

DOCUMENT RESUME

ED 063 448

UD 012 452

AUTHOR Hoffman, Louis J.
TITLE Final Report of the Evaluation of the 1969-1970 Benjamin Franklin Cluster Program: Programs and Patterns for Disadvantaged High School Students. ESEA Title I.
INSTITUTION Teaching and Learning Research Corp., New York, N.Y.
SPONS AGENCY New York City Board of Education, Brooklyn, N.Y.
PUB DATE 70
NOTE 42p.
EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS Class Size; *Cluster Grouping; Curriculum Development; *Disadvantaged Youth; Guidance Services; High School Curriculum; *High School Students; Paraprofessional School Personnel; *Program Evaluation; Psychological Services; Reading Skills; Small Classes
IDENTIFIERS *Elementary Secondary Education Act Title I Program; Esea Title I Programs; New York City

ABSTRACT

The Cluster Program at Benjamin Franklin High School, funded under Title I of the 1965 Elementary Secondary Education Act, is designed to be a school within a school in which 249 ninth grade students attend classes in two separate clusters. Each cluster is formulated such that all students receive instruction from five teachers in classes whose maximal size is 30. These cluster students also receive the services of paraprofessional aides, a counselor, and a part-time psychologist. Laboratories and skills centers in reading and mathematics were specially developed for the cluster program, and three curriculum developers produced new materials in mathematics, science, and social studies. Evaluation procedures included (a) collecting and analyzing all the school record information available, (b) analyzing records and documents produced by the cluster program staff, (c) interviewing teachers, counselors, and the cluster program psychologist, (d) administering questionnaires to cluster students, and (e) observation of classroom functioning. (Author/JM)

FUNCTION # 923631

ED 063448

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRO-
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIG-
INATING IT. POINTS OF VIEW OR OPIN-
IONS STATED DO NOT NECESSARILY
REPRESENT OFFICIAL OFFICE OF EOU-
CATION POSITION OR POLICY.

FINAL REPORT
OF THE EVALUATION
OF THE

1969 - 1970

BENJAMIN FRANKLIN CLUSTER PROGRAM
PROGRAMS AND PATTERNS FOR
DISADVANTAGED HIGH SCHOOL STUDENTS

Evaluation of a New York City school district educational project funded under Title I of the Elementary and Secondary Education Act of 1965 (PL 89-10), performed under contract with the Board of Education of the City of New York for the 1969-70 school year.

UD 012452

TEACHING & LEARNING
RESEARCH CORP.

355 Lexington Avenue/New York, New York 10017/212-490-0197

BENJAMIN FRANKLIN HIGH SCHOOL CLUSTER PROGRAM

TABLE OF CONTENTS

<u>CHAPTER</u>		<u>PAGE</u>
	Acknowledgements.....	ii
	Table of Figures.....	iii
	Executive Summary.....	iv
I	Benjamin Franklin High School Cluster Program....	1
	Cluster Program: 1969-1970.....	2
	Organization of Cluster Program.....	3
II	Findings:.....	4
	Population and Samples.....	4
	Perceptions of the Faculty.....	4
	Impact on Curriculum.....	5
	Cluster Program and Students' Ability Level.....	5
	Impact on Achievement and College Entrance.....	6
	Development of Materials.....	7
	In-Service Teacher Training.....	8
	Perceptions of the Psychologist.....	9
	Perceptions of Guidance Counselors.....	9
	Perceptions of an Outside Mathematics Curriculum Special- ist.....	11
	Evaluation.....	12
	Recommendations.....	13
	Conclusions.....	14
	Perceptions of Students.....	17
	Performance Data.....	19
	School Attendance.....	19
	Tardiness.....	20
	School Grades.....	20
	Standardized Achievement test scores.....	21
	Reading Achievement.....	22
	Mathematics Achievement.....	25
III	Conclusions and Recommendations.....	27
	Conclusions.....	27
	Recommendations.....	28
Appendix A:	Questionnaire for Cluster Faculty.....	30
Appendix B:	Responses to the Question: "What did you like least about the Cluster Program?".....	31
Appendix C:	Responses to the Question: "What did you like best about the Cluster Program?".....	33
	Evaluation Staff.....	35

ACKNOWLEDGEMENTS

The Teaching & Learning Research Corp. expresses its appreciation for assistance given in the evaluation of this project. First to the staff of the Bureau of Educational Research of the Board of Education of the City of New York - Former Assistant Superintendent, Dr. J. Wayne Wrightstone; Acting Director, Dr. Samuel D. McClelland; and Acting Assistant Director, Dr. George Forlano.

Second, to the office of High School Projects, especially to Miss Ann Braunstein and Miss Mary Hamilton.

Third, to the Administrative Staffs of the school in which the project operated. And finally, with greatest appreciation to the staff and participants of the Benjamin Franklin Cluster Program, especially Mr. Carl Doerner.

BENJAMIN FRANKLIN HIGH SCHOOL CLUSTER PROGRAM

TABLE OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
1	Organization of Cluster Program.....	3
2	Frequency Distribution of Standardized Reading Achievement Test Scores for Cluster Students February 1970.....	22
3	Frequency Distribution of Standardized Reading Achievement Test Scores for Cluster Students February 1969.....	23
4	Frequency Distribution of Standard Reading Achievement Test Score Gains from February 1969 to February 1970 (Grade Equivalent Units).....	24
5	Standardized Distribution of Mathematic Achievement Test Scores for Cluster Students, February 1969.....	26

BENJAMIN FRANKLIN HIGH SCHOOL CLUSTER PROGRAM

EXECUTIVE SUMMARY

The cluster program at Benjamin Franklin High School commenced operation during the 1967-1968 school year and has now completed its third year. The cluster program is designed to be a school within a school in which two hundred and forty ninth grade students attend classes in two separate clusters. Each cluster is formulated such that all students receive instruction from five teachers in classes whose maximal size is thirty. These cluster students also receive the services of paraprofessional aides, a counselor and a part-time psychologist. Laboratories and skills centers in reading and mathematics were specially developed for the cluster program, and three curriculum developers produced new materials in mathematics, science, and social studies.

Evaluation Objectives

The evaluation study attempted to assess:

1. Whether new education materials and methods have been developed.
2. The quality and usefulness of these materials.
3. Whether the cluster program is equally suitable for groups of differing ability.
4. The extent to which students' grades and rates of college bound admissions are influenced by the cluster program.
5. The appropriateness and effectiveness of the newly developed materials to the general students at Benjamin Franklin High School.
6. Whether the cluster program was able to reduce the disparity in reading level which existed between the cluster students and the norm group.
7. The effect of the in-service training on the faculty in regard to their understanding of the needs and problems of the cluster students.

These evaluation objectives were achieved by a) collecting and analyzing all the school record information available, b) analyzing records and documents produced by the cluster program staff, c) interviewing teachers, counselors and the cluster program psychologist, d) administering questionnaires to cluster students, e) observation of classroom functioning.

The main findings of this evaluation were:

1. Students view their cluster teachers as having more interest in their problems and counselors as giving more help than those teachers and counselors previously encountered.
2. Student's school grades during 1969-1970 were lower than those achieved during the 1968-1969 school year.
3. The student's standardized test scores in reading changed an average of .79 grade equivalent units.
4. Absenteeism for cluster students decreased from an average of forty-seven days during 1968-1969 to an average of thirty-six days during 1969-1970.
5. Forty-six students were recorded as never being late for school during 1969-1970. Only twenty-three of these students achieved such a record during 1968-1969.

The major conclusions of this study are:

1. Most teachers, students and other persons in the Cluster Program feel quite strongly that the program is providing valuable assistance to students, and that to a great extent, the program is accomplishing its goals.
2. New curricular materials are emerging as a result of the Cluster Program.
3. The Cluster Program is not assisting many students to enter the College Bound Program as originally intended. This is not viewed by the teachers, however, as an important failure of the Cluster Program.
4. Most teachers believe that the rate of development of new materials in the Cluster Program for use throughout Benjamin Franklin High School is not proceeding as originally expected.
5. The contribution of the Cluster Program to the in-service training of teachers is viewed as valuable by most teachers in the program.
6. The psychological services originally intended for the students are not being completely provided for. However, the psychological services which were provided were valued by most students and teachers.
7. Some students would like to have a slightly greater emphasis given to academic achievement.
8. Attendance patterns for those students in the Cluster Program are slightly better than those for other students in the same school.
9. Tardiness appears to decrease as a result of attendance in the Cluster Program.
10. The Cluster Program has a positive effect on the reading achievements of students.

RECOMMENDATIONS

1. The major recommendation of the evaluation staff of Teaching & Learning Research Corp. is that the Cluster Program be continued. It is also suggested, that if possible and if funds are available the Cluster Program be extended to the 10th grade.
2. Should be given greater attention in the in-service training program to the development of teaching materials, particularly in the area of reading.
3. Counseling and psychological services should be maintained at a level, at least equal to those offered in the 1969-70 school year. If possible, additional professional services should be added.
4. In accord with apparent student desires, perhaps a slightly greater emphasis can be placed on academic areas such as reading skills.

Section I

BENJAMIN FRANKLIN HIGH SCHOOL CLUSTER PROGRAM

The Cluster program has now completed its third year. The program was planned originally by the Franklin Improvement Program Committee (FIPC) which was formed in October 1966 to generate solutions for some of the academic problems which existed at the Benjamin Franklin High School.

Gladys Rothbell¹ summarized the basic philosophy underlying the original 1967-1968 program as follows:

"The theoretical foundation for the structuring of the program was derived from the experiences of some of the teachers in running a summer program at Benjamin Franklin High School. They felt strongly that the summer school reflected a much more positive quality in student attitudes and in pupil-teacher interaction than was evident in the winter session. The summer school contained only a few hundred students, and as a result, teachers as well as supervisory staff got to know all students by name. It was the feeling of the teachers that the factor of small group size was an important determinant of the overall positive summer school atmosphere. They saw participation in a small school to a few hundred students as a qualitatively more desirable and less alienating experience for students than being a part of the normal Benjamin Franklin student body of over 3,000 students.

The idea for the cluster program was, therefore, essentially an attempt to replicate the quality of smaller-group interaction during the regular school year. This was to be done by creating a small school within a larger school. Students in the program were to be organized into "clusters" of eighty students each, which were to operate as largely autonomous units. Each cluster was to have four classes of twenty students and its own teaching staff and ancillary services. Provisions were to be made for increased interaction between the teachers and the students in each cluster".

A cluster was originally conceived to be a group of twenty ninth grade students who would attend classes together in five major subject areas. The cluster would not only stay together for the school day, but would also receive the benefits of an individualized program, increased guidance services, medical and dental services, and increased attention to the world of work.

When finally funded however, medical and dental services were not available and the scope of the program was reduced from the entire ninth grade to three hundred and twenty students who were selected mainly from students who were pursuing the "general course" program. Twenty teachers were selected to serve in the four clusters which were formed.

During the second year, several new approaches were tried in the curriculum areas of mathematics, social studies, and science, and innovations in teaching provided the focus for the program. It was at this point that the number of clusters were reduced to two and class sizes became average for the school.

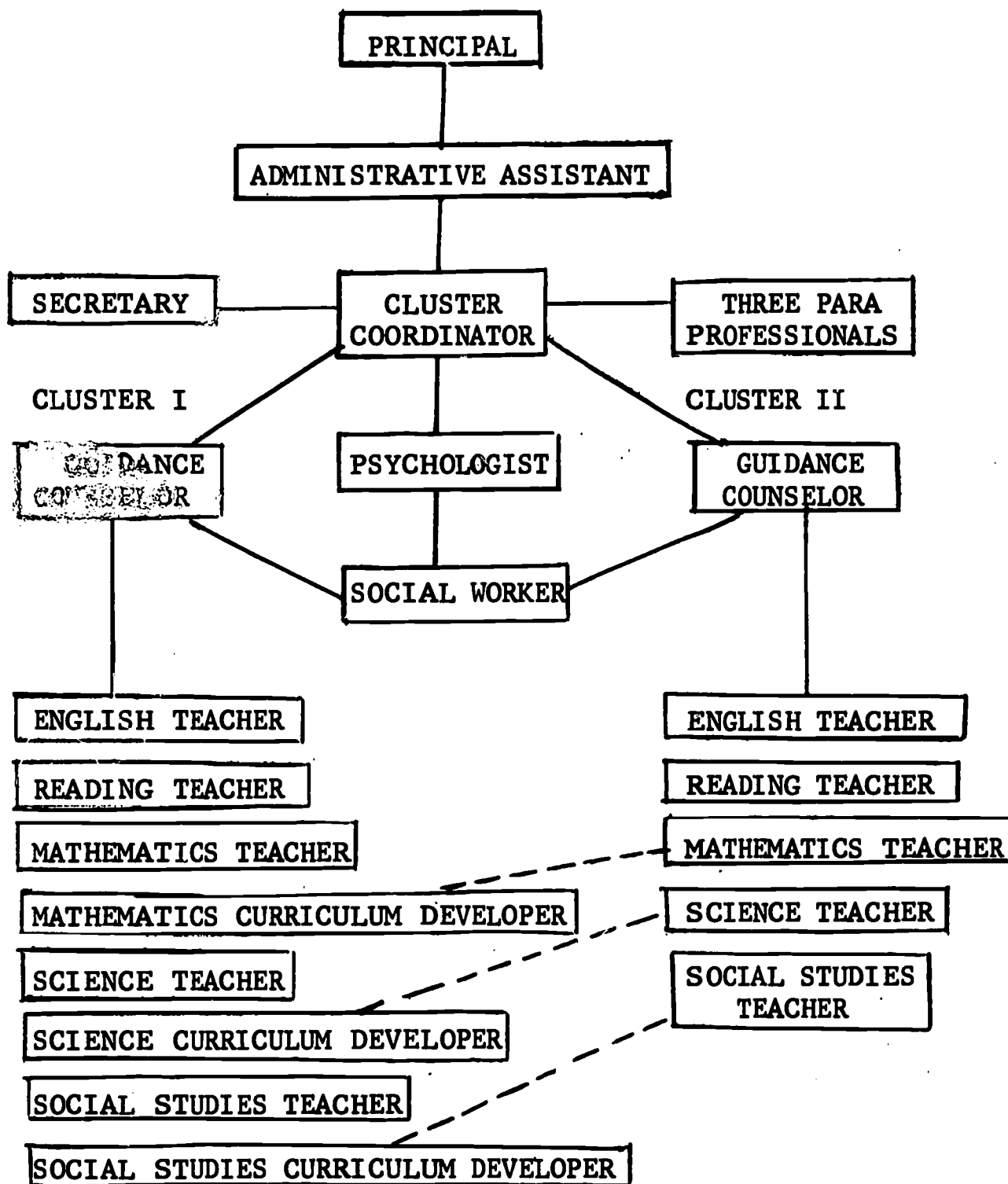
CLUSTER PROGRAM: 1969-70

In the 1969-70 school year three curriculum developer positions, and two educational assistant positions were added. A mathematics laboratory and skills center were also developed which offered more individualized instruction. A reading laboratory and skills center was opened during the midterm period. In addition, a narcotics education unit, and an environmental studies curriculum were developed.

¹Gladys Rothbell. Benjamin Franklin High School Program, The Center for Urban Education, December 1968.

The organization of the school as of February 1970, is displayed in figure I.

Figure I. ORGANIZATION OF CLUSTER PROGRAM



SECTION II

FINDINGS

POPULATION AND SAMPLES

Cluster I was composed of average students of Benjamin Franklin who generally had fairly low reading abilities. Cluster II was composed of three groups. Group one contained students which were just below the ability levels of students in the College Bound Program. Group two students were similar to students in Cluster I while group three was composed of even poorer readers.

The original class size of thirty was reduced somewhat by February at which time ninety seven students were enrolled in Cluster I, and ninety students were enrolled in Cluster II.

All the students served as the sample for this study. In June 1970, records of 121 students were obtained. These came from the list of 188 students who were enrolled in February 1970. All students present in class during the early part of June were administered a questionnaire about their attitudes toward the program.

All the teachers responded to a questionnaire regarding how closely they felt the program had come to meeting its goals. In addition, other personnel in the administration were also interviewed.

PERCEPTIONS OF THE FACULTY

The responses of faculty to the evaluation staff of Teaching & Learning Research Corp. are grouped under the following categories: impact on curriculum innovation; relevance to students with greater and lesser academic abilities; impact on student achievement levels and preparation for college; development of materials; service to poor readers; and assistance in in-service teacher training.

Impact on Curriculum

Most of the teachers felt that the goal of generating new curricula was met quite well. They were particularly impressed with the materials in science and mathematics, but thought that more emphasis was needed on reading. As these teachers stated it:

"I made a significant start in developing units on drugs, sex, space science, the environment, leaves, and animal behavior. I was aided by the curriculum developer in science in several of these areas. Materials prepared last year in science were often of assistance, although only seldom did I use the prepared sheets. Next year, I hope to continue developing materials. My conclusion: reasonably successful."

"Curricula materials from every major and many not so major science curriculum projects have been amassed for reference and application. New curriculum materials evolved daily as units were developed in the classroom. In addition to the usual tools of science, we have introduced tape recorders, polaroid cameras, and typewriters as instruments that assist in data collection and organization of data. Some use of the video tape has been used to explore the use of the technology in teaching science."

"I had an opportunity to try out a new method of teaching phonics which I found very successful. From the reports and observations, I feel great things were done in the math and science areas. The materials used in social studies were also challenging."

Cluster Program and Students' Ability Level

When teachers were asked whether they could cut across the range of ability within the ninth grade to see if the Cluster Program is equally applicable to the brighter students and those of lower academic ability, they responded:

"There are ability ranges in every class. Our objective was to have materials and problems for all students, which we in fact did have. I do not think it is a question any longer of whether or not the program is applicable to bright or non bright students rather it is a question of better matching the Cluster teaching style with students preferred learning styles, that will make a difference in the long run in terms of engaging students."

"I think the Cluster Program in general, and my class in particular, has dealt more successfully with the slow learner. In reading especially, I had had the tendency to let brighter students work on their own while I concentrated on the slower students. Also, there are materials in the reading room for brighter students. However, with more time and a better knowledge of students' capabilities, a challenging program could be worked out in coordination with the English teacher and with materials from the English department."

"Of the range of abilities, I found difficulty in providing challenges that was equal to each student's ability. I tried to make the reading level of materials very simple, and kept away from excess verbalism, symbolism, and abstract reasoning generally. What I did not attempt, but will attempt next year, is to use materials on the same topic on various levels of challenge. I fear grouping of students in formal ways, however, I don't want to embarrass any student or create artificial barriers."

It appears that the teachers feel that allowing the bright students to work at their own pace and concentrating on the poorer students is one way of coping with individual variation. On the basis of interviews, it also seemed to the evaluation staff of Teaching & Learning Research Corp. that the teachers believe that the Cluster Program is especially helpful to students who are able to transfer into the college bound program.

Impact on Achievement and College Entrance

The teachers were also asked whether they felt that the intense relationships and additional services would improve students grades and allow his admission into the college bound program which existed for the tenth grade.

The responses of the teachers were not unanimous. On the one hand many believed that the increased services were valuable in general, but most felt that even with these services, most students would not attain a level sufficient to permit entrance into the college bound program.

Some typical responses are:

"I don't think this has been a purpose of the program. It sounds extremely ambitious. If 15 of the 200 reached College-Bound this year, it was not as a result of improvement as of discovery of hidden talent. Cluster and college bound programs are encouraging to students, but the preparation for a meaningful life is more nearly a goal of the program. In any event, such goals can hardly be measured in a year."

"My observations of students have led me to believe the extra support given by the Cluster Program is essential to develop student confidence and motivation which is in turn, essential to success in the tenth grade and the future."

"I have no data comparing grades of Cluster and non-cluster students, nor any academic performance comparisons at all. I think it can be said fairly that the relationships between students and teachers have improved attitudes and possibly performance (as a result of relaxation of tensions). I would not recommend more than a handful of Cluster students to college bound. Cluster did not prepare students consciously or unconsciously, for a rigorous academic course of study."

Development of Materials

Another goal of the program was to provide materials for the rest of the students at Benjamin Franklin High School. Most teachers felt that this goal was not being reached, although, in principle it could have been. As one teacher phrased it:

"I believe the Cluster Program is applicable for providing materials, but it hasn't been done yet. Very little has been done along these lines."

Other teachers felt that while material preparation had been accomplished to some degree, this accomplishment was not due to the nature of the Cluster Program, and that the interchange of ideas was a function of the staff members involved.

Service to Poor Readers

Another goal of the Cluster Program was to demonstrate that subject teachers could serve the poorest readers in the ninth grade by providing teachers with more knowledge about the student and his problems.

On the basis of interviews it was concluded that the teachers feel that the small classes assisted them, but, that the program could make more progress in this area. As two teachers put it:

"I believe serving the poor readers is a very basic goal. I feel, however, that each child in this group should have a social study and psychological testing. For this group to remain in a school situation with all that the poor performance and failure means, may indicate a high degree of motivation."

"The fact that we know who our non-readers are in itself says something for Cluster. These students need individual attention in a way that the rest of the school has not begun to understand, and we are only beginning to approach it ourselves."

In-service Teacher Training

In assessing whether the cluster program assisted in the in-service training of teachers, some teachers mentioned that the curriculum development personnel could have been more effective in transmitting information to other teachers. Others felt that more communication between clusters would have been helpful. Most teachers, however, felt that some communication had been established, and that discussions and "encounter type" sessions had proved valuable to them in providing a common focus for the program. These experiences seemed to have the flavor of ad hoc meetings and a formal in-service program has not been entirely established.

PERCEPTIONS OF THE PSYCHOLOGIST

During the school year 1969-70, the school psychologist devoted half time to the Cluster Program and half time to the rest of the building. In practice, this balance resulted in less than the originally planned apportionment of psychological services to the Cluster Program. The psychologist's duties included a weekly group meeting with both Cluster staffs to discuss particular students and their problems, and provide a sensitivity training to improve the mental health of the total group of faculty and students. The psychologist met students on an appointment or a drop-in basis. However, these individual sessions were limited to just Cluster II, because of a shortage of time. He reported approximately 25-30% of his time was spent in individual counseling, and approximately 40% with group counseling of the Cluster II classes. These students were seen during a section period and a regular class period, either in total sections or in groups of approximately 15.

One of the objectives of the Cluster Program, and therefore that of the psychologist, was to move some of the Cluster students to the college bound group. Some 10 to 20 students qualified for this movement. However, many of these students were not admitted to the college bound program because of lack of space.

The psychologist also reported that there were fewer problems of acting out this year than last year, and cited as a probable cause that the teachers were more attuned to the students problems.

He also reported that some students in the Cluster Program behave in a more deviant fashion when not with their cluster teachers. One instance of this was the unruly behavior of cluster students when being monitored by another teacher during a reading exam.

PERCEPTIONS OF GUIDANCE COUNSELORS

The Guidance counselors provided a wide range of services for the program. In addition to counseling students, the counselors provided scheduling assistance and grade advisement

and served as disciplinarians at times.

The counselors felt that the major asset of the Cluster Program was the intimacy between counselors, faculty and students.

As far as their own role was concerned, they felt that they were occasionally put in an ambivalent position because of the overlapping roles that they were forced to play. The time expended on these other activities interfered a great deal with their counseling functions. However, they also felt this centralization of functions was one of the assets of the Cluster Program.

PERCEPTIONS OF AN OUTSIDE MATHEMATICS CURRICULUM SPECIALIST

The evaluation of the mathematics curriculum is based in part, on interviews with the mathematics curriculum coordinator Mr. Allen Odden. Mr. Dennis Moscowitz and Mr. Marc Prensky provided a candid summary of the experiences with teaching the materials prepared for the program. The second major source of information was gathered from a careful examination of the materials used in the program during the year.

The Curriculum:

The goals of the curriculum as stated by Mr. Odden in the order of importance are:

- 1) To provide the students with an enjoyable and successful experience in mathematics.
- 2) To maximize individual attention and instruction.
- 3) To reinforce and extend arithmetic skills.

The curriculum delineates two major areas of activity, arithmetic skills and mathematical experiences. The major themes that make up the mathematical experience are units on measurement, graphs, estimation, and informal geometry.

The curriculum is still in the formative stages and as such cannot be identified as being on any well known curriculum development project. The curriculum is designed to be non-sequential and each unit is independent of each other. The loose structure is intended to provide for greater flexibility and adaptability. It's open-ended construction allows for the addition of new units of work at any point in the program. The curriculum makes extensive use of the ideas of Dienes and Piaget.

Mr. Odden and his colleagues have employed an interesting variety of manipulative materials which include geo-boards, Dienes' multibase blocks, cuisinaire rods, calculators and tanagrams. The written material is designed to individualize instruction. Each activity sheet contains simply stated directions, and is key to a ref-

erence page in the text or is completely self-contained. The emphasis is on having the student work independently at his own rate.

The primary rate of instruction places the teacher in the role of a director and prescriber of educational activities. All instruction (with the assistance of para-professionals) is carried out on a one to one basis. The teacher has complete freedom to experiment, revise and devise imaginative materials and techniques. To maintain and extend skills, the student is given a series of short projects covering the operations with whole numbers through fractions and mixed numbers. The student is presented for placement and post-tested for evaluation.

Field trips provide for a break in the routine and serve as a vehicle for social growth. They are spontaneously organized and recreational in nature.

Evaluation:

The curriculum is fluid enough so that constant revision and empirical refinements are possible. However, there is the risk that the end product could become a disconnected set of activities whose major function is to keep the students busy. The present staff is highly motivated, enthusiastic and have expressed their confidence in Mr. Odden's ability to continue the program on its present course.

The mathematical experience in the form of manipulating geo-boards, mathematical games and the like are imaginatively used, but this is not sufficient. One notices quickly that the curriculum fails to meet the practical needs of the student. There is little or no attempt to capitalize on and incorporate the experiences of the students into the overall curriculum plan. The field trips are primarily recreational in nature and are not designed to relate to the students' classroom experiences. Hence the rich resources of the outside community are left virtually untapped.

The mathematical content of the curriculum ranges from the third grade level to the lower seventh grade level. In view of the wide range of individual differences in the cluster population, I would say the program is weak in the area of mathematical skills, concepts and understanding that can be accomplished by the students. The program makes no provision for the student who might aspire to an education beyond the requirements of a general diploma.

The method of instruction is well suited for carrying out the goal of individualizing instruction. However, the exclusive use of this single mode of instruction deprives the student of the growth in communication and socialization that accrues from small group activity. Furthermore, there are many topics that can be more effectively learned in small groups, i.e., measurement, and discoveries in geometry. Fortunately the staff recognizes the need to vary the method of instruction.

The effectiveness of the program in terms of materials and methods used is evaluated by means of feedback from the students. Feedback is accomplished by questionnaire and is the only instrument devised for internal evaluation. Teacher evaluation is superseded by the desire to maintain teacher morale, therefore, no formal procedures have been employed for this purpose. Students are given a pre-test and a post-test at the beginning of the term and periodically thereafter. These tests are essentially abridged versions of the New York City Arithmetic Computation Test. It is clear to me that evaluation in all areas, internally and externally, is in need of expert attention.

Mr. Odden, the mathematics coordinator, is a highly competent person who has earned the respect of his colleagues by his productivity, creativity, enthusiasm and willingness to work side by side with his teachers in and out of the classroom. Both math teachers agree that Mr. Odden is an excellent resource person who infuses the program with rich ideas. Above all, he listens to his teachers and is willing to learn from their experiences.

Recommendations:

- 1) The aims and goals of the curriculum should be brought in to better alignment with the needs of the student and the real world that he is going to face.
- 2) The curriculum should be structured to the extent that the directions necessary for an on-going program in mathematics are clearly defined in terms of vocational, academic and social goals appropriate for the students of the program.
- 3) The mathematics content of the curriculum should be upgraded by providing enrichment materials

and activities for each unit.

- 4) A multi-methods approach is strongly recommended to exploit the potentials of small group activities and instruction.
- 5) Every effort should be made to build reading skills and to correlate the mathematics with the science and social science programs.
- 6) A progress report or some other action for informing and involving the parents of the program and community leaders, should be undertaken as an on-going part of the program.
- 7) The mathematics program should be evaluated at least four times a year by an outside agency with a view toward suggesting improvements.
- 8) Field trips and mathematics should be combined as instruments for exploring and learning about the community.

Conclusions:

The mathematics curriculum presently in operation is student centered and activities oriented. The role of the teacher has been redefined in keeping with the most current educational research. The staff is committed and the administration is supportive. Once the nexus between the curriculum and the real needs of the ghetto students has been made, the program should flourish.

Harvey J. Walker
Department of Mathematics
Education
Queens College, CUNY
Flushing, New York

PERCEPTIONS OF AN OUTSIDE SCIENCE
CURRICULUM SPECIALIST

The Science Clusters Program consists of two sections of non-academically oriented students. These classes are taught by either a regular classroom teacher or by the science cluster coordinator. Of the two regular teachers, only one appears to be trained specifically in science. The coordinator is currently enrolled in a doctoral program in Science Education at Teachers College, Columbia University and has taught both in Africa and the United States. He has also worked with and been trained in the Elementary School Science (EES) and Earth Science Curriculum Projects (E.S.C.P.)

The program is designed to present science in an interesting and meaningful manner to non-academically oriented and generally poorly motivated students. Mr. Sherman, the coordinator, is not attempting to develop new materials for this program, but rather to implement and modify (if necessary) materials from existing science projects to meet the needs of these students. He provides group leadership and training in the use of these materials for the one non-science trained teacher. It is important to note that the two teachers do not present the same program or materials to their classes. Freedom of choice on the part of the classroom teachers appears to be the rule. Lessons and units which appear to be particularly successful with one cluster, however are shared and made available in a rather loosely designed program.

The Science Cluster Program works independently from the regular Science Department at the High School. Mr. Sherman meets irregularly with the chairman of the Science Department. The chairman indicated his general support for the philosophy and approach of the cluster program.

Mr. Sherman also coordinates the purchase of the materials and supplies for the program. While the quantity of equipment is adequate, he finds that many students resent the inexpensive, childlike quality of the project materials. This, he feels, encourages a sense of disrespect for the program on the part of the students. For example, while they may not be prepared to use expensive microscopes, they will not make serious work of simplified wood and plastic substitutes.

Neither of this year's Science Cluster teachers is returning for the 1970-1971 school year. The coordinator

will provide the only line with the continued development of this program which he defines as still being in the experimental stage.

It is difficult to assess the academic success of the program. However, based upon the classroom observation and discussion with Mr. Sherman, there appears to be considerable merit to the philosophical and pedagogical approach of the program. Further, a review of the materials employed and the results of their use attests to both their suitability and appropriateness.

SUMMARY

1. Program does not develop new materials, but rather draws on a variety of existing programs for what it hopes will be a unique and suitable course of study.
2. Each cluster works independently and classroom decisions are ultimately the responsibility of the teacher. Mr. Sherman attempts to coordinate the materials, and acts as a consultant to the two science teachers whose backgrounds vary considerably.
3. While equipment and supplies are available in sufficient quantity, some of it has been designed for use in lower grades and has been found to be unsuitable.
4. Philosophical approach, level of difficulty of subject matter, and the manner of presentation appear to be most suitable for these students

Phillip White, Ed. D.
Assistant Professor
Science Education
Queens College, CUNY
Flushing, New York

PERCEPTIONS OF STUDENTS

Table I contains the proportions and responses of cluster students to a series of questions dealing with their reactions to various elements of the cluster program.

Table I. Responses of students to various elements of the Cluster Program.

	PERCENT
1. Compared with the teachers you have had in the past, do the Cluster teachers show:	
a) less interest in you and your problems	16
b) the same interest in you and your problems	32
c) more interest in you and your problems	52
2. Compared with guidance workers you have had in the past, do the Cluster psychologists and guidance counselors give you:	
a) less help than you've had in the past	3
b) the same help you've had in the past	18
c) more help than you've had in the past	79

3. Do you think that the worksheets and materials you used in the Cluster program would be:	
a) of no help for non-cluster students	9
b) of some help for non-cluster students	52
c) very helpful for non-cluster students	39
4. As far as your reading is concerned, do you think that the Cluster program:	
a) didn't help me improve that much	11
b) helped me improve a little	48
c) helped me improve a lot	41
5. Did you find that subject teacher helped you improve in reading?	
a) only my reading and English teacher	25
b) most of my subject teachers	50
c) all of my subject teachers	25

The students responded quite favorably to all the aspects of the program. Fifty-six percent thought that the teachers showed more interest in them than had teachers of the past.

This compares with only sixteen percent who felt that Cluster teachers showed less interest than past teachers.

When asked to compare psychologists and guidance counselors with those encountered in the past, the students responded even more positively. Seventy-nine percent said they had been given more help, while only three percent felt they were given less help.

The worksheets and materials developed in the Cluster Program were viewed as positively very helpful for non-cluster students while only nine percent felt that these materials would be of no help to non-cluster students.

Reactions by the students to the reading programs were also quite positive. Forty-one percent said that the program helped them "improve a lot", while forty-eight percent thought the program helped them improve "a little".

Correspondingly, seventy-five percent of the students found that most or all their subject teachers helped them improve in reading, and only twenty-five percent found that only their reading and English teachers were instrumental in helping them improve.

Asked what they liked least and best about the Cluster Program, the students produced two separate conflicting views.

Many students felt that the work was too easy, and in addition they did not receive any homework. Yet on the opposite side, the trips were by far, cited as the most liked aspect of the program, and these trips did not entail the academic features of the homework. The trips placed more emphasis on occupational and cultural awareness. In other words, the trips are not usually construed to be part of the academic program.

There were, however, students who did not like the trips, particularly when they fell on rainy days.

Some students in the Cluster Program felt that their teachers weren't teaching them anything, and others felt that the school day was too long.

When asked whether the classwork was hard or easy, twenty-five percent thought it was easy, while only five percent thought it was hard. In addition, slightly over sixty percent classified their classwork as average or boring, and forty percent viewed their teachers as not very strict.

Yet, overwhelming proportions viewed their teachers as "friendly" and giving "lots of help" and they characterize the program as "helpful", and a place where they are "free to express themselves".

The picture strongly emerges that the students feel psychologically comfortable with their teachers, psychologist, and counselors, and the teachers and counselors show a great interest in their problems, but that there is some yearning toward a more academic program which would give them the feeling they're learning many more things. The students wish (previously discussed) for more homework and perhaps more "strict" teachers is additional data in accord with this conjecture that they may be making a subtle plea for a more strenuous academic program than they have been receiving.

PERFORMANCE DATA

School Attendance

The number of days absent during the 1968-1969 and 1969-1970 school years were ascertained by inspecting the school records of all Cluster students whose records were available at Benjamin Franklin High School at the end of the school year. The standard school data form records the number of days absent during each of the years, and these were compared.

An examination of the record card attendance information data revealed that there was an average of forty seven days absent during the 1968-1969 school year, and thirty-six days absent during the 1969-1970 school year.

For the 1968-1969 school year, sixty percent of the students had no entry for attendance in their school records. Even in 1969-1970, twenty-five percent of the records contained no information on attendance.

On a survey of attendance prepared at Benjamin Franklin High School, for the months of February, March, and April, the Cluster students attained an average attendance of around seventy-five percent. The same attendance survey compared the Cluster and total school average. The school attendance during these three months averaged about fifteen percentage points lower than the Cluster students attendance.

Tardiness

A separate measure of motivation to attend school is the frequency of times late for school. Twenty-three students were recorded as not being late even once during the 1968-1969 school year. This total was doubled to forty-six students during the 1969-1970 school year.

The average days late for school, disregarding the students who were recorded as never being late, was sixteen days during the 1969-1970 school year. During the previous year, the average was twenty-one.

School-Grades

Teacher assigned grades for the present and the past school year were compared. These grades, while they indicate to some extent, the progress students are making in school, are not entirely appropriate for the measurement of this progress. Differences in grading standards between schools, differences in the norm groups involved, and differences between subjects taken all contribute to the unreliability of this kind of measure and thereby place restrictions on generalizations emanating from this data.

For this evaluation, the subject grades received were coded as "4" if 85% and above, "3" if 75 to 84%, "2" if 65-74, and "1" if below 65%.

All subjects taken during the year were given equal weight and averaged. The average of all subject grades during 1968-1969 was 2.40. For 1969-1970 this average was 2.13.

Thus, for all subjects, the teachers average grading for these cluster students showed a decrease of .275. This may be roughly interpreted as a change from 69 percent to about 66 percent.

There were two subject areas that the majority of cluster students enrolled in during both school years. These were English and Mathematics. Table 2 contains information on these two subjects.

Table 2. Grades received in English and Mathematics During the 1968-1969, and 1969-1970 school years.

	1968-1969	1969-1970
ENGLISH	2.41	2.18
MATHEMATICS	2.14	2.69

Cluster students attained roughly a five percent increase in their mathematics grades, while a decreasing by about 2 percentage points in English. Seventy four percent of the Cluster students received the same or higher scores in Mathematics during the year. The corresponding percentage for English was only fifty-eight percent.

Standardized Achievement test scores

Two subjects in which our junior high school students are commonly tested are reading and mathematics. All the standardized scores available for Cluster students for these achievement areas were collected and analyzed.

The Reading and Mathematics tests were not all administered at the same month of the school year. The Metropolitan Achievement Tests were administered in June, while the California Achievement Tests were administered at midyear. The proportions of students having June and February entries was nearly equal for both 1969 and 1970. Therefore, this analysis categorized the test scores simply as 1969 and 1970 scores administered during 1969, and the median score increased "by" 6.2 grade equivalent units.

Reading Achievement

The distribution of reading grade equivalent scores is presented in Figure 2. Ranging from the third grade level to the tenth grade level, these scores peak at the sixth grade level with the median score being 5.85.

Figure 2.

FREQUENCY DISTRIBUTION OF STANDARDIZED
READING ACHIEVEMENT TEST SCORES
FOR CLUSTER STUDENTS FEBRUARY 1970

number = 83

<u>INTERVAL</u>	<u>FREQUENCY</u>
3.1 - 3.5	0
3.6 - 4.0	0
4.1 - 4.5	3
4.6 - 5.0	5
5.1 - 5.5	11
5.6 - 6.0	17
6.1 - 6.5	13
6.6 - 7.0	11
7.1 - 7.5	10
7.6 - 8.0	9
8.1 - 8.5	2
8.6 - 9.0	0
9.1 - 9.5	0
9.6 - 10.0	0
10.1 - 10.5	0
10.6 - 11.0	2

Figure 3 contains the frequency distribution of reading grade equivalent scores administered during 1969. The variance of these 1970 test scores is smaller than the 1969 test scores.

Figure 3.

FREQUENCY DISTRIBUTION OF STANDARDIZED
READING ACHIEVEMENT TEST SCORES
FOR CLUSTER STUDENTS FEBRUARY 1969
number = 52

<u>INTERVAL</u>	<u>FREQUENCY</u>
3.1 - 3.5	2
3.6 - 4.0	4
4.1 - 4.5	1
4.6 - 5.0	2
5.1 - 5.5	10
5.6 - 6.0	12
6.1 - 6.5	6
6.6 - 7.0	3
7.1 - 7.5	1
7.6 - 8.0	2
8.1 - 8.5	4
8.6 - 9.0	0
9.1 - 9.5	0
9.6 - 10.0	3
10.1 - 10.5	1
10.6 - 11.0	1

This assessment of changes in reading ability does not account for initial ability. Students taking tests in 1969 and achieving scores near the maximum obviously cannot change to the same extent that students scoring nearer the minimum score, and the shift in medians (or in means for that matter) cannot, therefore, express accurately the true gain.

Thus a separate analysis was conducted for students whose scores were recorded for both 1969 and 1970. This group contained students whose 1969 scores ranged from 3.8 to 8.0 grade equivalent units, not including therefore, the maximum scoring students. The distribution of these gains is presented in Figure 4. The mean change in reading scores is .79 grade equivalent units.

Figure 4.

FREQUENCY DISTRIBUTION OF STANDARIZED
READING ACHIEVEMENT TEST SCORE
GAINS FROM FEBRUARY 1969 TO FEBRUARY 1970
(GRADE EQUIVALENT UNITS)
NUMBER = 24

<u>INTERVAL</u>	<u>FREQUENCY</u>
-1.6 - -2.0	0
-1.1 - -1.5	1
-.6 - -1.0	3
-.1 - -.5	2
0	0
.1 - .5	1
.6 - 1.0	3
1.1 - 1.5	7
1.6 - 2.0	5
2.1 - 2.5	2
2.6 - 3.0	0

The usual interpretation of grade equivalent units is that 1.0 change represents one years growth for the normative population. Considering this reference group, therefore, the cluster students can be said to achieve a change of about eighty percent of this reference population.

While this change of eight tenths of one years growth in reading does not reduce the discrepancy between the cluster students and the "national" average, it should be pointed out that this rate of growth appears to be higher than that achieved by these students prior to their entrance into the cluster program.

Mathematics Achievement

Standardized achievement scores were apparently not administered to the great majority of Cluster students during the 1970 school year. Only seven scores were recorded in Cluster students' cumulative record folder, and this presented any realistic assessment of changes which may have occurred during the 1969-1970 school year.

For comparative purposes, the distribution of 1969 standardized mathematics achievement is presented in Figure Five.

FIGURE 5.

FREQUENCY DISTRIBUTION OF STANDARIZED
MATHEMATIC ACHIEVEMENT TEST SCORES
FOR CLUSTER STUDENTS, FEBRUARY 1969
NUMBER = 45

<u>INTERVAL</u>	<u>FREQUENCY</u>
3.1 - 3.5	0
3.6 - 4.0	0
4.1 - 4.5	3
4.6 - 5.0	9
5.1 - 5.5	11
5.6 - 6.0	15
6.1 - 6.5	3
6.6 - 7.0	1
7.1 - 7.5	0
7.6 - 8.0	2
8.1 - 8.5	1
8.6 - 9.0	0

The large majority of the scores fall between the fourth and seventh grade level, and the median score of 5.5 is only slightly below the corresponding median for reading.

SECTION III

CONCLUSIONS AND RECOMMENDATIONS

In summary, the major conclusions of this evaluation study of the 1969-70 Cluster Program are as follows:

1. Most teachers, students and other persons in the Cluster Program feel quite strongly that the program is providing valuable assistance to students, and that to a great extent, the program is accomplishing its goals.
2. New curricula for students are emerging as a result of the Cluster Program.
3. The Cluster Program is helping students of all academic levels. Bright students and poor readers are both being served by this program.
4. The Cluster Program is not assisting many students to enter the College Bound Program as originally intended. This is not viewed by the teachers, however, as an important failure of the Cluster Program.
5. Most teachers believe that the rate of development of new materials in the Cluster Program for use throughout Benjamin Franklin High School is not proceeding as originally expected.
6. The contribution of the Cluster Program to the in-service training of teachers is viewed as valuable by most teachers in the program.
7. The psychological services originally intended for the students are not being completely provided for. However, the psychological services which were provided were valued by most students and teachers.

8. The guidance counselors are being handicapped in serving the Cluster Program by being required to serve in too many roles, e.g. disciplinarian and scheduling assistants. The guidance counselors, however, found certain positive functions in their serving in these many roles.
9. A considerable portion of the students would like to have a slightly greater emphasis given to academic achievement.
10. Attendance patterns for those students in the Cluster Program are slightly better than those for other students in the same school.
11. Tardiness appears to decrease as a result of attendance in the Cluster Program.
12. The Cluster Program has a positive effect on the reading achievements of students. In other areas of academic performance the impact of the Cluster Program could not be discerned or ascertained.

RECOMMENDATIONS

1. The major recommendation of the evaluation staff of Teaching & Learning Research Corp. is that the Cluster Program be continued. It is also suggested, that if possible and if funds are available the Cluster Program be extended to the 10th grade.
2. In addition, greater attention in the in-service training program and committee structure can be given to the development of teaching materials, particularly in the area of reading.
3. Counseling and psychological services should be maintained at a level, at least equal to those offered in the 1969-70 school year. If possible, additional professional services should be added after consultation with the staff, counselors and psychologists of the Cluster Program.

4. In accord with apparent student desires, perhaps a slightly greater emphasis can be placed on academic areas such as reading skills. However, it is suggested that the Cluster staff should proceed cautiously so that they can note any development of negative attitudes. The Cluster Program appears to have been too successful to warrant any major revision in its goals or methods.

APPENDIX B

STUDENT

Responses to the Question What did you like
least about the Cluster Program

1. The work was easy and but that about it I liked everything.
2. Some work was hard. Some work was too hard. We must do the some work. We get few homework.
3. Nothing
4. Coming out of school at 3:30 and having the 10th period of science.
5. I don't want to answer this question.
6. On going on all of those trips because think that we were dumb.
7. They didn't give us homework.
8. They didn't give us any homework.
9. They didn't give us any homework.
10. They didn't give us any homework.
11. That they don't give us homework.
12. The time you get out.
13. The time you come out.
14. You don't get so much work and your in different groups. You don't learn more.
15. Most of the teachers don't hardly teach anything to help students.
16. Some of the teachers some of the work.
17. We all like eachother as students not like enemys like some of the other classes and all. The teachers were nice and treated all of us like kings and I'm not kidding about the king stuff.
18. The work is easy.
19. They gave us late class like lunch 8th period that bad for the body having to wait so long.
20. The work was easy.
21. The work was easy.
22. The trips when it raining.
23. math class
24. some of the trips
25. You are free to express your self in and the work is given as the grade.
26. nothing
27. I didn't like this work sheet.
28. The least I liked about the program was the trip we went on.

29. They got us used to doing no work and than change us like anything with work.
30. That I didn't give to much homework.
31. I can't think of anything.
32. The trips
33. Nothing
34. They didn't give no work.
35. Reading and gym
36. reading and gym
37. Getting at the end of 10th period.
38. The work
39. The things that we were doing in some of the classes.
40. What we were doing in some of the classes. I didn't like some of the work.
41. Nothing
42. The least that I liked was that most of the teachers didn't really teach anything.
43. I like the least for the Cluster program that we go on trips.
44. Learning— they didn't teach too much and I didn't like doing different things from eachother.

STUDENT

APPENDIX C

Responses to the Question What did you like
the best about the Cluster Program

1. the trips
2. The trip they took us on.
3. I think
4. I like the Cluster program because I learn in the math class.
5. The math class because there I learned alot and most of the cluster trips were a Blast. Some of them were a bore too.
6. all the trips
7. That you go out on trips and you could talk to your teachers better then if you were in regular program.
8. You go on alot of trips and you really got to learn a little more than you already do know. The teachers are more like us you know they don't act like real teachers except for Mrs. Bess.
9. You go on trips.
10. The classes
11. They were like a family.
12. The people that we met and the teachers.
13. About the Cluster program I like the trips and other things.
14. I like some of the things they do like go on trips.
15. The trips some of the work
16. The trips and the work was O.K.
17. The trips they took us the people I met.
18. I like the best about the Cluster program the trip that we go and our guidance counsellar is a very nice man and help you in what he could.
19. The trips and the class work.
20. I like some of the teacher and some of the work we did in class.
21. The trips
22. Everything was very good I don't have no complaints.
23. the teachers
24. the trips
25. The teachers tryed to help us learn what we didn't know.
26. The trip were half good half bad because of the weather.
27. The trips— the teachers
28. The trip the teacher
29. I don't want to answer this question.

30. The trips the teachers
31. They have some good teachers go on good trips and you have lots of fun.
32. Well it was easy to understand your work because they explained it to us nice and calm. They are not like other teachers. They tell you the work once if you understand it it is swell but whoever do not understand they just don't care. But not the Cluster teachers!! It's the best class I ever went to all the teachers were nice and I mean all of them. They might not feel the same way about me but I don't care.
33. The trips and some of the teachers.
34. Some trips are very good and some teachers are very nice. The best class I like is our math class because it is such a sap and plus I've learned alot.
35. They really didn't teach perfectly but I really am graceful for the least bit of things they try to do.
36. The trips
37. The trips laugh
38. The best thing I like in Cluster are the trips we go to.
39. The trips we had.
40. That we went on trips.
41. That we go on trips.
42. Gym—trips—friendly teachers
43. There is nothing I could tell you that I liked the best in this program.
44. Going on trips.
45. We went on alot of trips and made a composition of what we thought about it.
46. the trips
47. The Cluster was well made. It was pretty good. We we went on good trips but not so good. Why can more than one class be on the same program. Why did we go on a bad trip. The bad of all was the jammed bag. There was no litter thing. I did not see nat thing.
48. I liked the teachers the students the trips. Everything.

BENJAMIN FRANKLIN CLUSTER PROGRAM

EVALUATION STAFF

Evaluation Director: Louis J. Hofmann

Associate Director: Alan J. Simon

Evaluation Assistants: Orel Callahan
Bala Carr
Werner Stutzel

Evaluation Consultants: Edsel L. Erickson
Edmund W. Gordon
Lee M. Joiner
Harvey Walker
Philip White