THE EFFECTS OF TEACHER'S HOMEWORK STRATEGIES ON PERFORMANCE, ATTITUDE AND ATTENDANCE

THESIS

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by

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Abstract

Recent studies show a definite connection between graded homework and increased performance. Also, correlations have been detected between performance and increased attendance at the secondary level. This study tested and evaluated 50 Non-Regents students in the City School District of Rochester and their responses to varied treatments of homework strategy to determine if the students reacted more facorably to one type over another. The data was collected in three areas: (1) performance, (2) attitude, and (3) attendance. Analysis at the 0.05 level of significance showed differences in means for the attitude construct, enjoyment of mathematics, and performance. Although the analysis detected these statistically significant differences, the increases were attributed to the group whose treatment had not been changed since the beginning of the school year. No conclusive statements could be made regarding the relationship between homework strategies and the variables tested. An unexpected outcome was the data to reinforce the characteristics of these particular students, i.e., the sensitivity to changes in program used in classroom management.

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Chapter I

Introduction

The City School District of Rochester experiences critically high absentee rates in all levels of the secondary program. Many factors influence a student's attendance patterns. Recently, teacher accountability has been a central issue discussed throughout the country. Many angry feelings have been voiced by teachers regarding accountability particularly in view of such absentee rates. The responses from the rank and file teachers echo the idea, "How can we be held accountable if students are not in class much of the time?" Many things can be done to address the attendance problem at all levels of education whether through board of education policy changes, new programs for students at the building level, but in the final analysis, it is the teacher who has the greatest opportunity to influence the student who has problems in school. What can a teacher do to alter his management techniques to facilitate the learning of the multitude of students who enter into his classroom? If the teacher does have the capacity to be flexible in his classroom management, is it an effective approach to the problem? Does the homework strategy of a teacher influence a student's performance? Does increased performance necessarily suggest better attendance and a more positive attitude? This study will attempt to determine if a teacher's homework policy has an effect on these variables by following three groups of non regents students given different homework strategies over a twenty week period and attempt to answer the following questions statistically:

Are there any differences in mean scores of students' attendance, performance and attitude for treatment groups tested?

Chapter II

Review of Literature

Problems of Public Education

One of the many problems which contribute to the frustration of educators is the negative publicity received in recent years. As published in Newsweek, April, 1981, the consensus of public opinion is the failure of public schools. The author, Williams, cites the following to justify this perception:

> Try telling that (public schools are doing their job) to Dorothy Tillman, whose son, Jimmy, marched off to kindergarten in Chicago already reading at the second grade level and, after seven years, now reads at fourth grade level. Mention it to Basil Huffman, the San Jose high-school principal who had to fire half his teachers in a fiscal pinch--including all but one of his math teachers. Tell Jody Krieger, who was driven from her Maryland classroom by abusive 13 year-olds and is now in real estate.

These statements are indicative of the problems of poor discipline, lack of money and many others that plague the public school sector. The sense of failure that pervades our schools is responsible for a new phenomena called "Bright Flight" or the more able students leaving public schools for the private sector of education. It is said that the private school sector, even after controlling for variables such as ability, race and other "background" variables, seem to be able to produce a "better cognitive outcome."

While discipline is cited as the most crucial issue to be faced by educators, many principals and teachers, primarily within the inner city, consider absenteeism to be a significant and complex problem. The nationwide attendance rate is just over 90%, or an average daily absentee rate of 10%. Despite the fact that, historically, absentee rates are lower and the number of high school graduates are higher, the high school diploma is now more of a minimum requirement for most every unskilled job.

As a result, the problem of high absenteeism (15% of the school year missed) is critical because it frequently leads to failure and dropping out of school. To many urban districts who are in financial straits the cost of absenteeism is staggering, not only in lost aid from state and federal aid programs and grants, but also in costs of time and personnel who must monitor the problem. For example, the Los Angeles school district calculates that it lost 34 million dollars because of excused absences (California School Boards Association, 1981). It is imperative that attendance issues become the focus of the educational reform movement. According to a recent survey done at West Community High School, Chicago, Illinois, evidence showed an increase in state aid of $329,596 after making the attendance issue a top priority item. The school district implemented a program where daily phone calls were made following two periods of unexplained absences the previous day. The district reports that in addition to the financial benefits there were other payoffs for such a program. Observations made included a positive climate and more "academically engaged" time on task which yields increased academic achievement (DuFour, 1983).

Absenteeism - City of Rochester School District

Locally, the City of Rochester attendance rates are illustrated in Table 1.1. A brief inspection of the table will show that absenteeism is at a crisis level in every grade in the secondary level but most saliently at the ninth grade level. The best attendance rates are observed in the elementary schools.

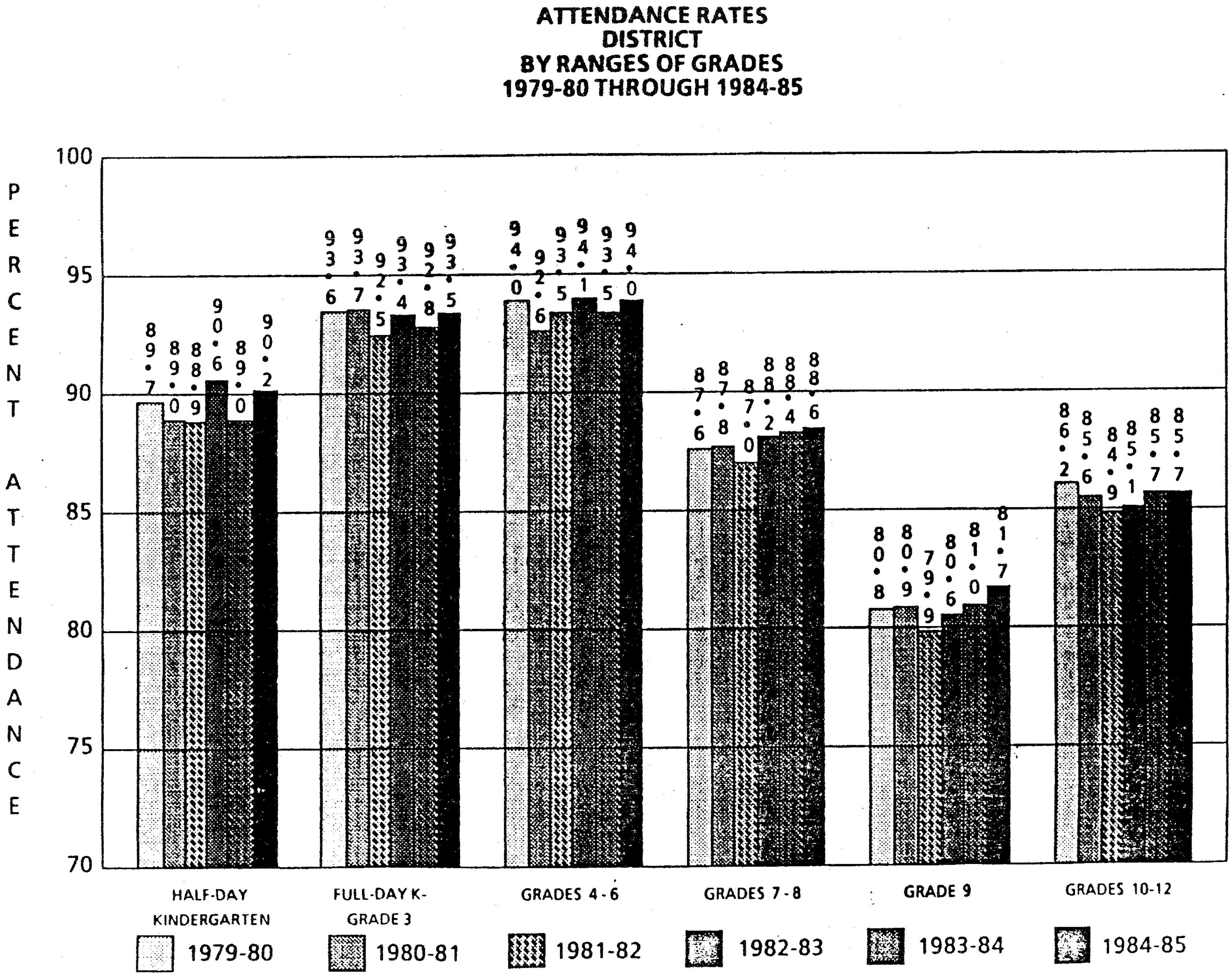
In what ways do absentee rates noted manifest themselves? It is without doubt, that attendance is the first ingredient in learning (Broadbelt, 1985). The Model of Achievement makes several suppositions Each step in the model is conditional upon the other and collectively proves to be an efficient and effective model for learning.

MODEL OF ACHIEVEMENT

ATTENDANCE----THE CLASSROOM TEACHER----TIME OF TASK +++++ ACHIEVEMENT

(Pupil Presence) (Classroom Environment) (Engaged Time Ratio)

Table 1.1



Note: Table provided by the City School District
Rochester, New York Dept of Student Data

Tables 1.2 and 1.3 provide a further understanding of the enormity of the problems at our local public school level. Note that the Non-Regents program in the ninth grade has consistently experienced failures at the rate of 40% or better. Recall that the absentee rates in the ninth grade hover at the 20% level.

Causes of Absenteeism

When attempting to assess the causal factors of these rates of absenteeism and failures, several basic categories come into focus. The nature of "out of school" factors and "in school" factors which are influential in determining the rate of absenteeism must be examined. Obviously, increasing school attendance can help increase a school's achievement levels (Brookover, 1982). In the literature, an analysis has been done by reviewing reasons for absences as a thumbnail sketch of pupils who are absent. Of course, there are legitimate reasons for absences. Illness, weather, and transportation periodically affect attendance rates. Interestingly, students' choice is a crucial factor. All general factors can be grouped as follows (Powell, 1980):

IN SCHOOL	PERSONAL/FAMILY	ENVIRONMENT
Teacher Attitude	Illness	Transportation
Discipline	Accident	Weather
Interpersonal-Relations	Self-Image	Community Events
	Learning Problems	
	Money	
	Vacations	

TABLE 1.2

EAST HIGH SCHOOL
NON REGENTS PROGRAM
FAILURE RATES
(1982 – 1985)

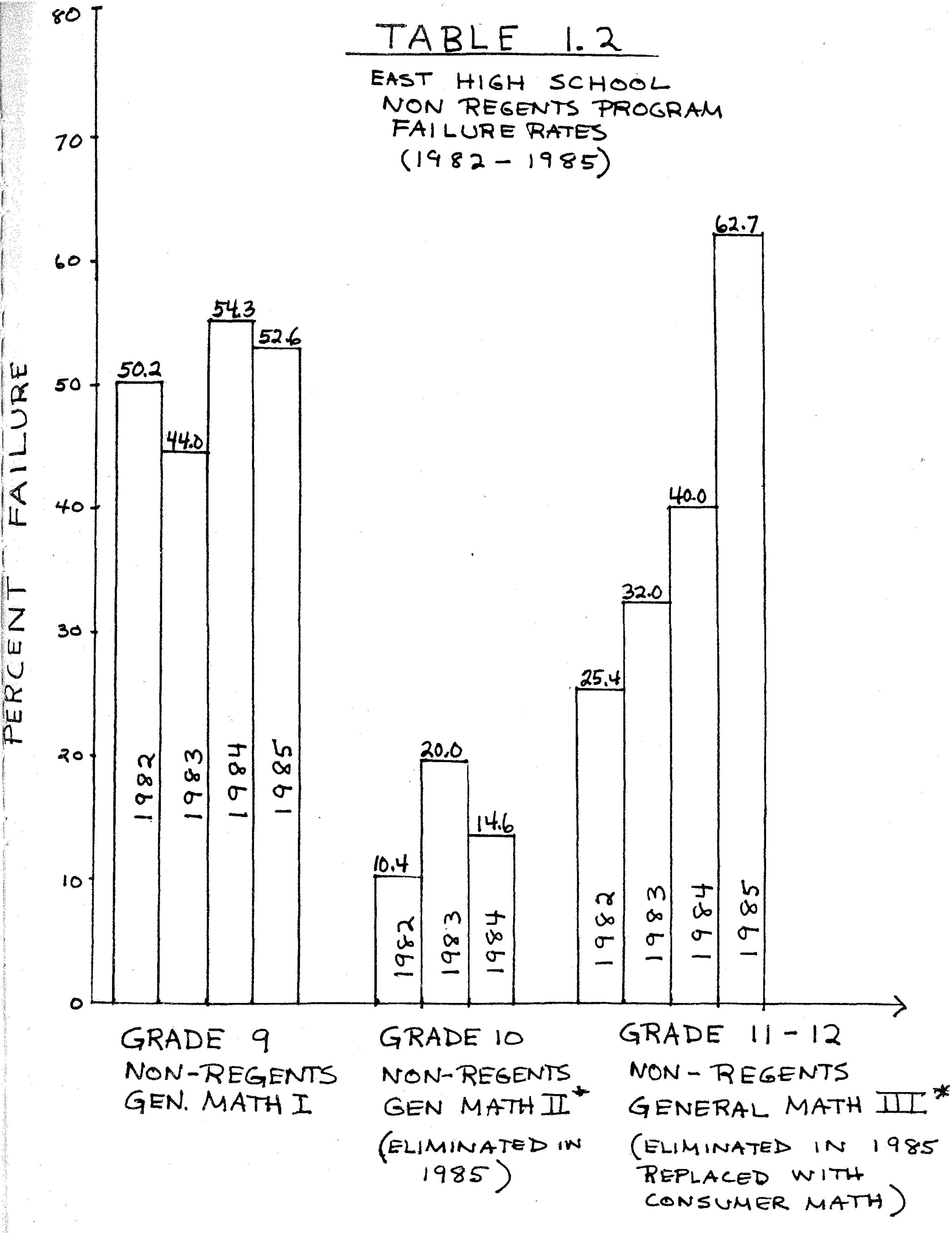
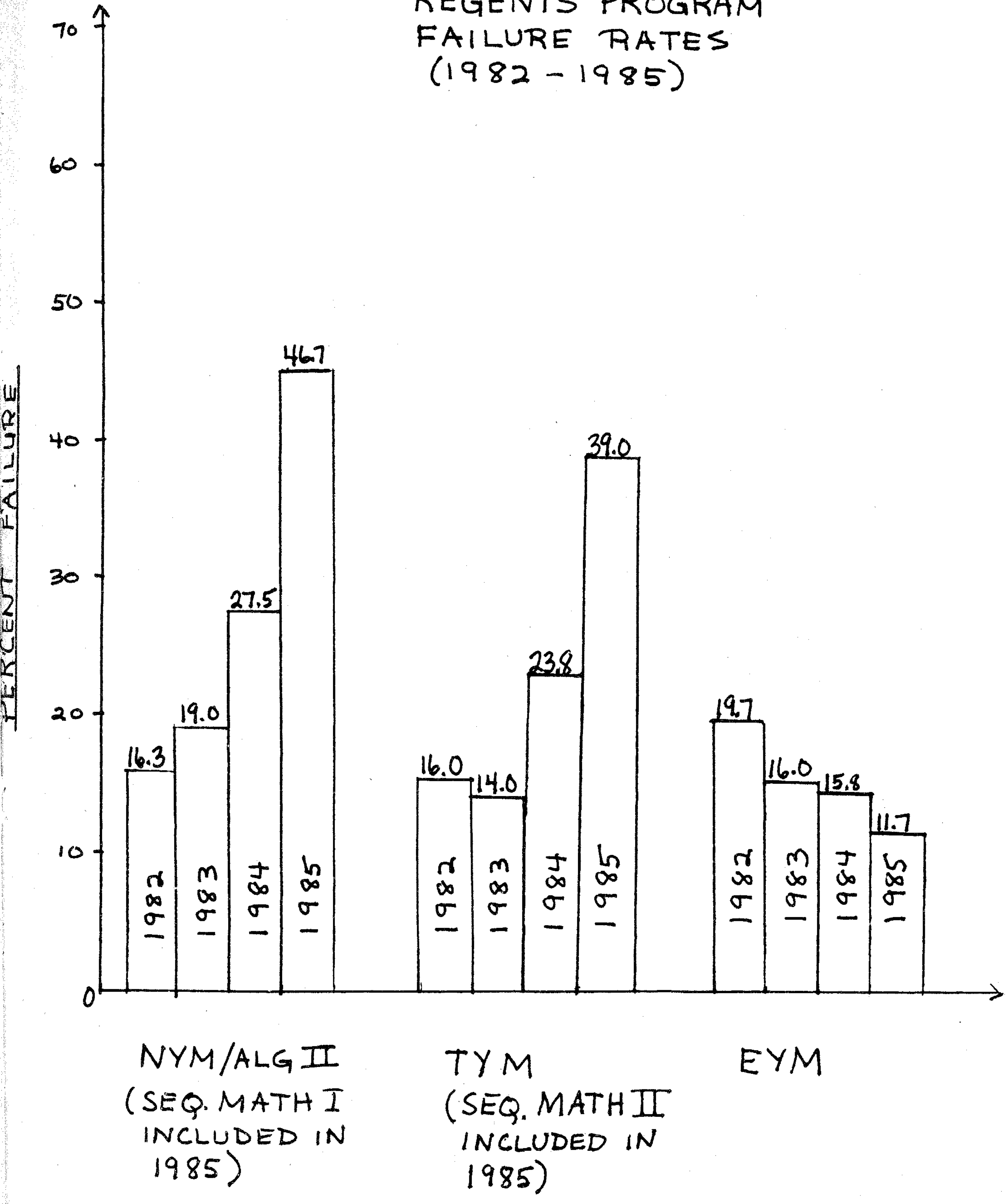


TABLE 1.3

EAST HIGH SCHOOL
REGENTS PROGRAM
FAILURE RATES
(1982 - 1985)



Further, on the opposite side of the coin, an analysis of attendance displays that a student's desire to attend school is related primarily to the "school ideology" (Brookover, 1982). Brookover defines school ideology as a set of general beliefs, morays, and expectations which characterize the environment. The old adage "Nothing succeeds like success" and the reverse "Nothing fails like failure" seems to be valid within this topic of discussion. Most research demonstrates a consistent relationship between attendance and achievement (Coleman, 1982).

Homework and Its Effects on Attitude, Performance and Attitude

The public continues to clamour for more research and subsequent solutions to these longstanding problems. Of the many possibilities for research related to achievement and "in school" factors connected to absenteeism is the topic of homework. Homework is under the control of the teacher and certainly could be viewed as a measure of the teacher attitude which is a component of "school ideology" as Brookover (1982) suggested.

Historically, attitudes toward homework on the part of educators and the family are cyclical in nature. Swings in attitude tend to be dependent on social attitudes and educational philosophies. As early as the 1860's, British teachers were paid according to student exam scores. Students were kept in after school for additional help in order to master tasks. Pressures from the home encouraged the formulation of homework policies as follows: 0-12 years - no homework; 12-14 years - 1 hour homework; 14-16 years - 1-1/2 hours per day four days per week. Supervised study halls were provided for increased study time. Similar patterns were reported in the United States. The "in vogue" philosophy at that time was "mind as muscle" which stressed rote memorization and especially difficult homework assignments to strengthen one's discipline of the mind. These attitudes prevailed until the early 1900's when emphasis shifted toward concerns about a student's mental health, sleep patterns and leisure time activities. In 1913, the Ladies Home Journal opposed homework on the grounds that it is "unwholesome, professionally unsupervised, allows children to practice mistakes." However, when achievement began to decline the pressure for good grades increased. It would appear that over time parents do demand homework and view good grades as part, if not the entire formula, for entrance to preferable colleges (Strother, 1984). As might be expected parents were and still are caught in the "universal bind" of balancing high standards for academic achievement against other activities that foster growth in other developmental areas of the child's world. Attitudes and ideas seem to vacillate on a twenty to thirty year cycle as history will document. We see such swings in the 1900-1910 era, 1930-1940 era and the memorable "Sputnik" era.

Does homework have an effect on achievement? Research through the 1960's seemed to show no conclusive results regarding direct correlations. There were many studies concluding "Yes, there was an efrect" as studies that stated "No effect." However, it was concluded that homework may increase achievement but studies did indicate that the absence of negative effects. Therefore, it could be stated that homework would not decrease achievement. More recently, the professional research takes a much stronger position. Perhaps with the advent of more powerful computerized statistical software, the studies have provided more conclusive data. The Journal of Education Research published an article in its November-December 1984 issue entitled "The Effects of Homework on Learning, A Quantitative Synthesis." The above article summarized results of a statistical analysis of 15 published and unpublished studies. The conclusions show that 85% of the effect favored groups assigned homework. The study also suggested that homework which was graded or which contained teacher comments produced stronger effects. Studies show statistically significant increases on achievement on standardized tests. The groups without teacher comments on their homework showed increases on their percentile scores from 50th to 60th ranges. Those whose homework did include comments showed gains from the 50th to 79th percentile. The graded homework effect is one of the largest ones discovered in educational research literature (Walberg, 1984). The magnitude and consistency of the homework effect is substantial.

Within the realm of "in school" factors, the topic of homework is a proverbial "can of worms." parents and teachers favor homework, but for much different reasons. It was a consensus within research, however, that homework is only detrimental when mishandled at home or inappropriately assigned at school (McDermott, 1984). However, after 77 policies of New York State schools were surveyed, it became apparent that homework policies were one of the most mismanaged aspects of the school program (McDermott, 1984). According to the observers, policies were not congruent with research related to sound teaching and learning theories. Differences among individual students were not accounted for, or ignored. Surprisingly, only in one-third of the school districts surveyed, did the teachers grade, correct and return homework. This is a substantial issue to be addressed in light of the major research findings outlined on the effect of graded homework outlined by Walberg (1984).

Other Factors Influencing Attendance Performance

The connection between failure rates and absenteeism is obvious. The problem seems to be one of how to turn around the sense of frustration and failure within our public schools, in general, and more specifically, our urban schools. The sense of failure perceived is a complex and multi-faceted problem and the identification of possible solutions is overwhelming. As stated earlier, not only "in school" factors influence absenteeism and failure rates, but "personal and family" factors as well. Yet, as we analyze on a macro level the sociology of the American family, we find that approximately one-third of all children will witness the dissolution of family life at the current rate of divorce and will suffer the subsequent psychological costs. Another sociological change in the past two decades is the increase of working mothers (32% in 1960 to 56% in 1981). These two trends have provided for a generally unstable home environment for students. The notion of the "at home" mother is a relic of the past. The following excerpt was taken from a Cornell University Cooperative Extension Bulletin:

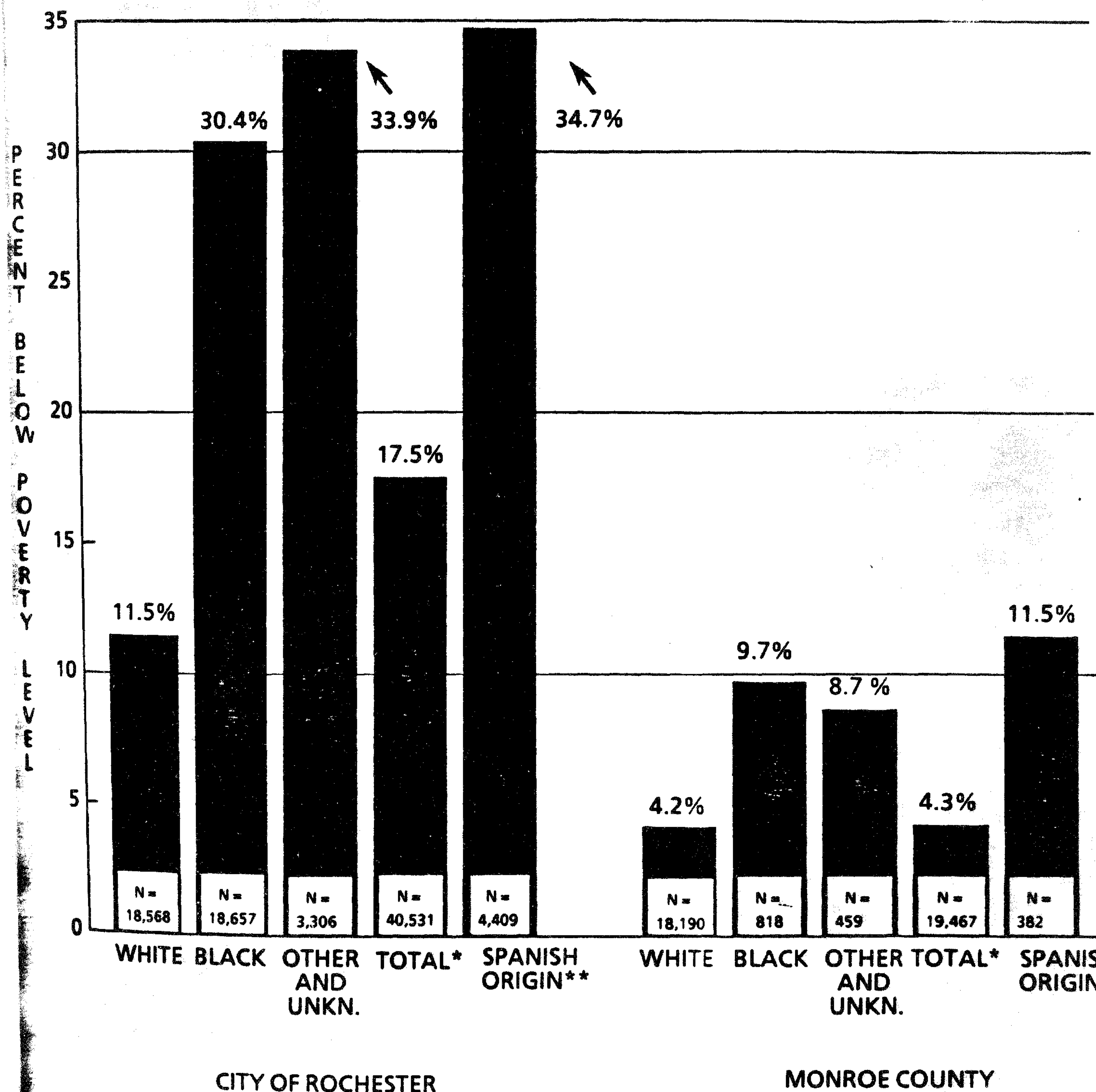
Middle class families face heavy economic pressures these days and the era of the one earner family seems to be over. Two breadwinners now are needed to bring home as much as one person used to make. The families most likely to slip from the middle class into pvoerty are the ones headed by single women. They are three times likely as any other family to be impoverished. An estimated 20% of the children in this country are growing up in poverty.

The major changes in family structure are amplified in the urban areas as the blacks and other minorities suffer these problems but in far greater proportions. Table 1.4 provides statistics on the numbers of families below poverty level. Table 1.5 show families below poverty level by race and Table 1.6 shows the increase of single parent families. It is not difficult to conclude from this data that a great majority of the City of Rochester student population are minority, below poverty level and although precise figures are not available these same students are members of single-parent households headed by women.

Is there any doubt that from these circumstances, whether it is a student from Rochester, Chicago, New York City or any urban area, that the learning process is severely disrupted at sometime during a youngster's school career. Perhaps the question should be how to keep from going off track.

CITY AND NON-CITY MONROE COUNTY
BY ETHNIC GROUP
1980 CENSUS DATA

TABLE 1.4



* "Total" includes "White," "Black," and "Other and Unknown," but not "Spanish Origin"; see following note.

** Dulplicated count: Spanish orgin is considered by the census to be an issue of ancestry rather than of race.

Note: Table from "DATA BASE - 1985 to 1986"
City School District, Rochester, New York
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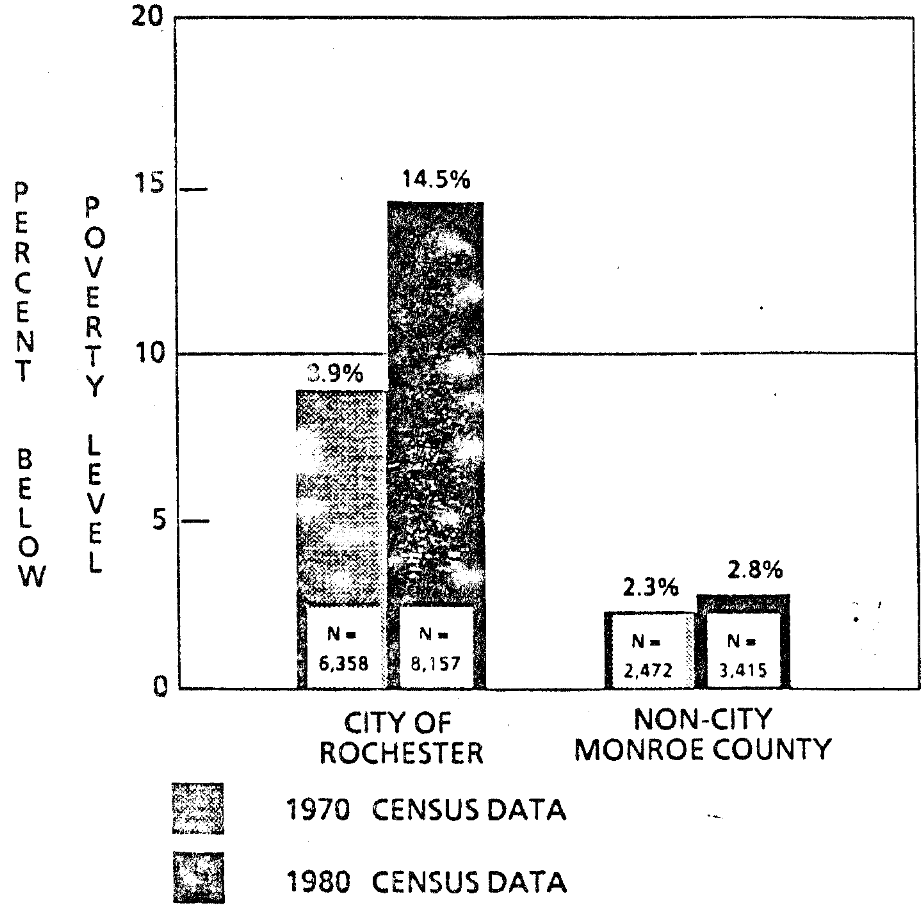
TABLE 1.5

NUMBERS AND PERCENTAGES OF FAMILIES BELOW POVERTY LEVEL CITY AND NON-CITY MONROE COUNTY 1970 VERSUS 1980 CENSUS DATA



NUMBERS AND PERCENTAGES OF FAMILIES
BELOW POVERTY LEVEL
CITY AND NON-CITY MONROE COUNTY
1970 VERSUS 1980 CENSUS DATA

This figure shows numbers and percentages of families in the City of Rochester and in Monroe County excluding Rochester who were below the poverty level according to the 1970 and 1980 United States censuses. Census data from 1970 is compared to that from 1980 for both segments of the population. Data values are estimated from sample data obtained in the censuses.

At the time of the 1970 census, 8.9 percent of city resident families were below the poverty level. That percentage had risen to 14.5 at the time of the 1980 census. For Monroe County excluding Rochester, the percentage of families below the poverty level changed from 2.3 percent in 1970 to 2.8 percent in 1980. This data indicates a larger increase in the proportion of families below the poverty level in the City of Rochester than elsewhere in Monroe County between 1970 and 1980.

Note: Table from "DATA BASE - 1985 to 1986
City School District, Rochester, New York
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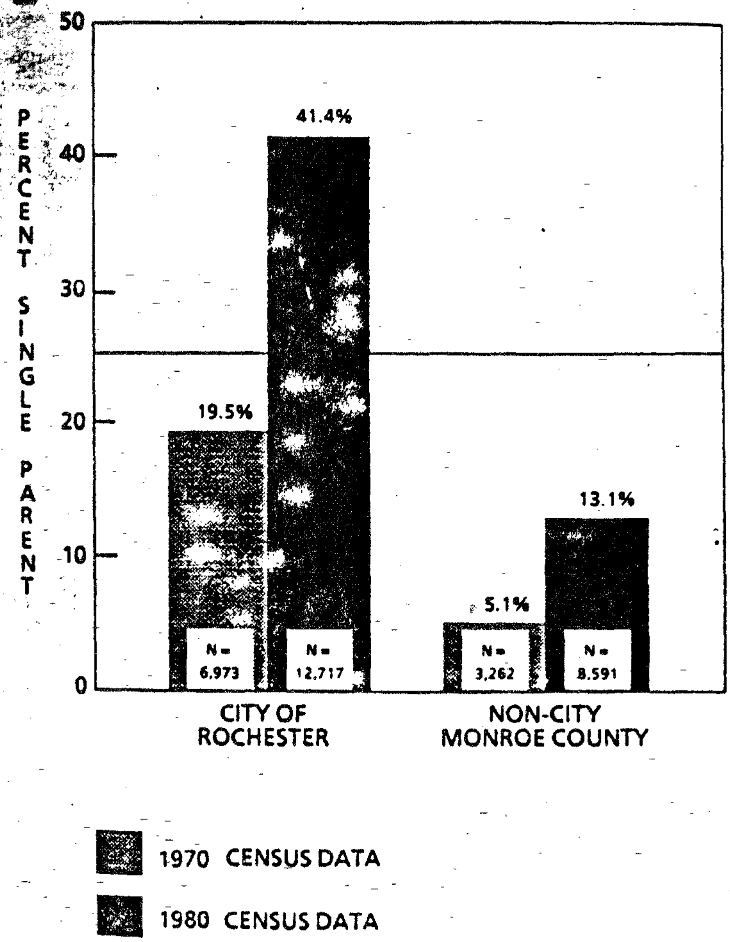
NUMBERS AND PERCENTAGES OF FAMILIES
WITH SINGLE PARENT
CITY AND NON-CITY MONROE COUNTY
1970 VERSUS 1980 CENSUS DATA

TABLE 1.6



NUMBERS AND PERCENTAGES OF FAMILIES
WITH SINGLE PARENT
CITY AND NON-CITY MONROE COUNTY
1970 VERSUS 1980 CENSUS DATA

This figure shows numbers and percentages of families in the City of Rochester and in Monroe County excluding Rochester who were single parent families according to the 1970 and 1980 United States censuses. Only families with one or more of their own children under age 18 are considered as part of the base. Census data from 1970 is compared to that from 1980 for both segments of the population. Values are estimated from sample data obtained in the censuses.

At the time of the 1970 census, 19.5 percent of city resident families were single parent families. That percentage had risen to 41.4 at the time of the 1980 census. For Monroe County excluding Rochester, the percentage of single par[illegible] [illegible]milies changed from 5.1 percent in 1970 to 13.1 percent in 1980. While [illegible]he proportion of single parent families more than doubled in both the city and the county excluding Rochester during this ten-year period, the proportion in the city was at least three times higher than that in the county excluding Rochester in both 1970 and 1980.

Note: Table from "DATA BASE - 1985 to 1986"
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The "curriculum of the home" is decisive in the learning process (Walberg, 1984). Walberg defines family curriculum as "encouragement and discussion of leisure reading, monitoring and joint analysis of television viewing, deferral of immediate gratification to accomplish long term goals, expression of affection and interest in academic and personal growth. The "Curriculum of the home" is as important as the "curriculum in school" and "Multiply each other's effect" (Walberg, 1984). In order for the student to succeed rather than fail, there must be cooperation of all parties involved (student, parent and teacher). If one lacks the support of the other two components in the team, little is accomplished.

Chapter III

Design of the Study

Purpose

Careful review of the most recent research seems to indicate the dramatic results of increased achievement have been reported with a homework strategy that included a process of grading, teacher comments and return of papers to the students. It was not conclusive if a certain type of student was more affected than others. At East High School in Rochester, New York, the most consistent failure rates and highest absenteeism are occurring in the ninth grade Non-Regents program. A thumbnail sketch of such a student is a young adult who, in most instances, scores well below that 50th percentile on the mathematics portion of the standardized achievement tests offered. At least 50% of the class are comprised of "repeaters" which would be expected from a better than 50% failure rate district-wide in this particular course. The prior mathematics background of these students has been one of dismal failure. Perhaps a generalized statement could be made of these students. Their attitudes toward mathematics and school, in general, are extremely negative and well entrenched. However, there are studies that document overall declines in achievement in the 7th and 8th grades, perhaps in response to an emerging adolescence or adjustments from a protected elementary school environment to that of a large (2400 students) 7-12 comprehensive high school, and then begins to increase toward the end of the ninth year in school. Another possible cause of this decline of grades is a social promotion policy where students are not held accountable for grades in terms of passing or failing until the ninth grade. It is common knowledge within the junior high school students that he can fail two of his major subjects and continue to be promoted. Many teachers who had experience within this level stress the essential ingredient for success, that is, positive teacher attitudes and motivation techniques. This is "essential" to any class, but particularly relevant to a student type who has consistently experienced failure in mathematics, and school at large. With these ideas in mind, it seems to be appropriate to evaluate homework policies typically used by teachers at East High School to determine which strategy would facilitate growth in achievement, and as a byproduct, demonstrate changes in attitude and increases in attendance figures.

Hypothesis

The variables of performance, attitude and attendance were selected to measure the possible effect of the treatments being used in the experiment. The current education literature indicates that graded homework has a positive effect on achievement (Walberg, 1984) and the achievement is strongly related to absentee rates (Coleman, 1982). The instruments used to measure these variables were administered before and after the treatment. With the data collected the following will be analyzed:

Are there differences among the treatment groups on mean scores for performance, attitude toward mathematics or attendence in class?

Sample

As discussed previously, the treatment groups were comprised of ninth grade Non-Regents students and all other high school students who needed to fulfill the requirement of General Math I for graduation. All of these students had longstanding histories of failure in mathematics and had abilities (as measured by standardized) that were well below average.

Method

The groups tested were 50 General Mathematics students who were members of three distinct classes who met periods 3, 7, and 8 respectively. Each class was lead by the same teacher. Although this design may limit the "generalizability" of findings, it provides the smallest possible independent sampling unit available (Simplified Designs for School Research).

Three different homework policies were administered to a group of 50 students in the Non-Regents course in General Math I. The problem is to determine their relative effectiveness. The first policy (Treatment #1) was detailed as follows:

HWK #1 Homework was assigned twice weekly (15 minutes to 30 minutes in length, as prescribed by district policy). The following day, the homework was discussed in class and corrected by the student. The assignment was turned in to the teacher to be recorded. The student received a grade for homework based on the number of assignments completed compared to the number of papers assigned. This percent was factored into the final semester grade at the rate of 25%. Homework was not returned unless requested by the student.

HWK #2 Each assignment, given twice weekly, was discussed as a class, graded by the student and turned in to the teacher. The teacher graded the papers and made comments where appropriate. The teacher returned the papers as soon as possible. A homework tally chart was kept on the classroom wall to show progress. As before, homework was weighted as 25% of the final grade, but was computed by totaling individual homework scores.

HWK #3 As in other methods, homework was assigned twice weekly. Problems were corrected in class and handed in for recording process. The student received a grade for homework based on the number of assignments completed compared to the number of papers assigned. Bonus points were added to the test and quiz average based on the percent of homework completed based on the following breakdown:

65 - 75 percent completed	2 points
75 - 85 percent completed	3 points
85 - 100 percent completed	5 points

The treatments were assigned as follows: period 3 was assigned treatment #3, period 7 was assigned treatment #2 and period 8 was assigned treatment #1.

Instruments

The subjects were administered pre-tests and post-tests in several areas. The Mathematics Attitude Inventory consisting of 48 questions which required an answer from strongly agree to strongly disagree generated data on any attitudinal changes which occurred during the experimental period.

To test for changes in achievement levels, the students were administered LEVEL I of the Metropolitan Achievement Test. It was chosen because of its familiarity of format to the students. In the City School District of Rochester, students are given standardized tests yearly. Until 1985, it was the Metropolitan Test which was given. It was felt that this test would be less intimidating and less disruptive. Lastly, any changes in attendance patterns were measured by historical data based upon the number of days absent in the previous time span in 1985 compared to the same time period in 1986.

Procedure

As previously stated, three classes of General Math I students were assigned treatments HWK #1, HWK #2 and HWK #3. The research began on the first day of the second marking period and conclude on the last day of the third marking period. The length of time was selected to allow adequate time for any subtle attitudinal or attendance patterns to surface. The pre-tests were administered on the two days prior to the beginning of the experimental period and similarly, the pst-tests were administered on the two days concluding the period. Make up exams for those absent on evaluation days were done in the library within two weeks. If this could not be accomplished, the student was dropped from the study. Also, any student who transferred to another class or to another school was eliminated from the study. The students received the same curriculum and utilized the same text offered that they would ordinarily receive had the experiments not been taking place.

All of the data was analyzed by the Analysis of Variance technique using the Mini-Tab program. If the analysis of variance results of pre-tests showed a difference in means of treatment groups, an analysis of covariance was performed to determine differences in the ability level, performance level, or attitudes of these classes.

Summary

This study was designed to determine whether a teacher's homweork policy had an effect on student's attendance, performance or attitude. Measurements of the above mentioned variables were taken before and after the experimental twenty week period when three groups of approximately 15 to 18 students each were treated with different classroom management techniques for managing homework. The pre-tests were analyzed with one-way Anova procedures to validate the similarity of the groups. If a test statistic showed a decision to reject the hypothesis that the groups are dissimilar than an analysis of covariance was conducted. The post-tests were evaluated in the same fashion. Depending upon the results of the Anova procedures, further post hoc comparisons were made as appropriate.

Chapter IV

Data Analysis

The three variables under investigation in response to changes in homework strategies were attitude, performance and attendance. The data generated by the Mathematics Attitude Inventory was categorized into six subsections or attitude constructs which are listed as follows:

1. Perception of the Mathematics Teacher: A student's view regarding teaching characteristics of his or her mathematics teacher.

2. Anxiety toward Mathematics: The uneasiness a student feels in situations involving mathematics.

3. Value of Mathematics in Society: A student's view regarding the usefulness of mathematical knowledge.

4. Self-Concept in Mathematics: A student's perception of his or her own competence in mathematics.

5. Enjoyment of Mathematics: The pleasure a student derives from engaging in mathematical activities.

6. Motivation in Mathematics: A student's desire to increase his or her knowledge and understanding of mathematics.

Each sub-category was analyzed for every treatment group both for pre-test and post-test situations. The following are the Anova Tables for the pre-tests.

Table 1.7

Perception of the Math Teacher
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	11.1	5.6	0.51
Error	47	511.6	10.9	
Total	49	522.7		

Table 1.8

Math Anxiety
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	33.1	16.1	1.33
Error	47	548.8	12.4	
Total	49	617.9		

Table 1.9

Value of Mathematics
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	24.77	12.38	1.72
Error	47	337.65	7.18	
Total	49	362.42		

Table 1.10

Self-Concept
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	66.6	33.3	2.96
Error	47	528.1	11.2	
Total	49	594.7		

Table 1.11

Enjoyment of Mathematics
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	43.3	21.7	1.99
Error	47	510.3	10.9	
Total	49	533.6		

Table 1.12

Math Motivation
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	1.21	0.60	0.28
Error	47	100.71	2.14	
Total	49	101.92		

A brief inspection of the Anova tables above will demonstrate that under the conditions of a level of significance of .05 with degrees of freedom of (2,47) which generates a critical value of 3.22 that all F-ratios fall within the critical region. For all treatment groups, the results from the attitude survey show that the means are not significantly different. Recalling that these results were pre-tests, we can conclude that the students in all treatments did not differ generally in these six attitude constructs.

The two other factors, attendance and performance, were measured by previous historical data for attendance (same as the experimental period but the year 1985-1986) and scores from the level I Metropolitan tests. The Anova tables for pre-test results are listed in Tables 1.13 and 1.14.

Table 1.13

Metropolitan Scores - Performance
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	148	74	0.22
Error	47	15866	338	
Total	49	16013		

Table 1.14

Attendance
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	8.3	4.1	0.12
Error	47	1600.8	34.1	
Total	49			

As with the other pre-tests data the level of significance is 0.05 and the degrees of freedom are (2,47). The critical value generated is 3.22. Both F-ratios for attendance and performance fall well within the critical region requiring a "Fail to Reject" statistical decision. The interpretation, again, shows that the means of these treatment groups do not differ statistically on the pre-tests for attendance and performance measurement evaluation.

The following are the Anova tables for the treatment groups post test results.

Table 1.15

Perception of Math Teacher
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	36.7	18.4	1.36
Error	47	567.6	13.5	
Total	49	604.3		

Table 1.16

Anxiety
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	21.9	11.0	0.75
Error	42	618.4	14.7	
Total	44	640.3		

Table 1.17

Value of Math in Society
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	14.47	7.23	1.22
Error	42	248.64	5.92	
Total	44	263.11		

Table 1.18

Self Concept
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	32.1	15.6	1.01
Error	42	650.5	15.5	
Total	44	681.6		

Table 1.19

Enjoyment of Math
Analysis of Variance

Source	DF	SS	MS	F	
Factor	2	96.2	48.1	3.61	****
Error	42	559.4	13.3		
Total	44	655.6			

Table 1.20

Math Motivation
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	11.79	5.89	1.66
Error	42	149.46	3.56	
Total	44	161.24		

The post tests for all six attitude constructs show all but one F-ratio generating a "Fail to Reject" decision when compared to a critical value of 3.22 (degrees of freedom [2,42] and level of significance of 0.05). There is no difference in mean scores in the treatment groups after the twenty-week experimental period in the areas of perception of math teacher, anxiety, value of mathematics in society, self-concept or mathematics motivation. The one area which the analysis of variance procedure required further investigation was the construct "enjoyment of math." The critical value with degrees of freedom (2,42) at the 0.05 level of significance again was 3.22. The notable difference was the F-ratio from the Anova table was 3.61.

The statistical decision was the reject of the hypothesis that there is a statistically significant difference in the treatment groups.

The following two tables are the final post test results for performance and attendance.

Table 1.21

Metropolitan Test - Performance
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	2447	1223	3.49 ****
Error	42	14727	351	
Total	44	17174		

Table 1.22

Attendance
Analysis of Variance

Source	DF	SS	MS	F
Factor	2	180.2	90.1	0.92
Error	42	4095.5	97.5	
Total	44	4275.6		

Post tests results indicated that the Metropolitan Tests for performance showed a F-ratio of 3.49 compared with a critical value of 3.22. The means of the treatment groups display a statistically significant difference. However, the final Anova procedure for attendance showed a F-ratio of 0.92 for the test statistic which clearly falls within the critical region. There appears to be no difference between means for treatment groups using data collected on attendance patterns. As with all testing situations for post tests the degrees of freedom were (2,42) and the level of significance was 0.05.

The pre-tests administered showed no difference when one-way Analysis of Variance routines were performed on the variables outlined in the previous section. However, the follow up set of post tests did provide statistically significant F-ratios at the 0.05 level of significance for the variables of "enjoyment of math" (the construct taken from the MAI) and the Metropolitan Test scores measures the variable "performance." Bearing in mind that a significant F-ratio tells only that the variation among sample means cannot be reasonably related to chance, it seemed appropriate to conduct post hoc comparisons following the analysis of variance procedures.

The Scheffe's Test was selected because of its ability to review each mean with every other mean. This test was also able to accommodate unequal sample sizes. Additionally, the Scheffe Test correction factors make it a relatively conservative test. The following is the formula for this test,

$$F = \frac{(\bar{x} - \bar{x})^2}{S_w^2 \cdot \frac{n_1 + n_2}{n_1 \; n_2}}$$

where $\bar{x}_1$ and $\bar{x}_2$ are the sample means and n_1 and n_2 are the sample sizes and S_w^2 is the sample estimate of variance (more commonly known as the Mean Square within factors). The following tables list the results of the Scheffe's Test.

Table 1.23

Scheffe's Test
Enjoyment of Math - Post Tests

Comparison of Means	F-Ratio	Critical Value df(k-1, N-k·(k-1)	Statistical Decision
period 3 compared to period 7	1.89	6.44	Fail to Reject
period 3 compared to period 8	2.09	6.44	Fail to Reject
period 7 compared to period 8	7.19	6.44	Reject the Hypothesis***

Table 1.24

Scheffe's Test
Metropolitan Scores - Performance

Comparison of Means	F-Ratio	Critical Value df(k-1, N-k·(k-1)	Statistical Decision
period 3 compared to period 7	2.49	6.44	Fail to Reject
period 3 compared to period 8	6.79	6.44	Reject the Hypothesis***
period 7 compared to period 8	0.80	6.44	Fail to Reject

As a result of the Scheffe's Test, the difference in means in the areas of enjoyment and performance which developed in the post tests becomes clearer. In a sense the Scheffe's Test isolates the major differences between the means of the treatment groups. We can observe that the difference between the treatment group 7 and treatment group 8 accounted for the variance on post test for the attitude "enjoyment" which was detected by the analysis of variance procedure. We can now conclude that the variance was due to treatment rather than sampling error. Likewise, when the results were analyzed for performance, treatment group 3 and treatment group 8 mean comparisons accounted for the variance on the variable "performance" which showed up as a result of the analysis of variance. Each of these comparisons proved statistically differences occurred at the 0.05 level of significance.

Chapter V

Conclusions and Implications

The Scheffe's test showed that the difference between means did not occur due to random sampling error. For data collected from the Mathematics Attitude Inventory, the sub-category of enjoyment, the mean score of treatment group 7 differed significantly from the mean score of treatment group 8. Recall that treatment group 7's homework strategy was to grade all homework assignments, average then and factor the grade on a weighted basis as part of the student's final grade. Grades were to be posted in the classroom. Treatment group 8's strategy was a straight and simple "check-in" of homework completed with 25% of the final grade comprised of the percent of homework completed. Treatment group 7's mean was 17.154 and Treatment group 8's mean was 20.867. One could possibly conclude that the added pressure of strict homework "accountability" in treatment group 7 may have been responsible for the decline in the enjoyment of the class. Subjective observations within the experimental period showed students negatively responding to the display of homework scores for others to view. Students may have been placed in a conflict situation. Any motivation to do extra homework or to extend themselves, may have come from external pressures from peers and not from instrinsic desire to do homework for their own benefit. Certainly, a position of such dissonance would not have added to the enjoyment of any subject matter.

Within the data collected for measurement of performance, the Scheffe's Test again isolated a statistically significant difference between mean scores between treatment groups 3 and 8. Treatment group 3's homework procedure was a bonus situation in which extra points were distributed depending upon the percent of homework turned in when assigned. The mean scores on the Metropolitan Test Level I for treatment group 3 and treatment group 8 were 22.94 and 40.20, respectively. Again, treatment group 8 displayed higher mean scores than the comparison groups.

It is interesting to note that both experimental groups 3 and 7 were compared against group 8. On an informal basis, treatment group 8 acted similarly to a control group. It was the only group which was assigned a homework strategy that was not different from the management style that was used for the first semester prior to the commencing of the testing period. Perhaps such a negative effect to change has overshadowed any slight changes due to the particular method used in other treatment groups.

Implications on Future Research

Much continued study is needed in the area of student performance, attendance and attitude. The interaction between the variables is not clear. Many answers to the current problems lie somewhere within this cluster. This study was an initial attempt to scratch the surface of an extraordinarily complex social problem. If this study were to be replicated, several very feasible changes could be made at the outset. A major refinement would be to start each treatment group at the beginning of the school year with the same strategy that it would be functioning with for the entire duration of the school year. This would eliminate the negative reaction to change that was so clearly exhibited in this study. In addition, the timing of the testing program would be more of a nature event in the students' lives. They tend to expect standardized testing early in the school year. It would not be another disruption for them which again provides more negative reactions. The choice of the achievement test would be different. In retrospect, the overall response to the Metropolitan Test was quite negative. It is an interesting side note that many students expressed the perception that the results are not used and are literally a waste of time. Perhaps it would be a wise decision for teachers to share some of the data and the possible outcomes of these test results. Clearly, this response is one of an alienating student who feels his input into the system does not make a difference. Some students did not take the testing seriously and just filled in answers randomly. This obstacle could be overcome by testing on material that was currently being presented from the curriculum. This study saliently highlighted the one characteristic that is common to this type of student. It is their need for stability. One could argue that this is a characteristic common to all students, but one need only examine the personal lives of these students which from outward appearances seem to be fraught with family problems and continual upset. Although, many of the effects anticipated did not emerge, patterns of attendance still could be researched in response to measures of change in a student's life. Also, the time period for a study involving a student's attendance and related variables should be run over a much longer period of time. It is possible that patterns of attendance are not easily changed by forces that are not of primary importance to the student. A longer period would allow for the "passages" that adolescents seem to experience. A twenty week experimental period does not allow for enough time to span these typical ups and downs of the developmental cycle.

With these ideas in mind, further research should be conducted to statistically determine which of the factors are related to a student's attendance pattern. One possible option that could be evaluated is a longitudinal study over the intermediate years using a correlational approach to determine the strength of each factor tested. This type of study might have the power to identify which of the factors negatively influence the good attendance patterns brought from the elementary school years.

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Appendix I

Mathematics Attitude Inventory

MATHEMATICS ATTITUDE INVENTORY

DIRECTIONS

THE FOLLOWING STATEMENTS ARE ABOUT THE STUDY OF MATHEMATICS. PLEASE READ EACH STATEMENT CAREFULLY AND DECIDE WHETHER IT DESCRIBES THE WAY YOU FEEL ABOUT MATHEMATICS. THEN, FIND THE NUMBER OF THE STATEMENT ON THE ANSWER SHEET, AND BLACKEN ONE OF THE SPACES ACCORDING TO THE FOLLOWING DIRECTIONS:

IF YOU STRONGLY AGREE WITH THE STATEMENT, BLACKEN SPACE 1.

IF YOU AGREE WITH THE STATEMENT, BLACKEN SPACE 2.

IF YOU DISAGREE WITH THE STATEMENT, BLACKEN SPACE 3.

IF YOU STRONGLY DISAGREE WITH THE STATEMENT, BLACKEN SPACE 4.

BE SURE TO BLACKEN ONLY ONE SPACE FOR EACH STATEMENT. MARK YOUR ANSWERS ONLY ON THE ANSWER SHEET. PLEASE DO NOT WRITE IN THE BOOKLET.

BE SURE TO ANSWER EVERY QUESTION. YOU WILL HAVE ABOUT 20 MINUTES TO COMPLETE THE 48 STATEMENTS OF THE INVENTORY. REMEMBER TO ANSWER EACH STATEMENT ACCORDING TO THE WAY YOU FEEL AT THE PRESENT TIME.

ANSWER SHEET

Name of School: ____

Form: ______________________________ Date __________ __________

Background Information

PLEASE ANSWER EACH OF THE FOLLOWING ITEMS BY EITHER TICKING ( ) THE CORRECT BOX OF FILLING IN THE BLANK.

1. Sex: MALE FEMALE

2. Citizenship: U. S. ________ Other __________

3. Father's occupation (Or occupation of head of household)

   Specify ____

4. Highest educational level reached by father (or head of household)

   No Formal Education ____

   Elementary ____

   Junior High School ____

   High School ____

   College ____

   Other (Graduate School)

5. My Grades in seventh, eighth and ninth grades were

   Excellent ____

   Good ____

   Fair ____

   Poor ____

1. Mathematics is useful for the problems of everyday life.
2. Mathematics is something which I enjoy very much.
3. I like the easy mathematics problems best.
4. I don't do very well in mathematics.
5. My mathematics teacher shows little interest in the students.
6. Doing mathematics problems is fun.
7. I feel at ease in a mathematics class.
8. I would like to do some outside reading in mathematics.
9. There is little need for mathematics in most jobs.
10. Mathematics is easy for me.
11. When I hear the word mathematics, I have a feeling of dislike.
12. Most people should study some mathematics.
13. I would like to spend less time in school doing mathematics.
14. Sometimes I read ahead in our mathematics book.
15. Mathematics is helpful in understanding today's world.
16. I usually understand what we are talking about in mathematics class.
17. My mathematics teacher makes mathematics interesting.
18. I don't like anything about mathematics.
19. No matter how hard I try, I cannot understand mathematics.
20. I feel uneasy when someone talks to me about mathematics.
21. My mathematics teacher presents material in a clear way.
22. I often think, "I can't do it," when a mathematics problem seems hard.
23. Mathematics is of great importance to a country's development.
24. It is important to know mathematics in order to get a good job.

25. It doesn't worry me to do mathematics problems.

26. I would like a job which doesn't use any mathematics.

27. My mathematics teacher knows when we are having trouble with our work.

28. I enjoy talking to other people about mathematics.

29. I like to play games that use numbers.

30. I am good at doing mathematics problems.

31. My mathematics teacher doesn't seem to enjoy teaching mathematics.

32. Sometimes I do more mathematics problems than are given in class.

33. You can get along perfectly well in everyday life without mathematics.

34. Working with numbers upsets me.

35. I remember most of the things I learn in mathematics.

36. It makes me nervous to even think about doing mathematics.

37. I would rather be given the right answer to a mathematics problem than to work it out myself.

38. Most of the ideas in mathematics aren't very useful.

39. It scares me to have to take mathematics.

40. My mathematics teacher is willing to give us individual help.

41. The only reason I'm taking mathematics is because I have to.

42. It is important to me to understand the work I do in mathematics.

43. I have a good feeling toward mathematics.

44. My mathematics teacher knows a lot about mathematics.

45. Mathematics is more of a game than it is hard work.

46. My mathematics teacher doesn't like students to ask questions.

47. I have a real desire to learn mathematics.

48. If I don't see how to do a mathematics problem right away, I never get it.

5(a) (For Form 2 only)

Form 1 Mathematics marks: ______________________________

(b) (Form Form 4 only)

L.C.E. Mathematics grade: ______________________________

Paper taken:

Mathematics ☐

Modern Mathematics ☐

****

MATHEMATICS ATTITUDE INVENTORY

Item	Strongly Agree	Agree	Disagree	Strongly Disagree
1	1	2	3	4
2	1	2	3	4
3	1	2	3	4
4	1	2	3	4
5	1	2	3	4
6	1	2	3	4
7	1	2	3	4
8	1	2	3	4
9	1	2	3	4
10	1	2	3	4
11	1	2	3	4
12				
13	1	2	3	4
14	1	2	3	4
15	1	2	3	4
16	1	2	3	4
17	1	2	3	4
18	1	2	3	4
19	1	2	3	4
20	1	2	3	4
21	1	2	3	4
22	1	2	3	4
23	1	2	3	4
24				
25	1	2	3	4
26	1	2	3	4
27	1	2	3	4
28	1	2	3	4
29	1	2	3	4
30	1	2	3	4
31	1	2	3	4
32	1	2	3	4
33	1	2	3	4
34	1	2	3	4
35	1	2	3	4
36				
37	1	2	3	4
38	1	2	3	4
39	1	2	3	4
40	1	2	3	4
41	1	2	3	4
42	1	2	3	4
43	1	2	3	4
44	1	2	3	4
45	1	2	3	4
46	1	2	3	4
47	1	2	3	4
48				

Appendix II

Raw Data

RAW DATA

ATTITUDE CONSTRUCT #1 PERCEPTION OF THE MATH TEACHER

STUDENT NAME	ID#	PRE TEST SCORE	POST TEST SCORE
PERIOD 3			
Smith, Roosevelt	301	28	24
Agee, Tom	302	31	27
Valentine, Jody	303	24	24
Hucks, Hasan	304	26	28
Toro, Orlando	305	24	24
Paige, Stacy	306	26	28
Ackley, Sam	307	30	27
Kendricks, Keith	308	21	23
McClary, Terrance	309	23	18
White, Pete	310	30	27
Thompson, Michael	311	27	30
Sterina, Kim	312	29	27
Stephens, Trevor	313	26	27
Robinson, Rodney	314	26	23
Jackson, Theresa	315	27	32
Evans, Irene	316	31	32
Williams, Terrance	317	28	28
PERIOD 7			
Davis, Melissa	701	31	32
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	24	22
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	31	29
Byrd, Regina	706	28	29
Orr, Ellen	707	26	25
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	26	25
Carter, Alfie	711	28	27
Porter, Arlene	712	24	22
Pointer, Sam	713	26	23
Russell, William	714	21	18
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	25	18
Kimble, John	717	28	21
Likely, Kalvin	718	24	24
PERIOD 8			
Brockington, Dorie	801	28	23
Graham, Troyce	802	26	26
Cox, Eurica	803	31	30
Johnson, Tim	804	21	24
Cobb, Isaac	805	25	29
Dade, Earl	806	25	24
Harris, Rodney	807	28	30
Gordon, Jomo	808	22	29

STUDENT NAME PERIOD 8	ID#	PRE TEST SCORE	POST TEST SCORE
Marshall, Khadija	812	23	24
Vasquez, Angel	813	28	26
Singleton, Steph.	814	21	29
Cook, Laura	815	25	30
Pressley, Wayne	816	30	28
Thomas, Joyce	817	27	24
Boyd, Rochelle	818	24	26

ATTITUDE CONSTRUCT #2 MATHEMATICS - ANXIETY

PERIOD 3			
Smith, Roosevelt	301	8	19
Agee, Tom	302	13	9
Valentine, Jody	303	13	13
Hucks, Hasan	304	15	11
Toro, Orlando	305	16	13
Paige, Stacy	306	16	12
Ackley, Sam	307	6	9
Kendricks, Keith	308	19	15
McClary, Terrance	309	15	13
White, Pete	310	11	9
Thompson, Michael	311	10	11
Sterina, Kim	312	17	17
Stephens, Trevor	313	21	19
Robinson, Rodney	314	7	13
Jackson, Theresa	315	7	6
Evans, Irene	316	10	10
Williams, Terrance	317	11	8

PERIOD 7			
Davis, Mellissa	701	12	11
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	12	11
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	9	10
Byrd, Regina	706	16	13
Orr, Ellen	707	13	12
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	14	12
Carter, Alfie	711	13	11
Porter, Arlene	712	19	11
Pointer, Sam	713	10	14
Russell, William	714	15	15
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	13	14
Kimble, John	717	14	17
Likely, Malvin	718	7	9

STUDENT NAME PERIOD 8	ID#	PRE TEST SCORE	POST TEST SCORE
Brockington, Dorie	801	9	9
Graham, Troyce	802	13	12
Cox, Eurica	803	12	11
Johnson, Tim	804	12	9
Cobb, Isaac	805	12	14
Dade, Earl	806	10	12
Harris, Rodney	807	10	11
Gordon, Jomo	808	12	10
Marshall, Khadija	809	17	17
Vazquez, Angel	810	12	10
Singleton, Steph.	811	8	7
Cook, Laura	812	8	7
Pressley, Wayne	813	7	6
Thomas, Joyce	814	9	13
Boyd, Rochelle	815	11	11

ATTITUDE CONSTRUCT #3 VALUE OF MATHEMATICS IN SOCIETY

PERIOD #3

Smith, Roosevelt	301	25	23
Agee, Tom	302	26	24
Valentine, Jody	303	20	23
Hucks, Hasan	304	24	23
Toro, Orlando	305	21	27
Paige, Stacy	306	27	28
Ackley, Sam	307	24	24
Kendricks, Keith	308	22	26
McClary, Terrance	309	24	28
White, Pete	310	23	24
Thompson, Michael	311	25	27
Sterina, Kim	312	22	24
Stephens, Trevor	313	28	25
Robinson, Rodney	314	25	21
Jackson, Theresa	315	26	27
Evans, Ireve	316	27	27
Williams, Terrance	317	20	25

PERIOD 7

Davis, Melissa	701	25	28
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	25	25
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	25	28
Byrd, Regina	706	28	27
Orr, Ellen	707	25	24
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	25	23

STUDENT NAME	ID#	PRE TEST SCORE	POST TEST SCORE
Carter, Alfie	711	26	24
Porter, Arlene	712	22	19
Pointer, Sam	713	22	24
Russell, William	714	18	22
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	22	25
Kimble, John	717	23	20
Likely, Kalvin	718	18	19

PERIOD 8

Brockington, Dorie	801	19	26
Graham, Troyce	802	21	24
Cox, Eurica	803	25	27
Johnson, Tim	804	22	26
Cobb, Isaac	805	26	25
Dade, Earl	806	22	22
Harris, Rodney	807	26	24
Gordon, Jomo	808	24	27
Marshall, Khadija	809	24	25
Vazquez, Angel	810	25	25
Singleton, Steph.	811	18	23
Cook, Laura	812	22	28
Pressley, Wayne	813	23	27
Thomas, Joyce	814	16	21
Boyd, Rochelle	815	23	21

ATTITUDE CONSTRUCT #4 SELF CONCEPT IN MATHEMATICS

Smith, Roosevelt	301	15	16
Agee, Tom	302	16	23
Valentine, Jody	303	17	19
Hucks, Hasan	304	12	13
Toro, Orlando	305	17	13
Paige, Stacy	306	15	19
Ackley, Sam	307	18	23
Kendricks, Keith	308	7	17
McClary, Terrance	309	15	10
White, Pete	310	16	17
Thompson, Michael	311	21	17
Sterina, Kim	312	13	8
Stephens, Trevor	313	11	10
Robinson, Rodney	314	20	20
Jackson, Theresa	315	19	21
Evans, Irene	316	17	16
Williams, Terrance	317	23	22

STUDENT NAME PERIOD 7	ID#	PRE TEST SCORE	POST TEST SCORE
Davis, Melissa	701	19	17
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	17	15
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	18	17
Byrd, Regina	706	12	16
Orr, Ellen	707	17	16
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	14	16
Carter, Alfie	711	16	15
Porter, Arlene	712	12	11
Pointer, Sam	713	17	17
Russell, William	714	9	11
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	18	19
Kimble, John	717	17	18
Likely, Kalvin	718	18	19

PERIOD 8

Brockington, Dorie	801	18	14
Graham, Troyce	802	15	18
Cox, Eurica	803	15	17
Johnson, Tim	804	20	22
Cobb, Isaac	805	15	15
Dade, Earl	806	21	18
Harris, Rodney	807	19	19
Gordon, Jomo	808	17	20
Marshall, Khadija	812	16	10
Vasquez, Angel	813	23	23
Singleton, Steph.	814	18	14
Cook, Laura	815	21	24
Pressley, Wayne	816	23	24
Thomas, Joyce	817	22	16
Boyd, Rochelle	818	16	16

ATTITUDE CONSTRUCT # 5 ENJOYMENT OF MATH

PERIOD 3

Smith, Roosevelt	301	13	12
Agee, Tom	302	17	23
Valentine, Jody	303	18	20
Hucks, Hasan	304	22	20
Toro, Orlando	305	17	17
Paige, Stacy	306	17	22
Ackley, Sam	307	27	23
Kendricks, Keith	308	15	21
McClary, Terrance	309	19	12
White, Pete	310	14	16
Thompson, Michael	311	24	19
Sterina, Kim	312	16	13
Stephens, Trevor	313	16	16
Robinson, Rodney	314	20	19
Jackson, Theresa	315	23	25
Evans, Irene	316	18	23
Williams, Terrance	317	24	[illegible]

STUDENT NAME	ID#	PRE TEST SCORE	POST TEST SCORE
PERIOD 7			
Davis, Melissa	701	18	18
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	15	15
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	26	23
Byrd, Nesmith	706	14	19
Orr, Ellen	707	19	18
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	14	19
Carter, Alfie	711	20	22
Porter, Arlene	712	15	9
Pointer, Sam	713	19	18
Russell, William	714	15	17
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	18	17
Kimble, John	717	22	15
Likely, Kalvin	718	18	13
PERIOD 8			
Brockington, Dorie	801	19	18
Graham, Troyce	802	17	20
Cox, Eurica	803	21	21
Johnson, Tim	804	24	25
Cobb, Isaac	805	18	16
Dade, Earl	806	24	20
Harris, Rodney	807	22	22
Gordon, Jomo	808	18	25
Marshall, Khadija	812	20	17
Vasquez, Angel	813	20	22
Singleton, Steph.	814	20	18
Cook, Laura	815	24	25
Pressley, Wayne	816	21	25
Thomas, Joyce	817	22	18
Boyd, Rochelle	818	20	21

ATTITUDE CONSTRUCT #6 MOTIVATION IN MATH

PERIOD #3			
Smith, Roosevelt	301	9	12
Agee, Tom	302	8	10
Valentine, Jody	303	11	11
Hucks, Hasan	304	9	9
Toro, Orlando	305	8	9
Paige, Stacy	306	8	8
Ackley, Sam	307	12	10
Kendricks, Keith	308	7	8
McClary, Terrance	309	8	6
White, Pete	310	7	9
Thompson, Michael	311	10	10
Sterina, Kim	312	11	6
Stephens, Trevor	313	6	8
Robinson, Rodney	314	9	10
Jackson, Theresa	315	9	9
Evans, Irene	316	11	12
Williams, Terrance	317	10	10

ATTITUDE CONSTRUCT #6 MOTIVATION IN MATHEMATICS

PERIOD 7	ID#	PRE TEST	POST TEST
Davis, Melissa	701	11	12
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	15	15
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	11	13
Byrd, Regina	706	11	12
Orr, Ellen	707	8	8
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	8	8
Carter, Alfie	711	9	8
Porter, Arlene	712	9	8
Russell, William	713	8	6
Pointer, Sam	714	7	9
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	8	8
Kimble, John	717	11	9
Likely, Kalvin	718	9	8

PERIOD 8			
Brockington, Dorie	801	10	9
Graham, Troyce	802	8	10
Cox, Eurica	803	11	11
Johnson, Tim	804	10	12
Cobb, Isaac	805	9	12
Dade, Earl	806	10	10
Harris, Rodney	807	8	10
Gordon, Jomo	808	9	14
Marshall, Khadija	812	11	11
Vazquez, Angel	813	9	10
Singleton, Steph.	814	7	10
Cook, Laura	815	11	11
Pressley, Wayne	816	7	6
Thomas, Joyce	817	9	7
Boyd, Rochelle	818	10	10

RAW DATA

VARIABLE - PERFORMANCE

AS MEASURED BY SCALED PERCENTILES FROM METROPOLITAN TEST - LEVEL I

STUDENT NAME	ID #	PRE TEST SCORE	POST TEST SCORE
PERIOD 3			
Smith, Roosevelt	301	37	27
Agee, Tom	302	4	2
Valentine, Jody	303	59	14
Hucks, Hasan	304	27	2
Toro, Orlando	305	10	10
Paige, Stacy	306	45	12
Ackley, Sam	307	59	68
Kendricks, Keith	308	33	10
McClary, Terrance	309	21	8
White, Pete	310	24	27
Thompson, Michael	311	49	33
Sterina, Kim	312	7	10
Stephens, Trevor	313	21	14
Robinson, Rodney	314	30	20
Jackson, Theresa	315	24	30
Evans, Irene	316	33	50
Williams, Terrance	317	45	49
PERIOD 7			
Davis, Melissa	701	50	49
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	16	25
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	24	29
Byrd, Regina	706	50	40
Orr, Ellen	707	37	37
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	33	35
Carter, Alfie	711	30	30
Porter, Arlene	712	13	23
Pointer, Sam	713	75	65
Russell, William	714	7	19
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	45	47
Kimble, John	717	5	5
Likely, Kalvin	718	27	46
PERIOD 8			
Brockington, Dorie	801	2	21
Graham, Troyce	802	24	21
Cox, Eurica	803	19	20
Johnson, Tim	804	10	44
Cobb, Isaac	805	24	27
Dade, Earl	806	10	30
Harris, Rodney	807	2	29
Gordon, Jomo	808	2	46
Marshall, Khadija	812	30	37
Vazquez, Angel	813	44	82
Singleton, Steph.	814	49	16
Cook, Laura	815	44	69
Pressley, Wayne	816	68	70

PERIOD 8

Thomas, Joyce	817	49	70
Boyd, Rochelle	818	25	30

VARIANCE - ATTENDANCE — HISTORICAL DATA

STUDENT NAME	ID#	PRE TEST SCORE	POST TEST SCORE
PERIOD #3			
Smith, Roosevelt	301	18	19
Agee, Tom	302	1	0
Valentine, Jody	303	12	19
Hucks, Hasan	304	10	22
Toro, Orlando	305	3	19
Paige, Stacy	306	9	11
Ackley, Samuel	307	2	13
Kendricks, Keith	308	10	6
McClary, Terrance	309	14	14
White, Pete	310	2	0
Thompson, Michael	311	12	7
Sterina, Kim	312	2	15
Stephens, Trevor	313	0	5
Robinson, Rodney	314	1	6
Jackson, Theresa	315	13	4
Evans, Irene	316	17	15
Williams, Terrance	317	10	21
PERIOD #7			
Davis, Melissa	701	7	0
Jones, Tiffany	702	DROP	DROP
Stubbs, Sherman	703	15	17
Jackson, Marcus	704	DROP	DROP
Nesmith, Lena	705	20	29
Byrd, Regina	706	6	16
Orr, Ellen	707	9	11
Smith, Catrena	708	DROP	DROP
Gilbert, Chris	709	DROP	DROP
Caso, Sue	710	6	4
Carter, Alfie	711	16	18
Porter, Arlene	712	3	7
Pointer, Sam	713	2	3
Russell, William	714	10	39
Holley, Robert	715	DROP	DROP
Kimble, Tom	716	1	3
Kimble, John	717	3	3
Likely, Kalvin	718	3	0

VARIABLE - ATTENDANCE HISTORICAL DATA

STUDENT NAME	ID#	PRE TEST SCORE	POST TEST SCORE
Brockington, Dorie	801	3	6
Graham, Troyce	802	20	23
Cox, Eurica	803	15	40
Johnson, Tim	804	4	37
Cobb, Isaac	805	5	1
Dade, Earl	806	4	9
Harris, Rodney	807	10	13
Gordon, Jomo	808	12	14
Marshall, Khadija	812	10	20
Vazquez, Angel	813	2	4
Singleton, Steph.	814	5	4
Cook, Laura	815	17	35
Pressley, Wayne	816	9	21
Thomas, Joyce	817	0	0
Boyd, Rochelle	818	6	12