considerable lack of intra-staff cooperation and ability to make effective use of the program ingredients.

   In Year 2 comparisons of teacher performance indicated that MES teachers continued to show greater individual attention to students, less time spent on non-teaching duties, and further progress in increasing their contact with parents. Further, MES classrooms were judged as having a more receptive and communicative atmosphere, and MES children showed a higher frequency of participation in lessons and of volunteering questions and answers. However, there was no difference observed between MES and Control classrooms in the use of media in instruction, organization and preparation of lessons, interest and enthusiasm generated by the lessons, and general teaching style in terms of organization and presentation of material. Teachers continued to express generally positive attitudes toward the program, but gaps in communication and lack of intra-staff cooperation were still problems.

3. In Year 1 the operation of the clusters was judged to be generally ineffective with a tendency for teachers to work alone rather than together and a failure to take full advantage of opportunities afforded by the program ingredients.

   In Year 2 there was a greater tendency for MES teacher to work together. Three out of the 11 clusters were judged to have well organized, smoothly functioning teaching and planning teams, but most others still showed a lack of adequate joint planning and cooperation.

4. In Year 1 MES children scored higher than Control children on the post test administrations of the Stanford Achievement Tests at two out of three grade levels. At Grade 2 the MES children scored significantly higher than Control children on each of two reading subtests and on one of the two math

subtests administered. At Grade 4 the MES children scored higher than the Control children on one of the two reading subtests and on all three of the math subtests administered. At Grade 6 there were no significant differences between the performances of MES and Control children on any of the two reading subtests and three math subtests administered.

In Year 2 MES children continued to score higher than Control children, although the focus of MES superiority shifted from the middle and lower grade levels to the middle and upper grade levels. At Grade 1 MES children scored higher than Control children on one of two reading subtests. At Grade 3, MES children scored higher on both reading subtests administered and on one of the two math subtests. At Grade 5 MES children scored higher on both reading subtests administered and on two of the three math subtests.

5. Longitudinal analysis showed that Grade 3 children who had been in the MES program for two full years scored significantly higher than Control children on both reading subtests but on neither of the two math subtests. Grade 5 children in the longitudinal analysis scored significantly higher than Control children on both reading subtests and on all three math subtests.

   Cross sectional analysis of achievement data showed that third and fifth graders in the MES schools performed better on achievement tests than the third and fifth graders in the same schools the year before the program began.

6. In Year 1 the results of the analysis of school attendance data showed that during the first year of operation the attendance rates for both MES and Control schools declined from the average of the previous four years, with the Control schools maintaining a higher rate of attendance than the MES schools both before and after the inception of the program.

   In Year 2 the attendance rates in both MES and Control schools again declined. The Control schools maintained a higher rate of attendance.

7. In Year 1 the reaction of most parents to the program was positive, and at one school the parent turnout at open house and participation in school activities was characterized as greatly improved over previous years.

   In Year 2 parent questionnaires and project records indicated that parent reaction to the program continued to be positive and that parent involvement in school activities increased. Many parents requested more involvement, however.

8. In Year 1 analysis of attitude data showed that during Year 1 the program appeared to have a positive effect on childrens' attitudes toward certain aspects of school,

specifically toward their class and the school library, two aspects of school directly touched by the program. The only other concept for which there were consistent differences between MES and Control schools was attitude toward the principal, in which the Control children showed a consistently higher attitude than MES children. Where positive attitude change was found, it was most obvious at the lower grades.

In Year 2 analysis of attitude data showed that the MES children maintained neither the more positive attitude toward certain school concepts nor the more positive gain in attitude that they had demonstrated during Year 1. In fact, Control children demonstrated generally more positive attitudes.

C. Summary of Current Operations

1. Population Served

In Year 3 the MES Program operated in the same two elementary schools, Alfred A. Benesch and Wooldridge. All students in Grades K-6 received the services of the program. In the third year of operation, Alfred A. Benesch had a student population of 512 and Wooldridge served 254 students for a total of 766 students.

2. Program Costs

The cost of the MES program has increased over three years of operation. Table 1 presents expenditure data. The table shows that over the course of three years the per pupil expenditure from MES funds alone increased 88%, general fund

Table 1

Expenditure Data Over Three Years of the MES Program

Program Year	Total MES Funds	Per Pupil Expenditure		
		MES	General Fund	Total
1	$319,810	$367	$459	$ 826
2	$452,170	$557	$501	$1,058
3	$528,257	$690	$541	$1,231

expenditures increased by 18%, and the total per pupil expenditure in the project schools increased 49%. It should be noted that some, although by no means all, of the increase in MES per pupil expenditures over the course of three years was due to salary increases and the addition of personnel and services that were budgeted for Year 1 but not provided. In Year 3 the addition of MES funds to the general funds normally spent increased the per pupil expenditure in the project schools by 128%.

D. Questions to be Answered by Evaluation

The evaluation was addressed to four basic questions:

1. Were the basic ingredients of the program provided as proposed? (Were the process objectives attained?)

2. How successful were the school staff in making use of the ingredients of the program? (Were the staff objectives attained?)

   a. Increased use of media
   b. Superior organization and preparation of lessons
   c. Greater degree of individual attention to children
   d. Less time spent in non-teaching duties
   e. Greater degree of parent-teacher contact

3. Were the pupil objectives attained?

   a. Superior performance on achievement measures.
   b. Improved attendance rate
   c. Greater parent involvement
   d. Improved attitude toward school

4. What has been the impact on achievement over the three years of operation of the program?

II. HIGHLIGHTS OF FINDINGS

A. Summary of Key Findings

1. Evaluation Question 1: Were the Basic Ingredients of the Program Provided as Proposed?

FINDING: All of the proposed resources of the program were provided as proposed.

a. A pre-service orientation session was held as proposed, except that it was held for two rather than three days.

b. Equipment and materials were ordered as proposed.

c. With five exceptions all of the 72 proposed personnel changes were provided as proposed.

d. Class size was reduced to an average of not over 25 pupils as proposed.

e. The classrooms in MES schools were organized into clusters as proposed.

f. The team of teachers serving each cluster met weekly for joint planning as proposed.

g. An in-service course for teachers was conducted as proposed, although previously identified needs were not completely addressed.

2. Evaluation Question 2: How Successful were the School Staff in Making Use of the Ingredients of the Program?

FINDING: All five staff objectives were achieved. In addition MES teachers were found to be more successful in making effective use of program resources than in previous years. Serious problems in the areas of staff conflicts and communication still exist.

a. Staff Objectives

(1) Classroom observers found a statistically significant difference in favor of the teachers in MES schools in the extent and effectiveness of the use of teaching aids.

(2) Classroom observers found a statistically significant difference in favor of teachers in MES schools in the organization and preparation of lessons.

(3) Classroom observers found a statistically significant difference in favor of teachers in MES schools in the degree of individual attention given to students.

(4) Responses to a teacher questionnaire indicated that MES teachers spent significantly less time in the performance of non-teaching related duties than they did before the program began.

(5) Teacher logs revealed a successful effort on the part of MES teachers to increase their contacts with parents. However, a review of the duties of the home-curriculum specialist and the community aide is needed.

b. Other Areas of Teacher Performance

With respect to other areas of teacher performance, ratings by classroom observers showed that:

(1) MES teachers were rated significantly higher than Control teachers on 8 out of 12 measures of teacher performance in the classroom.

(2) MES teachers were judged as not inherently superior to Control teachers in overall quality of teaching but were judged to be able to do a more effective job because of the resources provided by the program.

c. Student Response to Teacher Performance

In rating the response of the students to the teachers' classroom performance, the observers' ratings showed that:

(1) There was no difference between MES and Control schools in the interest and enthusiasm of the students or in the proportion of students volunteering answers to teacher questions.

(2) MES schools were rated significantly higher in terms of student participation in lessons and in the proportion of students raising spontaneous questions.

d. Operation of the Cluster

With respect to the operation of the cluster, the observers reports and ratings showed the following:

(1) There was a substantially greater frequency of interchange of students among classrooms in MES schools than in Control schools.

(2) There was a substantially greater degree of grouping children for instruction within classrooms in MES schools than in Control schools.

(3) The tendency for MES staff to work together in the classroom remained improved over the first year of program operation.

(4) The organization and use of extra staff in the classroom was rated as effective in a substantially greater proportion of MES classrooms than Control classrooms.

(5) With some exceptions the cluster meetings in MES schools were judged as productive and valuable to the teachers.

(6) Six out of the 11 clusters in the MES schools were subjectively rates as "good" in their overall operation.

e. Use of Teacher Aides

(1) The use of teacher aides was judged as productive in most MES classrooms.

(2) In-service training was suggested for teachers in the effective use of paraprofessionals.

f. Teacher Opinion of Program Operation

Analysis of MES teachers' responses to a questionnaire on various aspects of program operation indicated the following:

(1) The teachers were satisfied with most elements of program operation.

(2) Teachers perceived the most valuable aspects of the program to be small classes, the cluster approach, and individualization of instruction.

(3) Substantial proportions of teachers saw a need for improvement in the following:

- Training of teacher aides
- Accessibility of supplies
- Provision of planning time
- In-service training
- Teacher involvement in decision making
- Communication among teachers, administrators and liaison personnel

(4) According to the teachers, the major problems facing the program were the following:

(a) Communication and cooperation among teachers, administrators and liaison personnel

(b) Selection of staff who are willing to put forth the effort and commitment needed for program success

(c) Administrative and liaison leadership

(5) Teachers' overall attitude toward the MES Program was positive but a majority indicated a need for program modification.

3. Evaluation Question 3: Were the Pupil Objectives Attained?

FINDING: Two out of three pupil objectives were at least partially attained and one was not. Data on the fourth objective are incomplete.

a. Objective 1: MES Superiority in Achievement in Reading and Math.

A summary of the results of the Stanford Achievement Tests administered to MES and Control children in Grades 2, 4 and 6 in Year 3 are summarized in Table A.

Table A

Summary of Results of Achievement Testing in Year 3

Grade	SUPERIOR GROUP ON EACH READING AND MATH SUBTEST				
	Word Meaning	Paragraph Meaning	Arithmetic Computations	Arithmetic Concepts	Arithmetic Applications
2	MES	None	MES	MES	----
4	None	None	None	MES	None
6	MES	None	Control	MES	None

(1) Reading

MES children scored higher on one out of two reading subtests at Grades 2 and 6, and none out of two at Grade 4. Performance in reading was comparatively worse than in the previous year when MES children scored higher on both reading subtests at two grade levels and on one subtest at the remaining grade level.

(2) Math

MES children scored higher on two out of two math subtests at Grade 2 and one out of three at grades 4 and 6.

(3) The achievement results indicate that Objective 1 was partially attained.

b. Objective 2: Significant Increase in Attendance Rates in MES Schools.

Analysis of attendance data collected for the three years of program operation and for the four years prior to program implementation showed the following:

(1) Attendance rates both city-wide and in the MES schools were significantly lower in the third year of operation than before the program began.

(2) There was no evidence that the MES Program has had any effect on the attendance rates in the schools served. Objective 2 was not attained.

c. Objective 3: Increase in Incidence of Parent-Teacher Meetings

Data collected through teacher logs of parent attendance at cluster activities and records of parent attendance at school-wide activities showed the following:

(1) Clusters conducted an average of two to three parent involvement activities per cluster during the year.

(2) Parent attendance at cluster activities averaged approximately 48% of the possible participants at Benesch and 20% at Wooldridge.

(3) The most successful school-wide activities in terms of parent attendance were open houses. The activities drawing the fewest parents were PTA meetings.

(4) Available data indicate partial achievement of Objective 3.

d. Objective 4: MES Superiority in Attitude Toward School

Data analysis was incomplete as of this writing. Results will be appended at a later date.

4. Evaluation Question 4: What has been the impact on Achievement Levels over the Three Years of Operation of the Program?

FINDING: The results of longitudinal analyses are less impressive than in the previous year, but cross sectional analyses showed some evidence of a gradual rise in performance levels at certain grades.

a. Longitudinal Analysis

Samples of children were selected who had been in the MES and Control schools for the entire three years of operation of the program. These children were compared, for differences in achievement levels at the end of the three years. Three samples were tested:

- Grade 1-2 sample - Children entered program in Grade 1, Year 2 and were compared in Grade 2, Year 3.

- Grade 2-3-4 sample - Children entered program in Grade 2, Year 1 and were compared in Grade 4, Year 3.

- Grade 4-5-6 sample - Children entered program in Grade 4, Year 1 and were compared in Grade 6, Year 3.

Table B shows a summary of the results of the achievement comparisons made between MES and Control children in the longitudinal samples.

Table B

Summary of Results of Longitudinal Achievement Comparisons Between MES and Control Children

Longitudinal Sample	SUPERIOR GROUP ON EACH READING AND MATH SUBTEST				
	Word Meaning	Paragraph Meaning	Arithmetic Computations	Arithmetic Concepts	Arithmetic Applications
Gr. 1-2	None	None	MES	MES	----
Gr. 2-3-4	None	None	Control	None	Control
Gr. 4-5-6	MES	MES	None	None	None

(1) Reading

Of the three longitudinal samples tested the only significant differences in reading occurred in the Grade 4-5-6 sample in which MES children scored significantly higher on two out of two subtests administered in Grade 6 at the end of three years. This is comparatively worse than the performance in Year 2 when MES children scored higher on two out of two reading subtests in both longitudinal samples.

(2) Math

Of the three longitudinal samples tested, the only significant differences in favor of MES occurred in the Grade 1-2 sample in which MES children scored higher on both math subtests administered. This performance is somewhat poorer than in Year 2 when MES children scored higher on three out of three subtests in one of the two longitudinal samples tested.

b. Cross Sectional Analysis

Analysis of the changes in performance levels across three years at given grade levels in MES schools revealed the following:

(1) Reading

Of the three grade levels examined (Grades 3, 5 and 6), performance levels in reading were observed to be gradually rising at Grades 5 and 6 in the face of generally declining performance in other schools.

(2) Math

Of the three grade levels examined, performance levels in math were observed to be gradually rising at Grade 6 in the face of generally declining performance in other schools.

(3) Despite gradual rises in performance levels at certain grade levels, overall performance was still well below grade level norms in most cases.

B. Implications and Recommendations

1. Discussion of Results

This report is the evaluation of Year 3 of the MES Program, but any discussion of results must be undertaken in the context of the preceding two years of operation. During the first year of the program, implementation of the proposed changes in school organization and procedures must be characterized as less than smooth. (One wag was heard to remark at the time that an accurate definition of the program could be had simply by adding another S to the acronym.) Cluster operation during the first year was generally rated as ineffective, and teachers were judged as not making productive use of program resources. Effective use of new equipment and materials was observed infrequently, and the small class size was not seen to be of much benefit in most lessons observed. However, when the program first began few people involved really quite understood their

roles in it, how they were expected to use its resources, the purpose, structure and function of clusters, or in short, what the program was. A frequently encountered question from confused and frustrated teachers was, "...But what is MES?" Teachers thrown together on a cluster "team" tended to isolate themselves from their "teammates" and continued to function as individual teachers in individual classrooms, because they did not know how to do otherwise, and they weren't really sure of what the otherwise was.

In many respects, there has been marked improvement in program operation since its inception. By the third year over half of the clusters were rated by observers as having a "good" overall operation. MES teachers were rated as superior to Control teachers on many dimensions of teaching behavior, ranging from better prepared and organized lessons to using a wider variety of methods and materials. This superiority was directly related by observers to the greater resources available to them. MES teachers were also observed to be working together as teams to a much greater extent, grouping and regrouping children within and among classrooms for instruction. More effective use of instructional equipment was seen, and in the majority of lessons observed, the loss of the smaller class size would have seriously impeded the effectiveness of instruction.

Overall, the three years of the MES Program have seen a gradual movement from an operation that was confused and lacking in definition, with an abundance of equipment, materials, small classes and supportive personnel that few teachers knew how to use, to an operation that is more clearly defined in terms of organization and procedure, with a staff that has shown considerable growth in

terms of understanding how to use program resources. Some measure of the improved understanding of the staff regarding how the program was intended to operate is reflected in the changing nature of the complaints teachers have made over the three years. In the first year teacher concerns centered most often on things: not enough equipment, not enough materials, not enough staff. By the third year, their attention had shifted away from such surface elements to a primary concern with selecting staff with the philosophy and commitment necessary to make the program work. To one who has observed the program from the beginning, the shift represents a growing insight on the part of the teachers that showering a school with material goodies will affect teaching only to the extent that teachers make effective use of them.

Although there has been considerable improvement in program definition and effective use of resources, certain problems have remained since the program began, including lack of communication and cooperation among teachers and school and program administrators, teacher dissatisfaction with the commitment of teachers selected for the program, teacher dissatisfaction with program leadership, and teacher dissatisfaction with the extent of their involvement in decision making. These are issues identified by the MES teaching staff themselves, and although they did not appear overwhelming, they were mentioned with sufficient frequency to warrant consideration. With respect to lack of cooperation, it should be noted that this problem does not appear as serious as in previous years; the findings of classroom observers certainly indicated a greater tendency for

teachers to work together than in the past. The problems of communication, program leadership, staff selection and teacher input, however, appear more widespread.

It is possible, of course, that in any program that requires a high degree of teamwork and which also touts freedom and flexibility in teaching there will inevitably be disagreement and conflict. It is also possible that there is no more of a problem in this respect in the MES schools than in any other school, but that it is more visible in the MES schools simply because program evaluation has given the teachers an opportunity to speak out on such issues. Whatever explanations can be devised, however, the distinct possibility remains that the degree of conflict and dissatisfaction that exists among the MES staff could be a serious impediment to the success of the program. Just as program administrators have taken steps in the past to clarify program organization and procedures, so should they now address themselves to these problems.

Although progress in the implementation of the MES Program has been documented, the question remains as to its effect on the children it serves. Three indices have been taken each year of operation: attendance, attitude and achievement. First, with respect to attendance, the evidence to date indicates that the MES Program has had no effect on the attendance rates in the schools served. Second, attitude data during the first year showed some evidence that MES children had more positive views of certain aspects of school than Control children, but during the second year

the Control children appeared to have generally more positive attitudes. (Attitude data for Year 3 are not yet complete but will be appended at a later date.) Finally, the effect of the program on achievement levels remains to be considered.

After three years of operation, the question "Has the MES Program had a measurable impact on improving achievement levels in reading and math?" must be answered with a resounding "...Perhaps." During the first two years, MES children demonstrated a decided superiority in achievement over Control children. Analysis of the performance of just those children who had been in the program for the full two years (the longitudinal samples) showed even more impressive results. In the third year of operation, however, there was slippage. MES children still outperformed Control children on several tests, but not as many. Analysis of longitudinal data showed MES superiority in fewer instances than before and Control superiority in a few more. Cross-sectional analysis of changes in performance over time at given grade levels did show some evidence of a gradual improvement in certain instances, but performance was still well below norm levels.

Do the results of Year 3 indicate that the program is a failure? No — just as the results of the first two years were not interpreted as indicating an unqualified success. (Earlier reports cautioned against premature expansion.) The results do point up the difficulty in making definitive statements about the impact of an experimental treatment that has been in place over a relatively short period of time and which has operated in the face of so

many uncontrollable variables as are found in public school systems. The problem of the possible bias introduced by the necessity of restricting longitudinal samples to the most geographically stable students in schools with high mobility rates has been discussed in the text. Conducting valid cross sectional analyses of program effects across time at given grade levels is hampered by a lack of adequate baseline data due to changes in instrumentation. The differences between performance as measured by the CTBS and performance as measured by the Stanford serve to point up the caution with which such results must be interpreted. Changing neighborhoods results in changing school populations in both MES and Control schools, and the changes may not be parallel. Such changes can, however, affect achievement levels and the results of comparisons.

The point of all this is that evaluation under such conditions, especially with programs involving entire school populations, often cannot yield quick answers. It may be that the achievement results in Year 3 of the MES program are merely a ripple in the stream of progress, to coin a cliché. Or it may be that they reflect a continuing downward trend. The answer will come, but it will require time for enough data to be collected so that administrators will be able to say, despite fluctuations in performance, that the overall trend indicates that the program is or is not effective in raising achievement levels.

2. Recommendations

a. It is recommended that the MES Program be continued in the same two schools in which it presently operates for the next two to three years until sufficient data are available for an accurate appraisal of long term program effects.

b. It is recommended that a decision on expansion of the MES Program be deferred until the results of the long term evaluation are available.

c. It is recommended that program and school administrators take immediate steps to improve the lines of communication among all levels of staff.

d. It is recommended that a formal screening procedure be established so that when staff vacancies occur in the MES schools, potential replacements will be made aware of the requirements involved in teaching in the MES Program.

e. It is recommended that the possibility of establishing some sort of transfer-without-prejudice policy limited to the MES schools be explored with the Cleveland Teachers Union. Such a policy is recommended because it is evident from the comments of observers, teachers and administrators that there are those who may be fine teachers in the traditional sense but who do not function well in a flexible and open teaching situation requiring teamwork in instruction.

f. It is recommended that training in alternative teaching techniques in specific subject areas be placed high on the list of priorities for in-service training.

III. PROJECT DESCRIPTION

The MES Program is aimed at creating optimal conditions for both learning and teaching in an effort to raise the poor achievement patterns of inner-city school children. Through the alteration or organizational and instructional patterns across grades it seeks to increase the individualization of instruction. The program contains the following elements:

- Reduced class size
- Expanded instructional and supportive staff
- Expanded supplemental services
- In-service development of teachers
- Expanded instructional materials and equipment
- Team planning and teaching
- Increased parental involvement in school

A. Participant Characteristics

The MES Program operated in A. A. Benesch and Wooldridge elementary schools, serving all students in grades K - 6. No non-public school students were served. Table 2 shows the number of pupils served by grade level. Of the total of 766 children, an average of 60% were from families on public assistance.

Table 2*

Number of Children Served by MES Program in Year 3 by Grade Level

Grade Level		Number of Children
EMR	-	51
K	-	126
1	-	113
2	-	125
3	-	101
4	-	88
5	-	74
6	-	88
	Total	766

*See Appendix A for a breakdown by school

Pupil turnover (mobility) averaged 68% during Year 3 (1971-72). At the time the program was planned, the estimated average achievement level of the children was one year and three months below grade level by the end of the sixth grade.

B. Project Operations

The basic tenet of MES is that teachers will be able to increase the effectiveness of their teaching if they are given the time, the materials and the supportive staff they need and if the organization of the schools is altered to give priority to individualizing instruction. Translation of these premises into operations resulted in several proposed changes in the school setting.

1. Organizational Details

The organizational details of the program varied somewhat depending upon the requirements of the particular school, but the basic elements proposed by program planners were as follows:

a. Reduced Class Size

Program design called for reduction of class sizes to an average of no greater than 25 students to enable teachers to provide more individualized instruction.

b. Clusters

Classes were to be organized into clusters of 2, 3 or 4 classrooms each. Each cluster was to be served by a team composed of the homeroom teachers and teacher aides from the classrooms in the cluster, plus one extra full-time teacher. The team for the cluster was to meet at least once weekly to cooperatively plan instructional

activity, each teacher sharing equal responsibility for the cluster as a whole. Instructional groupings within the cluster were to be flexible, allowing the teachers to regroup children from different classrooms as the need arose.

c. Expanded Library Service

The addition of a full-time librarian, library aide and a multi-media resource center was proposed to provide a variety of library equipment and materials to facilitate learning experiences.

d. Expanded Instructional Equipment and Materials

A wider variety of learning materials and equipment was proposed to permit flexibility in gearing instruction to the individual needs and abilities of the students. Materials and equipment were to include the following:

- Manipulative materials
- Consumable materials
- Instructional games
- Audio-visual equipment and software

2. Staffing

Proposed changes in the organizational structure of the schools to permit greater individualization of instruction were accompanied by proposed changes in staffing patterns to take advantage of the reorganization.

a. Liaison Teacher

A Liaison Teacher was to be responsible for coordinating the MES Program in the two schools, and, working closely with the principals, effecting the implementation of proposed program ingredients.

b. Classroom Teachers

Additional classroom teachers were required for the new classes created by the reduction of class size.

c. Cluster Teachers

The organization of classes within each school into clusters was to involve the addition of one extra full-time teacher without homeroom responsibilities for each cluster. The cluster teacher was to be part of the cluster team and was to share equal responsibility with the homeroom teachers for planning and carrying out instructional activities for the children in the cluster.

d. Teacher Aides

The program called for one teacher aide for every two classrooms to help free the teacher from clerical and other non-teaching duties in order to allow more time for teaching and planning. Teacher aides were also to provide reinforcement and tutoring for individuals and small groups.

e. Special Subject Teachers

The expansion of services of teachers in music, art and physical education was proposed to provide students with a broader exposure to these areas while at the same time freeing classroom teachers for cluster meetings.

f. Home-Curriculum Specialist

To increase the communication between home and school on academic matters and to involve parents more directly in the education of their children, a home-

curriculum specialist (visiting teacher) was proposed. The home-curriculum specialist was to engage in designing instructional materials and guides for parents, work in the home with parents of children with specific learning problems, and conduct workshops for parents and community people on various phases of the curriculum.

g. Community Aide

A community aide was proposed to be responsible for contacting parents on routine, non-academic matters, so that teachers could have more time for communicating with parents on more substantive problems.

h. Psychological Services

The time allocation for a school psychologist was to be increased for administering tests when the need for such was indicated, and for making the necessary referrals and recommendations.

3. In-service Training

Teachers with more time, supportive staff, small classes, and a greater variety of equipment and materials have instructional opportunities unavailable to teachers without these resources. Therefore an in-service training program was proposed to expose the MES teachers to teaching techniques that would permit them to take maximum advantage of the program resources. Proposed in-service offerings included the following:

a. A two day pre-service meeting of all MES staff for orientation to MES rationale, means, and objectives.

b. Training in micro-teaching techniques

c. Training in interaction analysis

d. Training in the operation and use of instructional equipment

e. Writing behavioral objectives

f. Test construction

g. Training teachers in the effective use of teacher aides

h. Training of teacher aides in reinforcement and tutoring techniques

4. Parent Involvement

Efforts to increase communication between parents and teachers and to obtain greater involvement of parents in school activities was considered important to the success of the program by program planners. Consequently, efforts were to be made to increase the volume of teacher-initiated contacts with parents, to recruit teacher assistants from the community, and to solicit parent volunteers for school activities.

5. Advisory Committee

An MES Advisory Committee was proposed to meet periodically to discuss the progress of the program and to make recommendations regarding implementation. The Committee was to be composed of the liaison teacher, the two MES principals, two teachers from each of the project schools, and the program evaluator.

IV. EVALUATION

The objectives stated in the proposal were viewed as guidelines for the evaluation. In some cases data were collected that were not related specifically to a stated objective but which in the course of the evaluation became available and were considered of interest. Further, the nature of the available methods of data analysis dictated occasional modification of the ways in which the objectives were assessed.

A. Basic Design

The evaluation employed either a status description or a cross-nested experimental-control model, depending on the nature of the objectives under consideration. For experimental-control comparisons, two Control schools (Doan and Chesterfield) were selected to match the MES schools as closely as possible on degree of poverty of pupils, attendance, mobility, achievement level, intelligence level, and racial composition. These Control schools received the services of other Title I and DPPF projects. Appendix B lists the characteristics on which the MES and Control schools were matched and shows the degree of matching attained.

A status description model making use of project records, interviews with project personnel, a teacher questionnaire and teacher logs was used for evaluation of the process objectives, certain staff objectives, and some aspects of program implementation not specifically outlined in the objectives. The cross-nested experimental-control design was used in evaluating the staff objectives related to teacher performance in the classroom and pupil objectives related to attendance, achievement and attitudes. Instrumentation included observer ratings, standardized

achievement tests, and locally constructed attitude scales.

B. Presentation of Findings

The evaluation procedures were organized around answering four basic questions about project operation and results, and the findings will be organized in the same way. Each basic evaluation question will be presented, followed by an examination of the data collected on the objectives that are pertinent to that evaluation question. Included where necessary will be a description of instrumentation and data collection procedures. A summary of results will follow the presentation of all the data related to each evaluation question.

EVALUATION QUESTION 1

WERE THE BASIC INGREDIENTS OF THE PROGRAM PROVIDED AS PROPOSED?

1. Data Collection

In answering Question 1, each of the process objectives outlined in the proposal was considered with respect to the success of its implementation in practice. Data were obtained through school records and interviews with project personnel.

2. Process Objective 1: Pre-service Orientation Program

A pre-service program of two days duration was held the week before the opening day of school, attended by the professional staff of the two MES schools. Teacher aides were also in attendance. On the first day the program consisted of introductions to the Flanders Interaction Analysis techniques and micro-teaching techniques using video tapes of

classroom teaching. The second day consisted of a panel report on the previous summer's in-service work on writing behavioral objectives, a display of new teaching methods, and planning meetings at the two project schools.

Process Objective 1 is considered attained.

3. Process Objective 2: Ordering of Instructional Equipment and Material.

Purchase requisitions for all instructional equipment were submitted before the opening day of school. Partially because of a delay in funding, however, much of the equipment was not delivered until late in the year.

Process Objective 2 was attained.

4. Process Objective 3: Assignment of Supportive Personnel.

Of the 72 staff positions to be provided or expanded under MES, 67 or 93% were provided as proposed. The exceptions were:

Benesch: 1/2 extra clerk vs. on full-time extra
1 administrative intern vs. 1 assistant principal
1 building substitute vs. 2 building substitutes

Wooldridge: 1 day/week of speech therapy vs. 2 1/2 days/week
2 days/week of visual literacy teacher vs. 1 extra full-time librarian

Due to a delay in funding, two aides at Benesch and the home-curriculum specialist at Benesch and Wooldridge were not acquired until January. (See Appendix C for the complete staffing patterns) Process Objective 3 is considered achieved.

5. Process Objective 4: Reduction of Class Size to Average of 25.

Examination of enrollment records showed that A. A. Benesch had an average class size of 21.75 students and Wooldridge had an average of 22.46 students. No classroom had a

yearly average enrollment of greater than 26 students and only one out of 26 had an average enrollment greater than 25.

Process Objective 4 was attained.

6. Process Objective 5 and 6: Cluster Organization and Meetings.

As proposed, groups of classrooms in each school were arranged into clusters, each served by a teaching team consisting of the homeroom teachers for each classroom and one extra teacher without homeroom responsibilities. A. A. Benesch School was organized into eight clusters as follows:

Listening Post, EMR	-	2 classes
Kindergarten	-	4 1/2-day classes
Grade 1	-	3 classes
Grades 1 and 2	-	3 classes
Grades 2 and 3	-	3 classes
Grades 3 and 4	-	3 classes
Grades 4 and 5	-	3 classes
Grades 5 and 6	-	3 classes

Wooldridge was organized into five clusters as follows:

*Upper and Lower EMR	-	2 classes
*Kindergarten and Pre-Kindergarten	-	4 1/2-day classes
Grades 1 and 2	-	3 classes
Grades 3 and 4	-	2 classes
Grades 4, 5 and 6	-	3 classes

*(No cluster teacher)

As proposed, each cluster team met for 80 minutes per week to plan and coordinate instruction for the children in the cluster. Records of each meeting were kept for review by the principal and the liaison teacher. The data indicate the objectives were attained.

7. Process Objective 7: In-service Training.

In-service training was offered in three sessions: fall, spring and summer of 1972. In the fall session, eight weekly two-hour sessions on interaction analysis were conducted

with paid attendance by teachers. Out of a total MES teaching staff of 62, 48 teachers and administrators were in attendance.

In the spring session another eight weekly two-hour meetings were held dealing with micro-teaching techniques. Twenty-two teachers attended.

Twenty-four teachers attended the summer in-service session which was conducted 2 hours per day over the course of two weeks. Enrollment was limited by the election of many teachers to teach summer school. The summer in-service session focused on constructing test items for the behavioral objectives written during the previous year's in-service.

In addition to the regularly scheduled in-service sessions, 30 teachers spent one day observing a similar program in Detroit to compare the two operations and exchange ideas. Also, five representatives from the two MES schools attended a one-day workshop in Columbus on the individualization of reading instruction. After their return they held a demonstration workshop to disseminate the information to the rest of the MES teaching staff. Finally, 2 two-hour sessions attended by all MES teaching staff were held to disseminate the results of the evaluation of the previous year's program operations.

In-service sessions were also organized and scheduled for teacher aides. Twelve course meetings of one hour each were held throughout the year with mandatory attendance by teacher aides. Topics covered in the meetings included tutoring techniques in reading and math, uses of manipulative

devices, small group reinforcement, speech habits, use of equipment, and becoming an active participant in the cluster.

An in-service program addressed to five of the seven areas outlined in the program plans was conducted as proposed. Process Objective 7 was attained.

MES teachers were asked, on a questionnaire, to list the areas of in-service training they felt were most needed during the coming school year. Fifty-two out of the 61 staff members returning the questionnaire responded to the question, and their most frequent suggestions are summarized in Table 3.

Table 3

Teacher Recommendations for Future In-service Training

Recommended Training Area	Percentage Making Recommendation
Training in alternative techniques for creative, individualized instruction within specific subject areas - mostly language arts and math	33%
Preparing tests and lessons to correspond to behavioral objectives	21%
Operation of equipment and effective use of media in instruction	15%
Exchange of innovative teaching ideas through visiting or meeting with other clusters or other school systems	12%
Constructing teaching aids and materials	10%

(A variety of suggestions other than those listed were suggested, but in each case these were suggested by fewer than 6% of the teachers.) By far the most frequently listed suggestion for in-service was training in teaching techniques for specific subject areas. This is the same area that was suggested with

the greatest frequency in Year 2. The second most frequently suggested in-service area was preparing tests and lessons to correspond to behavioral objectives, which appears to be a natural follow-up to the work done during Year 2 on writing the objectives. Training in the operation and use of media, the third most frequent suggestion, has been suggested with some frequency by teachers in every year of the MES program, but to date there has been no organized in-service program addressing this need. A new concern of the teachers with communication of ideas appeared in Year 3, idea exchange being the fourth most frequently suggested area for in-service. This represents an increase over Year 2 when idea exchange was placed well down on the list of suggestions. Finally, work on constructing teaching aids was the fifth most frequently suggested in-service area. In Year 2 it was the most frequently suggested area, and its drop on the list of teachers' priorities is probably related to the work done in this area during the summer of Year 2.

8. Summary of Question 1: Were the Basic Ingredients of the Program Provided as Proposed?

The results of the evaluation of the process objectives indicate that all seven objectives were achieved.

a. A pre-service orientation session was held as proposed, except that it was held for two rather than three days.

b. Equipment and materials were ordered as proposed.

c. With two exceptions all personnel were assigned as proposed.

d. Class size was reduced to an average of not over 25 as proposed.

e. The classrooms in MES schools were organized into clusters as proposed.

f. The team of teachers serving each cluster met weekly for joint planning as proposed.

g. An in-service course for teachers was conducted as proposed, although previously identified needs were not completely addressed.

EVALUATION QUESTION 2

HOW SUCCESSFUL WERE THE SCHOOL STAFF IN MAKING USE OF THE INGREDIENTS OF THE PROGRAM? (WERE THE STAFF OBJECTIVES ATTAINED?)

1. Data Collection

In evaluating the degree to which the staff objectives were attained, comparisons between MES and Control schools on teacher performance were made by sending a team of six observers into the schools to observe classes in March, April and May, 1972. The observers assessed the quality of instruction by rating various aspects of teaching performance on a locally constructed rating scale, a copy of which appears in Appendix D. The observation team consisted of the following individuals:

- Principal of Milliken School, Cleveland Heights
- Professor of Education, John Carroll University
- Principal of Malvern School, Shaker Heights
- Assistant Principal, Beechwood Middle School, Beechwood
- Home-School Liaison Teacher, Prospect School, East Cleveland
- Home-School Liaison Teacher, Mayfair School, East Cleveland

Prior to their observations, the team was briefed on the rationale, purpose and organization of the MES program.

Each observer spent three days observing in each MES school and one day in each Control school for a total of eight observation days per observer. (The distribution of time among the schools was made upon the recommendations of observers during the previous year's evaluation.)

Table 4 shows the number of teachers observed at each MES and Control school and the number of observations made.

Table 4

Number of Teachers Observed and Observations Made in MES and Control Schools

School	Observations	Teachers Observed
A. A. Benesch	93	30
Wooldridge	75	17
Total MES	168	Total MES 47
Doan	35	16
Chesterfield	35	19
Total Control	70	Total Control 35

The classrooms observed were not pre-selected; rather the observers were allowed to roam the building at will, dropping in on any class they chose. Teachers were not forewarned as to when observers were scheduled to visit. The only direction observers were given as to selection of classrooms was to try to spread their observations evenly over the grades and to try to attend cluster meetings.

Table 5 shows the average number of observations made per classroom in MES and Control schools at each grade level.

Table 5

Average Number of Observations Per Classroom in MES and Control Schools by Grade

Grade Level	Average Number of Observations Per Classroom	
	MES Schools	Control Schools
1	5.6	1.8
2	3.5	1.8
3	4.2	2.5
4	5.0	3.0
5	3.8	2.8
6	4.2	2.0
Grand Mean	4.4	2.3

2. Staff Objective 1: MES Superiority in the Use of Media.

The team of observers was asked to rate both the extent and the effectiveness of the use of teaching aids in the classrooms they observed. They found a significant difference in favor of the teachers in MES schools in both the extent of use of teaching aids ($z = 3.73$, $p < .0007$)[1] and the effectiveness of the use of teaching aids ($z = 2.08$, $p < .02$).

In interviews and written reports following the completion of the observation schedule most observers commented that the availability and use of equipment in the MES schools was generally impressive and appeared to allow for alternate approaches to learning. Staff Objective 1 was achieved.

[1]To make statistical comparisons of the observers' ratings of MES and Control schools, a mean rating was computed for each classroom observed on each item of the rating scale. Differences were then tested with the Mann-Whitney U Test.

3. Staff Objective 2: MES Superiority in Organization and Preparation of Lessons.

The observers were asked to rate the amount of organization and planning evident in the lessons they observed. Analysis of the observations revealed a significant difference in favor of teachers in MES schools in the planning and organization of class activity. ($z = 1.95$, $p < .03$)

Staff Objective 2 was achieved.

4. Staff Objective 3: MES Superiority in Degree of Individual Attention to Students.

The question put to the observers was: How would you rate the degree of individual attention given the students by the teacher? The ratings submitted showed a highly significant difference in favor of the MES schools ($z = 3.77$, $p < .0007$).

Staff Objective 3 was attained.

5. Staff Objective 4: MES Teachers Spend Less Time on Non-teaching Duties.

On a questionnaire the MES teachers were given a list of duties and asked to estimate the proportion of their typical work week that they spent performing each, both before and after the advent of the MES program. Thirty-two out of 60 teachers responded appropriately to this question, and their averaged responses appear in Table 6.

Table 6

Average Proportion of Time Spent by MES Teachers in Various Activities

Activity	Mean % of Time			
	Before MES		Now	
Teaching	65%		69.9%	
Planning	11.5%	81.1%	16.4%	91.8%
Parent conferences	4.6%		5.5%	
Extra-curricular activities	2.7%		3.5%	
Non-teaching supervision of children (e.g. hall duty, breakfast, etc.)	6.9%	18.8%	1.3%	8.2%
Non-teaching clerical work	9.2%		3.4%	

The data show that according to the teachers the percentage of time they spent in activities related to teaching, (teaching, planning and parent conferences) increased with the MES Program, while the percentage of time spent in activities not related to teaching (extra-curricular activities, supervisory duties, and clerical work) decreased. The pattern becomes clear when the percentages of time spent in activities related to teaching are combined and compared with the time spent in the non-teaching-related activities combined. The decrease in the amount of time spent in non-teaching related duties was statistically significant ($t = 5.66$, $df = 30$, $p < .0005$, 1-tailed test). Staff Objective 4 was achieved.

6. Staff Objective 5: MES Superiority in the Incidence of Parent Contacts.

a. Data Collection

Two types of data were collected relative to this objective:

- Frequency of parent contacts
- Reasons for parent contacts

The means required to obtain these data precluded comparisons between MES and Control schools. Each MES homeroom teacher was required to keep a log of her contacts with the parents of the children in her class. The logs included the reason for each contact. Records were also to be kept by the home-curriculum specialists and the community aides serving each school. The role of the community aides was to make routine contacts with parents on attendance matters and personal problems, such as illness and clothing needs, to free the teachers to make contacts on more substantive matters. The role of the home-curriculum specialist was to increase the parents' involvement in their childrens' school work through working in the home with parents of children with specific learning problems, conducting workshops for parents and community people on various phases of the curriculum and designing instructional materials and guides for parents use at home with their children.

b. Frequency of Parent Contacts

Table 7 presents the percentage of children at each school whose parents were contacted at least once by

teachers during the school year and the average number of contacts made per classroom. Data are presented for Year 1, Year 2 and Year 3 of program operation.

Table 7

Teacher-Parent Contacts at MES Schools
During Year 1, Year 2 and Year 3

School	Mean Percentage of Parents Contacted			Average Number of Contacts per Classroom		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
A. A. Benesch	84%	86%	91%	50.3	46.1	61.0
Wooldridge	47%	61%	92%	11.5	37.1	73.0
Total	65%	77%	92%	30.9	44.9	62.3

The data show that during Year 3 the Benesch teachers maintained the same high level of parent contacts as they did during Years 1 and 2 and increased the overall frequency of contents. Wooldridge teachers made further progress in improving their contacts with parents during Year 3, increasing both the percentage of parents contacted and the number of contacts per classroom.

Table 8 presents a breakdown of the parent contact data according to the number of times each parent was contacted. Data are again presented for Year 1, Year 2 and Year 3.

Table 8

Percentage of Parents Contacted with Varying Frequencies at MES Schools During Year 1 and Year 2

School	Percentage of Parents								
	Contacted Once			Contacted Twice			Contacted 3 or more times		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
A. A. Benesch	30%	33%	30%	29%	33%	28%	41%	34%	42%
Wooldridge	63%	38%	17%	26%	23%	22%	11%	39%	61%
Total	47%	37%	26%	28%	29%	27%	26%	35%	46%

The data show that in Year 3 in Benesch the majority of the parents contacted (76%) were contacted two or more times. In Wooldridge, the majority of the parents (61%) were contacted three or more times in Year 3, a further improvement over Year 2.

The community aide at Benesch made a total of 116 parent contacts during Year 3, a substantial decrease from the 540 contacts in Year 2. At Wooldridge there were no data available on community aide activities. At Benesch the home-curriculum specialist made a total of 199 parent contacts while at Wooldridge the total was 179.

c. Reasons for Parent Contacts

There were a variety of reasons the teachers, home-curriculum specialists and community aides communicated with parents in Year 3. Table 9 summarizes the percentage of contacts that were made for different reasons by teachers, home-curriculum specialists and community aides. Community aide data are available for Benesch only.

Table 9

Percentage of Parent Contacts According to Reason for Contact

Reason for Contact	Contacts by Teachers			Contacts by Home-Curriculum Specialists			Contacts by Community Aides
	Total	Benesch	Woold.	Total	Benesch	Woold.	Benesch
Parent involvement in meetings, programs, etc.	39%	36%	43%	19%	39%	0%	25%
Academic matters	37%	44%	22%	29%	15%	42%	6%
Discipline or conduct	11%	9%	13%	9%	3%	16%	1%
Personal adjustment problems or non-academic matters such as illness or clothing needs	9%	7%	12%	18%	25%	11%	37%
Attendance and enrollment matters	6%	3%	10%	25%	18%	31%	31%

The table shows that the parent contact activities of the teachers and the community aide (at least at Benesch) were complementary as intended. The majority of contacts by the community aide were related to attendance and non-academic personal problems, while the majority of the contacts by the teachers in both schools were related to academic and parent involvement matters. That is, many of the routine contacts were handled by the community aide, freeing the teacher to make contacts on more substantive matters. (It would appear that teachers were relieved of routine contacts to a somewhat greater extent at Benesch where only 19% of the teacher contacts were related to routine non-academic matters as opposed to 35% at Wooldridge.)

The distribution of contacts made by the home-curriculum specialists, however, did not reflect the intent of the program plans in creating that position. Almost all of the contacts made by the home-curriculum specialists should have been related to academic matters and parent involvement, but in both schools, about half of the contacts were related to routine matters that should have been the province of the community aide.

In summary, the success of the teaching staff of both MES schools in their efforts to establish contact with the parents of the children in their classes leads to the conclusion that Objective 5 was achieved. However, the data showing that large percentages of the parent contacts made by the home-curriculum specialists were not related to their defined area of responsibility suggest a review of the use being made of these specialists.

With respect to the community aides, the data from Benesch showing a total of only 116 parent contacts and the lack of any data at all from Wooldridge raises questions concerning the need for full-time personnel at these positions. It is entirely possible of course, that the need for full-time community aides would be apparent if the distinction between the responsibilities of the aides and the responsibilities of the home-curriculum specialists were more clearly drawn.

7. Other Areas of Teacher Performance

In addition to gathering data related to the five Staff Objectives, the team of observers was asked to compare

MES and Control schools on other aspects of teachers' classroom performance. The areas of classroom performance rated and the results of the comparison between MES and Control classrooms are presented in Table 10.

Table 10

Results of Ratings of MES and Control Schools on Various Areas of Teacher Performance

Dimension of Classroom Performance Rated	Finding
1. Creativity in instruction	Statistically significant difference in favor of MES ($z = 1.93$, $p < .03$)
2. Variety of materials and methods used	Statistically significant difference in favor of MES ($z = 1.89$, $p < .03$)
3. Adaptation of response and materials to number of students	Difference in favor of MES, approaching statistical significance ($z = 1.53$, $p < .07$)
4. Use of childrens' background and experience in lesson	Statistically significant difference in favor of MES ($z = 2.49$, $p < .007$)
5. Effort to encourage independence of thought	Difference in favor of MES, approaching statistical significance ($z = 1.39$, $p < .085$)
6. Opportunity for childrens' active participation	Statistically significant difference in favor of MES ($z = 2.12$, $p < .02$)
7. Interaction among students encouraged	Statistically significant difference in favor of MES ($z = 3.35$, $p < .0007$)
8. Teacher's receptivity to spontaneous questions	No difference between MES and Control
9. Quality of teachers' verbal communication with children	Statistically significant difference in favor of MES ($z = 2.22$, $p < .02$)
10. General quality of teaching	No difference between MES and Control
11. Amount of material covered	No difference between MES and Control
12. Object of the lesson defined to children	No difference between MES and Control

Table 10 shows that in Year 3 teachers in MES schools scored significantly higher than teachers in Control schools on 8 out of 12 rating items measuring various aspects of teacher performance in the classroom. This represents an improvement over Year 2 in which MES teachers were rated superior on 5 out of 10 rating items. In addition, the observers reported that in 58% of the lessons observed in MES schools a larger class size would have seriously impeded or completely destroyed the effectiveness of the lesson. This finding is a notable improvement over the previous year in which observers reported that a larger class size would have made little difference in over two-thirds of the lessons.

In examining the results in Table 10 it would seem somewhat inconsistent that the MES teachers were rated as superior on such dimensions as creativity of instruction, variety of materials and methods, efforts to encourage independence of thought, etc., and yet were rated as not superior on overall quality of instruction. In questioning the observers following their series of visits to the schools and in reading their written reports, it became clear that they tended to draw a distinction between superior teachers and teachers with superior resources. That is, they concluded that the MES teachers engaged in teaching activities made possible by the organizational, staffing and hardware elements of the program, but that they were not inherently better teachers than the Control teachers. Thus, small classes, supportive staff and an abundance of materials and equipment enabled MES teachers to be more creative, to use a wider variety of approaches,

etc., but Control teachers were judged equal in overall quality of instruction given the resources available. As one observer put it, "All seemed to be trying to provide for individual differences, but the MES teachers have a better chance to do this successfully." At any rate, the assumption underlying the MES program is not that it will transform average teachers into good teachers but that it will give teachers in general the resources to do better what they are already trying to do. The distinction may be slight in terms of the end result, and the observers' ratings seem to indicate that the program is having its desired effect on teaching activity.

8. Student Response to Teacher Performance

The observers were asked to rate the response of the students to the lesson being observed. Their findings are presented in Table 11.

Table 11

Results of Ratings of MES and Control Schools on Student Response to Lesson Being Observed

Dimension of Student Behavior Rated	Finding
Interest and enthusiasm	No difference between MES and Control
Active participation in lesson	Statistically significant difference in favor of MES ($z = 2.49$, $p < .007$)
Proportion volunteering answers to teacher questions	No difference between MES and Control
Proportion raising spontaneous questions	Statistically significant difference in favor of MES ($z = 1.77$, $p < .02$)

Although there was no difference between MES and Control schools in the interest and enthusiasm the teachers generated in the students, or in the proportion of students volunteering answers to teacher questions, the MES schools did receive higher ratings in terms of student participation in the lesson and the proportion of students raising spontaneous questions. This finding reinforces the observers' ratings of teacher performance indicating that the MES schools were characterized by a greater opportunity for student participation and greater encouragement of independence of thought by students.

9. Operation of the Cluster

The organization of the MES schools into several clusters of three or four classes, each served by a team of teachers, was documented in the evaluation of the process objectives. The observers were asked several questions specifically designed to examine the effects of the cluster on classroom organization.

a. Grouping of Students for Instruction

One function of the cluster was to allow flexible grouping of children within and among the classrooms in the cluster as the need arose. To determine the extent to which children were grouped among the classrooms, each time a classroom was observed the observers were asked to describe the student population present by checking one of several descriptions offered on the rating form. The findings in the MES and Control schools are presented in Table 12.

Table 12

Percentage of Lessons Observed in Relation to Distribution of Students Among Classrooms

Description of Classroom	Percentage of Lessons	
	MES	Control
Class intact	53%	88%
Some children out with another teacher	28%	12%
Some children in from another class	18%	0%

The data in Table 12 show that there was considerably more interchange of students among classrooms in the MES schools than in the Control schools. In 47% of the cases observed some of the children in the MES classroom under observation were either out of the room with another teacher or were in from another classroom. In contrast, classrooms in Control schools were never observed to have children from another classroom.

To determine whether MES teachers were using the resources of the cluster for grouping children within the classroom, the observers were asked to make the following three observations on each classroom observed.

(1) Was there more than one activity going on in the classroom at the same time?

(2) Was ability grouping employed?

(3) Were learning stations evident in the classroom?

The results of the observations in both MES and Control schools are presented in Table 13. The table shows that on all three indices the MES schools were

observed to have a higher frequency of grouping children within the classroom than the Control schools.

Table 13

Frequency of Three Indices of Grouping Within MES and Control Classrooms

Observation	Percentage of Classrooms	
	MES	Control
Multiple Activity	71%	47%
Ability grouping	72%	51%
Learning stations	84%	53%

b. Use of Extra Staff

To determine the extent to which staff in the clusters tended to work together, the observers were asked to note the number and type of teaching staff in MES classrooms. These data together with similar data from Years 1 and 2 are presented in Table 14.

Table 14

Number and Type of Staff Observed in Classroom

Staff Present	Percent of Lessons Observed		
	Year 1	Year 2	Year 3
Homeroom teacher alone	55%	39%	35%
Cluster teacher alone	9%	1%	2%
Special staff alone	9%	0%	7%
One professional and aide	12%	23%	27%
Two or more professionals with or without aide	16%	37%	29%

The data show that in Year 1 teachers were found working alone in almost 3/4 of the cases observed (73%). In

Year 2 and Year 3, however, the number of cases of teachers working alone decreased markedly to about four out of 10. Some of the decrease in Years 2 and 3 might be due to increased numbers of cluster teachers and teacher aides, but it is clear that there was a greater tendency for the staff to work together.

To determine how well the extra staff were used, the observers were asked to compare MES and Control schools on the effectiveness of the organization and use of extra personnel in the classroom. Their findings are presented in Table 15.

Table 15

Observers' Ratings of Effectiveness of Organization and Use of Extra Personnel in the Classroom

Rating	Percentage of Lessons Rated	
	MES	Control
Very effective distribution of tasks among staff in classroom	50%	27%
Moderately effective distribution of tasks among staff	38%	42%
Poor distribution of tasks	12%	31%

The table shows that almost twice as many MES lessons as Control lessons observed were rated as having a very effective distribution of tasks among the staff, and that well over twice as many Control lessons were rated as having a very poor distribution of tasks. The difference in mean ratings between MES and Control classrooms is statistically significant as determined by the Mann-Whitney U test ($z = 1.97$, $p < .03$).

c. Use of Cluster Planning Meetings

Asked to comment generally about the effectiveness of the cluster meetings observed, most observers agreed that the cluster meetings afforded the cluster team a real opportunity for give and take of ideas and joint planning of instruction. Most meetings were judged as professional, productive and of real value to the teachers involved. There were exceptions, of course; in some meetings deep conflicts between teachers were apparent, and some were characterized as very unproductive with teachers seeming to merely go through the motions of joint planning. As in previous years, the observers expressed the feeling that in several cases the cluster was not being used to its full potential. In general, however, the cluster meetings made a positive impression.

Several suggestions emerged from the observations of the cluster meetings:

(1) Cluster teams should strive for greater integration of subject areas.

(2) One long meeting per week appeared more productive than two shorter meetings because the time available in the longer meeting allowed more depth of discussion.

(3) There could be greater participation (not attendance) of aides in cluster meetings.

When given the opportunity to subjectively rate the operations of individual clusters on a five-point scale of from excellent to very poor, four of the eight clusters in Benesch, and two of the three clusters in Wooldridge were

judged on the average "good". This represents improvement over the previous year in which only three clusters were singled out as having well-organized, smoothly functioning teaching and planning teams.

10. Use of Teacher Aides

It has already been noted that the observers rated the MES schools superior to Control schools in terms of the organization and use of extra personnel in the classroom. When asked to comment specifically on the use of teacher aides, the observers reported that in most cases they appeared to be used in a productive manner in a variety of tasks ranging from clerical work to small group reinforcement. It was suggested, however, that training be offered to teachers in making the best use of these paraprofessionals, and that in-service also be provided the aides themselves. The latter suggestion, of course, had already been implemented.

11. Teacher Opinion of Program Operation

a. Data Collection

In order to obtain feedback from the MES staff on certain aspects of program operation, a locally constructed questionnaire was distributed to the teaching staff of 62 persons. Questionnaires were returned by 61 staff members or 98%. The questionnaire consisted of a series of statements about the MES program to which the teachers were asked to respond by indicating the degree to which they agreed or disagreed with the statement on a five point rating scale. The scale allowed two levels of agreement (Agree and Strongly Agree), two levels

of disagreement, and a neutral response indicating no opinion. In addition, the questionnaire contained several open-ended questions related to various aspects of program operation.

The questionnaire allowed gradations of response from Strongly Disagree to Strongly Agree, but these were primarily for the teachers' benefit. For purposes of evaluation, interest centers primarily on whether the teachers basically agreed or disagreed with a statement irrespective of the degree of agreement or disagreement. For this reason, in analyzing and interpreting the data, the various levels of agreement and disagreement were combined. A problem arose, however, with respect to the neutral response, especially when large numbers of teachers choose it. For purposes of simplifying data presentation, the percentage of teachers choosing the neutral response was split between the agreement and disagreement sides of the response scale. A copy of the questionnaire with a summary of responses appears in Appendix E.

b. Teacher Statisfaction with Program Resources and Operation

The results of the teacher questionnaire indicate that basic satisfaction (75% or more of the teachers) existed with respect to most elements of program operation, including the following:

*. Definition of program purpose and goals
. Definition of program structure and organization
. Definition of teaching methodology
. Definition of roles
. Effectiveness of class size of 25
. Provision of instructional equipment
. Variety of instructional materials
. Performance of teacher aides
*. Freedom to innovate in teaching
. Concept and value of the cluster approach
. Use and effectiveness of the cluster approach
. Cooperation among teachers within the cluster
*. Coordination between clusters and special subject teachers
. Increased contact between school and community
. Impartiality of the MES evaluation report

This listing represents some improvement over the previous year when several of the elements listed here were identified by teachers as problem areas. These instances are identified in the listing by asterisks.

The teachers were asked in an open-ended question to indicate what they felt were the most valuable elements of the MES Program. A summary of their responses appears in Table 16. The table shows that by far the most

Table 16

Teachers' Perceptions of the Most Valuable Elements of the MES Program

Program Element	Percentage of Teachers Responding *
Small Classes	48%
Cluster approach	47%
Individualization of instruction	42%
Equipment and materials	24%
Opportunity for professional growth	20%

* Percentages add to more than 100% because many teachers listed more than one program element.

frequently cited aspects of the program were the small classes, the cluster approach to teaching and planning, and the individualization of instruction made possible by the program's resources. These are the same items that were cited most frequently by teachers in Year 2. Other aspects of the program than those shown in Table 16 were listed by some teachers, but by less than 10% in each case.

c. Teacher Dissatisfaction with Program Resources and Operation

There are also elements of program operation with which significant proportions of teachers indicated some degree of dissatisfaction or a need for improvement.

In no case in which dissatisfaction was indicated was it expressed by a majority of the teachers. However, such indications by one third of the teachers or more were considered serious enough to warrant mention.

Aspects of program operation with which teachers appeared less than satisfied included the following:

- Training of teacher aides
- Accessibility of supplies
- Provision of planning time
- In-service training
- Teacher involvement in decision making
- Communication among teachers, administrators and liaison personnel

Although over 80% of the teachers agreed that considering their training, teacher aides did an effective job, some 60% indicated that the teacher aides needed more training.

Although 89% of the teachers agreed that there was a wide enough variety of instructional materials provided, over one-third indicated that they were not always

accessible when needed.

Some inconsistency emerges with respect to the teachers' evaluation of the amount of planning time they are provided. Seventy-five percent of the teachers agreed with statements asserting that adequate time was provided for planning and record keeping. When asked, however, to report their number of free periods per week and whether they considered that number adequate, 91% reported five or more per week, but 35% characterized their number as inadequate.

When responding to statements regarding in-service training, sizable proportions of the teachers chose to maintain a neutral stance. (See Appendix D). This may reflect the numbers of teachers that did not participate in the in-service courses. When the proportion of teachers giving a neutral response is split between those taking a definite positive or negative stance, over one third of the teachers considered the in-service training less than adequate, less than effectively conducted and not of benefit to them personally. The validity of the latter two responses is questionable in as much as more teachers responded to the question than actually participated in the in-service training. On the question of whether in-service training should be required of MES teachers, however, fewer teachers (15%) took a neutral response resulting in 65% agreement that in-service should be required.

The areas of greatest dissatisfaction among the teachers were related to teacher involvement in decision making and the adequacy of communications among all levels of the MES staff and administration. In response to all statements asserting that teacher involvement in decision making and communication channels among the staff were adequate, over one-third and sometimes almost half of the teachers disagreed.

The foregoing description of teacher dissatisfaction with the MES Program is based on teachers' responses to questionnaire statements regarding specific aspects of program operation. Teachers were also given the opportunity on an open-ended question to list what they considered the major problems facing the program. The most frequent responses are summarized in Table 17.

Table 17

Teacher Perceptions of Major Problems Facing the MES Program

Problem	Percentage of Teachers Responding*
Communication and cooperation among teachers, administrators and liaison personnel	36%
Selection of staff who are willing to put forth the effort needed for program success	36%
Administrative and liaison leadership	16%
Role definition	12%
Student discipline	10%

* Percentages add to more than 100% because many teachers listed more than one problem

The table shows that teachers perceived the greatest problems with the MES Program to be related to communication and cooperation among the staff and to selecting a staff fully committed to the success of the program. The first finding reinforces the conclusion drawn from the analysis of areas of teacher dissatisfaction with program operation. The second finding illustrates an important concern of the teaching staff that was not addressed by specific questions on the questionnaire. Typical of teacher comments related to dissatisfaction with staff selection are the following: "Teachers are too traditionally bound - unwilling to change...Not enough teachers seem willing to go the extra 10% to make this program different". The third and fourth most frequently mentioned area of concern of the teachers was the leadership provided by administrative and liaison personnel and role definition.

The four areas of concern discussed above are basically the same problem areas identified by teachers in the previous year of operation of the program. It is possible that in any program requiring cooperation and teamwork there will be conflicts and disagreements among the staff, but judging by the statements of the MES teachers themselves, it appears that the degree of staff conflict in the MES Program should be of serious concern to the program administrators. Over two-thirds of the teachers cited cooperation, communication or uncommitted staff as serious problems.

d. Overall Attitude Toward MES Program

Teachers were asked to indicate how they generally felt about the MES Program as it now stands. Ninety-one percent indicated positive feelings of one degree or another, but only 29% indicated that they felt completely positive. Further, when asked their opinion of continuation or expansion of the program, only 18% voted for continuation or expansion of the program as it now stands, while 79% favored continuation or expansion with modifications. In general, the prevailing opinion of the MES teachers seems to be that the program is a good one but that there are serious problems that must be dealt with if it is to meet with success.

12. Summary of Question 2: How Successful Were the School Staff in Making Use of the Ingredients of the Program?

a. Staff Objectives

The data collected relative to Evaluation Question 2 show that all five staff objectives stated in the proposal were achieved:

(1) Classroom observers found a statistically significant difference in favor of the teachers in MES schools in the extent and effectiveness of the use of teaching aids.

(2) Classroom observers found a statistically significant difference in favor of teachers in MES schools in the organization and preparation of lessons.

(3) Classroom observers found a statistically significant difference in favor of teachers in MES schools in the degree of individual attention given to students.

(4) Responses to a teacher questionnaire indicate that MES teachers spent significantly less time in the performance of non-teaching related duties than they did before the program began.

(5) Teacher logs revealed a successful effort on the part of MES teachers to increase their contacts with parents. However, a review of the duties of the home-curriculum specialist and the community aide is needed.

b. Other Areas of Teacher Performance

With respect to other areas of teacher performance, the classroom observers found that:

(1) MES teachers were rated significantly higher than Control teachers on 8 out of 12 measures of teacher performance in the classroom.

(2) MES teachers were judged as not inherently superior to Control teachers in overall quality of teaching but were judged to be able to do a more effective job because of the resources provided by the program.

c. Student Response to Teacher Performance

In rating the response of the students to the teachers' classroom performance the observers ratings showed that:

(1) There was no difference between MES and Control schools in the interest and enthusiasm of the students or in the proportion of students volunteering answers to teacher questions.

(2) MES schools were rated significantly higher in terms of student participation in lessons and in the proportion of students raising spontaneous questions.

d. Operation of the Cluster

With respect to the operation of the cluster, the observers reports and ratings showed the following:

(1) There was a substantially greater frequency of interchange of students among classrooms in MES schools than in Control schools.

(2) There was a substantially greater degree of grouping children for instruction within classrooms in MES schools than in Control schools.

(3) The tendency for MES staff to work together in the classroom remained improved over the first year of program operation.

(4) The organization and use of extra staff in the classroom was rated as effective in a substantially greater proportion of MES classrooms than Control classrooms.

(5) With some exceptions the cluster meetings in MES schools were judged as productive and valuable to the teachers.

(6) Six out of the 11 clusters in the MES schools were subjectively rated as "good" in their overall operation.

e. Use of Teacher Aides

(1) The use of teacher aides was judged as productive in most MES classrooms.

(2) In-service training was suggested for teachers in the effective use of paraprofessionals.

f. Teacher Opinion of Program Operation

Analysis of MES teachers' responses to a questionnaire on various aspects of program operation indicated the following:

(1) The teachers were satisfied with most elements of program operation.

(2) Teachers perceived the most valuable aspects of the program to be small classes, the cluster approach, and individualization of instruction.

(3) Substantial proportions of teachers saw a need for improvement in the following:

- Training of teacher aides
- Accessibility of supplies
- Provision of planning time
- In-service training

- Teacher involvement in decision making
- Communication among teachers, administrators and liaison personnel

(4) According to the teachers, the major problems facing the program were the following:

- Communication and cooperation among teachers administrators and liaison personnel
- Selection of staff who are willing to put forth the effort and commitment needed for program success
- Administrative and liaison leadership

(5) Teachers' overall attitude toward the MES Program was positive but a majority indicated a need for program modification.

EVALUATION QUESTION 3

WERE THE PUPIL OBJECTIVES ATTAINED?

1. Pupil Objective 1: MES Superiority in Reading and Math Achievement Levels.

a. Data Collection

In order to assess the impact of the MES program on achievement in basic academic skills areas, comparisons were made between MES and Control schools on performance on the Reading and Arithmetic subtests of the Stanford Achievement Tests. The tests were administered to a sample of children from Grades 2, 4 and 6 in MES and Control schools in September, 1971 and again in May, 1972.

Data were collected from students in Regular classes only. Students in any kind of special class such as Major

Work, Enrichment, Listening Post or EMR were not tested. Table 18 shows the level and form of the test administered to each grade level and the number of students included in the analysis of the data.

Table 18

Form and Level of Stanford Achievement Test Administered to Grades 2, 4, and 6 in MES and Control Schools, and Size of Sample Tested

Grade Level	Sample Size		Level and Form of Test
	MES	Control	
2	89	106	Pre-Primary I, Form X Post-Primary II, Form W
4	72	100	Pre-Intermediate I, Form X Post-Intermediate I, Form W
6	73	129	Pre-Intermediate II, Form X Post-Intermediate II, Form W
Totals	234	335	

Data analysis was performed on the scores of only those children for whom both pre and post test scores were obtained. Consequently, the results reflect the achievement of only those students who attended MES or Control schools for the nine-month period from September, 1971 to May, 1972.

Data analysis was performed on the raw scores attained on the tests, i.e., the number of correct responses. Raw scores on the Stanford Achievement Tests are often transformed into grade equivalent scores to show a student's performance relative to the national norms. Grade equivalents are very useful for descriptive purposes, but because they are not an equal-interval scale, raw scores were preferred for statistical analysis.

MES and Control schools were compared with respect to post-test achievement scores. To avoid the problem of the post score differences being merely a reflection of initial differences in pre scores, the data were analyzed by means of multivariate analysis of covariance (MANCOVA). MANCOVA determines the effects that selected variables (covariates) may have on post scores and adjusts the data for these effects before making comparisons. In the present analysis the students' pre-test achievement scores and their PLR scores were used as covariates, and the MES and Control schools were compared on post test performance after adjusting for the effects of the covariates.

b. Reading Achievement

Table 19 shows the results of comparisons between the post-test reading performance of MES and Control children in grades 2,4 and 6. In the analysis, reading pre test scores and PLR scores were used as covariates. Pre test scores were adjusted for unequal N, and post scores were adjusted for unequal N and the effects of the covariates. Full statistical data appear in Appendix F.

Table 19

Mean Adjusted Post Reading Subtest Scores for Children in Grades 2, 4 and 6 in MES and Control Schools

		MEAN READING SUBTEST SCORES			
		Word Meaning		Paragraph Meaning	
Grade	Group	Post	Superior Group	Post	Superior Group
2	MES Control	17.6 15.2	MES*	25.4 23.8	None
4	MES Control	16.7 15.3	None	23.5 22.4	None
6	MES Control	19.5 17.5	MES*	26.7 25.3	None

*$p < .01$

The table shows that children in MES schools scored significantly higher than children in Control schools on the Word Meaning subtest at Grade 2 and Grade 6. There was no difference in performance on the Paragraph Meaning subtest at any of the three grade levels. The differences in reading performance between MES and Control schools were less clear in Year 3 than the previous year when the MES children scored significantly higher than Control children on all reading subtests in two out of the three grade levels tested.and on one subtest in the remaining grade level.

At Grade 4 a Sex x Treatment interaction that approached significance was obtained on the Word Meaning subtest. The interaction effect is illustrated in Figure 1. The interaction showed that the lack of a significant difference between MES and Control schools was due to the relatively good performance registered by Control boys. (Full statistical data on the interaction are available in Appendix G.)

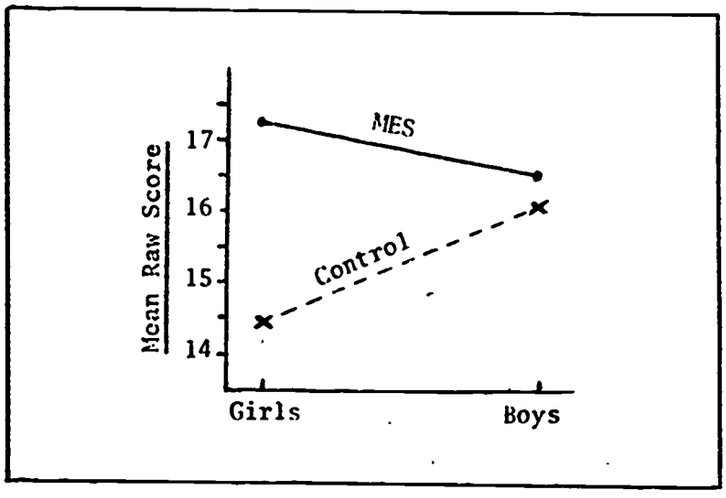

Fig. 1. Sex x Treatment Interaction on Word Meaning Subtest at Grade 4.

In order to show the reading performance of the MES and Control children in relation to grade level norms, the pre and post raw scores were transformed into grade equivalent scores and are presented in graphic form in Figure 2. The results for the three grade levels are plotted on the same scale so that the relationship between performance and the norms will be comparable among grade levels. In reading the figure, two points should be kept in mind: Grade equivalent scores are not an exact reflection of the raw score obtained on the test and at times will not accurately reflect differences in raw scores. Further, the grade equivalent scores used in Figure 2 were computed from the observed raw score means, not from the means used in the analysis, which were adjusted for the effects of unequal N and covariates.

Figure 2 shows both MES and Control children performing a year or more below grade level in Grades 4 and 6 with little progress toward the norm during the year. Performance at Grade 2 was somewhat better for both MES and Control children, with the mean MES score on the Word Meaning subtest matching the grade level norm. It is further evident that the performance deficit increased as a function of grade level.

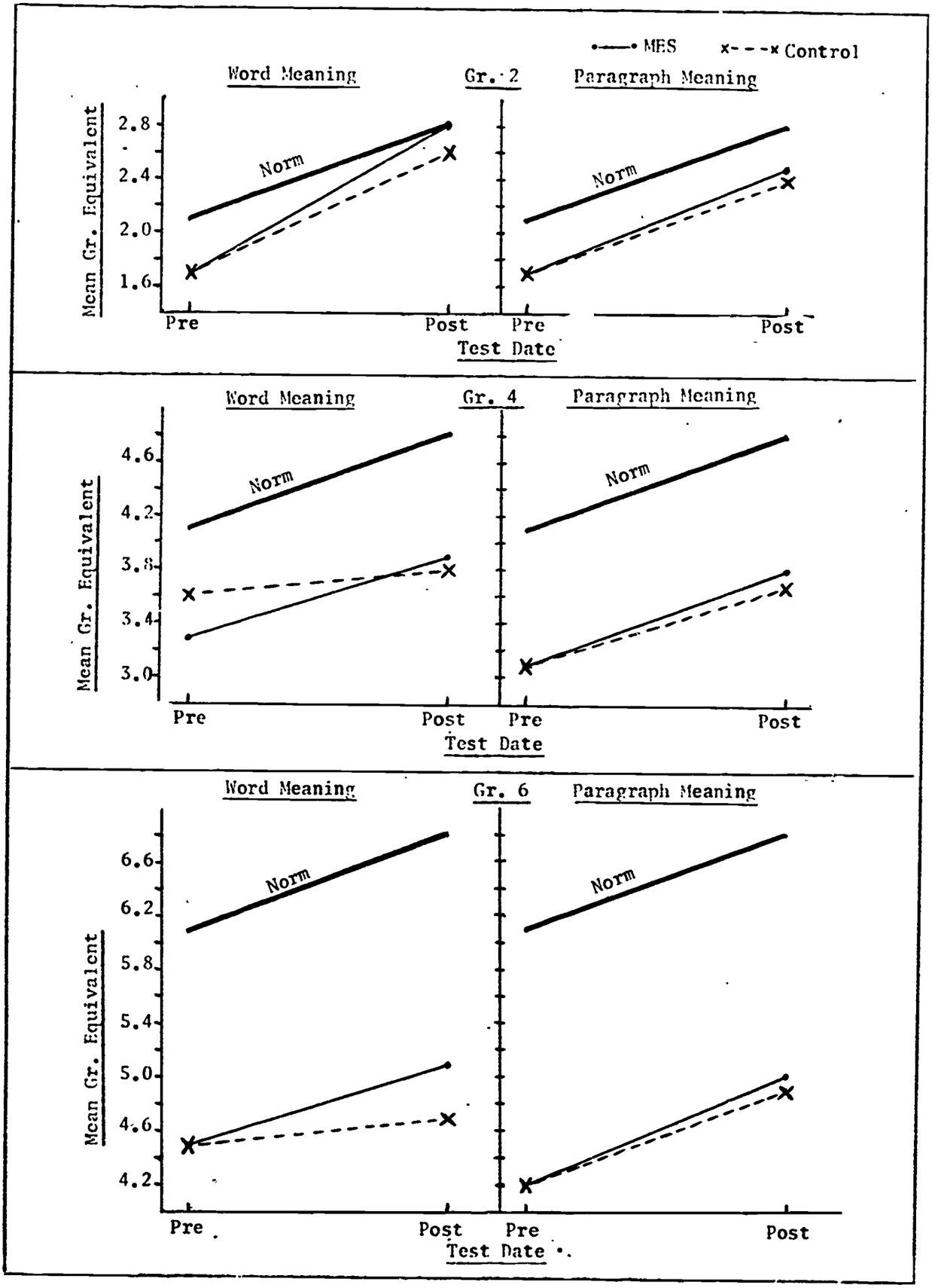

Fig. 2. Mean Reading Grade Equivalent Scores for MES and Control Children in Grades 2, 4 and 6 in Year 3.

c. Math Achievement

Table 20 shows the results of comparisons between the post test math performances of MES and Control children at the three grade levels tested. In the analysis, math pre test scores and PLR scores were used as covariates. Pre scores were adjusted for unequal N, and post scores were adjusted for unequal N and the effects of the covariates. Full statistical data appear in Appendix F.

Table 20

Mean Adjusted Post Math Subtest Scores for Children in Grades 2, 4 and 6 in MES and Control Schools

		MEAN MATH SUBTEST SCORES					
		Computations		Concepts		Applications	
Grade	Group	Post	Superior Group	Post	Superior Group	Post	Superior Group
2	MES	23.2	MES*	17.5	MES*	---	---
	Control	18.4		14.0		---	---
4	MES	18.3	None	15.1	MES*	11.5	None
	Control	17.5		12.3		10.3	
6	MES	16.5	Con-	13.9	MES**	15.1	None
	Control	17.9	trol**	12.8		14.1	

*p < .002
**p < .05

The table shows that MES children scored significantly higher than Control children on the Concepts subtest at all three grade levels. On the Computations subtest, MES children scored higher at Grade 2 and Control children scored higher at Grade 6. There were no differences at any grade level on the Applications subtest. With respect to grade level these results

can be characterized as scattered except at Grade 2 where a clear MES superiority in math achievement was evident. With respect to areas of math performance, the results indicate clear MES superiority on Arithmetic Concepts.

Figure 3 shows the mean pre and post math grade equivalent scores of MES and Control children in Grades 2, 4 and 6 in relation to the grade level norms. The figure shows that both MES and Control children performed closer to norm level on the math subtests than they did on the reading subtests. At Grade 2 the average score of MES children was at or above the norm on both math subtests, and the superiority of the MES group was evident at this grade level. The figure also shows a performance deficit again increasing as a function of grade level for both MES and Control children.

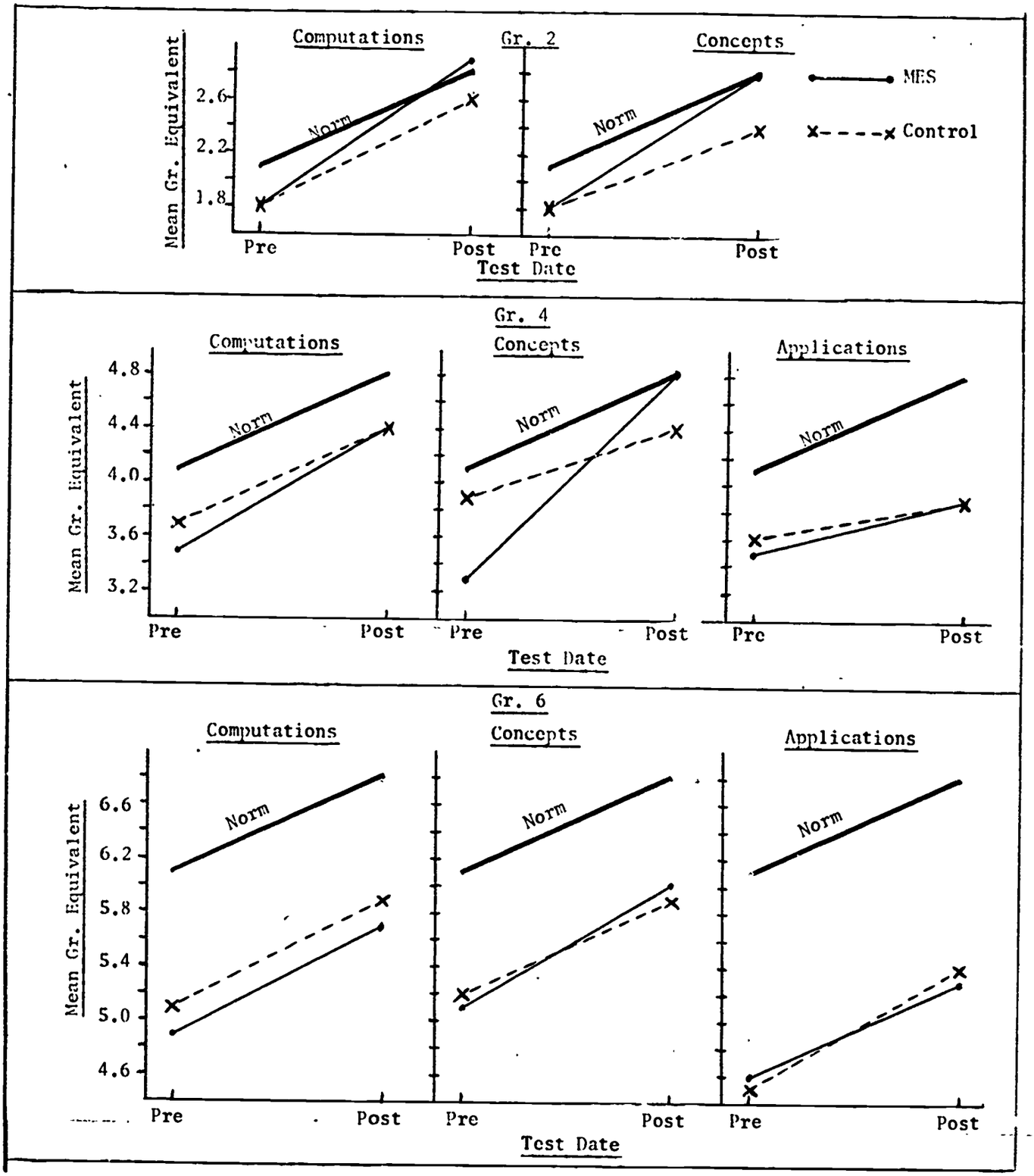

Fig. 3. Mean Math Grade Equivalent Scores for MES and Control Children in Grades 2, 4 and 6 in Year 3.

d. Boys vs. Girls

Examination of the reading and math achievement data for sex differences revealed a significant difference on only one subtest at one grade level. In Grade 2, boys scored significantly higher than girls on the Computations subtest. Statistical data appear in Appendix H.

e. Benesch vs. Wooldridge

The reading and math achievement data were examined for differences between the two MES schools, and several significant differences were found. At Grade 2 the children in Benesch scored significantly higher than the children in Wooldridge on all reading and math subtests. At Grade 4 the children in Benesch scored significantly higher than the children in Wooldridge on three out of the five subtests administered. These subtests were Paragraph Meaning, Arithmetic Computations and Arithmetic Concepts. At Grade 6 the children in Wooldridge scored significantly higher than the children in Benesch on three out of the five subtests administered: Word Meaning, Arithmetic Concepts and Arithmetic Applications. Overall, performance appeared better at Benesch at the middle and lower grade levels, and better at Wooldridge at the higher grade levels. Statistical data appear in Appendix I.

f. Summary of Achievement Data

Table 21 summarizes the number of reading and math subtests on which the MES children at each grade level scored higher than Control children. The table shows the results as reported in each of the three years of program operation.

Table 21

Number* of Reading and Math Subtests on Which MES Children Scored Higher than Control Children at Each Grade Level in Each Year of Operation

Year 1			Year 2			Year 3		
Grade	Reading Subtests	Math Subtests	Grade	Reading Subtests	Math Subtests	Grade	Reading Subtests	Math Subtests
2	1/2	1/2	1	0/2	0/1	2	1/2	2/2
4	1/2	3/3	3	2/2	1/2	4	0/2	1/3
6	0/2	0/3	5	2/2	2/3	6	1/2	1/3

*Denominators refer to the number of subtests administered, and numerators represent the number of subtests on which MES children scored higher.

The table shows that there has been some slippage since Year 2 in the number of times MES children scored higher than Control children in reading. In math there is again some slippage at the middle and upper grade levels. Another way of looking at the data, however, is to compare Year 3, Grade 2 with Year 1, Grade 2, etc. This cross sectional comparison shows that in reading the margin of superiority remained the same at Grade 2, was eliminated at Grade 4 and improved at Grade 6. In math the cross sectional comparison shows improvement at Grade 2 and Grade 6 and slippage at Grade 4. The results can only be characterized as mixed, and the achievement objectives must be judged only partially attained.

2. Pupil Objective 2: Increase in Pupil Attendance Rates in MES Schools.

Pupil attendance rates for the MES schools were gathered for the school years 1965-66 through 1971-72. The data were analyzed in two ways:

a. The mean attendance rate in MES schools during Year 3 was compared with their mean rate during Years 1 and 2 and during the previous four school years. The same comparisons were made on the city-wide attendance rate.

b. The mean attendance rate of MES schools during Year 3 was compared with the mean city-wide attendance rate for the same period. A similar comparison was made for Years 1 and 2 and the previous four school years.

Comparisons of attendance rates were made by means of the t - test. (Statistical data appear in Appendix J.) The attendance rates for the MES schools and city-wide schools for the three time periods considered are presented graphically in Figure 4.

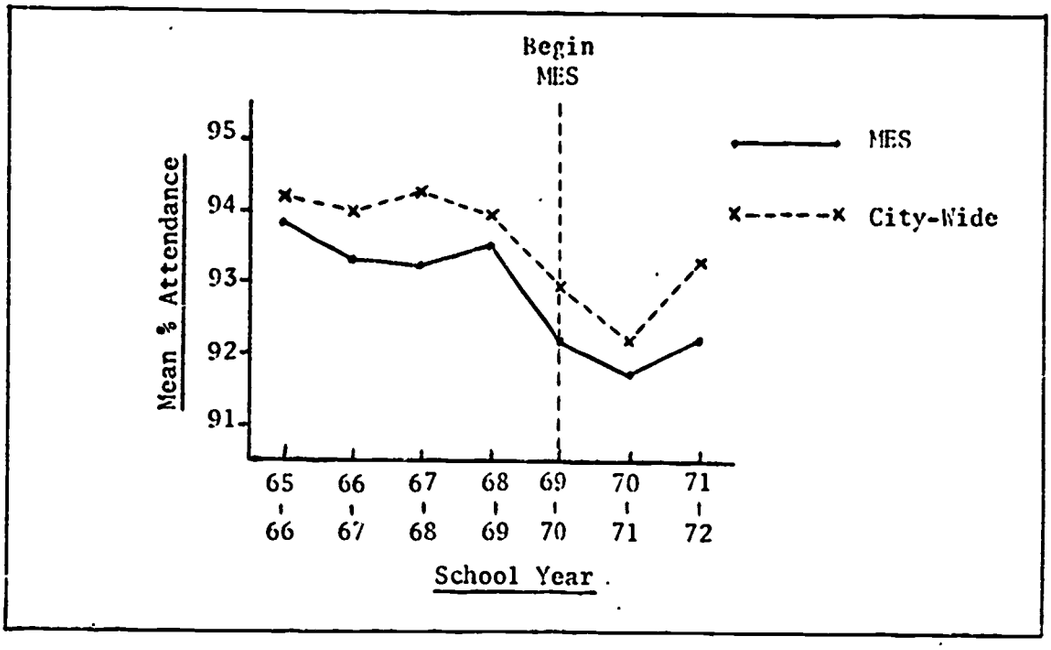

Fig. 4. Mean Attendance Rates City-Wide and for MES Schools

Figure 4 shows that the mean attendance rates city-wide and for the MES schools declined through Year 2 of the program and then rose in Year 3. Despite the rise in attendance rates in Year 3, the mean rate in Year 3 was significantly lower than the mean pre-program rate, both city-wide and for the MES schools. There were no significant differences between the city-wide attendance rate and the rate in MES schools either before or after the program began. However, the rise in the city-wide rate between Year 2 and Year 3 was statistically significant, while the rise was not significant for the MES schools. The attendance pattern in Figure 4 suggests that whatever variables have affected city-wide attendance rates have affected the MES attendance rates in the same way. There is no evidence to date that the MES Program has had any effect on attendance rates in the schools served. Objective 2 was not achieved.

3. Pupil Objective 3: The Incidence of Parent Teacher Meetings will Increase Beyond Previous Levels.

a. Data Collection

Each cluster was to keep records of group parent activities conducted at the cluster level, recording the nature of the activity and the number of parents attending. Records were also kept on the number of parents attending school-wide activities such as open house. The accuracy of the data that follow is dependent, of course, on the completeness of the records submitted by the schools.

b. Parent Attendance at Cluster Activities

Individual clusters conducted a wide variety of parent involvement activities ranging from question and answer meetings about the MES Program to an odds and ends sale.

All of the clusters at Benesch and two out of the three clusters at Wooldridge conducted at least one parent involvement group activity during the year. The number of activities conducted by each cluster ranged from one to seven and averaged two to three per year.

Attendance at the group activities conducted by the clusters at Benesch averaged 32 parents per cluster activity or roughly 48% of the potential participants. At Wooldridge the attendance was somewhat lower, averaging 10 parents per cluster activity or roughly 20%. The data indicate that Benesch parents were more responsive to cluster efforts to bring them into the school than Wooldridge parents.

c. Parent Attendance at School-Wide Activities

More data are available from Benesch on parent attendance at school-wide activities than from Wooldridge. Table 22 shows various types of school-wide activities and the average parent attendance at each. It is impossible to report parert attendance in terms of the percentage of parents attending because there is no way of determining whether the numbers include one or both of a child's parents. The table shows that

Table 22

Parent Attendance at School-Wide Activities

Type of Activity	Average Parent Attendance	
	Benesch	Wooldridge
Open House	552	300
PTA General Meetings	20	*
School Programs and Assemblies	80	*
TOTAL AVERAGE	115	

*Data not available

by far the most successful activities in terms of parent attendance were the open houses and the least successful were PTA meetings. In comparing the data from the two MES schools, it should be kept in mind that Benesch has roughly twice the student enrollment of Wooldridge.

d. Parent Volunteers

Another index of parent involvement in the MES schools is the number of parents who volunteered to assist in the classroom. At Wooldridge there were 25 volunteer tutors contributing an average of approximately 40 hours each during the school year. At Benesch 16 parent volunteers worked an average of 14 hours each.

The basic problem facing the MES staff as reported by program administrators has been in overcoming parents' reluctance to come to the school in the first place, much less take an active part in educational activities. Consequently many of the parent involvement activities have been designed to simply get the parents into the school. From there it is hoped that as they begin to feel more comfortable about coming into the school, they can become progressively more involved in their childrens' education.

The data available to date indicate that the two schools are making progress in the first phase of this effort. Objective 3 was attained.

4. Pupil Objective 4: MES Superiority in Attitude Toward Schools

As of this writing, the analysis of data on the attitudes of MES and Control children is incomplete. The results of the analysis will be appended to this report at a later date.

5. Summary of Question 3: Were the Pupil Objectives Attained?

The data collected relative to Evaluation Question 3 show that progress toward achievement of the four pupil objectives in Year 3 was limited.

a. Objective 1: MES Superiority in Achievement in Reading and Math

Analysis of the results of standardized achievement tests administered to MES and Control children in Grades 2, 4 and 6 showed that the achievement objectives were only partially attained:

(1) Reading

The MES children scored significantly higher than the Control children on the Word Meaning subtest at Grades 2 and 6. There were no differences in performance on the Paragraph Meaning subtest at any grade level. By grade level, the MES children scored higher on one out of two tests at Grade 2, none out of two tests at Grade 4 and one out of two tests at Grade 6. This performance was comparatively worse than the previous year when MES children scored higher on both subtests at two grade levels and on one subtest at the remaining grade level.

(2) Math

The MES children scored significantly higher than the Control children on the Concepts subtest at all three grade levels. On the Computations subtest, MES children scored significantly higher at Grade 2, but Control children scored higher at Grade 6. There was no differences on the Applications subtest. By grade level the MES children scored higher on two out of two tests at Grade 2, none out of two tests at Grade 4, and one out of three tests at Grade 6.

b. Objective 2: Significant Increase in Attendance Rates in MES Schools.

Analysis of attendance data collected for the three years of program operation and for the four years prior to program implementation showed that the attendance objective was not achieved:

(1) Attendance rates both city-wide and in the MES schools were significantly lower in the third year of operation than before the program began.

(2) There is no evidence that the MES Program has had any effect on the attendance rates in the schools served.

c. Objective 3: Increase in Incidence of Parent-Teacher Meetings

Data collected through teacher logs of parent attendance at cluster activities and records of parent attendance at school-wide activities showed that the objective was achieved:

(1) Clusters conducted an average of two to three parent involvement activities per year per cluster.

(2) Parent attendance at cluster activities averaged approximately 48% of the potential participants at Benesch and 20% at Wooldridge.

(3) The most successful school-wide activities in terms of parent attendance were open houses. The activities drawing the fewest parents were PTA meetings.

d. Objective 4: MES Superiority in Attitude Toward School

Analysis of attitude data was incomplete as of this writing.

EVALUATION QUESTION 4

WHAT HAS BEEN THE IMPACT ON ACHIEVEMENT LEVELS OVER THE THREE YEARS OF OPERATION OF THE PROGRAM?

1. General Procedures

To determine the impact on reading and math achievement over the full three years of operation of the MES Program, two types of analysis were conducted. The first was a longitudinal analysis in which the achievement performance of a group of children was monitored throughout the three years of operation. The second analysis was cross sectional and involved monitoring changes in the achievement levels demonstrated at certain grade levels across the three years of program operation.

2. Longitudinal Analysis of Achievement

a. Longitudinal Data Collection

The schedule of achievement test administration over the three years of operation of the MES Program was designed to allow an examination of the performance of MES and Control children on a longitudinal basis. The grades tested during each year of program operation and the number of children for whom data are available over the three year period are presented in Table 23. (The form and level of the tests administered at each grade in each year are available in Appendix K.)

Table 23

Grades Involved in Achievement Testing Over Three Years of Operation of the MES Program

Grades Tested			Longitudinal Sample Size	
Year 1	Year 2	Year 3	MES	Control
--	Gr. 1	Gr. 2	51	54
Gr. 2	Gr. 3	Gr. 4	48	58
Gr. 4	Gr. 5	Gr. 6	33	61
Gr. 6	--	--	--	--

Table 23 shows that the schedule of achievement testing generated three longitudinal samples. Two years of data are available on children who began the program in Grade 1, Year 2 and completed Grade 2, Year 3 (1-2 longitudinal sample). Three years of data are available on children who began the program in Grade 2, Year 1 and who completed Grade 4, Year 3 (2-3-4 longitudinal sample). Three years of data are also available on children who began the program in Grade 4, Year 1 and completed Grade 6, Year 3 (4-5-6 longitudinal sample).

The longitudinal analysis was performed on the achievement data of only those children who were enrolled in the MES and Control schools during the entire longitudinal time frame. Children who entered or left the schools during the longitudinal time frame were not included in the analysis.

An important point to be remembered in interpreting the longitudinal analysis is that the combination of high pupil mobility rates and imperfect data retrieval methods resulted in a decrease in the size of the longitudinal sample

each year. Consequently, the number of children in the longitudinal samples after three years represented only a little over one third of the children who were originally enrolled in the schools. The rest of the original enrollees had either left the schools or did not have complete achievement data. The sample that remained represented the most stable elements of the pupil population in terms of mobility and was in that sense a biased sample. The possible effect of this bias on achievement results is unknown.

b. Longitudinal Analysis - Reading

Multivariate analysis of covariance was performed on the mean Year 3 post reading scores of MES and Control children in the Grade 1-2, Grade 2-3-4, and Grade 4-5-6 longitudinal samples. Year 1 PLR scores and reading pre scores were used as covariates for the Grade 2-3-4 and Grade 4-5-6 samples. Metropolitan Reading Readiness Test Scores were used as covariates for the Grade 1-2 sample. Table 24 shows the mean post raw scores adjusted for unequal N and the effects of covariates. Full statistical data appear in Appendix L.

Table 24

Mean Post Reading Scores for MES and Control Children in the Grade 1-2, Grade 2-3-4 and Grade 4-5-6 Longitudinal Samples

Sample	Group	Mean Post Reading Scores			
		Word Meaning	Superior Group	Paragraph Meaning	Superior Group
1-2	MES Control	18.0 16.6	None	25.1 26.7	None
2-3-4	MES Control	17.4 16.2	None	24.9 23.1	None
4-5-6	MES Control	23.7 17.4	MES*	29.5 25.3	MES**

*$p < .0006$
**$p < .08$

The table shows that of the three longitudinal samples, significant differences between the reading performances of MES and Control children occurred only in the Grade 4-5-6 sample. Here MES children scored significantly higher than Control children on the Word Meaning subtest, and on the Paragraph Meaning subtest. The difference in favor of MES children approached statistical significance.

In order to show reading performance in relation to grade level norms, the reading grade equivalent scores of the MES and Control children in the longitudinal samples are presented in Figure 5. The figure shows the grade equivalent scores attained in each year of program operation.

The figure shows that in the Grade 1-2 sample, after two years in the MES program the average score of the MES children was at norm level on the Word Meaning subtest, although Control children were only one month behind. On the Paragraph Meaning subtest, however, MES children had fallen four months behind the norm by the end of two years in the program.

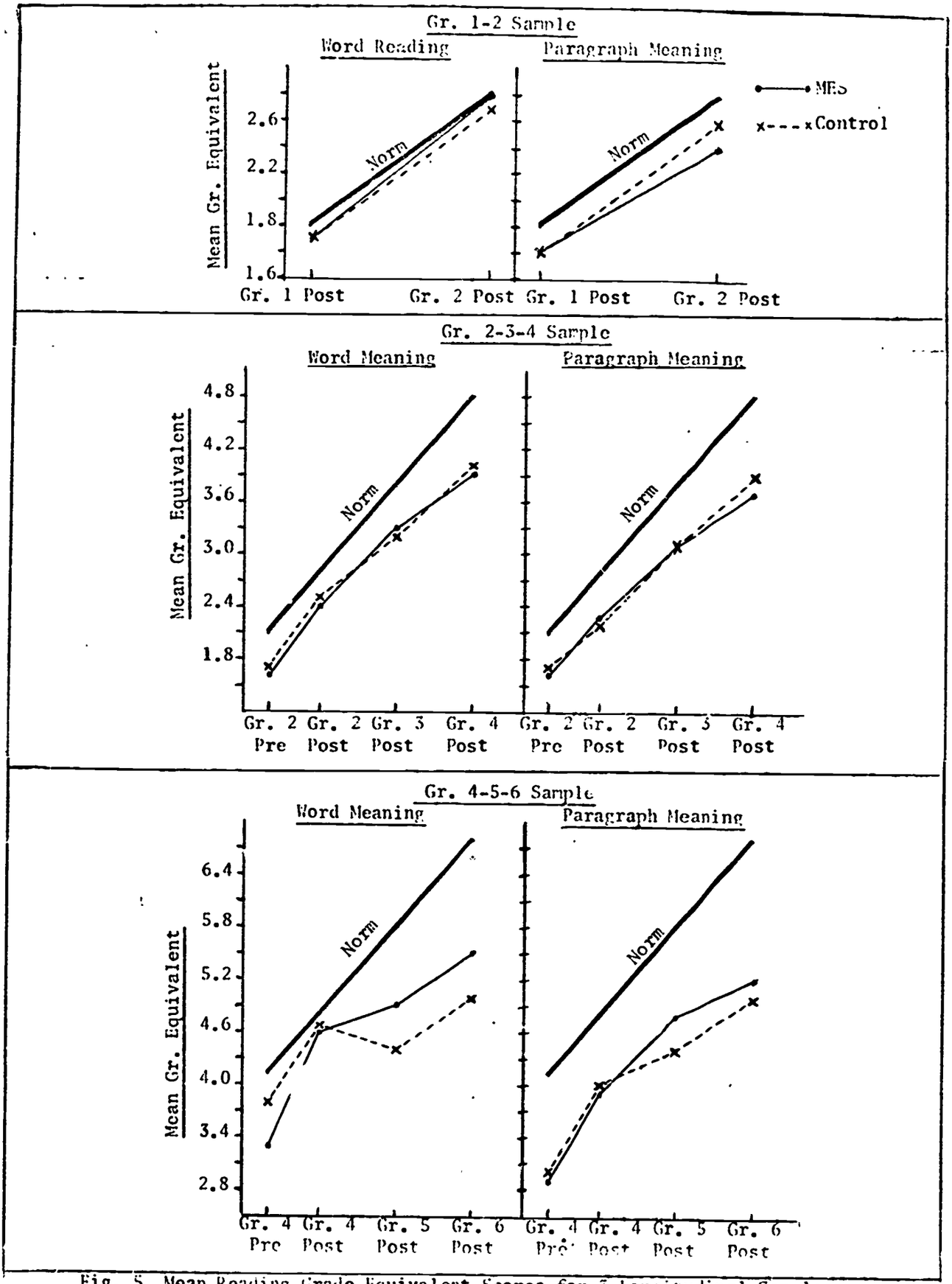

Fig. 5 Mean Reading Grade Equivalent Scores for 3 Longitudinal Samples of MES and Control Children.

In both the Grade 2-3-4 and the Grade 4-5-6 samples, the figure shows a pattern of increasing performance deficit as the children progress through the grades. The deficit is of about the same magnitude for MES and Control children in the Grade 2-3-4 sample but is less for the MES children in the Grade 4-5-6 sample. In the Grade 2-3-4 sample, MES children having had program services for three years were roughly one year behind the norms. In the Grade 4-5-6 sample, the MES children were up to one and one half years behind the norms after three years in the program.

c. Longitudinal Analysis - Math

Multivariate analysis of covariance was performed on the mean Year 3 post math scores of MES and Control children in the three longitudinal samples. Year 1 PLR scores and math pre scores were used as covariates for the Grade 2-3-4 and Grade 4-5-6 samples. Metropolitan Reading Readiness Test scores were used as covariates for the Grade 1-2 sample. Table 25 shows the mean post raw scores adjusted for unequal N and the effects of the covariates. Full statistical data are available in Appendix L.

Table 25

Post Mean Math Scores for MES and Control children in the Grade 1-2, Grade 2-3-4 and Grade 4-5-6 Longitudinal Samples

		Mean Post Math Scores					
Sample	Group	Computations	Superior Group	Concepts	Superior Group	Applications	Superior Group
Gr. 1-2	MES	22.7	MES*	17.9	MES*	----	---
	Control	19.1		15.2		----	---
Gr. 2-3-4	MES	17.0	Control**	14.6	None	10.9	Control**
	Control	19.7		14.2		12.5	
Gr. 4-5-6	MES	17.3	None	14.8	None	16.6	None
	Control	18.7		13.6		14.9	

*$p < .03$
**$p < .06$

Table 25 shows that the only significant differences in favor of MES on the math subtests occurred in the Grade 1-2 sample where the MES children scored significantly higher on both the Computations and Concepts subtests. In the Grade 2-3-4 sample the Control children scored higher on the Computations and Applications subtests, the differences approaching statistical significance. There were no differences in the Grade 4-5-6 sample.

To show the math performance of the longitudinal samples in relation to the grade level norms, the average raw scores of the MES and Control children were transformed into grade equivalent scores. These are presented for each year of program operation in Figure 6.

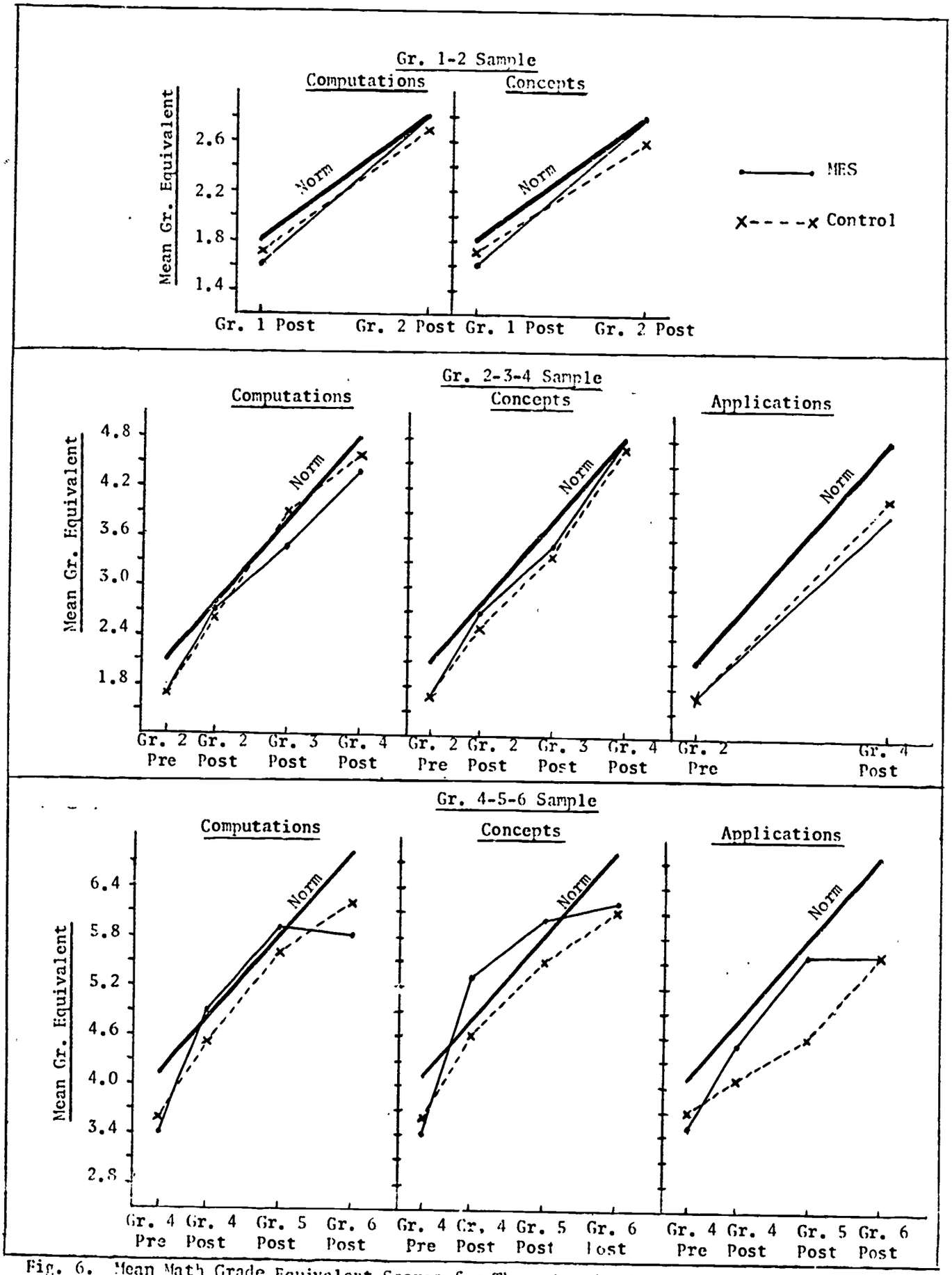

Fig. 6. Mean Math Grade Equivalent Scores for Three Longitudinal Samples of MES and Control Children.

The figure shows that at the end of two years in the MES Program the MES children in the Grade 1-2 sample were performing at the grade level norm on both the Computations and Concepts subtests.

In the Grade 2-3-4 sample the performance of both MES and Control children was closer to the norm on the Computations and Concepts subtests than on the reading subtests with the MES children performing at the norm level on the Concepts subtest. On the Applications subtest, however, both groups were almost a year behind the norm level.

In the Grade 4-5-6 sample the MES children maintained a clear superiority on all three math subtests during the first two years of the program. On the Computations and Concepts subtests they performed above the norm level, and on the Applications subtest they appeared to be moving towards the norm. In Year 3, however, their performance suddenly dropped back to the level of the Control children or below, so that they were a year or more behind the norms.

d. Summary of Longitudinal Analysis

Table 26 summarizes the number of reading and math subtests on which the MES children in the longitudinal samples scored significantly higher than Control children. The table shows the results for each sample as reported in Year 2 of the MES program and again in Year 3 when an additional year of data was available on each sample.

Table 26

Number* of Reading and Math Subtests on Which MES Children Scored Higher than Control Children in the Longitudinal Samples

Program Year 2			Program Year 3		
Longitudinal Sample	Reading Subtests	Math Subtests	Longitudinal Sample	Reading Subtests	Math Subtests
---	---	---	Gr. 1-2	0/2	2/2
Gr. 2-3	2/2	0/2	Gr. 2-3-4	0/2	0/3
Gr. 4-5	2/2	3/3	Gr. 4-5-6	2/2	0/3

*Denominators refer to the number of subtests administered and numerators represent the number of subtests on which MES children scored higher.

The table shows that the overall performance superiority of the MES children in the longitudinal samples was less impressive after three years of the MES Program than it was after two years of operation. In Year 2 the Grade 2-3 MES sample showed a clear superiority over the Control sample in reading, but lost it in Year 3. In Year 2 the Grade 4-5 sample showed superior performance on all subtests in reading and math, but in Year 3 showed superiority only in reading.

It should be noted that the longitudinal sample at the end of Year 3 is not exactly the same group of children as the sample at the end of Year 2 because of pupil mobility. As mentioned earlier, with each succeeding year the group of children in both MES and Control schools who have been there since the program began gets smaller and more select. Restricting the longitudinal sample to geographically stable students may introduce a bias, the extent and effect of which is not known.

3. Cross Sectional Analysis of Achievement

a. Cross Sectional Data Collection

The cross sectional analysis of achievement attempts to answer the following type of question: After three years of operation of the MES Program, how are children in Grade 3 performing as compared with the performance at Grade 3 when the program began? Cross sectional grade level comparisons of this sort were made using the results of the reading and arithmetic subtests of the California Tests of Basic Skills (CTBS) obtained through the city-wide testing program. Mean scores on the subtests were obtained for the MES schools, the Control schools and for all 30 Title I target schools. The test results from the 1969-70, the 1970-71 and the 1971-72 school years (Years 1, 2 and 3 of the MES Program) were examined at Grades 3, 5 and 6. The use of these years and grades was determined by the city-wide testing schedule. Baseline data are not available for the years preceding the MES Program because the CTBS was not used in the city-wide testing program until the first year of MES.

b. Cross Sectional Analysis - Reading

Figure 7 shows the average reading performance levels of children in Grade 3, 5 and 6 in the MES schools, the Control schools and the Title I target schools during each of the three years of operation of the MES Program. Because test dates sometimes varied, the data are presented in the form of grade equivalent months deviation from the norm rather than grade equivalent scores. Due to the lack of statistical control on these data, apparent differences in the

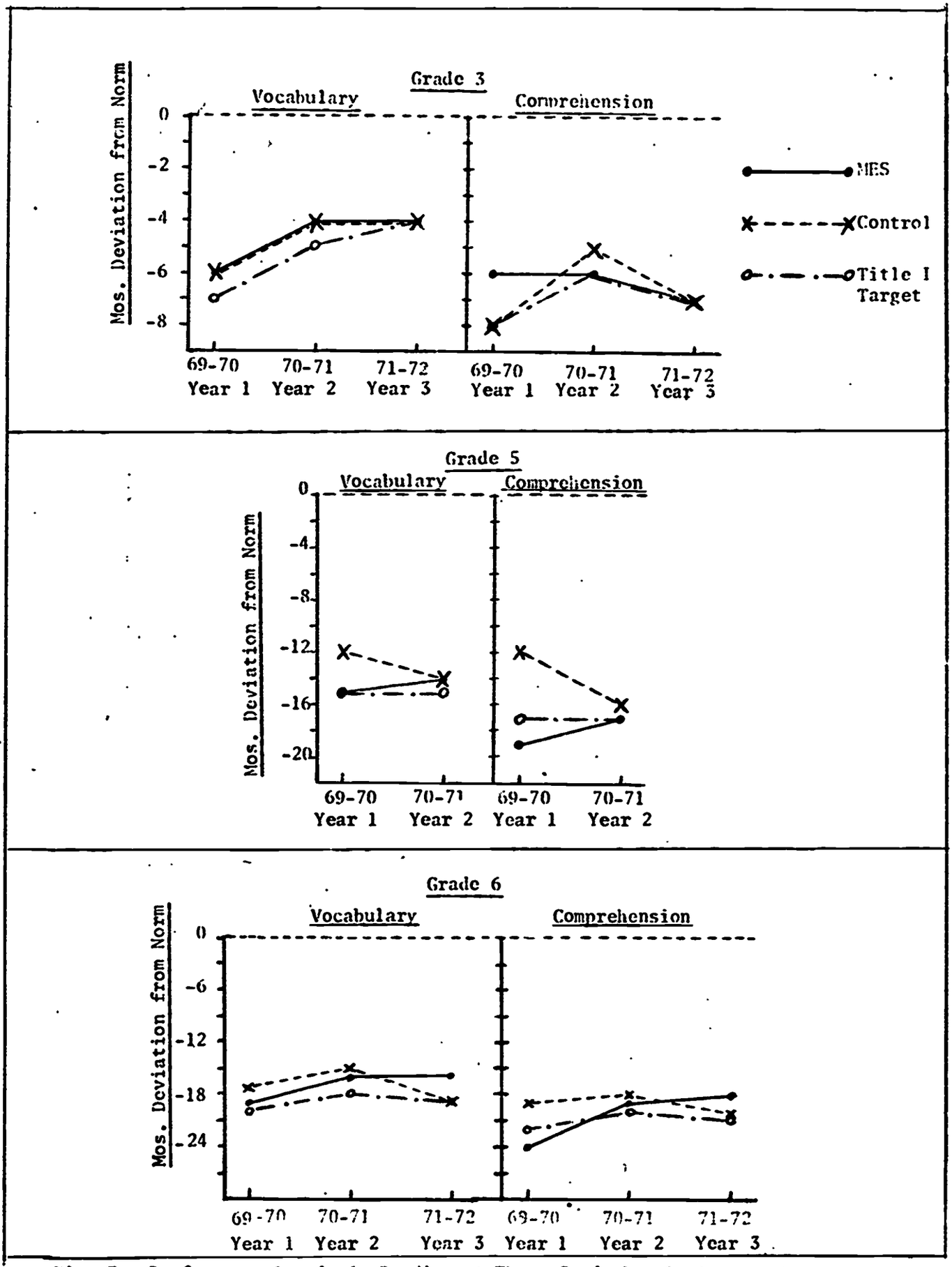

Fig. 7. Performance Levels in Reading at Three Grade Levels Across Three Years for MES, Control and 30 Title I Target Schools.

performance level between groups at a given point in time should not be interpreted too strictly. What is of interest is the pattern of performance by each group across the three years.

At Grade 3 performance changes on the Vocabulary subtest across the three years were identical for MES and Control schools, rising between Year 1 and Year 2 and remaining unchanged from Year 2 to Year 3. The average performance in the 30 Title I target schools rose steadily over the three years. On the Comprehension subtest, the performance in Control schools and the Title I target schools rose in Year 2, but fell again in Year 3. In MES schools there was no change in performance from Year 1 to Year 2, and performance levels dropped in Year 3. In general, changes in the reading performance levels in MES schools at Grade 3 appeared to differ little from the changes observed in the Control and other Title I target schools.

At Grade 5 data were available for only two years, Year 1 and Year 2 of the MES Program. Across those two years the figure shows that performance levels in the Control schools dropped on both reading subtests and the performance in the target schools remained unchanged. The reading performance of MES fifth graders, however, rose between Year 1 and Year 2.

At Grade 6 the performance of all three groups rose from Year 1 to Year 2 on both reading subtests. In Year 3 MES performance continued to rise while that of the Control and other target schools declined. In Year 3 the average

performance of MES sixth graders on the Comprehension subtest was six months higher than that of MES sixth graders in Year 1.

In summary, the reading performance data indicate that the average performance levels in MES schools are slowly rising at Grades 5 and 6, but not at Grade 3. Despite the rise, MES children were still performing a year and a half or more below grade level at Grades 5 and 6.

c. Cross Sectional Analysis - Math

Figure 8 shows the average math performance levels of children in Grades 3, 5 and 6 during each of the three years of the operation of the MES Program. Again, the data are presented in the form of grade equivalent months deviation from the norm.

At Grade 3 changes in math performance across the three years of the MES program were mixed. In the MES schools the performance level rose each year of the program on the Computations and Applications subtests. These rises were generally paralleled, however, by the average performance levels in the other Title I target schools. On the Concepts subtest MES performance levels rose in Year 2 but fell again in Year 3. Again the changes were fairly well paralleled by the Control groups

At Grade 5 MES performance levels on the Concepts and Applications subtests rose in Year 2 and fell in Year 3. Performance remained essentially unchanged on the Computations subtest. Performance across the three years in the Control and other target schools either remained the same or fell.

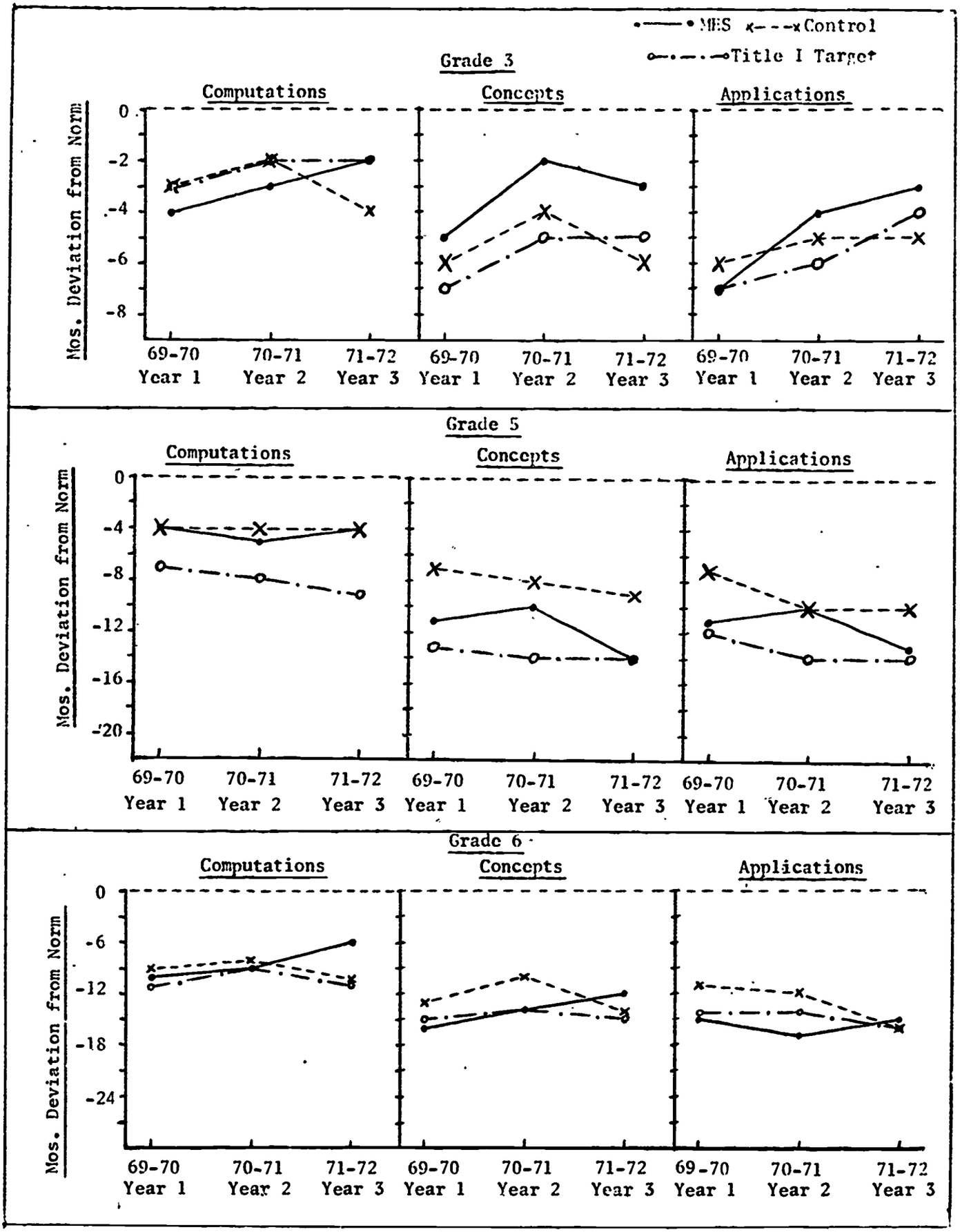

Fig. 8. Performance Levels in Math at Three Grade Levels Across Three Years for MES, Control and 30 Title I Target Schools.

At Grade 6 MES performance levels on Computations and Concepts rose steadily over the three years of the program, but changed little on Applications. The Control groups' performance paralleled the MES rise in Year 2 but fell in Year 3.

In summary, performance levels in math were observed to be generally rising at Grade 6 but not at Grades 3 and 5.

Summary of Cross Sectional Analysis

In examining changes in reading and math performance at three grade levels over the course of three years of operation of the MES program, any such changes must be interpreted in light of the changes occurring in other schools. In this cross sectional look at achievement the clearest results occurred at Grade 6 where a general pattern of slowly improving performance in MES schools took place in the face of generally declining performance in other schools. The same pattern held for reading performance at the fifth grade level, although lack of data prevents examination of performance over the full three years. Similar results were found in math performance at Grade 3 but these were paralleled by similar changes in other schools. Other changes in MES performance also were generally paralleled by similar changes in other schools. Despite the gradual rises in achievement levels, performance was still well below grade level norms in most cases.

V. CONCLUSIONS AND RECOMMENDATIONS

A. Discussion of Results

This report is the evaluation of Year 3 of the MES Program, but any discussion of results must be undertaken in the context of the preceding two years of operation. During the first year of the program, implementation of the proposed changes in school organization and procedures must be characterized as less than smooth. (One wag was heard to remark at the time that an accurate definition of the program could be had simply by adding another S to the acronym.) Cluster operation during the first year was generally rated as ineffective, and teachers were judged as not making productive use of program resources. Effective use of new equipment and materials was observed infrequently, and the small class size was not seen to be of much benefit in most lessons observed. However, when the program first began, few people involved really quite understood their roles in it, how they were expected to use its resources, the purpose, structure and function of clusters, or in short, what the program was. A frequently encountered question from confused and frustrated teachers was, "...But what is MES?" Teachers thrown together on a cluster "team" tended to isolate themselves from their "teammates" and continued to function as individual teachers in individual classrooms, because they did not know how to do otherwise, and they weren't really sure of what the otherwise was.

In many respects, there has been marked improvement in program operation since its inception. By the third year over half of the clusters were rated by observers as having a "good"

overall operation. MES teachers were rated as superior to Control teachers on many dimensions of teaching behavior, ranging from better prepared and organized lessons to using a wider variety of methods and materials. This superiority was directly related by observers to the greater resources available to them. MES teachers were also observed to be working together as teams to a much greater extent, grouping and regrouping children within and among classrooms for instruction. More effective use of instructional equipment was seen, and in the majority of lessons observed, the loss of the smaller class size would have seriously impeded the effectiveness of instruction.

Overall, the three years of the MES Program have seen a gradual movement from an operation that was confused and lacking in definition, with an abundance of equipment, materials, small classes and supportive personnel that few teachers knew how to use, to an operation that is more clearly defined in terms of organization and procedure, with a staff that has shown considerable growth in terms of understanding how to use program resources. Some measure of the improved understanding of the staff regarding how the program was intended to operate is reflected in the changing nature of the complaints teachers have made over the three years. In the first year teacher concerns centered most often on <u>things</u>: not enough equipment, not enough materials, not enough staff. By the third year, their attention had shifted away from such surface elements to a primary concern with selecting staff with the philosophy and commitment necessary to make the program work. To one who has observed the program from the beginning, the shift

represents a growing insight on the part of the teachers that showering a school with material goodies will affect teaching only to the extent that teachers make effective use of them.

Although there has been considerable improvement in program definition and effective use of resources, certain problems have remained since the program began, including lack of communication and cooperation among teachers and school and program administrators, teacher dissatisfaction with the commitment of teachers selected for the program, teacher dissatisfaction with program leadership, and teacher dissatisfaction with the extent of their involvement in decision making. These are issues identified by the MES teaching staff themselves, and although they did not appear overwhelming, they were mentioned with sufficient frequency to warrant consideration. With respect to lack of cooperation, it should be noted that this problem does not appear as serious as in previous years; the findings of classroom observers certainly indicated a greater tendency for teachers to work together than in the past. The problems of communication, program leadership, staff selection and teacher input, however, appear more widespread.

It is possible, of course, that in any program that requires a high degree of teamwork and which also touts freedom and flexibility in teaching there will inevitably be disagreement and conflict. It is also possible that there is no more of a problem in this respect in the MES schools than in any other school, but that it is more visible in the MES schools simply because program evaluation has given the teachers an opportunity to speak out on such issues. Whatever explanations can be devised,

however, the distinct possibility remains that the degree of conflict and dissatisfaction that exists among the MES staff could be a serious impediment to the success of the program. Just as program administrators have taken steps in the past to clarify program organization and procedures, so should they now address themselves to these problems.

Although progress in the implementation of the MES Program has been documented, the question remains as to its effect on the children it serves. Three indices have been taken each year of operation: attendance, attitude and achievement. First, with respect to attendance, the evidence to date indicates that the MES Program has had no effect on the attendance rates in the schools served. Second, attitude data during the first year showed some evidence that MES children had more positive views of certain aspects of school than Control children, but during the second year the Control children appeared to have generally more positive attitudes. (Attitude data for Year 3 are not yet complete but will be appended at a later date.) Finally, the effect of the program on achievement levels remains to be considered.

After three years of operation, the question "Has the MES Program had a measurable impact on improving achievement levels in reading and math?" must be answered with a resounding "..Perhaps." During the first two years, MES children demonstrated a decided superiority in achievement over Control children. Analysis of the performance of just those children who had been in the program for the full two years (the longitudinal samples) showed even more impressive results. In the third year of operation, however,

there was slippage. MES children still outperformed Control children on several tests, but not as many. Analysis of longitudinal data showed MES superiority in fewer instances than before and Control superiority in a few more. Cross sectional analysis of changes in performance over time at given grade levels did show some evidence of a gradual improvement in certain instances, but performance was still well below norm levels.

Do the results of Year 3 indicate that the program is a failure? No — just as the results of the first two years were not interpreted as indicating an unqualified success. (Earlier reports cautioned against premature expansion.) The results do point up the difficulty in making definitive statements about the impact of an experimental treatment that has been in place over a relatively short period of time and which has operated in the face of so many uncontrollable variables as are found in public school systems. The problem of the possible bias introduced by the necessity of restricting longitudinal samples to the most geographically stable students in schools with high mobility rates has been discussed in the text. Conducting valid cross sectional analyses of program effects across time at given grade levels is hampered by a lack of adequate baseline data due to changes in instrumentation. The differences between performance as measured by the CTBS and performance as measured by the Stanford serve to point up the caution with which such results must be interpreted. Changing neighborhoods result in changing school populations in both MES and Control schools, and the changes may not be parallel. Such changes can, however, affect achievement levels and the results of comparisons.

The point of all this is that evaluation under such conditions, especially with programs involving entire school populations, often cannot yield quick answers. It may be that the achievement results in Year 3 of the MES Program are merely a ripple in the stream of progress, to coin a cliché. Or it may be that they reflect a continuing downward trend. The answer will come, but it will require time for enough data to be collected so that administrators will be able to say, despite fluctuations in performance, that the overall trend indicates that the program is or is not effective in raising achievement levels.

B. Recommendations

1. It is recommended that the MES Program be continued in the same two schools in which it presently operates for the next two to three years until sufficient data are available for an accurate appraisal of long term program effects.

2. It is recommended that a decision on expansion of the MES Program be deferred until the results of the long term evaluation are available.

3. It is recommended that program and school administrators take immediate steps to improve the lines of communication among all levels of staff.

4. It is recommended that a formal screening procedure be established so that when staff vacancies occur in the MES schools, potential replacements will be made aware of the requirements involved in teaching in the MES Program.

5. It is recommended that the possibility of establishing some sort of transfer-without-prejudice policy limited to the MES schools be explored with the Cleveland Teachers Union. Such a policy is recommended because it is evident from the comments of observers, teachers and administrators that there are those who may be fine teachers in the traditional sense but who do not function well in a flexible and open teaching situation requiring teamwork in instruction.

6. It is recommended that training in alternative teaching techniques in specific subject areas be placed high on the list of priorities for in-service training.

APPENDIX

APPENDIX A

Descriptive Data on Project Schools

	Alfred A. Benesch	Wooldridge
Poverty Rate	72%	49%
Mobility Rate	66%	69%
Enrollment by Grade		
EMR	16	35
K	87	39
1	94	19
2	77	48
3	67	34
4	68	20
5	46	28
6	54	34
Total Enrollment	512	254

APPENDIX B

Matched Characteristics of NES and Control Schools
in 1969

MEDIAN GRADE EQUIVALENT[1]

School	% Poverty	% Mobility	% Attendance	Grade	Reading: Word Meaning	Reading: Paragraph Meaning	Arithmetic: Computation	Arithmetic: Concepts	Arithmetic: Application	Mean[2] PLR	% Negro
A. A. Benesch	77	10	92.7	6	4.4	4.7	5.6	5.4	4.9	96	100
				5	3.8	3.9	4.5	5.2	4.2	101	
				3	3.6	3.0	3.8	3.5		99	
Doan	62	20	93.1	6	4.6	4.8	5.6	5.6	4.9	94	100
				5	4.2	4.2	4.6	4.9	4.2	99	
				3	3.2	2.9	3.8	3.1		96.4	
Wooldridge	44	24	92.9	6	5.6	5.0	5.9	6.1	5.4	96	100
				5	4.2	4.3	4.6	5.6	4.9	100	
				3	3.2	2.8	3.7	3.3		87.9	
Chesterfield	47	24	94.0	6	5.2	4.8	6.0	6.1	5.4	96	100
				5	4.1	4.2	4.8	5.2	4.4	100	
				3	3.0	2.8	3.7	3.1		95.8	

[1] Results of Stanford Primary II and Intermediate II Achievement Tests. City-Wide Testing, Spring, 1969.

[2] Probable Learning Rate. Score on Kuhlman-Anderson Test.

APPENDIX C

MES Staffing Pattern

Staff for A. A. Benesch

Staff Category	Normal	Proposed for 1971-72	Provided
Administration			
Principal	1	1	As Proposed
Administrative Intern	1 (1/2 time)	1 full-time Assistant Principal	1 Administrative Intern
Clerks	1 (full-time 1 (1/2 time)	3 (full-time)	2 (full-time)
Teachers			
Homeroom Teachers	13	19	As Proposed
Kindergarten Teachers	2	2	"
Child Development	1	1	"
Special Education Teachers	1	1	"
Cluster Teachers	0	8-1 for K-(4 1/2-day classes) 1 for Listening Post and Specials (2 classes) 1 for Gr. 1 (3 classes) 1 for Grs. 1 & 2 (3 classes) 1 for Grs. 2 & 3 (3 classes) 1 for Grs. 3 & 4 (3 classes) 1 for Grs. 4 & 5 (3 classes) 1 for Grs. 5 & 6 (3 classes)	"
Permanent Substitute Teacher	0	2	1
Permanent Cluster Substitute	0	2	As Proposed
Special Subject Teachers			
Art Teacher	2 days/week	5 days/week	"
Physical Ed. Teacher	3 days/week	1 for 5 days/week 1 for 1 day/week	" "
Vocal Music Teacher	2 days/week	5 days/week	"
Instrumental Music Teacher	1 1/2 days/week	1 1/2 days/week	"
Handicraft Teacher	2 days/week	2 days/week	"
Science Teacher	5 days/week	5 days/week	"
Aides			
Teacher Assistants	1 for Childhood Development	14-1 Pre-Kindergarten 2 for K (4 1/2-day classes) 1 for every 2 classes in Grades 1-6 (10) 1 for Science and Art	"

APPENDIX C (Continued)

Staff for A. A. Benesch - Continued

Staff Category	Normal	Proposed for 1971-72	Provided
Aides-Continued			
Community Aide	0	1	As Proposed
Shower Attendant	1	1	"
Nutrition Aides for Breakfast Program	5	7 (funded under Nutrition Program)	"
Supportive Service			
Guidance Counselor	0	1 (full-time)	"
Speech Therapist	1 1/2 days/week	2 1/2 days/week	"
Psychologist	1 day/month	2 days/month	"
Home-Curriculum Specialist	0	1 (full-time)	"
Medical Services			
Doctor	1/2 day/month	1/2 day/month	"
Nurse	1 1/2 days/week	1 1/2 days/week	"
Dentist	1/2 day/month	1/2 day/month	"
Dental Hygienist	1 1/2 days/week	1 1/2 days/week	"
Library Services			
Librarian	1	2	"
Library Aide	1	2	"

APPENDIX C (Continued)

Staff for Wooldridge

Staff Category	Normal	Proposed for 1971-72	Provided
Administration			
Principal	1	1	As Proposed
Administrative Intern	0	1	"
Clerk	1	2	"
Teachers			
Homeroom Teachers	6	9	"
Kindergarten Teachers	1	1	"
Special Education Teachers	2	2	"
Child Development Teacher	1	1	"
Permanent Substitute	0	2	"
Cluster Teachers	0	3 - 1 for Grs. 1 & 2 (3 classes) 1 for Grs. 3 & 4 (3 classes) 1 for Grs. 4, 5 & 6 (3 classes)	
Special Subject Teachers			
Science Teacher	2 days/week	3 days/week	"
Art	2 days/week	5 days/week	"
Vocal Music	2 days/week	2 days/week	"
Instrumental Music	1 1/2 days/week	1 1/2 days/week	"
Physical Education	2 days/week	4 days/week	"
Aides			
Teacher Assistants	0	8 (1 for every 2 classrooms)	"
Nutrition Aides for Breakfast Program	3	3 (funded under Nutrition Program)	"
Lunch Attendant	1	1	"
Child Development Project Aides	1	1	"
Community Aide	0	1	"

APPENDIX C (Continued)

Staff for Wooldridge - Continued

Staff Category	Normal	Proposed for 1971-72	Provided
Supportive Services			
Guidance Counselor	0	1 (full-time)	As Proposed
Home-Curriculum Specialists	0	1 (full-time)	"
Speech Therapist	1 day/week	2 1/2 days/week	1 day/week
Psychologist	1 day/month	2 days/month	As Proposed
Medical Services			
Nurse	1 1/2 days/week	1 1/2 days/week	"
Doctor	1 day/month	1 day/month	"
Dentist	1 day/month	1 day/month	"
Dental Hygienist	1/2 day/week	1/2 day/week	"
Library Service			
Librarian	1	2	1 librarian 1 visual literacy teacher
Library Aide	1	2	As Proposed

APPENDIX D

Rating Scale Used by Classroom Observers

NOTE: Percentages listed in the summaries refer to percentages of observations, not percentages of classrooms observed. Therefore classrooms may be counted more than once in the percentages listed.

MORE EFFECTIVE SCHOOLS

Individual Class Observation Report

PLEASE FILL IN ALL INFORMATION AND ANSWER ALL QUESTIONS

PART A

School _____ Observer _____

A. Approximate number of children in classroom _____ in group observed _____

MES - 19.36	MES - 11.6
Control - 27.82	Control- 19.06

B. Content of activity observed.

C. How many staff were working in the classroom? Who?

1. Regular classroom teacher
2. "Cluster teacher"
3. Teacher aide
4. Special staff. Indicate who:
5. Others (who)

	MES	Control
Regular Teacher Alone	35%	80%
Cluster Teacher Alone	2%	0
Special Staff Alone	7%	7%
2 or more Professionals	17%	3%
1 professional and aide	27%	10%
2 or more professionals and aide	12%	0

D. How many staff were working on the lesson?

1. Regular classroom teacher
2. "Cluster teacher"
3. Teacher aide
4. Special STaff. Indicate who:
5. Others (who)

	MES	Control
Regular Teacher Alone	67%	88%
Cluster Teacher Alone	8%	0
Special Staff Alone	6%	4%
2 or more professionals	7%	0
1 professional and aide	11%	8%
2 or more professionals and aide	9%	0

E. If a teacher assistant was present, how was she being used?

	MES	Control
1. Clerical assistant (grading papers, passing out materials, arranging bulletin board, etc.)	22%	21%
2. Assisting children at their seats while teacher presents lesson.	14%	14%
3. Working with small group	41%	21%
4. Tutoring on a one-to-one basis	15%	43%
5. Standing around or used chiefly as disciplinarian	4%	0
6. Other	4%	0

F. Define the student population relative to the cluster.

	MES	Control
1. Class was intact with all children present.	53%	75%
2. Some children were out in a different room with another teacher	28%	10%
3. Some children in the class were from another class in the cluster	18	0
4. Not Applicable	5%	15%

G. Has there more than one activity going on in the classroom at the same time?

Yes	No
MES - 71%	MES - 28%
Control - 47%	Control - 52%

Appendix D Continued

Individual Class Observation Report

PART 3

DO NOT MARK THESE PAGES. USE ANSWER SHEET.

1. Were "learning stations" evident in the classroom?

a. Yes	b. No
MES - 84%	MES - 16%
Control - 53%	Control - 47%

2. What amount of planning and organization was evident in this group's activity?

	MES	Control
a. Activity was exceptionally well-organized and planned.	9%	5%
b. Activity was above average in organization and planning	41%	25%
c. Average organization and planning	38%	62%
d. Below average in organization and planning	12%	6%
e. Little or no organization and planning evident	0	2%

3. How would you characterize the level of creativity and imagination on the part of the teacher?

	MES	Control
a. Extremely creative	1%	1%
b. Moderately creative	21%	1%
c. Average	56%	74%
d. Somewhat stereotyped	10%	11%
e. Very uncreative and stereotyped	10%	12%

4. If you rated the lesson as "moderately" or "extremely creative," please explain the basis for rating_____

_____

_____

5. To what extent did the teacher encourage independence of thought, interpretation and conclusion on the part of the children?

	MES	Control
a. Free expression of childrens' ideas was consistently encouraged and accepted	40%	22%
b. Free expression of ideas was accepted but not particularly encouraged	26%	32%
c. Expression of childrens' ideas was tolerated but emphasis was on "canned" responses	23%	24%
d. Regurgitation of "facts" was the rule; expression of childrens' own ideas was discouraged	11%	21%

6. What use of the child's background and experience was evident in this lesson?

	MES	Control
a. Consistent opportunities for child to relate lesson to his own experience and/or bring experience to lesson	20%	15%
b. Some opportunity for child to relate lesson to his experience and use experience in lesson	62%	51%
c. Lesson was remote from the child's experience	17%	33%

7. To what extent did the teacher make the object of the lesson clear to the children?

	MES	Control
a. Object of the lesson was very clear. Children knew what was expected.	64%	63%
b. Object of the lesson was fairly clear, but not entirely--some children didn't understand what the teacher was trying to accomplish.	28%	31%
c. Object of the lesson was muddy. Most children were confused and didn't know what the teacher was trying to accomplish.	7%	5%

8. To what extent did the teacher use a variety of methods and materials in her approach to a concept or task?

	MES	Control
a. Great variety used, concept approached from several angles	17%	11%
b. Some variety used	39%	35%
c. Little variety used	31%	41%
d. No variety	12%	14%

9. Taking into consideration the teaching aids available, (games, audio-visual equipment, charts, manipulatives, etc), to what extent were teaching aids utilized?

	MES	Control
a. Wide variety used	19%	5%
b. Some used	46%	38%
c. Little or no use of teaching aids	35%	57%

10. How effectively were these teaching aids utilized?

	MES	Control
a. Use was very effective	31%	13%
b. Somewhat effective	49%	68%
c. Ineffective	19%	18%

11. (Answer for MES schools only)
To what extent could the group activity observed have been carried through with a class size of 30-35?

	MES
a. Larger group size would have completely destroyed effectiveness	22%
b. Larger group size would have seriously impeded effectiveness	37%
c. Activity would have been somewhat less effective in a larger group	30%
d. Activity would have been just as effective in a larger group	9%

12. How would you rate teacher's adaption of response and materials to the number of students in the group?

	MES	Control
a. Excellent adaption to group size	22%	13%
b. Effective efforts made to utilize group size	39%	40%
c. Some effort made to adapt to group size	25%	33%
d. Little or no effort made to adapt to group size	13%	13%

13. Was ability grouping employed in the classroom? (Take into account whether some children from the class are out of the room with another teacher).

	MES	Control
a. Yes	72%	51%
b. No	27%	49%

14. How would you rate the amount of material covered?

	MES	Control
a. Outstanding	1%	2%
b. Better than average	28%	22%
c. Average	56%	62%
d. Below average	14%	12%
e. Extremely poor	0	0

15. If more than one staff member was working in the classroom, how effective was the organization and use of personnel in the classroom?

	MES	Control
a. Very effective distribution of tasks among staff in classroom	49%	27%
b. Moderately effective distribution of tasks among staff	38%	41%
c. Poor distribution of tasks	12%	31%

16. How would you rate the depth of instruction?

	MES	Control
a. Outstanding	6%	4%
b. Better than average	33%	32%
c. Average	42%	53%
d. Below average	17%	10%
e. Extremely poor	1%	0

17. How would you rate the lesson you have just seen, considering the quality of instruction?

	MES	Control
a. Outstanding	6%	3%
b. Better than average	40%	35%
c. Average	34%	40%
d. Below average	18%	19%
e. Extremely poor	1%	0

18. How would you rate the activity you have just seen, considering the children's interest and enthusiasm?

	MES	Control
a. Outstanding	10%	9%
b. Better than average	37%	26%
c. Average	35%	47%
d. Below average	15%	12%
e. Extremely poor	1%	3%

19. Did the lesson provide opportunities for participation of children?

	MES	Control
a. Opportunities consistently available and participation encouraged	63%	47%
b. Opportunities available but participation not particularly encouraged	20%	19%
c. Few opportunities available but participation not discouraged	11%	26%
d. Few opportunities available and participation discouraged	4%	6%

20. What was the overall participation of children?

	MES	Control
a. Every or almost every child was actively involved	56%	30%
b. More than half the class participated	22%	30%
c. About half of the children participated	11%	22%
d. Less than half of the children participated	7%	13%
e. Few children participated in the lesson	3%	4%

21. When appropriate, to what extent did the teacher encourage interaction among the students in teaching the lesson.

	MES	Control
a. Interaction was consistently encouraged and accepted.	37%	7%
b. Interaction was accepted but not particularly encouraged	25%	37%
c. Occassional interaction tolerated, but emphasis was on responding to the teacher	28%	41%
d. Interaction discouraged or frowned upon	9%	14%

22. How many children volunteered in response to teacher questions?

	MES	Control
a. Every or almost every child	22%	25%
b. More than half the children	38%	19%
c. About half the children	16%	27%
d. Less than half the children	14%	17%
e. Very few or no volunteering	9%	11%

23. How many children raised spontaneous questions or comments?

	MES	Control
a. Every or almost every child	2%	3%
b. More than half the children	14%	5%
c. About half the children	12%	12%
d. Less than half the children	24%	20%
e. Very few or no children raised spontaneous questions	47%	59%

24. How would you describe the teacher's handling of the children's spontaneous questions?

	MES	Control
a. Questions were welcomed and built on	43%	53%
b. Questions were answered cursorily	39%	38%
c. Questions were ignored	6%	5%
d. Questions were repressed	11%	3%

25. How would you rate the teacher's verbal communication with the children?

	MES	Control
a. Excellent	18%	6%
b. Better than average	43%	40%
c. Average	27%	38%
d. Below average	9%	15%
e. Extremely poor	2%	0

26. Would you characterize the activity, movement and noise in the classroom as:

	MES	Control
a. Chaotic	6%	6%
b. Quite noisy and active but all as part of learning activities	28%	16%
c. A busy hum	51%	49%
d. Like a crypt, controlled	14%	28%

27. How would you rate the degree of individual attention given the students by the teacher?

	MES	Control
a. Outstanding	17%	0
b. Better than Average	37%	26%
c. Average	32%	48%
d. Below average	12%	25%
e. Extremely poor	1%	0

APPENDIX E

Teacher Questionnaire

Appendix E - Teacher Questionnaire

Cleveland Public Schools
Division of Research
and Development
May, 1972

TO: Teachers in More Effective Schools

FROM: Derek B. Taylor, Division of Research and Development

RE: Evaluation of MES Program

As you know we have been monitoring the progress of the MES program since September. An important part of this effort is the observations and judgments made by teachers participating in the program. This questionnaire, which is being sent to all MES teachers, will give you an opportunity to express your reactions to the program. In completing it, please be absolutely frank about your feelings, for only through an honest appraisal of the program can steps be taken to insure its success. The questionnaire may be completed anonymously. PLEASE ANSWER ALL QUESTIONS except where inapplicable--e.g. Special Subject Teachers should not answer questions relating to cluster operation.

Please return the completed questionnaire via school mail to:

Derek B. Taylor
Division of Research and Development
Room 610
Headquarters

If more space is needed for your answers to some of the questions, use the back of the page.

RESPONSE KEY

1 - Strongly disagree
2 - Disagree
3 - Neutral
4 - Agree
5 - Strongly agree

Appendix E Continued

Question	Response (Circle One)	Comment
1. The purposes and goals of the MES Program are adequately defined.	1 2 3 4 5 2% 3% 14% 63% 18%	
2. The structure and organization of the MES Program are adequately defined.	1 2 3 4 5 8% 5% 17% 61% 8%	
3. The teaching methodology of the MES Program is adequately defined.	1 2 3 4 5 5% 12% 20% 57% 7%	
4. I understand my role in the MES Program.	1 2 3 4 5 4% 5% 7% 49% 35%	
5. The average MES class size of 25 pupils is small enough to allow for the individualization of instruction.	1 2 3 4 5 2% 5% 16% 45% 33%	
6. I have sufficient planning time built into my schedule.	1 2 3 4 5 8% 10% 13% 50% 18%	
7. I have adequate time and help to handle my record-keeping responsibilities.	1 2 3 4 5 7% 10% 14% 50% 19%	
8. My techniques and strategies for teaching have changed as a result of the MES Program.	1 2 3 4 5 -- 2% 16% 52% 31%	
9. I have sufficient freedom to innovate in my teaching.	1 2 3 4 5 2% 3% 13% 50% 32%	

RESPONSE KEY

1 - Strongly disagree
2 - Disagree
3 - Neutral
4 - Agree
5 - Strongly agree

Question	Response (Circle One)	Comment
10. The MES Program has led to more and improved contact between the school and community.	1 2 3 4 5 2% 12% 24% 40% 22%	
11. The frequency of discipline problems has decreased as a result of the MES Program.	1 2 3 4 5 5% 15% 42% 35% 3%	
12. My principal provides effective leadership in implementing the MES Program.	1 2 3 4 5 10% 7% 21% 45% 17%	
13. Effective leadership is provided to the MES Program by the MES Liaison Teacher.	1 2 3 4 5 8% 8% 41% 25% 17%	
14. Teacher involvement in decision making at my school is adequate.	1 2 3 4 5 6% 26% 19% 39% 10%	
15. Teacher inputs concerning the content and structure of the MES Program have been used adequately.	1 2 3 4 5 2% 10% 35% 44% 10%	
16. I can get teacher supplies when I need them.	1 2 3 4 5 12% 15% 18% 43% 12%	
17. The instructional materials available to me are varied enough to allow for a wide range of pupil abilities.	1 2 3 4 5 2% -- 17% 53% 28%	
18. Provision of equipment for my use is adequate.	1 2 3 4 5 2% 3% 7% 61% 27%	

RESPONSE KEY

1 - Strongly disagree
2 - Disagree
3 - Neutral
4 - Agree
5 - Strongly agree

Appendix E Continued

Question	Response (Circle One)	Comment
19. Considering their training, the teacher aides I work with do an effective job.	1 2 3 4 5 2% 3% 24% 50% 21%	
20. The teacher aides I work with need more training.	1 2 3 4 5 10% 19% 19% 38% 13%	
21. There is adequate communication between the administration and teachers in my school.	1 2 3 4 5 10% 18% 19% 45% 8%	
22. There is adequate communication between the teachers and the MnS Liaison Teacher.	1 2 3 4 5 13% 19% 31% 23% 15%	
23. There is adequate communication among the teachers in my school.	1 2 3 4 5 3% 28% 20% 43% 5%	
24. There is adequate cooperation between the administration and the teaching staff in my school.	1 2 3 4 5 7% 13% 22% 50% 8%	
25. There is adequate cooperation among the teachers in general.	1 2 3 4 5 2% 13% 26% 54% 5%	
26. There is adequate cooperation among the teachers in my cluster.	1 2 3 4 5 -- 5% 9% 60% 25%	
27. There is adequate coordination between the activities of the clusters and the special subject teacher.	1 2 3 4 5 -- 9% 21% 52% 18%	

RESPONSE KEY

1 - Strongly disagree
2 - Disagree
3 - Neutral
4 - Agree
5 - Strongly agree

Appendix E Continued

Question	Response (Circle One)	Comment
28. My cluster receives adequate attention and service from the MES Liaison teacher.	1 2 3 4 5 16% 14% 18% 38% 14%	
29. Teacher aides should be included in cluster meetings, at least periodically.	1 2 3 4 5 2% 2% 5% 54% 38%	
30. The concept of the cluster is a good one.	1 2 3 4 5 -- -- 5% 39% 56%	
31. The cluster approach is being correctly implemented in my school.	1 2 3 4 5 2% 5% 22% 40% 31%	
32. The cluster approach as implemented in my school has a positive effect on childrens' performance.	1 2 3 4 5 2% -- 25% 46% 28%	
33. My cluster is well organized.	1 2 3 4 5 -- 6% 20% 44% 30%	
34. Our cluster meetings are valuable and accomplish useful goals.	1 2 3 4 5 2% 2% 16% 46% 34%	
35. The MES Program provided adequate in-service offerings this year.	1 2 3 4 5 -- 17% 33% 27% 23%	
36. The MES inservice has been effectively conducted this year.	1 2 3 4 5 3% 19% 29% 29% 19%	
37. MES in-service training has been of benefit to me.	1 2 3 4 5 2% 16% 42% 16% 25%	

RESPONSE KEY

1 - Strongly disagree
2 - Disagree
3 - Neutral
4 - Agree
5 - Strongly agree

Question	Response (Circle One)	Comment
38. In-service training should be required for MES teachers.	1 2 3 4 5 10% 18% 15% 33% 25%	
39. The evaluation of the MES Program is being conducted in a fair and impartial manner.	1 2 3 4 5 2% 3% 36% 47% 12%	
40. There is adequate feedback to the teachers from the Division of Research concerning the results of the MES evaluation.	1 2 3 4 5 3% 13% 21% 43% 20%	

41. How do you feel about the MES Program as it now stands?

29% 1. Completely positive
53% 2. Strongly positive, but not completely
9% 3. Slightly positive
7% 4. Slightly negative
2% 5. Strongly negative, but not completely
--- 6. Completely negative

42. How many free periods a week do you have scheduled (counting cluster meeting periods)? →

Do you consider this adequate? Yes 65% No 35%

No. of Periods		% of Teachers
0	-	2%
1	-	--
2	-	--
3	-	5%
4	-	2%
5	-	79%
6	-	3%
7	-	4%
8	-	2%

43. Please estimate what percentage of your typical school week is spent in each of the following activities.

Activity	Percent of Time	
	Before MES	Now
1. Teaching	65.0%	69.9%
2. Planning	11.5%	16.4%
3. Extra curricular activities	2.7%	3.5%
4. Parent conferences	4.6%	5.5%
5. Non-teaching supervision of children (eg., hall duty, breakfast, etc.)	6.9%	1.3%
6. Non-teaching clerical work	9.2%	3.4%
TOTAL	100%	100%

44. Estimate the percentage of teachers in your school that really understand and follow the MES approach.

73.6%

If less than 100% what do you feel is the effect on the program?

45. What areas of inservice would be most useful to you next year? Please be specific.

46. What do you consider the most valuable aspects or elements of the MES Program? Why?

47. What do you feel are the major problems with the MES Program as it now stands?

48. If you were in charge of planning MES for next year, what needs or changes do you feel merit serious consideration?

49. Do you feel the MIS Program should be:

10% 1. Continued as is
43% 2. Continued with modifications
36% 3. Expanded with modifications
8% 4. Expanded as is
--- 5. Abolished
3% 6. Undecided

50. General Comments.

APPENDIX F

Achievement - MES vs. Control

Adjusted Mean Pre and Post Achievement Test Scores for MES and Control Schools at Grade 2 with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	MES	Control	MES	Control			
Word Meaning	19.30	20.50	17.63	15.20	2.43	11.21**	1 and 184
Paragraph Meaning	17.89	18.25	25.35	23.79	1.56	1.55	1 and 184
Arithmetic	36.21	36.33	---	---	---	---	---
Arithmetic Computations	---	---	23.20	18.36	4.84	25.66***	1 and 185
Arithmetic Concepts	---	---	17.53	14.04	3.49	20.79***	1 and 185
PLR	109.7	105.2					
			Reading Multivariate F = 6.24*				2 and 183
			Math Multivariate F = 18.21***				2 and 184

*p < .003
**p < .001
***p < .0001

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects. Stanford Primary I used as pre test and Stanford Primary II used as post test.

[a]The Stanford Primary I Achievement Test given as the pre-test in Grade 2 has only one arithmetic subtest. The scores from this subtest were used as the pre scores for the Computations, Concepts and Applications subtests in the Stanford Primary II which was given as the post test.

APPENDIX F Continued

Achievement - MES vs. Control

Adjusted Mean Pre and Post Achievement Test Scores
For MES and Control Schools at Grade 4
with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	MES	Control	MES	Control			
Word Meaning	9.93	11.81	16.86	15.25	1.61	3.34	1 and 161
Paragraph Meaning	17.37	18.35	23.47	22.39	1.08	.61	1 and 161
Arithmetic Computations	9.79	11.72	18.30	17.47	.83	.59	1 and 160
Arithmetic Concepts	8.19	11.46	15.09	12.30	2.79	10.17**	1 and 160
Arithmetic Applications	8.08	9.29	11.53	10.32	1.21	1.93	1 and 160
PLR	96.91	96.35					
			Reading Multivariate F = 1.68				2 and 160
			Math Multivariate F = 3.58*				3 and 158

*$p < .02$
**$p < .002$

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX F Continued

Achievement - MES vs. Control

Adjusted Mean Pre and Post Achievement Test Scores
For MES and Control Schools at Grade 6
with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	MES	Control	MES	Control			
Word Meaning	15.35	15.49	19.46	17.52	1.94	6.77***	1 and 191
Paragraph Meaning	20.03	20.50	26.74	25.31	1.43	2.01	1 and 191
Arithmetic Computations	11.42	12.49	16.46	17.95	-1.49	4.51*	1 and 190
Arithmetic Concepts	9.44	9.85	13.89	12.76	1.12	5.52***	1 and 190
Arithmetic Applications	10.12	11.32	15.14	14.08	1.06	2.53	1 and 190
PLR	98.54	97.05					
			Reading Multivariate F = 3.61**				2 and 190
			Math Multivariate F = 4.95****				3 and 188

*p <.04
**p <.03
***p <.02
****p <.003

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX G

Achievement - Sex x Treatment Interaction

Adjusted Mean Pre and Post Achievement Test Scores for MES and Control Boys and Girls with Results of Multivariate Analysis of Covariance

Grade 4

Subtest	Pre Scores (Covariates)				Post Scores				Interaction Least Square	Interaction Univariate F	df
	MES		Control		MES		Control				
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls			
Word Meaning	10.51	9.36	12.48	11.13	16.49	17.22	16.07	14.43	-2.37	4.37**	1 and 161
Paragraph Meaning	18.92	15.83	18.31	18.38	22.66	21.28	23.10	21.68	-3.04	1.86	1 and 161
PLR	94.23	99.60	95.20	97.49							
									Reading Multivariate F = 2.45*		2 and 160

*$p < .09$
**$p < .04$

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX H

Achievement - Boys vs. Girls

Adjusted Mean Pre and Post Achievement Test Scores for Boys and Girls at Grade 2 with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	Boys	Girls	Boys	Girls			
Word Meaning	19.27	20.53	16.58	16.26	.32	.35	1 and 184
Paragraph Meaning	15.68	20.46	23.90	25.23	-1.33	.52	1 and 184
Arithmetic[a]	35.68	36.86	---	---	---	---	---
Arithmetic Computations	---	---	19.69	21.86	-2.17	5.97**	1 and 185
Arithmetic Concepts	---	---	15.60	15.98	- .38	.18	1 and 185
PLR	104.5	110.4					
			Reading Multivariate F = 1.18				2 and 183
			Math Multivariate F = 3.00*				2 and 184

*$p < .052$
**$p < .02$

NOTE: Analysis was performed on post test scores with pre-test scores and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects. Stanford Primary I used as pre-test and Stanford Primary II used as post test.

[a] The Stanford Primary I Achievement Test given as the pre-test in Grade 2 has only one arithmetic subtest. The scores from this subtest were used as the pre scores for the Computations, Concepts and Applications subtests in the Stanford Primary II which was given as the post test.

APPENDIX H Continued

Achievement - Boys vs. Girls

Adjusted Mean Pre and Post Achievement Test Scores for Boys and Girls at Grade 4 with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	Boys	Girls	Boys	Girls			
Word Meaning	11.50	10.24	16.28	15.83	.45	1.75	1 and 161
Paragraph Meaning	18.62	17.11	22.88	22.98	-.09	1.15	1 and 161
Arithmetic Computations	11.08	10.43	18.20	17.57	.63	.72	1 and 160
Arithmetic Concepts	10.22	9.42	14.12	13.27	.86	1.94	1 and 160
Arithmetic Applications	8.94	8.44	11.29	10.55	.74	1.00	1 and 160
PLR	94.71	98.54					
			Reading Multivariate F = 1.11				2 and 160
			Math Multivariate F = .65				3 and 158

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX H Continued

Achievement - Boys vs. Girls

Adjusted Mean Pre and Post Achievement Test Scores for Boys and Girls at Grade 6 with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	Boys	Girls	Boys	Girls			
Word Meaning	15.48	15.37	18.99	17.99	.99	2.41	1 and 191
Paragraph Meaning	20.12	20.42	25.45	26.60	-1.16	.70	1 and 191
Arithmetic Computations	11.59	12.32	16.63	17.78	-1.15	2.86	1 and 190
Arithmetic Concepts	10.06	9.23	12.94	13.71	- .77	1.02	1 and 190
Arithmetic Applications	11.15	10.30	14.26	14.96	- .71	.11	1 and 190
PLR	97.79	97.79					
			Reading Multivariate F = 2.09				2 and 190
			Math Multivariate F = 1.45				3 and 188

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX I

Achievement - Benesch vs. Wooldridge

Adjusted Mean Pre and Post Achievement Test Scores for A. A. Benesch and Wooldridge Schools at Grade 2 with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	Benesch	Wooldridge	Benesch	Wooldridge			
Word Meaning	19.74	18.87	20.53	14.73	5.79	40.11**	1 and 184
Paragraph Meaning	17.31	18.47	27.02	23.68	3.34	5.35*	1 and 184
Arithmetic[a]	36.45	35.97	---	---	---	---	---
Arithmetic Computations	---	---	25.14	21.25	3.89	15.25**	1 and 185
Arithmetic Concepts	---	---	19.94	15.12	4.81	29.14**	1 and 185
PLR	103.7	115.7					
					Reading Multivariate F = 22.44**		2 and 183
					Math Multivariate F = 17.69**		2 and 184

*$p < .03$
**$p < .0002$

NOTE: Analysis was performed on post test scores with pre-test scores and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects. Stanford Primary I used as pre test and Stanford Primary II used as post test.

[a] The Stanford Primary I Achievement Test given as the pre-test in Grade 2 has only one arithmetic subtest. The scores from this subtest were used as the pre scores for the Computations, Concepts and Applications subtests in the Stanford Primary II which was given as the post test.

APPENDIX I Continued

Achievement - Benesch vs. Wooldridge

Adjusted Mean Pre and Post Achievement Test Scores for A. A. Benesch and Wooldridge Schools at Grade 4 with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	Benesch	Wooldridge	Benesch	Wooldridge			
Word Meaning	9.17	10.69	17.00	16.71	.29	.96	1 and 161
Paragraph Meaning	17.50	17.25	25.22	21.72	3.50	7.21**	1 and 161
Arithmetic Computations	9.99	9.58	21.44	15.16	6.28	13.34***	1 and 160
Arithmetic Concepts	8.99	7.39	16.70	13.49	3.21	16.79***	1 and 160
Arithmetic Applications	8.72	7.44	11.40	11.66	-.26	.19	1 and 160
PLR	97.21	96.61					
			Reading Multivariate F = 3.59*				2 and 160
			Math Multivariate F =11.81***				3 and 158

*$p < .03$
**$p < .009$
***$p < .0004$

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX I Continued

Achievement - Benesch vs. Wooldridge

Adjusted Mean Pre and Post Achievement Test Scores for A. A. Benesch and Wooldridge Schools at Grade 6 with Results of Multivariate Analysis of Covariance

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	Benesch	Wooldridge	Benesch	Wooldridge			
Word Meaning	16.41	14.30	16.83	22.10	-5.26	15.36***	1 and 191
Paragraph Meaning	20.96	19.11	25.97	27.51	-1.54	.64	1 and 191
Arithmetic Computations	11.42	11.13	16.05	16.87	- .82	1.40	1 and 190
Arithmetic Concepts	10.24	8.65	12.21	15.56	-3.35	15.98***	1 and 190
Arithmetic Applications	11.02	9.23	13.66	16.62	-2.97	7.86*	1 and 190
PLR	100.3	96.79					
			Reading Multivariate F = 7.70**				2 and 190
			Math Multivariate F = 6.47***				3 and 188

*$p < .006$
**$p < .0007$
***$p < .0004$

NOTE: Analysis was performed on post test scores with pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX J

Attendance Data

Means and Standard Deviations of Attendance Percentages from MES Schools and City-Wide

School	(Pre-Program) 1965-69		1969-70 (Year 1)		1970-71 (Year 2)		1971-72 (Year 3)	
	Mean	s.d	Mean	s.d.	Mean	s.d.	Mean	s.d.
MES	93.34	.96	92.21	2.24	91.72	2.06	92.19	1.16
City-Wide	94.11	.96	92.93	2.07	92.20	2.18	93.33	1.49

Independent t-tests between MES and City-Wide Attendance Data

Year	MES vs. City-Wide	
	t*	df
1965-69 (Pre-Program)	1.75	18
1969-70 - Year 1	.73	18
1970-71 - Year 2	.49	18
1971-72 - Year 3	1.91	18

*2-tailed test

Correlated t-tests* on Attendance Data for MES Schools and City-Wide

Schools	1965-69 (Pre-Program) vs. 1971-72 (Year 3)		1970-71 (Year 2) vs. 1971-72 (Year 3)	
	t	df	t	df
MES	3.28***	9	.69	9
City-Wide	2.73**	9	2.62**	9

*2-tailed test
**$p < .05$
***$p < .005$

APPENDIX K

Form and Level of Stanford Achievement Tests Administered In Year 1, Year 2 and Year 3 to Pupils in the Longitudinal Sample.

Level and Form of Test	Longitudinal Sample		Sample Size	
	Grade	Program Year	TES	Control
Post - Primary I, X	1	2	51	54
Pre - Primary I, X Post - Primary II, W	2	3		
Pre - Primary I, W Post - Primary II, W	2	1	48	58
Pre - Primary II, X Post - Primary II, W	3	2		
Pre - Intermediate I, X Post - Intermediate I, W	4	3		
Pre - Intermediate I, X Post - Intermediate I, W	4	1	33	61
Pre - Intermediate II, W Post - Intermediate II, X	5	2		
Pre - Intermediate II, X Post - Intermediate II, W	6	3		

APPENDIX L Continued

Achievement - MES vs. Control Longitudinal Data

Adjusted Mean Pre and Post Achievement Test Scores for MES and Control Children in the Longitudinal Samples with Results of Multivariate Analysis of Covariance

Grade 2-3-4

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	MES	Control	MES	Control			
Word Meaning	16.46	20.95	17.43	16.16	1.28	.63	1 and 95
Paragraph Meaning	13.25	18.64	24.87	23.14	1.73	.69	1 and 95
Arithmetic[a]	31.09	31.94	---	---	---	---	---
Arithmetic Computation	---	---	17.04	19.69	-2.65	3.91*	1 and 96
Arithmetic Concepts	---	---	14.61	14.23	.38	.00	1 and 96
Arithmetic Applications	---	---	10.99	12.52	-1.54	3.70*	1 and 96
PLR	100.2	103.2					
		Reading Multivariate F = .49					2 and 94
		Math Multivariate F = 3.23***					3 and 94

*p <.051
**p <.057
***p <.026

NOTE: Analysis was performed on Grade 4 post test scores with Grade 2 pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

[a]The Stanford Primary I Achievement Test given as the pre-test in Grade 2 has only one arithmetic subtest. The scores from this subtest were used as the pre scores for the Computations, Concepts and Applications subtests in the Stanford Intermediate I which was given as the post test.

APPENDIX L Continued

Achievement - MES vs. Control Longitudinal Data

Adjusted Mean Pre and Post Achievement Test Scores for MES and Control Children in the Longitudinal Samples with Results of Multivariate Analysis of Covariance

Grade 4-5-6

Subtest	Mean Pre Scores (Covariates)		Mean Post Scores		Least Square Estimate	Univariate F	df
	MES	Control	MES	Control			
Word Meaning	9.94	15.74	23.69	17.38	6.32	12.81***	1 and 83
Paragraph Meaning	15.66	17.98	29.45	25.28	4.17	3.15*	1 and 83
Arithmetic Computations	9.54	11.00	17.31	18.66	-1.34	.48	1 and 82
Arithmetic Concepts	9.41	9.79	14.80	13.56	1.24	2.59	1 and 82
Arithmetic Applications	8.62	9.19	16.55	14.93	1.62	1.82	1 and 82
PLR	95.61	95.62					
			Reading Multivariate F = 6.36**				2 and 82
			Math Multivariate F = 1.77				3 and 80

*$p < .08$
**$p < .003$
***$p < .0006$

NOTE: Analysis was performed on Grade 6 post test scores with Grade 4 pre test and PLR scores as covariates. Covariates shown are adjusted for unequal N. Post test scores shown are adjusted for unequal N and covariate effects.

APPENDIX L

Achievement - MES vs. Control Longitudinal Data

Adjusted Mean Post Achievement Test Scores for MES and Control Children in the Longitudinal Samples with Results of Multivariate Analysis of Covariance

Grade 1 - 2

Subtest	Mean Post Scores		Least Square Estimate	Univariate F	df
	MES	Control			
Word Meaning	18.00	16.63	1.37	1.08	1 and 96
Paragraph Meaning	25.07	26.68	-1.60	.60	1 and 96
Arithmetic Computations	22.67	19.08	3.59	5.91*	1 and 96
Arithmetic Concepts	17.90	15.15	2.74	5.44*	1 and 96
Metropolitan Reading Readiness Test (Covariate)	55.24	59.20	----	----	---
		Reading Multivariate F = 4.23*			2 and 95
		Math Multivariate F = 3.79*			2 and 95

*$p < .026$

NOTE: Analysis was performed on Grade 4 post test scores with Metropolitan Reading Readiness Test score as the covariate. Covariate shown is adjusted for unequal N. Post test scores shown are adjusted for unequal N and the effect of the covariate.