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ABSTRACT

The objective of the magnet schools concept is to create quality educational programs with distinctive features which can attract or retain pupils of various ethnic types, and thereby contribute to racial balance in the schools. Magnet schools are intended to promote desegregation by permitting parents to make voluntary choices among schools, rather than through bussing or other student assignment plans. The present study sought to trace the workings of the magnet schools concept in the Montgomery County Public Schools (MCPS) from its design in the planning stages, through the implementation of quality educational programs, to the response of parents to the program, and finally to how this complete system influences desegregation within the seven elementary schools of the Takoma Park Cluster. Thus, the report contains the following sections: (1) Design of the Magnet Cluster; (2) Description of the Magnet School Program; (3) Program Comparisons with Nonmagnet Schools; (4) Parents' Knowledge of and Response to the Program; (5) Pupil Achievement; and (6) Desegregation Effects. Findings showed that the educational features prescribed for each of the magnet schools are functioning, and the magnet school programs appear to have higher levels of several educational quality factors. (Author/GK)

**MONTGOMERY COUNTY PUBLIC SCHOOLS**
**ROCKVILLE, MARYLAND**

# Takoma Park Magnet School Evaluation

PART II
FINAL REPORT

FEBRUARY, 1981

**EDWARD ANDREWS**
Superintendent of Schools

**Prepared by the Department of Educational Accountability**

MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

# TAKOMA PARK MAGNET SCHOOL EVALUATION

February, 1981

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TAKOMA PARK CLUSTER MAGNET SCHOOLS EVALUATION

Part II

Description and Effects of Magnet School Programs

Table of Contents

Table of Contents

EXECUTIVE SUMMARY

TAKOMA PARK CLUSTER MAGNET SCHOOLS EVALUATION

## OBJECTIVES OF THE STUDY

The objective of the magnet schools concept is to create quality educational programs with distinctive features which can attract or retain pupils of various ethnic types, and thereby contribute to racial balance in the schools. Magnet schools are intended to promote desegregation by permitting parents to make voluntary choices among schools, rather than through bussing or other student assignment plans.

The present study sought to trace the workings of the magnet schools concept in the Montgomery County Public Schools (MCPS) from its design in the planning stages, through the implementation of quality educational programs, to the response of parents to the program, and finally to how this complete system influenced desegregation within the seven elementary schools of the Takoma Park cluster. Thus, the report contains the following sections:

Design of the Magnet Cluster
Description of the Magnet School Programs
Program Comparisons with Nonmagnet Schools
Parents' Knowledge of and Response to the Program
Pupil Achievement
Desegregation Effects

## STUDY FINDINGS

THE QUALITY EDUCATIONAL PROGRAMS MANDATED FOR THE MAGNET SCHOOLS BY THE BOARD OF EDUCATION WERE SUCCESSFULLY ESTABLISHED IN THE MAGNET SCHOOLS.

The educational features prescribed for each of the magnet schools are functioning; and compared to other elementary schools in Area 2, the magnet school programs appear to have higher levels of several educational quality factors such as:

More Adults Supporting Teachers in the Classroom
Smaller Instructional Groupings
Greater Variety in Their Educational Approaches
Wider Usage of Extra or Supplementary Learning Materials

TEACHERS IN MAGNET SCHOOLS ENDORSE THEIR SCHOOL PROGRAMS MORE HIGHLY THAN DO NONMAGNET TEACHERS

When asked to comment about aspects of their schools which they particularly liked or disliked, magnet school teachers more often commented favorably on their school programs than did nonmagnet teachers; while the nonmagnet teachers cited more often the nonprogram aspects of the schools.

MAGNET SCHOOL PARENTS RATE THEIR SCHOOLS MORE HIGHLY THAN DO NONMAGNET SCHOOL PARENTS

As with the teachers, magnet school parents commented favorably about their school programs more often than did nonmagnet school parents. On the whole, magnet school parents graded their schools with a 3.4 "grade point average," while the nonmagnet parents scored their schools with a 3.2. By comparison, the general MCPS population sampled in 1979 averaged a 2.8 in the rating of their schools. Thus, there is a high level of satisfaction with schools in the magnet cluster. Among minority parents, however, nonmagnet parents appear more satisfied with their school programs than do magnet school parents.

PUPILS ATTENDING MAGNET SCHOOLS GAIN IN ACADEMIC ACHIEVEMENT BETWEEN THIRD AND FIFTH GRADE AT THE SAME RATE AS THEIR PEERS ATTENDING NONMAGNET SCHOOLS IN THE AREA

A thorough analysis of the effects of the magnet schools on pupil achievement was not possible since measures appropriate to each program were not available for every year in each grade. However, a limited analysis of achievement gains between third and fifth grades in reading, vocabulary, spelling and math indicated that when each ethnic group was considered separately, there were no significant differences between the gains of magnet and nonmagnet groups, even though the magnet cluster on the average had more high-minority schools than the nonmagnet group.

PARENTS ARE NOT SUFFICIENTLY INFORMED ABOUT THE MAGNET SCHOOLS.

Although 75 percent of the magnet school parents surveyed recognized the term "magnet schools", only about one-third of them could name a magnet program feature at their child's school. Also, magnet parents do not know much more about the magnet cluster of schools than the nonmagnet parents know about their own neighborhood schools. Thus, the advertising campaign throughout magnet schools has been little more effective than the "normal" channels of communication among schools. Also, minority parents tend to be less informed about the magnet schools than are majority parents.

MAGNET SCHOOLS ARE NOT ADVANCING THE DESEGREGATION OF THE CLUSTER SCHOOLS.

Despite the quality educational programs operating throughout the magnet cluster, the minority compositions of schools in the magnet cluster are just as disparate as they were prior to the magnet program four years ago. Several factors may account for this finding. Since the general level of educational programs throughout MCPS is relatively high, it may be that some of the magnet school programs were not distinctive enough in their attractions. Many of the magnet programs were already operating in those same schools prior to the establishment of the magnet cluster; thus, with many parents already accustomed to the school programs in their area, they did not perceive a "new attraction" as a reason for transfer. Also, the level of satisfaction with elementary schools throughout Area 2 is relatively high. Therefore, there was not a sufficiently powerful incentive for many parents to transfer their children from one school to another. Although about 10 to 15 percent of the magnet school parents requested school transfers, at least 30 percent would have been needed to attain racial balance within the cluster.

THE MAGNET CLUSTER DESIGN WAS NOT OPTIMAL FOR PROMOTING DESEGREGATION IN THE TAKOMA PARK CLUSTER

The magnet school approach was not well suited to promoting desegregation in the particular cluster of schools selected, because not enough low-minority schools were mixed with the high-minority schools in the composition of the cluster. Further, the average minority composition of the cluster as a whole, even upon its formation in 1977, was already more than 20 percentage points above the MCPS average. Under the ESAA guidelines, schools are considered racially balanced only if their percentage of minority pupils falls within 20 points of the district average. Thus, even if the schools within the cluster had become perfectly balanced racially by the operation of the magnet program, then all seven of the schools would have been out of compliance with the ESAA criterion. It does not appear, therefore, that the magnet approach was well suited to bringing the minority composition of the cluster schools closer to the district mean. Magnet programs are intended to balance the racial compositions among the magnet schools. Thus, a magnet cluster should have an average racial composition similar to that of the district, even though the racial mix of schools would, at the outset, vary greatly within the cluster.

THE MAGNET SCHOOL CONCEPT, AS A DESEGREGATION DEVICE, IS ONLY PARTIALLY SUITED TO THE DEMOGRAPHIC CHANGES OCCURRING IN MONTGOMERY COUNTY.

The rationale for employing magnet schools for desegregation is based partially on the assumption that whites are leaving the school system in the areas in which black enrollment is increasing. However, an analysis of the demographic changes in the county over the last decade suggests that the decreasing white enrollment in MCPS is not due to growing withdrawals from the schools. In fact, the rate of withdrawals to private schools has remained low and constant, and the overall withdrawal rate has recently declined. Rather, as the county population continues to grow, those who move into the county, compared to the in-migrants of prior years, have fewer or no children per household. Thus, the majority group children graduating or withdrawing from MCPS are not being replaced as fast as they used to be.

This does not mean, however, that magnet school programs are unsuited to MCPS. Rather, it means that if magnet programs are to be used for effective desegregation, they must be carefully located and may have to be coupled with other desegregation strategies or made much more attractive relative to existing school programs.

RECOMMENDATIONS

A number of recommendations for enhancing the desegregation effectiveness of the magnet schools concept follow from the foregoing conclusions. These recommendations are offered here as potential guidelines for future planning.

Modify the Cluster Design

As noted above, too many high-minority schools were concentrated into the magnet cluster. Modifications to the cluster design should include more low-minority schools. The simplest alternatives would be 1) to increase the size of the cluster by including more contiguous low-minority schools so that a greatest number of majority group pupils could potentially transfer into the high-minority schools or 2) to form new clusters constructed of no more than one or two high-minority schools and five to ten low-minority schools.

## Enhance the Distinctiveness of the Magnet Programs

When magnet programs are planned for schools as special attractions, they should have distinctive qualities not shared with other schools. Otherwise, there would not be a strong enough reason to transfer from a nearby school which already might have such similar features or from the neighborhood school whose very proximity functions as a magnet. Distinctive program attractions may possibly be accomplished with no increase in expenditures; however, potential increases in costs may be necessary if a qualitatively superior program is to be offered which is capable of overcoming the allegiance to neighborhood schools. Serious consideration should be given to allocating substantial extra funds to magnet schools, keeping in mind the possible negative consequences of unequal allocation among schools.

## Increase Parental Awareness of Magnet Schools

Regardless of the magnet cluster design or the program attractions, parents must be widely and thoroughly informed about the program. Too few parents were aware of the specific features of their own schools and of the programs in other schools within the cluster. Since voluntary transfers for desegregation purposes depend upon informed choices by parents, additional means of informing parents and even actively recruiting students for special programs should be initiated.

## Coordinate Desegregation Planning with Other School System Priorities

School desegregation may be productively articulated with other school system policies for adapting to changing conditions. As attempted to some extent in the current cluster, priorities planning for desegregation could be tied directly to other school system thrusts:

- Reducing underutilization costs incurred in small schools by facilitating school closings through provisions of an attractive alternative magnet program

- Introducing special services that cannot be supported systemwide such as all-day kindergarten programs, gifted and talented programs, or vocational services

# CHAPTER I

## INTRODUCTION

This evaluation of the Takoma Park Cluster magnet schools examines the planning, implementation, and effects of the magnet schools desegregation program operating since 1977. As an introduction to the study, the concept of magnet schools as an aid to desegregation is discussed, highlighting the basic evaluation issues. The first chapter examines issues in the planning, design, and location of the magnet schools cluster as affected by demographic conditions up to 1977. Ensuing chapters present a description of the educational programs observed in the seven magnet schools; a comparison of various aspects of educational quality in the schools' programs, parents' knowledge, and opinions of the programs in magnet and nonmagnet schools; and pupil achievement in magnet and nonmagnet schools. Included in the last chapter is a summary of the effects on desegregation of the magnet schools program and some recommendations for future desegregation activities.

### THE MAGNET SCHOOL CONCEPT

The objective of the magnet schools concept is to create quality educational programs with distinctive features which can attract or retain students (or their parents) of various ethnic types, and thereby contribute to racial balance in the schools. Magnet schools are intended to promote school desegregation through voluntary choices among schools rather than through bussing or other pupil assignment plans. Thus, as a concept the magnet schools program has much to offer parents, educators, and children as well as proponents of desegregation and opponents of student assignment plans.

A number of conditions are requisite to operating a magnet schools plan. First, of course, is to establish quality school programs with distinctive educational features. These programs should be "distinctive" relative to prior programs in those schools, and compared to other schools in the area. The more identifiably different the programs are from those that surround them or those that preceeded them, the greater is their potential for attracting the attention and interest of parents in the community. In this regard it should be noted that the typical closeness of elementary schools to homes constitutes in itself an attraction apart from considerations of the school program. The attractions to other school programs must be strong enough to overcome the inherent desireability of attending a close-by neighborhood school. This factor may be more important to elementary magnet schools than to those on the secondary level.

Second, there must be an open enrollment policy together with provisions for pupil transportation which allow parents to send their children to the schools of their choice. This characteristic is germain to voluntary desegregation. Of course, it may be that in the absence of new school programs, the declaration of an open enrollment policy would itself make available educational choices which were previously not available to parents under a closed enrollment policy. In the case of Montgomery County, however, it is the creation of educational attractions and transportation which are of interest since an open enrollment policy already existed in much of the area.

Third, choices among educational programs implies an informed community of parents. Parents will be encouraged to transfer their children to the extent that they know about alternative programs in other magnet schools and know how to go about the process of transferring. Even though magnet programs may be successfully implemented in each of the schools, if parents are not informed about the range of choices available, there will be little desegregation activity. Thus, in a successful magnet program, there should be evidence of some means of communicating with parents; and the effects of such communication should be reflected in the parents' increased knowledge of the schools.

Fourth, a magnet schools program may also need to regulate the transfer acitivity among schools. Where transfer requests from a given ethnic group in a school are directed into schools with a higher percentage of that same ethnic type, the goals of desegregation are not served. Rather, the free choice and open enrollment policies should produce movement of ethnic groups among schools so as to even out the disparities between schools in their ethnic compositions. For voluntary transfers to serve the goals of desegregation, it may be necessary to regulate movement of different ethnic groups into and out of various schools. Specifically, transfers should be granted to members of an ethnic group when they request transfer into a school whose composition of that ethnic group is lower than that of the sending school. In this manner, the ethnic disparities between schools will be decreased.

In addition to these essential features of a magnet schools program, there are several corollary conditions which may limit or enhance its effectiveness such as the number of schools included, their location relative to majority and minority populations, their geographic dispersion, and the stability or mobility of the population. The magnet school concept may be implemented in only one school, or in a cluster of schools, depending upon the magnitude of the desegregation task. Where one large school serves a wide attendance area, such as a large senior high school, it may reasonably constitute a magnet school program by itself. However, magnet schools are more typically found as a cluster of schools in a larger area which is the target of desegregation activities.

The potential desegregation effectiveness of magnet schools also depends much upon their locations with respect to the ethnic composition of the community and the trend of demographic changes. One would expect voluntary desegregation to be more effective in relatively stable communities compared to areas of high pupil mobility. That is, the higher the mobility rate in a community, the quicker any desegregation gains could be erradicated through population mobility. In addition, given the need to transport children to schools, there are practical limits on how wide a network of schools can be included in a magnet cluster. Within these limits, however, a cluster of schools located on the areas bordering communities of different ethnic compositions will have a greater chance of desegregation success than a cluster located entirely within a community of predominantly one ethnic type.

OBJECTIVES OF THIS EVALUATION

The foregoing considerations of what constitutes a magnet schools program provide the basic structure for this evaluation. These issues have been translated into the following evaluation questions:

How suitable for desegregation was the design of the Takoma Park Magnet School Cluster?

To what extent did the following demographic conditions affect the potential for desegregation in the magnet schools cluster?

- o Minority composition of the schools and community
- o Location of the cluster
- o Pupil mobility rate
- o Demographic changes in the community

Were quality educational programs implemented?

To what extent did the magnet schools plan result in distinctive programs of educational quality relative to::

- o Schools within the cluster?
- o Prior programs in those schools?
- o Schools outside the cluster?

How well-informed were parents about the magnet schools?

Compared to nonmagnet parents, what was the level of parent awareness of the magnet schools program?

- o Knowledge of own school's program
- o Knowledge of the magnet schools' program
- o Knowledge of other neighborhood schools

What means of disseminating the magnet schools' program were relatively more effective?

Were magnet school parents more satisfied with their schools than nonmagnet school parents?

Compared to nonmagnet parents, to what extent did magnet school parents respond to the program by submitting transfer requests?

To what extent did the magnet schools affect pupil achievement?

To what extent did the program desegregate the magnet school cluster?

The chapters in this report are structured around this sequence of issues. Each of the chapters on magnet schools' planning and design, description of school programs, parents' knowledge and satisfaction, pupil achievement, and desegregation effects concludes with a discussion of how these factors have influenced the effectiveness of the magnet schools' program.

## CHAPTER II

## MAGNET SCHOOLS AND DESEGREGATION IN MONTGOMERY COUNTY

### DEMOGRAPHIC CHANGES IN MONTGOMERY COUNTY

An understanding of the minority and majority group population changes in Montgomery County and Area 2 over a period of years is essential to the desegregation planning process for the Takoma Park Magnet School Cluster and other schools. The method or mix of methods selected for desegregation, the number of schools included in the plan, the location of the schools and other aspects of planning depend upon a number of factors in the community such as the absolute level of minority enrollments, the rate of change of the minority/majority enrollment over a network of schools, the probable causes for these changes, and the likely expectations for change in the near future. A detailed prospectus of enrollment changes is clearly outside the scope of this analysis; however, information from existing enrollment records suggests a number of trends which should be scrutinized in desegregation planning and analysis. This chapter concludes with a discussion of how several of these factors influenced the potential for desegregation in the magnet schools cluster.

Considering first the overall enrollments for Montgomery County, Table 2.1 summarizes the changes in minority and majority enrollment over a 12-year period from 1968 to 1980.

TABLE 2.1

Enrollment and Population Changes in Montgomery County, 1968 to 1980

| YEAR | Majority | | Minority | | Mean Annual Change | |
|---|---|---|---|---|---|---|
| | N | Mean Annual Change | N | Mean Annual Change | MCPS | County Population |
| 1968 | 113,621 | | 7,828 | | | |
| 1972 | 114,113 | 0.1% | 12,799 | 15.8% | 1.1% | 2.8% |
| 1976 | 98,379 | -3.4% | 19,260 | 12.6% | -1.8% | 1.7% |
| 1980 | 77,386 | -5.3% | 21,457 | 2.8% | -4.0% | 0.9% |

In general, these data suggest a pattern of increasing minority and decreasing majority enrollments; however, the pattern is not consistent across the two groups, nor even across years within either group. It is clear that majority group enrollments have declined at an increasing rate since 1968. On the other hand, minority group enrollments increased quite rapidly between 1968 and 1976 and then virtually leveled off with very little increase between 1976 and 1980. Note also that while the population for the county as a whole has been increasing slowly since 1968, the MCPS enrollments have been dwindling at an increasing rate. A number of factors may potentially explain these enrollment changes.

## Birth Rate

The decline in the birth rate and the number of births in Montgomery County are often cited as explaining some of the enrollment decline. For example, the number of births in Montgomery County declined from a peak of 8,461 in 1963 to a low of 6,421 in 1973, while the birth rate per thousand residents declined from a high of 22.5 in 1961 to a low of 11.1 in 1975. However, the effect of birth rate on enrollment declines can be assessed more directly by comparing the elementary school enrollments in any given year to the number of births six to eleven years earlier; that is, the span of years during which the kindergarten through sixth grade population was born. For example, the enrollment in kindergarten through grade six during the 1973-74 school year was 64,364, and by 1978 the number had dropped to 49,263, a decrease of 23 percent. During the years 1961 to 1968 -- the years when the 1973 kindergarten through sixth grade population was born -- the total number of births in Montgomery County was 56,472. Between 1966 and 1972 when the 1978 kindergarten through sixth grade population was born, there were 53,772 births in the county. Thus, the births in the county decreased 4.8 percent, while the school enrollments for those appropriate years decreased 23.5 percent. At most, then, the declining birth rate could have affected only about 20 percent of the enrollment decline.

## Withdrawal to Private Schools

A growing disaffection with the public schools and a consequent withdrawal of children into private schools is often repeated as a contributing factor to declining enrollments. However, the data do not support this contention. During the years 1973 to 1979, the Maryland State Department of Education records indicate that the enrollment in the elementary grades of the nonpublic schools in Montgomery County was virtually stable. The number of elementary grade children enrolled in private schools in Montgomery County did not increase but remained close to 13,000 throughout this period, while the public elementary school enrollments declined by approximately 11,000 children. In addition, during that same period of time, the percentage of parents withdrawing their children from MCPS elementary schools to attend nonpublic schools remained at about 2.5 percent (plus or minus .3 percent). Thus, there is no increasing flight into private schools from public school enrollees.

## Nonreplacement of Aging and Departing Children

The data from Montgomery County census records and the school system suggest that the enrollment decline is due largely to the fact that as children in the county grow older and or migrate out of the school system, they are being replaced at a much slower rate. Several demographic features illustrate this phenomenon. Between the years 1970 and 1977, the number of people in Montgomery county below the age of 20 years decreased by 13,000; while the number between the ages of 20 and 44 years increased by 45,000. The proportion of county population over the age of 55 also increased. Note that this is not due to a general loss of population, since the overall population of the county, as indicated in Table 2.1, has been increasing slowly in recent years. Also, between 1970 and 1977, the percentage of county households listed as "single person or nonrelated" increased from 16 percent to 23 percent. The fact that a lower proportion of households in the county produce children is reflected in the decrease of mean household size from 3.3 persons

in 1970 to 2.93 in 1977, an 11 percent decrease. Over this period there was a similar decline of 10.1 percent in MCPS enrollments. Taken together, these data suggest that as children enter the adult population from the school population they tend to form single households of their own and delay marriage and childrearing and that their parents tend not to move out of their homes to make way for new child-producing families. It may be that the increasing costs of replacement housing tend to keep the older segment of the population occupying their paid-for homes. In addition, those families who do migrate into the county tend to have fewer or no children, perhaps also due to the increasingly high costs of maintaining a family household. These demographic characteristics account most fully for the continuing decline in school enrollments.

Ethnic Differences in County Demographics

The foregoing considerations provide a plausible explanation for the declining majority group enrollments noted in Table 2.1; however, they do not explain the increasing minority group enrollments. More detailed data from the Montgomery County census reports suggest that there are important ethnic differences in the demography of the county which explain much of the increase in minority enrollments. In general, the minority group population of Montgomery County is newer to the county, has younger families, has larger families, tends more to be apartment dwellers and renters, and has a higher rate of in-migration. The following data illustrate these characteristics.

The 1977 Montgomery County census update indicated that the mean years of residence in the county for those living in single-family dwellings was 8.6 years for whites and 4.6 years for nonwhites. Also, the proportion of families with heads of household under 35 years of age was 33 percent for minorities and 27 percent for majority group members. Thus, the minority population tends to be newer to the county and younger. In addition, while the mean household size for whites in single-family dwellings was 3.62, for nonwhites it was 3.81. For those living in apartments, the whites had a mean household size of 2.57, while the size of the minority households in apartments averaged 3.19. Thus, minority families are on the average larger. When the family size differences are combined with the fact that a higher percentage of minority households lived in apartments (48 percent) than did majority households (31 percent), it is apparent that more minority children per dwelling unit will enroll in school than is true for the majority group population. One final statistic combines with these demographic differences to explain the increasing minority group enrollments. Between 1970 and 1977 the number of minority group households in the county increased 118 percent, while the number of majority group households increased only by 25.3 percent during the same period. Thus, the higher in-migration rate for minorities and their larger family sizes combine to produce an increasing number of minority enrollments in the schools.[1]

It should be noted that while these ethnic differences in demography persisted between 1970 and 1977, the rate of increase in minority group enrollments has slowed considerably from earlier years, as indicated in Table 2.1 by the

[1] A ten-year pattern of minority group migration from the central city into the suburban areas surrounding Washington, D. C., was recently reported in The Washington Post, Sunday, December 14, 1980.

recent small annual rate of change. It may be that the economic constraints in the housing market which have served to reduce majority group enrollments are beginning to take effect within the minority population of the county.

In summary, the enrollment declines of majority group pupils appear to be a reasonably consistent phenomenon based on very pervasive demographic trends. Thus, the likelihood of continuing majority group enrollment declines over the next several years seems quite likely. The minority group enrollment increase appears to be a somewhat less consistent phenomenon. While the annual rate of increase between 1968 and 1976 exceeded 10 percent, that rate of increase now appears to be only about 2 or 3 percent. However, most of the increase in minority group enrollments since 1976 is attributed to the rapidly growing number of Asian pupils whose annual rate of increase since 1976 has averaged 12.2 percent. If the recent influx of Asian pupils proves to be a temporary phenomenon, then the minority enrollments in the county may be expected to remain relatively stable for the next several years. A relatively stable or slowly increasing number of minority pupils and with a steadily decreasing number of majority pupils suggest that the percentage of minority enrollments in MCPS will continue to rise, although not so fast as in the years prior to 1976 when the initial planning and implementation of desegregation activities in the county began.

DEMOGRAPHIC CHANGES IN AREA 2

The minority group enrollments in Area 2 elementary schools reflect the trends described above for the county as a whole. Illustrated in Figure 2.1 are the trends for minority and majority group enrollments for the 27 elementary schools in Area 2 from 1976 to 1980. The percentages of ethnic group enrollments for this time period are indicated in Figure 2.2. As noted above, the decreasing majority group enrollments appear to be a consistent trend. While the total minority enrollments appear to increase consistently, the most recent increases are found in the Asian group. The black enrollment has remained at about the same level for the last two years. Since blacks comprise the largest minority group, the effect of the relatively level black enrollments on the minority composition of Area 2 should be to slow slightly the rate of increase.

The percentage of minority group enrollments for Area 2 elementary schools and the county as a whole is plotted in Figure 2.3. It is apparent from these data that not only is the level of minority enrollments in Area 2 higher than that for the county as a whole but also that the rate of increase is faster. At the outset of the desegregation activities in 1976, the minority composition of the current Area 2 elementary schools was about 28 percent; while the county average was about 16 percent. This difference of 12 percentage points fell within the ESAA guidelines which recommend that no school should have a minority composition more than 20 percentage points higher than the school district average. By the fall of 1980, the Area 2 elementary schools had an average minority composition of 43 percent which was 22 points higher than the county average of about 21 percent. Thus, throughout Area 2, the demographic changes discussed above had the effect of carrying a number of schools over the ESAA guidelines for minority composition.

**Figure 2.1**
**MINORITY AND MAJORITY GROUP ENROLLMENT IN AREA 2 ELEMENTARY SCHOOLS**
**1976 to 1980**

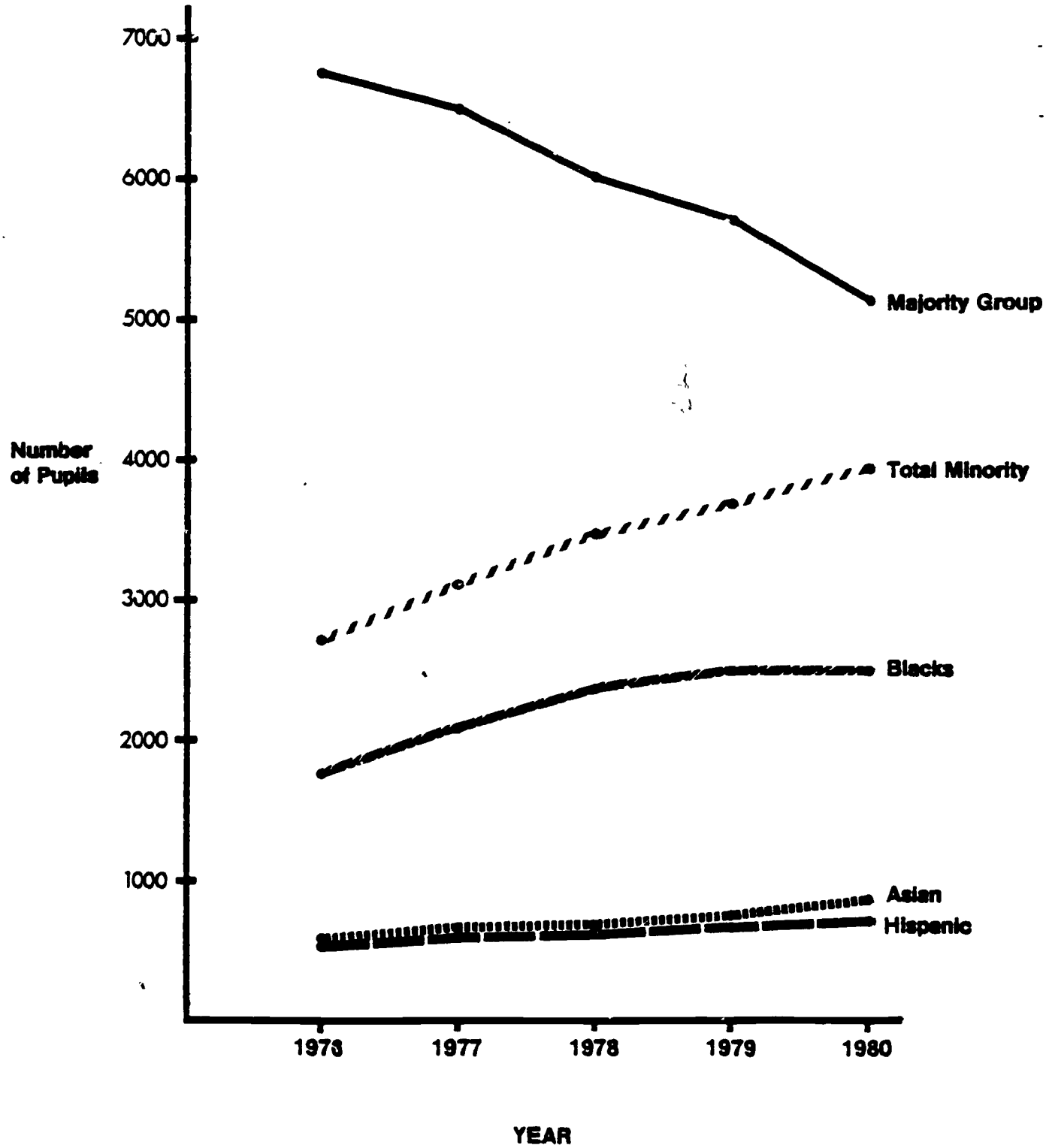


Figure 2.2
PERCENT OF AREA 2 ELEMENTARY SCHOOL ENROLLMENTS FOR MINORITY AND MAJORITY GROUP PUPILS
1976 to 1980

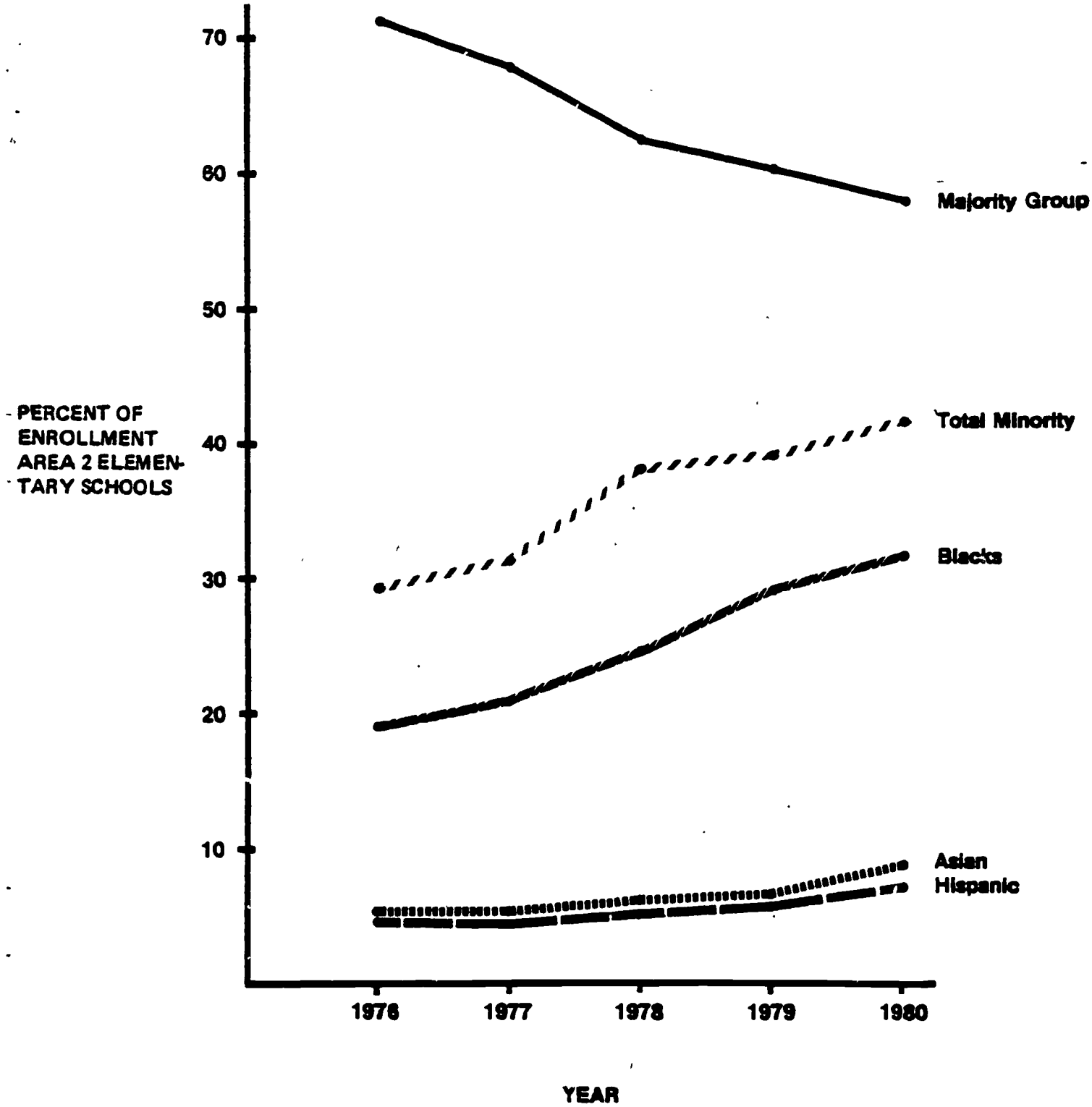
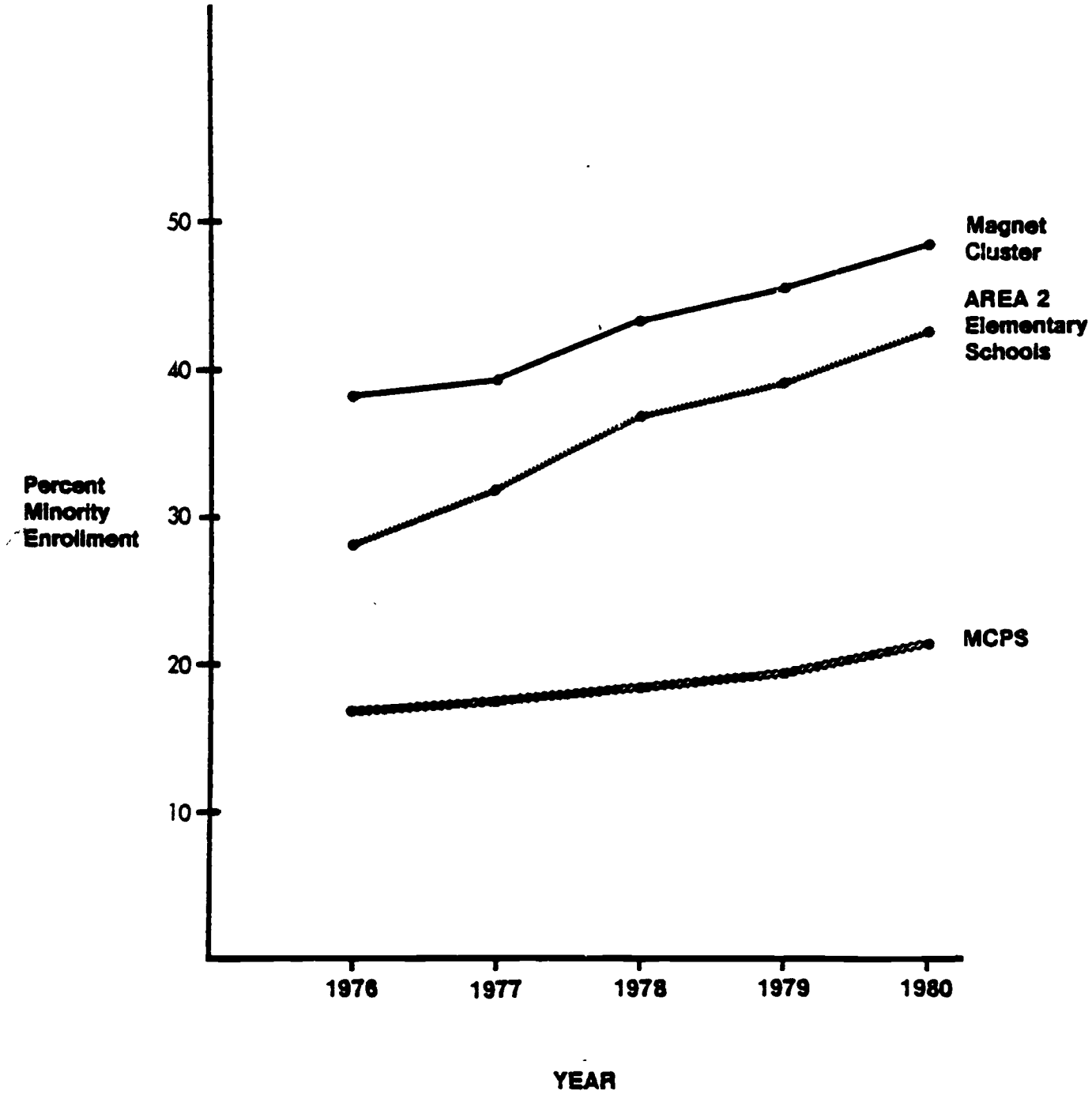


**Figure 2.3.**
**MINORITY ENROLLMENT PERCENTAGES FOR MCPS, AREA 2 ELEMENTARY, AND MAGNET CLUSTER SCHOOLS 1976 to 1980**



## CONCLUSIONS

The process of designing desegregation activities for a school system involves many decisions about what type of desegregation techniques or mixture of methods to employ, which schools to include, and how wide an area to encompass in the plan. An understanding of the scope of demographic changes in the community, their probable causes, and their potential effects in the near future can facilitate this planning process. A program intended to balance the schools by retaining majority group pupils is useful where decreasing white enrollments are due to increasing withdrawals. However, as we have seen, the primary reason for declining white enrollments is most likely not due to withdrawals but to "natural" attrition with no corresponding replacements. In addition, when a cluster of schools whose minority compositions are already relatively high is identified for desegregation activities, and the schools relatively low in minority composition are not designed as part of the cluster, it can be expected that the minority composition of the cluster as a whole will continue to increase even though the minority enrollments of the schools within the cluster may become more balanced. In this regard, it may be noted that not only did the minority composition of the Area 2 elementary schools grow to more than 20 percentage points greater than the county average but also that the average minority composition of the magnet cluster at the time of its formation already exceeded by more than 20 percentage points the county average. In planning for future desegregation activities, it may be useful to develop estimates of each school's projected minority composition and on this basis compose clusters of schools, school programs, and desegregation methods which are best suited to the realities of demographic movement within the community.

The next section provides detailed descriptions of the school programs at the seven elementary schools with the objective of determining the extent to which the magnet program features mandated by the Board of Education were in evidence in the schools.

## CHAPTER III

## DESCRIPTIONS OF PROGRAMS IN MAGNET SCHOOLS

This chapter is intended to provide a detailed understanding of the special features offered in the Takoma Park Cluster magnet schools. The office of Quality Integrated Education makes available brochures describing briefly the magnet program attractions at the various schools in the cluster, and the schools conduct open house visits each spring during the open enrollment period. Through these means a parent or other visitor may learn about each school's approach to education. The observations reported in this chapter are intended to supplement other means of magnet program description and in part to offer an "outsiders" perspective on what is attractive about the schools. At the conclusion of this chapter, the meaning of these various programs for quality education and for their relevance to desegregation are interpreted.

The data reported here were gathered in the spring of 1980 by Division of Program Monitoring staff. A staff member visited each school two to three times, conducting in-depth interviews with the principal, teachers, and other professional staff and observing in several classrooms. These reports are not intended to provide a measure of program implementation but rather to inform the reader about the range of magnet programs available in the cluster schools. The staff time and resources for detailed observational data were not available for this study. However, a detailed analysis of a teacher questionnaire on classroom resources and instructional procedures is discussed in Chapter IV of this report.

Table 3.1 below summarizes the variety of specific program features offered in the Takoma Park Cluster, as well as several other attractive features not specifically cited as magnet school features. These features and the spin-off benefits of these programs are discussed below for each of the seven magnet schools.

TABLE 3.1

Summary of Magnet Program Features
And Additional School Attractions Found
Across Seven Magnet Schools

| MAGNET PROGRAM FEATURES | East Silver Spring | Takoma Park | Rolling Terrace | Four Corners | Highland View | Oak View | Piney Branch |
|---|---|---|---|---|---|---|---|
| All day Kindergarten | X | | | | | | |
| Comprehensive Science Program | | | | | 0 | | X |
| Continuous Progress Emphasis | X | | | | 0 | | X |
| Standard Program with Some Subjects Taught in French | | | | X | | | |
| French Immersion with Most Subjects Taught in French | | | | X | | | |
| Spanish Bicultural Program | | | X | | | X | |
| Structured Program with an Emphasis on Academic Excellence | | | 0 | 0 | X | 0 | |
| Gifted and Talented Program | | X | 0 | | | | |
| **OTHER POTENTIALLY ATTRACTIVE FEATURES** | | | | | | | |
| Swimming | | | | | | | 0 |
| Industrial Arts | | | | | | | 0 |
| School Plant Renovation/ Construction | 0 | 0 | | | | | 0 |
| ISM (Computer math program) | 0 | | | | 0 | 0 | 0 |
| ESOL | | | 0 | | 0 | | |

X - Magnet Program Feature
0 - Other School Attraction

EAST SILVER SPRING ELEMENTARY (K - 3)

The special magnet features at East Silver Spring are the full-day kindergarten program and the continuous progress emphasis.

The major focus of the kindergarten program is early diagnosis of individual student strengths and needs, program planning, enrichment, continuous evaluation, and reinforcement. During the interview with the principal, it was stated that "many parents initially bring their children here for the full-day kindergarten activities, but once they come into the school and see the grea deal of special attention the we give to all of the children they generally elect to have their children remain in the school."

The Continuous Progress Program emphasizes helping individual students progress through the MCPS Program of Studies on a level and at a rate which is most appropriate for them in the areas of reading/language arts, mathematics, and spelling. For all pupils the process operates as follows:

1. Determine each child's skill level in reading, math, language arts, and spelling

2. Use the East Silver Spring Skills Objective Package (which is based on, but augments, the MCPS "Scope and Instructional Objectives for Skills in Mechanics of Written Expression") to determine what skills each child should master at each level of performance

3. Plan how best to teach the children and how they should be grouped

4. Teach the skills using appropriate materials and methods

5. Assess the child's mastery of skill(s)

6. Regroup according to the results of the assessment

This program requires detailed diagnosis of student learning needs and close monitoring of each child's progress. This task is accomplished using the continuous progress reading/language arts checklist, the Instructional System in Mathematics, and the Botel spelling program (modified). The process involves identifying the skill level of each child and providing that child with the appropriate level of instruction. Children are permitted to continue their progress through the program at the rate at which they demonstrates mastery of each successive skill level or objective. This is accomplished by forming small instructional groups of similiar skill levels and then regrouping children into their next skill level as they advance. The principal pointed out that this type of system is very useful in keeping teachers and parents informed about the progress of their children. Further, data which are collected and recorded for each child on the continuous progress checklist and the individual student profiles are forwarded to the child's next school (Piney Branch Elementary which also uses continuous progress and the ISM) to permit continuity of instruction through Grade 6.

Students are assigned to each of the homeroom or station teachers in heterogeneous groups. The mixture of children assigned to each classroom is based on two criteria: operational mode and reading skill level. Children are

diagnosed with regard to their skill level in reading and placed in one of four levels of high, average, low average, or low. The child is further diagnosed as functioning in one of three "operational modes" (independent, moderately independent, and dependent) which is basically the child's learning style. Thus, each homeroom typically contains 25-28 students, of varying ages, representing each of the four reading levels and consisting of independent, moderately independent, and dependent learners.

Students are assigned to one station teacher. however, each child will typically interact with at least two teachers each day and with four teachers each week because of special courses, such as, art, physical education, music, and other special subjects. Instructional aides, parent volunteers, and student aides from the local high school assist in the classroom, and in special centers and help staff by making instructional materials. The Continuous Progress program had been initiated four years prior to the beginning of the magnet school cluster.

The MCPS Program of Studies is taught primarily in an open space setting; however, the school's program is not an open-classroom program. Observations revealed the operation to be a semistructured program within clearly established boundaries or stations. Within each of the stations, there was considerable student autonomy, with students having access to a plethora of materials and activities. Each station contained an abundance of manipulative and visual instructional materials, both teacher-constructed and commercially prepared, as well as a wide variety of audiovisual equipment.

TAKOMA PARK ELEMENTARY (HS - 3)

The special feature at Takoma Park Elementary School is the Gifted and Talented Program. Instructional activities in the regular classroom setting and differentiated instruction in special classes form the two major components of this program. The instructional activities in the regular classroom setting are designed to allow those students participating in the gifted program to progress more rapidly in reading/language arts and mathematics than their counterparts. These activities are provided by the regular teacher with support from one of the three special teachers hired to teach these students. For example, the reading program includes the following activities for children who have been identified as being gifted and for some other children whose teachers feel they are capable of advanced work:

- Writing
- Multimedia productions using narration, description, exposition, drama, short stories, advertisements, and poems
- Research
- Newspaper/magazine production, including layouts and graphics

The second component of the program features an expansion of the basic instructional program through science, social studies, and a variety of special interest minicourses. The instruction in this program takes place for approximately two hours per day or ten hours per week. The primary emphasis during these instructional periods is on the development of cognitive concepts and processes, involving convergent, divergent, and evaluative thinking. Students in this group are provided opportunities to:

- Study major issues
- Study and research in depth
- Generalize and apply information and ideas
- Develop new and original ideas
- Initiate their own activities or projects leading to a product as the end result
- Use a variety of multimedia resources
- Interact with special mentors

The activities generally include:

- Data gathering: observing, counting/qualifying, interviewing, and experimenting
- Data organizing: classifying/defining, comparing, mapping/modeling, graphing/charting, and organizing statistics
- Data analysis: inferring, deducing, generalizing, predicting hypothesizing

The program, during the 1979-80 year, contains 75 students with approximately 25 at each grade level. The three classes observed contained 17, 19, and 20 students with 9 percent, 21 percent, and 35 percent minority, respectively. Of the 75 students presently in the program, 45 (60 percent) are transfers from other schools.

The program is supported with additional resources provided by QIE and other sources which include three special teachers whose primary duties are planning for and teaching those students in the program. These teachers also develop minicourses for gifted students, coordinate articulation between the basic instructional program and the gifted program and assist in counseling gifted students and parents.

In addition to the explicit contributions of the Gifted and Talented Program to the school, there are several positive "spin-off" effects of the program. One such effect is that when the gifted and talented children are pulled out of class there are only about 16 children left in the class with a teacher and an aide. This situation provides an opportunity for these children to receive more individual attention. Another "spin-off" effect is that other teachers in the building have the three teachers of the gifted and talented as in-house consultants or advisors for activities and projects that are conducted in the regular classroom.

Other benefits resulting from the Gifted and Talented Program are additional materials and equipment purchased with QIE funds as well as the opportunity to pilot the Comprehensive School Mathematics Program for Able Learners.

The decision by the Area 2 Office to begin global testing to identify gifted and talented children will probably result in more children being identified and enrolled in the program next year. The objective is to enroll pupils from each school in the cluster in proportion to its student enrollment in Grades 1 through 3.

In addition to the Gifted and Talented Program, other program attractions and benefits in the school include the Head Start, Kindergarten (1/2 day), and Title I programs. There is also an aide for each teacher, a Parent Room with

childcare facilities to allow parent participation in school activities, and the school organization which provides ten staff members for each 100 children in the school. The Parent Room and a portion of the Head Start funds are provided by a federal project which ends after 1980. The school also has a full-time counselor who has the responsibility of working with the entire student population. Also, the school building itself is newly built, with many facilities and an attractive design.

ROLLING TERRACE ELEMENTARY (HS - 4)

The special feature of the Rolling Terrace program is its Spanish Bicultural emphasis. This program was created to take advantage of the neighborhood's rich cultural diversity. It was started as an innovative program in September 1972. Since that time, it has been offered as part of the school's regular program. Materials used in the first year were developed specifically for the school by the central office supervisor and teacher specialist for foreign languages. Subsequently, program development work was done by the bicultural staff (a bilingual teacher and a bilingual aide under direction of the bilingual coordinator). The Spanish bicultural emphasis had been operational in the school for five years when the Takoma Park Cluster was formed.

A major goal of this program is to teach standard Spanish language skills to both native speakers and nonnative speakers of Spanish. In addition, the program strives to augment Hispanic students' pride in their culture and heritage and to acquaint nonnative speakers with Spanish culture. Classes at Rolling Terrace are self-contained. While students are grouped into classes heterogeneously, they are grouped and regrouped, within classes, according to their instructional needs.

There are two facets to the Spanish language program offered at the school. One involves Hispanics who are learning standard Spanish; the other, English speakers who are learning Spanish as a second language. The Spanish instruction is offered on a voluntary basis. All students, including those in Special Education classes, are given the opportunity to participate in the program, and most do. Instructional methods employ strategies and materials used to teach the Spanish language per se. No position for either program facet is funded by QIE.

The Spanish program for English speakers is offered in Grades K through 4. Kindergarten and first grade students participate at the beginning level. Kindergarten students receive instruction three times a week for 20-minute periods; Grade 1 students, five times a week for 30-minute periods. Emphasis here is on speaking Spanish. Students in Grades 2, 3, and 4 also receive instruction five times a week for 30-minute sessions; however, some are at the beginning level and others are at the intermediate level. In addition to oral skills, reading skills are taught to students who have reached the intermediate level. English speakers enrolled in the school's two special education classes are also offered the Spanish program on a voluntary basis. The special education students in the program receive instruction at the beginning level twice a week for 20-minute sessions. Since the staff feels more time should be spent with Hispanics' learning to speak and read English in Kindergarten through Grade 2, these students do not participate in the Spanish program until Grades 3 and 4. Those who take the program voluntarily at that time receive instruction daily, at beginning and intermediate levels, for 30-minute sessions.

In addition to the Spanish language program and the special education classes (for students with specific learning disabilities), Rolling Terrace has a Head Start program which provides teacher assistants through Title I funds. The school has an extensive ESOL program which is taught by a bilingual teacher. There is also a special program for highly able readers.

All students who transfer into the school are accepted into the Spanish program if they so request. During the past two or three years, the school's Hispanic enrollment has tapered off; but it has now begun to increase again and was 27 percent of the student population in May 1980. Seventy-five percent of the school's students participate in the Spanish Bilingual Program. Specifically, 36 percent are white; 39 percent, black; 17 percent, Hispanic; and 8 percent, other. Twenty-five percent of the schools enrollment are non-English-speaking students (such as Vietnamese, Cambodian, and Korean) who are enrolled in the ESOL program.

Observations at the school suggest that the program's bicultural emphasis pervades the school. When scheduled for Spanish sessions, students listen and repeat what they hear in Spanish, read aloud in Spanish, describe objects in Spanish, and play "learning" games in Spanish. There are also bulletin board displays which are done in Spanish/English or Spanish.

At Rolling Terrace the Program of Studies student outcomes have been expanded to include the teaching of Spanish language skills. This is done using oral/aural methods like those used countywide in the teaching of foreign language.

FOUR CORNERS ELEMENTARY (K - 6)

The emphasis at Four Corners is on a French immersion program in which French is the medium of instruction for academic subjects. The principal developed the program in response to parental demand for a foreign language program at the school. The direction of the Four Corners program, however, is not teaching a foreign language as language per se, but rather conducting the teaching of reading, mathematics, science, and social studies in a foreign language (French). The basis for this program, according to the principal, is the theory that students can best learn language when they have a need to understand and to communicate in that language. The goals of the French immersion program are for students to:

1. Master the MCPS Program of Studies objectives, using the French language as the medium of instruction
2. Acquire fluency in French (i.e., the ability to speak, write, read, and think in French)
3. Increase skills in listening and following directions

The planning stage of the program took place in 1973. During that year, the principal reviewed research on French immersion programs in Canada, worked with parents on preparing the program, and received permission to begin the program at the school. In 1974 and 1975 Four Corners had one French immersion class; in 1976, there where three. Four immersion classes existed in the school when the Takoma Park Cluster was formed in 1977. For the past two years, the school has had five immersion classes in operation.

The immersion classes are grouped heterogeneously and contain combination grade levels of students (e.g., Grades 1 and 2, 3 and 4 and 5 and 6). For students in Grades 1-4, the classroom teachers use the French language to teach curricular content for mathematics, science, social studies, English language arts, and reading; this comprises about 60 percent of the school day. Textbooks are in French, except for reading and English language arts texts which are in English; however, even though the texts for those two subjects are in English, the teacher uses French as the medium of instruction when teaching reading and English language arts in Grades 1-4. The remaining 40 percent of the school day is devoted to music, art, physical education, and media skills which are taught using the English language because specialists in these fields are not generally native French speakers. In Grades 5 and 6, mathematics, science, and social studies are taught using French as the medium of instruction (45 percent of the school day); English language arts, reading, music, art, physical education, and media skills are taught in English (55 percent of the school day). Textbooks are in the same languages as those described for Grades 1-4.

Another aspect of the Four Corners program is the offering of French as the medium of instruction twice a week for 20-minute sessions for those pupils not in the daily immersion program. In this approach, K-6 students are taught mathematics and map reading skills using French as the language for instruction. Instructional materials are written in French. Approximately 5 percent of the week's instruction is in French and 95 percent in English; therefore, this program is referred to as the English program. The goal of this facet of the Four Corners program is for students to acquire familiarity and confidence with the French language when used as the medium of instruction.

The school has a reading teacher and an aide who work with individuals, small groups, or whole classes on both advanced and remedial levels. There are also techers for art, physical education, general music, instrumental music, and Head Start. Parent volunteers and student aides are an important part of the program. Funds for materials, a half-t teaching position, and a three-quarters-time aide position are provi d by QIE for the Four Corners magnet program; otherwise, the schools's program is funded through regular MCPS allocations.

All Grade 1-6 students in the school whose parents apply for French immersion are admitted to the program. There are currently 140 students in the French immersion program. Of these students, 100 come from outside the Four Corners attendance area; 40 of this 100 are from within the Takoma Park cluster, and 60 are from outside the cluster. All of the students who transfer to take the immersion program are enrolled in it. Eighty percent of the immersion students are white; 13 percent, black; 3 percent, Asian; and 1 percent, American Indian.

Observations at the school support the "immersion nature" of the program. Classroom teachers are heard using French almost constantly while teaching their academic subjects. Students work with materials written in French; and they talk to each other, to teachers, and to the principal in French, not only in the classrooms but also in the halls. Visitors to the immersion classrooms are requested to refrain from speaking English while in the classroom.

HIGHLAND VIEW ELEMENTARY (K - 6)

The emphasis at Highland View, as described both in the Cluster brochure and by the school's principal, is on a tradional, self-contained structured program. This program began in 1974 because of the principal's concern that students' instructional needs necessitated more structure in the school program. Since that time, the program has evolved, with staff input, and now includes a class progress monitoring process for academic skills. This monitoring process uses a series of periodic "minitests" organized by the principal. These tests have been put together, over the past seven years, for use at Highland View Elementary School specifically. Fifty percent of the tests were developed by the principal and 50 percent by others, such as area teacher specialists. They are administered by the teachers and checked by the office staff. The principal maintains a master set of charts to review class progress.

The objectives of the program are to:

1. Promote academic excellence

2. Provide an environment in which children of all abilities are challenged to develop their full potential

3. Promote students' sense of mutual respect for the rights and property of others

Educational activities are primarily teacher-directed ones which are carried out in a self-contained classroom environment. Classes are set up by grade level and include students of varying abilities. Within each classroom, students are grouped by performance levels to facilitate learning. The nucleus of the Highland View structured approach includes:

1. Use of the same publisher's series of textbooks for a specific subject's resources (for example, across grade levels, the Harcourt Brace series is used for reading, Scott-Foresman for mathematics, and Macmillan for English language arts)

2. Emphasis on the teacher as the leader of the classroom instructional program

3. Emphasis on the "skill" subjects of reading, mathematics, and English language arts

4. Use of weekly reports to parents to inform them of the status of the student's completion of the week's work

In addition to receiving instruction through regular classroom programs in reading, mathematics, English language arts, and social studies, students in Grades 1-6 also receive instruction in science from a teacher who is especially trained to teach this subject. The practice of having students report, as a class, two or three times a week to a science teacher was begun in 1973 and was well established by the time the Takoma Park Cluster came into being in 1977. This special science instruction in a science center is augmented by the classroom teachers through science reading assignments for which the science teacher gives the classroom teachers direction.

The school has a mathematics resource teacher, funded by QIE, who works with small groups of students four or five times a week. There is also a math aide who is allocated through the Instructional System in Mathematics. There are two resource teachers, funded by special education, who diagnose student learning needs and prescribe appropriate instruction. Two compensatory education aides, funded by Title I, work through the classroom teachers to give extra help to students in reading, English language arts, and math. A reading specialist and reading aide work with small groups for enrichment or remediation and with classes as a whole, for Grades 2-6, once a week. In addition, the school's program includes special education, Head Start, art, music, physical education, instructional music, and ESOL teachers.

Observations at the school bear out the structured nature of the program. Students receive instruction both in small groups and as a whole class. Small groups work on teacher-provided options; i.e., even when the teachers give students a choice as to which tasks they will work on, these tasks are set by the teachers rather than by students through their free choice. Class instruction is teacher-directed and includes methods such as using a basal textbook on a structured, teacher-directed basis; "drilling" students on "basics" such as spelling or grammar and usage; and making whole-class assignments to be worked on by students orally or silently.

OAK VIEW ELEMENTARY (K - 6)

The special magnet feature of Oak View Elementary is its Spanish bicultural emphasis. This program, which began in 1977, is adopted from the Spanish Bicultural Program which began at Rolling Terrace Elementary in 1972 and is available, on a voluntary basis, to all students enrolled in Grades 1-6. The program is administered at four different levels (beginning, intermediate, advanced, and bilingual) based on the student's Spanish competency. ESOL is also provided to non-English-speaking students. The goals of the program, as expressed by the principal, are to provide:

- Non-Hispanic children with an awareness and appreciation of another language and culture

- Spanish-speaking students with listening, speaking, reading, and writing skills while developing and maintaining an appreciation of their own cultural heritage

During FY 80, 35[illegible] pupils (85 percent of the schools' enrollment) participated in the program. The majority of those students not participating in the program were other minorities who were concentrating on learning English. All of the students participating in the program received Spanish language instruction everyday for 30-45 minutes, depending on their level of Spanish competency. Discussions with one of three Spanish teachers revealed that they used the audiolingual instructional approach, as opposed to the grammartic-translation approach. It was further revealed that while many of the Spanish-speaking students in the bilingual level were proficient at speaking Spanish they were unable to read or write in Spanish: hence, instruction related to these areas was emphasized. Subsequent classroom observations support those findings.

Additional program support is provided through QIE including funds for materials, two and one-half teachers for Spanish instruction, and two ESOL teachers. The principle indicated that there was a total of eight bilingual persons on his staff with at least one at each grade level.

The MCPS Program of Studies, as well as the Spanish program, is delivered in a structured environment with most of the instruction conducted in self-contained classrooms. The curriculum consists of reading, mathematics, English language arts, social studies, and science. Students receive additional instruction in physical education, art, and music. In music, upper grade level students are able to receive lessons in guitar or recorder. New programs and materials which have been implemented over the last two years include the following:

- The Instructional System in Mathematics with computer terminal assessments
- The Zaner/Bloser Handwriting Program for Grades 1-4
- The Houghton Mifflin Reading Series for Grades K-6

These programs have also been supplemented with a variety of new kits in math and social studies. Other innovations include more team teaching which allows the school to combine the particular skills and strengths of all staff members.

PINEY BRANCH ELEMENTARY (4 - 6)

An exemplary science program is the school's major magnet feature. It is a program resulting from the concerted effort of the science task force formed in the spring of 1977 and charged with the responsibility of producing a detailed written description of a science curriculum. This committee was composed of the principal of the school, parents, teachers, science specialists, supervisors from the area and central offices, and a representative from the (QIE) team. A special science teacher was hired to plan, coordinate, and direct the schoolwide science program. Other resources and support were supplied in the form of additional funds for materials and equipment, staff training, and aides.

The program includes both the biological and physical sciences developed around the Science Curriculum Improvement Study (SCIS) and supplemented with special units from the Elementary Science Study (ESS) and Concepts in Science (CIS) programs. The program emphasizes a "hands on" approach using observation and experimentation as the primary modes for instruction.

Originally the program content was presented to the upper grades (5 and 6) in a two-year sequence consisting of three 12-week units of study each year. The program has since evolved to 4 units of 9-week duration. The content includes units such as Energy Sources, Communities, Batteries and Bulbs, Ecosystem, and Models. Plans for the 1980-91 school year include a unit on machines.

The fourth grade program has 9-week units in environments, relative position and motion, and a third unit consisting of two shorter presentations in sound and light. Additional topics such as weather, pendulums, kitchen physics, and geology are explored in the fourth unit as time permits.

The majority of the instruction is conducted within each open-space teaching station by the classroom teacher; however, individual classes are also taught in the science laboratory on a rotating basis. The special science teacher therefore, teaches miniunits and laboratory lessons to all students.

The school encourages the integration of science in all subject areas and promotes several schoolwide activities. An example of this is the spring horticulture project. In this project each class module participated in a comprehensive series of botanical activities, i.e., growing flowers and vegetables under different environmental conditions.

The science program is further augmented by several outside field trips and guest lecturers. The number of science-related trips is greater than that considered the normal quota for other schools. Included in these trips are excursions to Brookside Nature Center, Brookside Botanic Gardens, the Thomas Edison building, and other places of scientific interest. School-based presentations included demonstrations by PEPCO, the Franklin Institute of Science, National Bureau of Standards (NBS), and the Smithsonian Institute.

In the 1980-81 year the Gifted/Talented program frmo Takoma Part continues into Piney Branch.

Other special features included in the science program for students demonstrating high ability and/or interest in science are special enrichment activities coordinated by the special science teacher. Included among these activities are the Gifted Science Project which provides materials and mentors for approximately 40 students; the Science and Technology Enrichment Program (STEP) consisting of seminars and demonstrations by experts from the National Bureau of Standards in which over 80 students participated last year; and a special class for superior science students conducted by the science teacher to foster creativity and higher levels of thought processes.

In addition to the Science Magnet Program, the school has several other very attractive features which are either fully operational or planned for the near future. One such feature is the indoor swimming pool which in used to provide 14 weeks of swimming and water safety for all students. Another feature is the use of the Continuous Progress emphasis which is utilized by East Silver Spring Elementary to closely monitor individual student progress in reading/language arts. The Continuous Progress emphasis is also incorporated into mathematics by using the Instructional System in Mathematics and its computer terminal support.

CONCLUSIONS

From this brief review of the programs in magnet schools, it is apparent that the magnet program features mandated on March 16, 1977 by the Board of Education for each of the schools have been put into practice. The variety of the programs, the enthusiasm of the teachers and staff, and the detailed attention to instruction observed during the school visits make all of these schools appear attractive. In addition to the mandated magnet programs, each school has a number of other features which may be perceived by parents as attractive supplements to the school program, as is true for many schools in MCPS. In fact, as noted above in Table 3.1, various schools share a number of similar features. The presence of such variety in the schools undoubtedly contributes to the attractiveness of the schools.

However, there are a number of characteristics of the magnet school cluster which, while they may contribute to the attractiveness of any one school, may detract from the maximum desegregation effectiveness of the cluster as a whole. These characteristics may be considered cluster design features rather than specific school attributes. First, the fact that there are similar (though not identical) program features among schools detracts from the distinctiveness between schools, thus potentially reducing the drawing power of one school vis a vis another. Yet the effectiveness of the magnet concept is based on there being differential attractions among schools throughout a cluster. Under extremes of program overlap among schools, there may exist quality programs throughout the cluster, and parents and teachers may be quite satisfied with their schools; but the presumably contented parents would not be highly motivated to seek something different in other schools. This condition would not promote voluntary transfers among schools for the purposes of desegregation.

Second, most of the programs declared to be magnet program features had, in fact, already existed in the schools for several years. This condition allows the programs potentially to be more effective due to development of the staff and program over time. However, since the community was to some extent familiar with the school programs before the onset of the magnet program, we would expect the programs to generate less interest among parents than newly implemented program ideas. When this condition is combined with the fact that an open enrollment policy already existed throughout the area schools, we can see that several ingredients of a magnet schools program were already in operation. Thus, parents may not have been as interested in transfering their children as they would have been if a series of "new attractive programs" and a new open transfer policy had just been initiated.

Third, the seven magnet schools cannot all draw pupils from one another. For the magnet concept to operate most effectively, any one school should be able to enroll a pupil from any other school. In such a manner voluntary pupil transfers could best balance the minority group enrollments among schools. However, in the Takoma Park cluster, three lower elementary schools are designed to articulate with two other upper elementary schools. Such grade pairings among schools may well contribute to desegregation through mandatory articulation patterns. However, such desegregation could not be attributed to the magnet programs within those schools.

Thus, while quality educational programs may be operating throughout the magnet school cluster, the structure of the cluster may be inhibiting to some extent the maximum desegregation effectiveness of the program. The extent to which the magnet school programs may be distinctively different from other nonmagnet schools and how knowledgeable and satisfied the parents were concerning their schools, are considered in the following chapter.

## CHAPTER IV

## COMPARISON OF SCHOOL PROGRAMS IN MAGNET AND NONMAGNET SCHOOLS

### BACKGROUND

For magnet school programs to promote voluntary desegregation, they must have distinctive educational features which can potentially attract parents from outside the school's neighborhood. In Chapter III the fact was established that the magnet schools did have a variety of distinctive educational features which could attract parents. It was concluded that the differential attractiveness of the cluster schools relative to each other was limited to some extent by grade articulation patterns and by the fact that several of the schools did not inscigate new programs with the onset of the magnet plan but rather continued programs which had been in existence for several years. In this chapter the extent to which the magnet cluster schools have educational programs distinctively different from those found in nonmagnet schools in the same general area is examined. If no differences in the educational programs can be found between magnet and nonmagnet schools, then there can be little claim that the magnet program actually produced differentially attractive schools. However, to the extent that factors of educational quality are found more in magnet than in nonmagnet schools, it can be argued that the conditions for promoting voluntary desegregation by means of the magnet concept are present in the cluster schools. Thus, the magnet cluster is compared to a group of nearby nonmagnet schools on various aspects of educational quality.

The definition of educational quality is, of course, the object of much debate. Most authorities agree that there is no one best way to educate children, but consensus on the effectiveness of any one technique is difficult to find. There are, however, a few dimensions which reviewers of a large number of studies tend to find more consistently associated with successful educational programs. These are the following:

- More adults in the classroom
- The presence of independently-paced or small-group instruction
- Greater amounts of instructional time in a subject

These factors, together with several other aspects of the school programs such as special instructional materials, resources, or approaches to education, were identified for study in a sample of magnet and nonmagnet schools. The comparisons between magnet and nonmagnet schools also included levels of staffing in various classroom and support positions and teachers' reports about what they like or dislike about their schools. It should be emphasized that the features discussed here are considered inputs to the educational process as reported by teachers and are not instructional activities actually observed in the classrooms. However, these factors at least identify certain preconditions to implementing quality educational programs.

### METHOD

A teacher questionnaire was developed to assess the school features identified above. The questionnaire asked teachers about a number of characteristics of each class which they taught throughout a typical week. Thus, indicators of

educational quality could be analysed for each of the core curricular areas of math, reading, English language arts (ELA), social studies, and science.

The questionnaire forms were circulated to all teachers in the seven magnet schools and a sample of seven nonmagnet schools in the same administrative area of the district. The 7 nonmagnet schools were selected at random from the 21 nonmagnet schools in the area. In the total sample of 14 schools, there were 290 teachers of grades kindergarten through six. The analyses below are based on 192 returns, producing a total response rate of 66.2 percent. There was no significant response bias due to ethnicity since the total sample was composed of 23.4 percent minorities, while the respondent sample consisted of 22.8 percent minority group teachers. Table 4.1 summarizes the response rates by schools and magnet status.

TABLE 4.1

Sample and Response Rate of Schools
to Magnet Schools Teacher Questionnaire

| Magnet Schools | Teachers Assigned | Teachers Responding | Response Rate |
|---|---|---|---|
| East Silver Spring | 18 | 11 | .61 |
| Four Corners | 18 | 13 | .72 |
| Highland View | 23 | 22 | .96 |
| Oakview | 26 | 8 | .31 |
| Piney Branch | 28 | 18 | .64 |
| Rolling Terrace | 17 | 13 | .76 |
| Takoma Park | 26 | 23 | .88 |
| Subtotal | 156 | 108 | .692 |
| Nonmagnet Schools | | | |
| Cannon Road | 21 | 16 | .76 |
| Westover | 23 | 11 | .48 |
| Georgian Forest | 19 | 17 | .89 |
| Arcola | 15 | 8 | .53 |
| Glenallen | 21 | 15 | .71 |
| Strathmore | 19 | 11 | .58 |
| New Hampshire Estates[1] | 16 | 6 | .38 |
| Subtotal | 134 | 84 | .627 |
| Total | 290 | 192 | .662 |

[1]This school conducted an independent magnet program not structured as part of any magnet cluster.

## Teacher Background

An important aspect of the schools, apart from the instructional program, is the background of the teaching staff. The teachers were asked on the questionnaire to report their areas of certification, of extra training, years of experience, and their ethnic type.

The data in Table 4.2 suggest that the background and experience of the teachers in the magnet and nonmagnet schools are largely similar. The magnet schools do, however, have a higher percentage of minorities on their staffs (28.2 percent) than do the nonmagnet schools (17.7 percent). In addition, the

TABLE 4.2

Comparison of Teacher Background in Magnet and Nonmagnet Schools

| | | Magnet Schools | Nonmagnet Schools |
|---|---|---|---|
| Percentage Minority Staff | Sample | 25.0 | 19.7 |
| | Total Group | 28.2 | 17.7 |
| **Percentage Certified:** | | | |
| Elementary | | 65.7 | 81.2 |
| Early Education | | 25.9 | 22.4 |
| Special Education | | 6.5 | 8.2 |
| Secondary | | 10.2 | 3.5 |
| Reading | | 10.2 | 7.1 |
| Art | | 3.7 | 3.5 |
| Music | | 5.6 | 4.7 |
| Physical Education | | 3.7 | 1.2 |
| Science | | 1.9 | 1.2 |
| Math | | 1.9 | 1.2 |
| Foreign Language | | 7.4 | 0.0 |
| **Percentage Extra Training in:** | | | |
| ESOL/Bilingual | | 12.0 | 7.1 |
| Foreign Language | | 13.0 | 5.9 |
| Gifted/Talented | | 30.6 | 30.6 |
| Science | | 20.4 | 21.4 |
| Dramatics | | 25.0 | 20.0 |
| Music | | 19.4 | 16.5 |
| Physical Education | | 11.1 | 11.8 |
| **Percentage Years of Experience:** | | | |
| 1 - 4 | | 13.4 | 6.6 |
| 5 - 14 | | 57.7 | 50.0 |
| 15 - 24 | | 21.6 | 30.3 |
| 25 - 34 | | 5.2 | 10.5 |
| 35 + | | 2.1 | 2.6 |

proportion of teachers with less than five years of experience is twice as high in the magnet schools (13.4 percent) as it is in the nonmagnet schools (6.6 percent). The two groups are roughly comparable in teachers' training and certification; however, magnet schools' teachers hold fewer elementary and more secondary teaching certificates and indicate somewhat more training and certfication in the foreign language, bilingual, and reading areas.

INSTRUCTIONAL RESOURCES AND APPROACHES

One aspect of the schools which is intended to make magnet school programs more attractive is the offering of special features or distinctive approaches not found in other schools. A number of such approaches were described in detail as they appeared in the magnet schools; however, no such description was presented for the nonmagnet schools. In the questionnaire teachers were asked to report for each of their classes whether or not they employed a number of distinctive approaches or any of the several supplementary instructional resources. The percentages of teachers who responded in the affirmative are reported in Tables 4.3 and 4.4 for the magnet and nonmagnet groups separately. Across the five core curricular areas, the number of respondents for any one item ranged from 40 to 65.

The data in Table 4.3 suggest that while many of the special educational approaches found in magnet schools can also be found in nonmagnet schools, several approaches are significantly more prevalent in magnet schools. Exposure to and use of a foreign language was virtually absent in the nonmagnet schools, while in the magnet schools the use of a foreign language ranged from 5 to 13 percent of the teachers across the five core curricular areas. These classes are accounted for most by the French Immersion program in Four Corners elementary school and also by the Spanish Bilingual programs in Rolling Terrace and Oak View schools. Advanced placement and gifted/talented classes were more prevalent in magnet schools, particularly in math, reading, and ELA where one quarter to one third of the teachers indicated the presence of advanced placement or G/T students. In social studies and science, only about 2 percent of the nonmagnet teachers indicated this program feature, while 18 to 22 percent of the magnet teachers responded

TABLE 4.3

Percentage of Teachers Who Use a Given Instructional Approach in a Given Subject in Magnet and Nonmagnet Schools

| Approach | SUBJECT Math | Reading | ELA | Social Studies | Science |
|---|---|---|---|---|---|
| Foreign Language | 13.2<br>1.7 | 11.6<br>1.9 | .05<br>.00 | 7.4<br>1.8 | 7.5<br>0.0 |
| Advanced Placement G/T | 38.2<br>15.0 | 29.0<br>14.8 | 25.0<br>10.3 | 22.1<br>1.8 | 17.9<br>2.0 |
| Structured-Self-Contained | 64.7<br>61.7 | 60.9<br>55.6 | 53.3<br>51.7 | 48.5<br>45.5 | 44.8<br>43.1 |
| Cross-Cultural Emphasis | 14.7<br>10.0 | 36.2<br>13.0 | 30.0<br>13.3 | 38.2<br>29.1 | 16.4<br>9.8 |
| Teacher Teaming | 20.6<br>21.7 | 21.7<br>25.9 | 15.0<br>20.0 | 19.1<br>23.6 | 19.4<br>19.6 |
| Student Learning Contracts | 17.7<br>13.3 | 15.9<br>27.8 | 11.7<br>25.0 | 8.8<br>9.1 | 10.5<br>7.8 |

Note: Magnet-nonmagnet contrasts circled are statistically significant at the .05 level.

Key: Magnet
Nonmagnet

in the affirmative to this issue. In reading and ELA, significantly more magnet than nonmagnet teachers indicated the use of cross-cultural materials or emphasis.

One of the magnet school programs described in Chapter III was a traditionally structured, self-contained academic program. However, between 43 and 65 percent of all magnet and nonmagnet teachers across all five curricular areas indicated that they used a structured, self-contained learning approach in the classroom. In part, this high level of response may reflect a lack of specificity in the item on the teacher questionnaire. There may be a wide lattitude of classroom organizations and approaches which teachers feel justified in calling "structured." This does not necessarily mean that the Highland View school's structured program is not unique in its approach, but it does suggest that a structured program's claim to distinctiveness would have to be based on fairly explicit contrasts with what is apparently a typical approach in many schools.

To a certain extent the presence of additional or supplemental resources and materials in the classroom suggests educational quality. Of course, "hardware" in and of itself cannot contribute to learning without the guidance of a teacher; however, teachers of innovative or unique programs may be expected to draw upon a more diverse set of resources. Thus, teachers were asked to indicate the extent to which they make use of a number of learning materials in their classrooms. The data in Table 4.4 suggest that many such materials were found about equally in both magnet and nonmagnet schools. In

the math courses, however, a significantly greater percentage of magnet teachers indicated the use of extra classroom kits and audiovisual aids, as well as a higher percentage of computer terminal useage. In ELA courses the magnet teachers also cited a significantly higher useage of audiovisual aids and individual skills checklists. In general, then, the data on curricular approaches and materials suggest that pupils in the Takoma Park Cluster are exposed to a somewhat wider range of educational programs and materials than those in the nonmagnet schools.

TABLE 4.4

Percentage of Magnet and Nonmagnet Teachers Who Use a Given Instructional Resource in a Given Subject

| | SUBJECT | | | | |
|---|---|---|---|---|---|
| Materials | Math | Reading | ELA | Social Studies | Science |
| Classroom Kits | 76.5<br>48.3 | 72.3<br>59.2 | 63.3<br>46.7 | 66.2<br>45.5 | 74.6<br>66.7 |
| Lab | 26.5<br>21.7 | 30.4<br>16.7 | 11.7<br>15.0 | 13.2<br>5.5 | 22.4<br>11.8 |
| Audiovisual Aids | 69.1<br>48.3 | 62.3<br>46.3 | 68.3<br>48.3 | 76.5<br>65.5 | 67.1<br>56.9 |
| Supplementary Texts | 66.2<br>66.7 | 60.9<br>61.1 | 61.7<br>51.7 | 58.8<br>70.9 | 53.7<br>60.8 |
| Textbook Series | 54.4<br>55.0 | 63.8<br>66.7 | 48.3<br>55.0 | 33.8<br>40.0 | 35.8<br>37.3 |
| Skills Checklist | 35.3<br>36.7 | 31.9<br>31.5 | 41.7<br>25.0 | 10.3<br>9.1 | 4.5<br>7.8 |
| Computer Terminals | 2.9<br>6.7 | -<br>- | -<br>- | -<br>- | -<br>- |

Note: Magnet-nonmagnet contrasts circled are statistically significant at the .05 level.

Key: Magnet
Nonmagnet

ADULTS IN THE CALSSROOM

The number of adults assisting the teacher in the classroom may be considered another aspect of educational quality. While the stereotype of an elementary school classroom has one teacher in front of a class of 26 pupils, that type of classroom is difficult to find in Montgomery County. Or, if it is found, it may be rearranged during the next class period. To the extent that a teacher is supported by other adults in the classroom, the teacher may delegate certain instructional and monitoring activities and become a more effective manager of a variety of simultaneous learning activities in the class. Such an arrangement implies smaller instructional groupings and more

individualized attention. In addition, more specialized assistance may be available in the form of resource room teachers and specialists. To examine this issue, the teacher questionnaire asked teachers to indicate the amount of time they were assisted by other adults in their various classes. The data in Table 4.5 indicate the percentage of teachers in the magnet and nonmagnet groups who reported that they were assisted at least once per week or more by the following types of adults: high school students, parents, instructional aides; special education or resource room teachers, or another classroom teacher.

TABLE 4.5

Percentage of Teachers Who Are Assisted by Another Type of Adult in the Classroom for Different Subjects

| | SUBJECT | | | | |
|---|---|---|---|---|---|
| Type of Adult | Math | Reading | ELA | Social Study | Science |
| High School | 36.2 | 28.9 | 33.3 | 28.0 | 42.2 |
| Students | 23.8 | 16.2 | 20.5 | 17.1 | 39.2 |
| Parent | 37.5 | 42.0 | 39.0 | 28.3 | 22.2 |
| | 23.7 | 17.7 | 27.8 | 23.3 | 14.8 |
| Instructional | 80.0 | 77.4 | 69.1 | 56.5 | 52.1 |
| Aide | 43.6 | 58.3 | 42.1 | 29.4 | 28.1 |
| Resource Room | 37.7 | 58.0 | 44.7 | 35.6 | 31.2 |
| Teacher | 27.8 | 40.0 | 33.3 | 10.3 | 11.1 |
| Another | 34.0 | 32.6 | 25.7 | 33.3 | 35.7 |
| Teacher | 21.9 | 32.1 | 23.3 | 26.9 | 19.2 |

Note: Magnet-nonmagnet contrasts circled are statistically significant at the .05 level.

Key: Magnet
Nonmagnet

In all of the five core curricular areas, more magnet than nonmagnet school teachers reported the assistance of all types of adults. The greatest contrast was for instructional aides. Magnet school teachers reported the presence of aides in 52 to 80 percent of their classes, especially in the areas of reading and math, whereas the nonmagnet teachers' reports of aides ranged from 28 to 58 percent. Resource room teachers assisted magnet school teachers in about one third of their science and social studies classes, while the same form of assistance was reported in only about 10 percent of the nonmagnet classes. Also, parents in the classroom were significantly more frequent in magnet school reading classes (42 percent) than in nonmagnet schools (17.7 percent). For both groups of teachers, when aides and resource room teachers were present, they tended to be more frequent in reading, math, or ELA classes than in social studies or science.

These data suggest that a child attending school in the Takoma Park Cluster would more likely attend classes in which there were more adults, particularly aides, and particularly in reading and math, than would be so in the nonmagnet schools. This pattern may also suggest more small-group or individulaized instruction, a topic to which this study now turns.

GROUPINC METHODS WITHIN CLASSROOM

Few would argue with the assertion that individual instruction enhances pupil learning; however, it is equally obvious that no school system can match its instructional levels to each individual student's performance level. Inevitably, where attempts are made to individualize instruction, the instruction is delivered to groups of students whose ability levels are approximately similar, whether that be to a whole class, or subgroups within class, or even individually to pupils under special conditions. Of course, the smaller the instructional group, the more responsive the teacher can be to individual learning needs.

In several of the magnet schools, part of their magnet program was to provide pupils with individualized, continuous progress instruction, yet these schools often grouped children for instructional purposes. At the same time, even though the traditionally structured, self-contained classrooms come closest to the stereotype of whole-class instruction, their teachers too employed subgroupings of pupils on occasion. Thus, some indication of classroom grouping strategies may provide more information about the extent of individualization in teaching than would be suggested by the general label of a curricular approach. It is for that reason that items were included in the teacher questionnaire asking teachers to indicate the frequency with which they utilized different grouping strategies within their various classes. The questionnaire asked about the following grouping methods: large classes (more than one class at a time), whole class, small groups within class, and individualized or independent learning.

TABLE 4.6

Percentage of Time Which Various Grouping Methods Are Utilized in Classrooms for Care Curriculum

| Instructional Grouping Method | SUBJECT | | | | |
|---|---|---|---|---|---|
| | Math | Reading | ELA | Social Studies | Science |
| Large Groups | 1.52<br>1.78 | 1.22<br>1.83 | 1.68<br>1.65 | 1.96<br>1.73 | 1.80<br>1.92 |
| Whole Class | 2.40<br>2.87 | 1.73<br>2.40 | 2.69<br>3.16 | 3.54<br>4.15 | 3.65<br>4.09 |
| Small Groups | 4.33<br>3.74 | 5.0<br>4.3 | 4.0<br>3.6 | 3.2<br>3.2 | 2.7<br>2.9 |
| Individual Independent | 3.2<br>2.6 | 3.1<br>2.8 | 2.7<br>2.3 | 2.6<br>2.4 | 1.7<br>1.1 |

Note: Magnet-nonmagnet contrasts circled are statistically significant at the .05 level.

Key: Magnet
Nonmagnet

Scale
6=Always
5=More than 75%
4=51% - 75%
3=25% - 50%
2=1% - 24%
1=Never

The data in Table 4.6 indicate (on a scale of 1 to 6) the average frequency with which magnet and nonmagnet teachers reported the use of different instructional groupings in their classes. In general, for both magnet and nonmagnet classes, small groups within class was the most frequent grouping strategy, followed next by whole class instruction. In addition, smaller groupings were used more for the basic skills areas than for social studies or science. However, the contrast between magnet and nonmagnet schools indicates that magnet classes employed small group instruction in reading and math significantly more often than nonmagnet classes. Similarly, the magnet math classes were more frequently individualized than the nonmagnet classes. Conversely, whole class instruction was utilized significantly more often in the nonmagnet schools than in the magnet schools for reading and math.

This pattern corresponds with the finding of more adults assisting teachers in magnet school classrooms. For whatever reasons, where more adults are available in the classrooms, the instruction in those classrooms can be more individualized.

AMOUNT OF INSTRUCTIONAL TIME

The amount of time spent on instruction is an intuitively meaningful aspect of educational quality, and reviews of many educational evaluations also suggest that increased "time on task" is associated with greater learning. To examine this issue, the teacher questionnaire asked teachers to indicate for each of their classes the duration of the class meetings and the number of times the class met per week. By multiplying these two items, the number of minutes of instruction delivered per week by each teacher for each of the five core curricular areas was estimated. The average minutes of instruction in each of the core curricular areas is displayed in Table 4.7 for magnet and nonmagnet school groups.

TABLE 4.7

Average Minutes of Instruction Per Week
In the Core Curricular Areas

| | SUBJECT | | | | |
|---|---|---|---|---|---|
| | Math | Reading | ELA | Social Studies | Science |
| Magnet Schools | 202 | 266 | 206 | 186 | 170 |
| Nonmagnet Schools | 213 | 250 | 238 | 171 | 156 |

The data in Table 4.7 indicated no significant differences between magnet and nonmagnet groups. Both groups devoted more time to reading and math than to social studies and science. Although the magnet school mean for reading was slightly higher, the nonmagnet mean for ELA was slightly higher, so that the total time spent on reading and language differed between the two groups by only about three minutes per day on the average . Thus, the educational quality of magnet and nonmagnet schools is similar with respect to instructional time in the core curriculum.

TEACHER COMMENTS ABOUT THEIR SCHOOLS

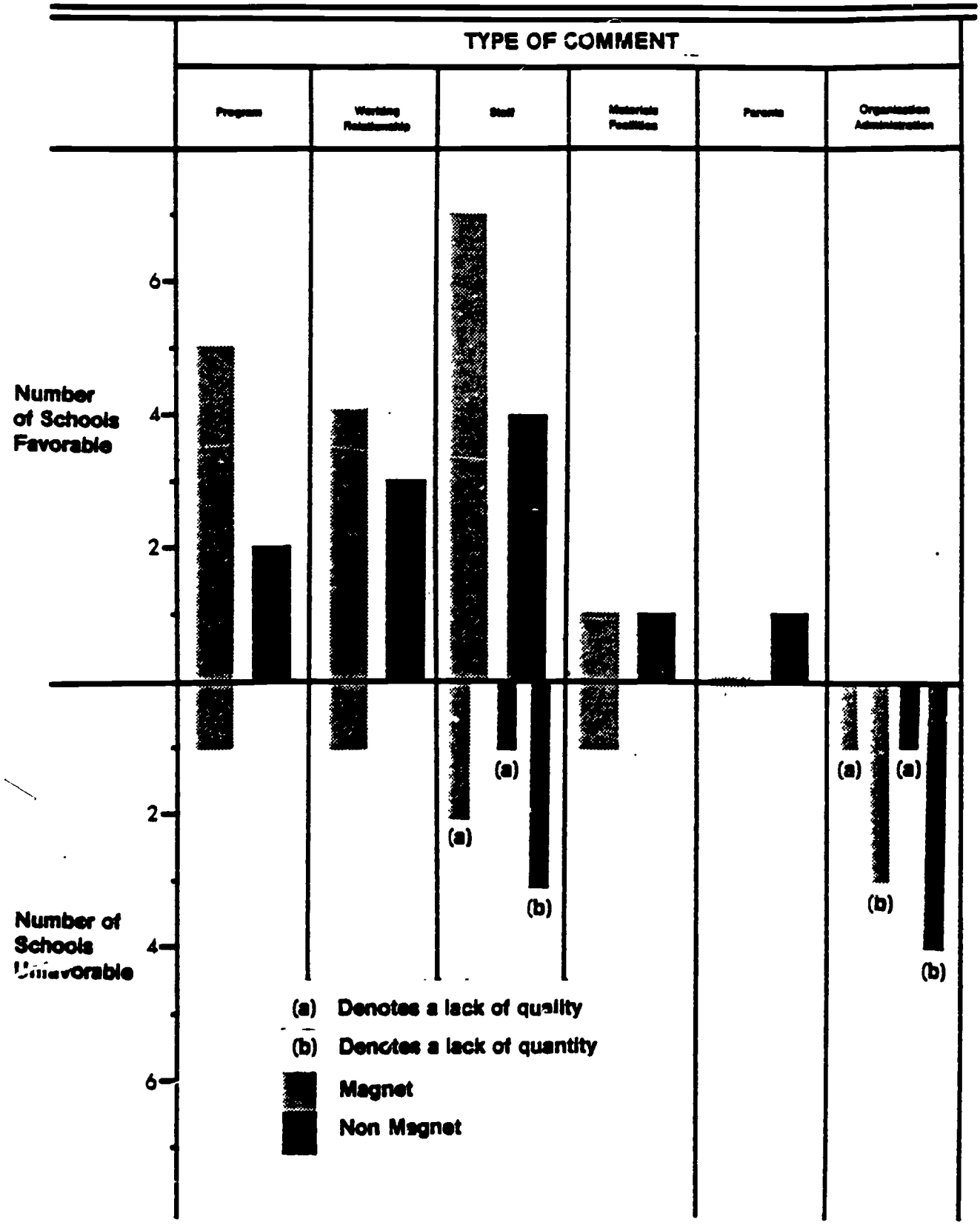
The aspects of the school which teachers like or dislike are not necessarily synonymous with program quality. However, teachers, as practitioners of their craft and the primary agents of the school, have the most immediate knowledge of what affects their teaching for better or worse. A summary of teacher opinions about what they like or dislike about their schools can at least identify important conditions surrounding the implementation of educational programs. Where teacher comments coincide with other types of information about educational programs, they acquire more meaning as indicators of educational quality. Thus, on the teacher questionnaire, the respondents were asked, in an open-ended question, what they liked most and disliked most about their schools. Space was provided for up to three responses per item. The written comments were reviewed at the completion of the survey and categorized according to the most frequently mentioned topics. The major themes coded for the analysis were the following:

- School curriculum and program
- Working relationships between school personnel
- School staff (quantity and quality)
- Materials
- Parents
- Organizational quality or amount

Any one of these topics could have been mentioned as a "like" or a "dislike" item. The data are summarized in Figure 4.1 as the number of magnet and nonmagnet schools in which at least 25 perent of the teachers commented on a topic, either favorably or unfavorably. The number of schools with this level of favorable comments is displayed above the zero point, and the number with unfavorable comments on each topic extends below the line.

For both magnet and nonmagnet schools, the topics commented on most favorably were school program, working relationships, and staff. Although the overall profile of topics was similar across groups, more magnet schools (five) than nonmagnet schools (two) commented favorably on their schools' programs; and all seven of the magnet schools endorsed their staff, while four of the nonmagnet schools responded as favorably to the topic of staff. This pattern may seem to suggest that magnet teachers hold their school programs in higher regard than nonmagnet teachers. This may be true for most of the magnet schools; however, one of the schools in which at least 25 percent of the teachers endorsed the school program also had at least 25 percent of the teachers commenting unfavorably on the school program, and two of the magnet schools with favorable responses to staff also indicated unfavorable responses to staff. A finding of both favorable and unfavorable comments on a topic within a school at least indicates variations in teacher opinions and at most may suggest a certain amount of conflict within the school. Two of the magnet schools and three of the nonmagnet schools indicated such differences of opinion about school staff. The detailed comments regarding school staff indicated that in three of the nonmagnet schools teachers complained about the lack of aides, while this comment was not found in any of the magnet schools.

**Figure 4.1**
**NUMBER OF MAGNET AND NONMAGNET SCHOOLS IN IN WHICH 25 PERCENT OR MORE OF THE TEACHERS COMMENTED ON AN ISSUE.**



To a certain extent, then, the lower useage of aides in the nonmagnet classes discussed earlier appears as a problem area in the teachers' comments about their schools.

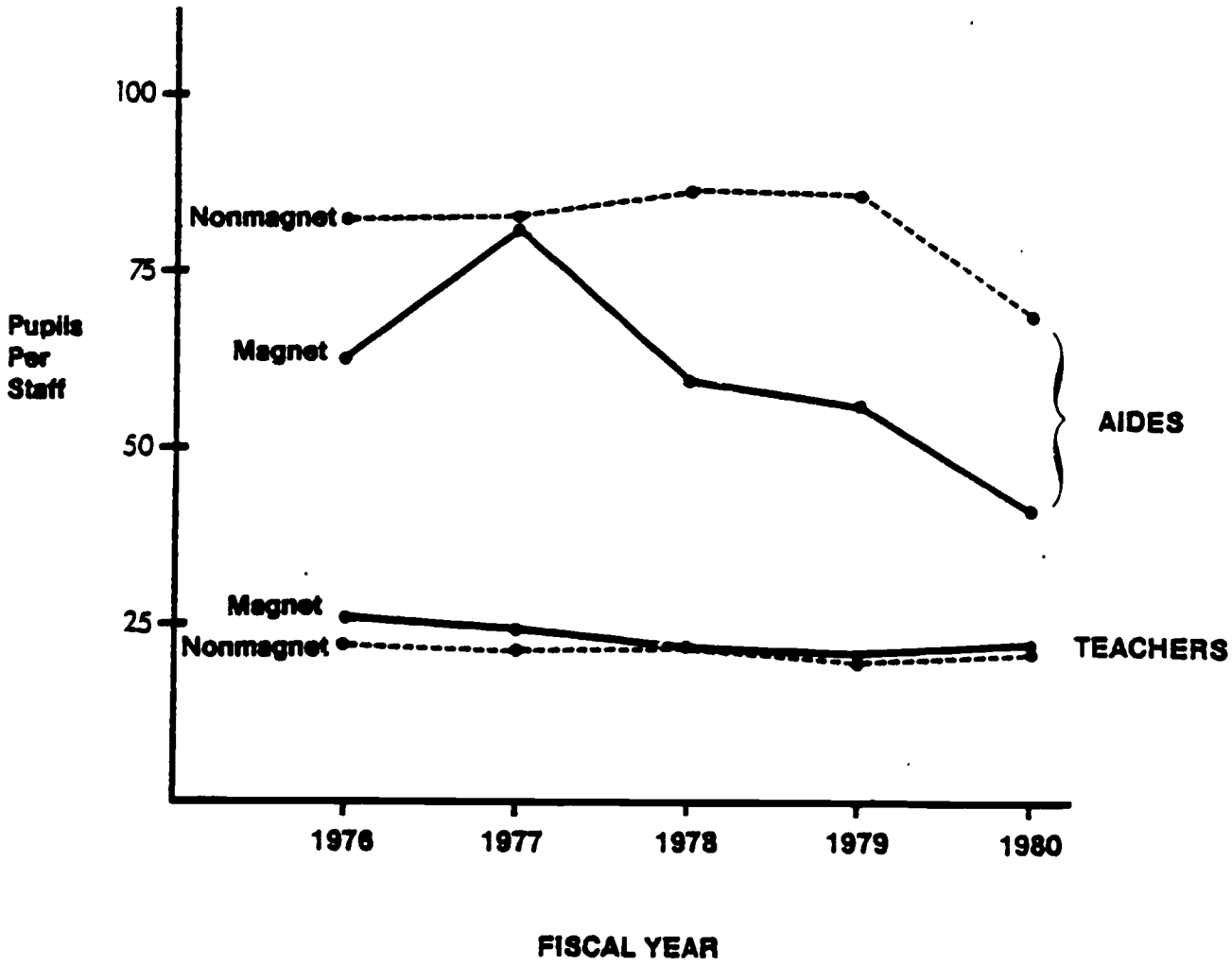
These data in part reflect aspects of school quality, but more directly they indicate the working atmosphere within school buildings. It may be assumed that the more favorably teachers perceive their work environments, the better they will be able to conduct their teaching. The data here indicate that all of the magnet schools and most of the nonmagnet schools view their staff and working relationships favorably. In addition, a greater number of magnet schools have programs which elicited favorable comments from many teachers. The unfavorable comments most prevalent included lack of aides in the nonmagnet schools and too much paperwork in both magnet and nonmagnet schools. In all fairness to the schools, it should be noted that most of the complaints about paperwork referred to the completion of the teacher questionnaire itself.

STAFFING PATTERNS IN THE SCHOOLS

The number of teachers, aides, and other support personnel in a school may be seen as a correlate of educational quality. Empirical data which express the relationship between adults in the school (usually rendered as class size) and the educational outcomes of the school at times find no differences in the schools' results, at times find benefits attributable to smaller classes, and sometimes reveal conflicting relationships. However, there persists in the minds of educators, parents, and researchers confidence in the belief that teachers can teach better and children can learn better in classrooms which are not overcrowded. Most parents would rather send their children to schools with small classroom sizes if given the choice, and this priority recently prompted the Board of Education to enact measures to limit the size of classes in many subjects. Thus, there is much interest in the ratio of pupils to adults in a school.

The Board of Education mandate which created the Takoma Park Cluster magnet schools did not specify that more staff would be assigned to the magnet schools. However, even though there was no a priori reason to expect pupil/staff ratios to vary between magnet and nonmagnet schools, the inevitable variations in staffing between schools due to school sizes, enrollment changes, and the presence of other different programs tend to produce variations in the pupil/staff ratios. It was possible to determine from existing records the number and types of staff assigned to the seven magnet and the seven nonmagnet schools over the last five years. The ratio of total teachers and total aides per enrollments in the two groups of schools is summarized below in the Figure 4.2, and the numbers of teachers and aides are indicated in Table 4.8 from one year prior to the magnet program up to the last school year.

Figure 4.2
RATIO OF PUPILS TO AIDES AND TEACHERS



It is apparent from Figure 4.2 that the magnet and nonmagnet schools were staffed at very nearly the same levels of teachers. For both groups there has been a very slow improvement in class size from close to 25 pupils per teacher to about 22 pupils per teachers over the last five years. With respect to aides, however, the magnet and nonmagnet staffing histories do differ. In the year just prior to the start of the magnet schools program, both groups of schools had an average of at 80 pupils per aide. Since that time the ratio of pupils per aide has become steadily more favorable in the magnet schools to a low of about 40 pupils per aide in 1980. In the nonmagnet schools, the ratio remained high for two more years and declined significantly to about 65 pupils per aide in 1980. These data from staff records corroborate the teacher reports from the magnet schools that there were significantly more aides supporting them in the classrooms than was true for the nonmagnet teachers (Table 4.5) and from the greater number of nonmagnet teachers reporting that they did not like the lack of aides in their schools (Figure 4.1).

Since there were no extra resources for staffing made available for the purposes of the magnet schools, it is of interest to determine the source of the greater number of aides in the magnet school cluster. The number of teachers and aides for each group of schools is indicated in Table 4.8 separately for regular classroom personnel and personnel allocated through Title I funds. These data make it clear that the number of regular teacher aides assigned to both groups of schools was approximately similar across the last five years, while the number of Title I aides assigned to the magnet cluster schools always exceeds that assigned to nonmagnet schools and in the last year was increased dramatically from 18 Title I aides in the cluster in 1979 to 39 in 1980. Thus, as noted above, pupils attending school in the magnet cluster have a higher probability of attending classes in which there are more adults supporting the instructional program, even though this feature arises not from the presence of the magnet school program per se but from the higher levels of participation of the magnet schools in Title I.

TABLE 4.8

Categories of Staff Assigned to Seven Magnet And Seven Nonmagnet Schools, FY76 to FY80

| | FISCAL YEAR | | | | |
|---|---|---|---|---|---|
| | 1976 | 1977 | 1978 | 1979 | 1980 |
| Classroom | 121 | 107 | 114 | 114 | 112 |
| Teachers | 120 | 125 | 111 | 116 | 112 |
| Title I | 0 | 0 | 3 | 7 | 3 |
| Teachers | 0 | 0 | 8 | 5 | 2 |
| Regular | 24 | 21 | 24 | 27 | 22 |
| Aides | 28 | 24 | 23 | 18 | 22 |
| Title I | 18 | 13 | 16 | 18 | 39 |
| Aides | 6 | 7 | 7 | 10 | 11 |

Key: Magnet
Nonmagnet

CONCLUSIONS

This comparison of school programs has attempted to determine the extent to which magnet and nonmagnet schools differ on certain aspects of school quality. If the magnet schools have higher levels of various indicators of educational qualities, there is reason to expect parents potentially to transfer their children into them; while if the level of magnet and nonmagnet school programs is similar, then the conditions for a magnet school cluster may not be present. The data presented here indicate that the magnet school cluster does have higher levels of several features such as:

- More adults supporting teachers in the classroom
- Smaller instructional groupings
- A broader range of educational approaches
- Wider useage of extra or supplementary learning materials

In addition, when teachers report aspects of their schools which they like, the magnet school teachers more often cite school program characteristics than do nonmagnet teachers.

Thus, it would appear that the magnet schools' emphasis on developing quality educational programs has generally produced attractive educational programs with which teachers are more satisfied. For the most part, these program attractions have been produced without additional expenditures of funds in the schools. Where additional funds for the schools have resulted in higher levels of staffing, they have come from greater Title I allocations to the magnet schools rather than from specifically magnet program resources.

The extent to which the magnet schools' program affected parents' knowledge of and satisfaction with their schools and the transfer actions which parents took in response to the program is examined in the following chapter.

## Chapter V

## PARENT'S KNOWLEDGE OF AND SATISFACTION WITH SCHOOLS

### BACKGROUND

As an aid to desegregation, the magnet schools' concept depends upon parents' voluntarily transferring their children from one school to another. Thus, the success of the magnet schools' concept as an aid to desegregation depends in part upon parents' knowledge about the magnet schools, their satisfaction with program offerings in the magnet schools, and the volume of transfer requests that they submit. To the extent that parents are poorly informed, or too few parents are well-informed about the magnet schools' plan, there can be no basis for informed choice among schools. Similarly, to the extent that parents are dissatisfied with program offerings in the magnet schools, they will lack the incentive to voluntarily transfer their children from one school to another. Finally, knowledge about the magnet schools' concept and satisfaction with program offerings in the magnet schools will not necessarily produce a successful voluntary desegregation program. There must also be transfer requests. In short, each of these factors must be present for a voluntary desegregation effort to be successful. The analyses in this chapter describe these three aspects of the magnet program and their implications for desegregation.

### METHODS

The analysis of parent knowledge of and satisfaction with the schools was based upon data gathered from a telephone survey. A questionnaire included in the Appendix was developed around the issues discussed above. The basic areas covered by the questionnaire were the following:

- Knowledge of own child's school program and that of other neighborhood schools
- Aspects of the schools which are liked or disliked, together with suggestions for improving the schools
- Previous requests to transfer the child to another school

The sample was drawn from the seven magnet schools and the eight nonmagnet schools. From the school system data base, a listing was obtained of the telephone numbers, ethnic type, and grade level of all children in the 15 sampled schools. The total enrollment was 5,222. From this population a 5 percent sample, stratified by ethnic type within school, was selected at random.

Interviewers were given a listing of telephone numbers for each school grouped by grade level within ethnic type. For each cell in the sample frame, a grade level was selected at random, then a telephone number was randomly selected within that group. If contact with a parent was not made after three call attempts, the case was replaced through the same procedures. The final sample of 260 respondents composed of 120 magnet and 140 nonmagnet parents, was obtained after having made 340 selections.

## PARENTS' KNOWLEDGE OF THE MAGNET SCHOOLS PROGRAM

Parents' knowledge about the magnet schools' program was analyzed in the following ways: 1) familarity with the term "magnet schools' program," 2) knowledge about the magnet school their child is attending, and 3) knowledge about other magnet schools in their area. Each of these three aspects of parents' knowledge is considered in the following paragraphs.

### Knowledge of the Term "Magnet School"

An important part of the magnet schools' plan is to inform parents through open houses, mailed materials, and other media about the program options available throughout the magnet cluster. Thus, if these information campaigns are successful, the majority of magnet parents should at least be familiar with the term "magnet schools' program." Hence, parents' responses to the survey question "Have you ever heard of the magnet schools program?" can be regarded as one measure of their knowledge about magnet schools. Table 5.1 shows the percentage of parents who said that they had heard of the magnet schools' program.

TABLE 5.1

Percentage of Parents Who Said They Had Heard of the Magnet School Program

| | Magnet Status | |
|---|---|---|
| Ethnic Status | Magnet | Nonmagnet |
| Majority | 82 | 30 |
| Minority | 64 | 23 |
| Total | 73 | 27 |

Overall, 73 percent of the magnet parents and 27 percent of the nonmagnet parents said that they have heard of the magnet schools' program. Thus, the information campaigns in the magnet cluster appear to have been effective. In addition to reaching their intended audience, the ad campaigns are apparently also reaching a number of the nonmagnet parents to whom they are not specifically directed.

However, while 82 percent of the majority parents indicated that they had heard of the magnet schools' program, only 64 percent of the minority parents did so. This may suggest that the ad campaigns in the magnet cluster are not equally effective in reaching majority and minority parents.

Differentially effective ad campaigns are undersirable because a fully effective magnet schools' plan should have both minority and majority parents submit transfer requests for their children.

Table 5.2 shows the methods by which parents learned about the magnet schools program.

Table 5.2

Media Through Which the Magnet Schools Program Was Communicated to Those Parents Who Had Heard of Magnet Schools

| Type of Parent | Medium | | | | | | |
|---|---|---|---|---|---|---|---|
| | Distributed Brochures | News-paper | School Staff | Open House | Other Parents | PTA Meetings | Other |
| Magnet | 67% | 17% | 11% | 5% | 11% | 1% | 14% |
| Nonmagnet | 21% | 29% | 13% | 1% | 16% | 13% | 24% |

In the magnet cluster, the most frequently reported source of information about the magnet schools' program was mailed brochures with 67 of the magnet parents reporting this as an information source. The proportions of magnet parents polled on this question who learned of the magnet schools' program through open houses and PTA meetings were 5 percent and 1 percent respectively. Open houses and PTA meetings are supposed to be two of the primary dissemination methods used in the magnet schools to publicize the various program offerings. However, these dissemination strategies seem to be reaching few parents. Indeed, the magnet/nonmagnet contrast in Table 5.2 suggests that PTA meetings served as a better information dissemination device in the nonmagnet cluster, where 13 percent of the parents heard about the magnet schools program this way, than in the magnet cluster where only 1 percent of the parents learned of the program in this fashion.

In an analysis of these data by majority/minority status, within the magnet group, it was found that brochures had reached 76 percent of the minority parents and 60 percent of the majority parents, while newspapers and other media had reached 21 percent of the minority parents and 48 percent of the majority parents. Thus, mailed materials and brochures were relatively more efficacious for minority parents than other media, whereas a mixture of several communication channels were effective for majority parents.

In summary, a large proportion of the magnet parents have at least heard of the magnet schools' program, and a greater proportion of majority parents than minority parents have heard of it. The most frequently reported vehicle of information about the magnet schools' program is mailed materials, and a greater proportion of minority parents than majority parents reported hearing about the program in this manner.

Magnet Parents' Knowledge About Their Own School

If the information campaigns in the magnet cluster are operating effectively, then, in addition to having heard of the magnet schools' program, magnet parents should be aware that their school is a magnet school and aware of a specific magnet feature in their school. The responses to these questions are illustrated in Table 5.3.

TABLE 5.3

Level of Knowledge of Magnet Schools for Magnet Parents

| Type of Parent | Percentage of Magnet parents Who Know: That Their School Was a Magnet | A Magnet Program Feature of Their School |
|---|---|---|
| Majority | 75 | 48 |
| Minority | 53 | 24 |
| Total | 64 | 36 |

Overall, 64 percent of the magnet parents were aware that their school was part of the magnet schools' program. This means that over one-third (36 percent) of the magnet parents in the study did not know that their own school was part of the magnet schools' program. Furthermore, proportionately more minority parents (47 percent) than majority parents (25 percent) were unaware that their school was part of the magnet schools' program.

Overall, only 36 percent of the magnet parents studied could name a specific magnet feature of their school. Once again relatively fewer minority parents (24 percent) than majority parents (48 percent) knew their own school's magnet programs.

Thus, although the information campaigns in the magnet cluster are producing a certain amount of familiarity with the term "magnet schools' program," these campaigns are much less successful at providing magnet parents, and especially minority parents, with specific information about their own school's magnet program.

Knowledge of Other Schools

If the information campaigns in the magnet cluster are operating effectively, then, in addition to their general knowledge about the magnet schools' program and their more specific knowledge about their own magnet school, magnet parents should also know something about the other magnet schools in the cluster; otherwise they would have no basis for informed choice among schools. To evaluate how effectively the magnet schools' program is providing parents with information about other magnet schools, parents were asked about their neighborhood schools. Once again, parents' knowledge was analyzed in several ways: 1) ability to name another school, 2) specific knowledge of another school, and 3) visits to another school. Each of these aspects of parents' knowledge of other schools is examined in the following paragraphs.

TABLE 5.4

Percentage of Parents Within Groups Who Could Name Another Local School

| Type of School Named | Type of Parent | | | | | |
|---|---|---|---|---|---|---|
| | Magnet | | | Nonmagnet | | |
| | Majority | Minority | Combined | Majority | Minority | Combined |
| Magnet | 54 | 39 | 47 | 8 | 13 | 11 |
| Nonmagnet | 15 | 7 | 11 | 46 | 36 | 42 |
| Combined | 59 | 44 | 52 | 49 | 43 | 47 |

Table 5.4 shows the percentage of parents who could name a neighborhood school other than the one their child is currently attending.

Of all the magnet parents, 47 percent could name another magnet school, while 42 percent of the total nonmagnet group could name another nonmagnet school. This finding suggests that the ad campaigns in the magnet cluster -- even though they are deliberately designed to inform magnet parents about the program offerings available throughout the magnet cluster -- are not much more effective than the ordinary communication channels throughout the nonmagnet schools.

Also from Table 5.4, it appears that in both the magnet and nonmagnet groups, the majority parents are more often able to name another neighborhood school than are the minority parents. This ethnic difference is slightly larger in the magnet than in the nonmagnet group.

Table 5.5 ranks the seven magnet schools with respect to the percentage of magnet parents who could name them. In general, Takoma Park was named most frequently and Rolling Terrace was named least frequently. However, minority parents named East Silver Spring most frequently and Highland View least frequently. By comparison, majority parents named Takoma Park most frequently and Oakview least frequently. Thus, minority parents may be more familiar with East Silver Spring than any other school and less familiar with Highland View than any other school. Majority parents, by contrast, may be more familiar with Takoma Park and least familiar with Oakview. In other words, there is evidence of minor ethnic differences with respect to parents' familiarity with particular magnet schools.

TABLE 5.5

Rank Order* of Most Known (1) to Least Known (7) Magnet Schools
By Ethnic Type of Magnet Parent

| | SCHOOL | | | | | | |
|---|---|---|---|---|---|---|---|
| | Takoma Park | E. Silver Spring | Piney Branch | Four Corners | Highland View | Oak View | Rolling Terrace |
| Combined | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Majority | 1 | 2 | 3.5 | 3.5 | 5 | 6 | 7 |
| Minority | 2 | 1 | 3.5 | 5.5 | 7 | 5.5 | 3.5 |

*Decimals indicate tied ranks.

An effective information campaign would impart not only the name of another school but also specific knowledge about other schools. Table 5.6 shows the percentage of parents who knew something specific about another neighborhood school's program. For the combined magnet group, only 38 percent of the parents knew something about another magnet school. About two thirds of the magnet parents are uninformed about the other schools in the magnet cluster. Furthermore, the magnet/nonmagnet contrast shows that the proportion of all magnet parents who knew something about another magnet school (38 percent) is the same as the proportion of all nonmagnet parents who knew something about another nonmagnet school (38 percent). This suggests that methods for disseminating information about the cluster schools are no more effective than the normal types of communication channels for learning about nonmagnet schools. As with the other indicators of school knowledge, somewhat fewer minority than majority parents have a detailed knowledge of other neighborhood schools.

TABLE 5.6

Percentage of Parents Who Knew Anything Specific About
Another Neighborhood School

| Type of School Named | Type of Parent | | | | | |
|---|---|---|---|---|---|---|
| | Magnet | | | Nonmagnet | | |
| | Majority | Minority | Combined | Majority | Minority | Combined |
| Magnet | 46 | 31 | 38 | 7 | 11 | 9 |
| Nonmagnet | 15 | 5 | 10 | 40 | 34 | 38 |
| Combined | 51 | 34 | 42 | 43 | 40 | 41 |

If the ad campaigns in the magnet cluster are operating effectively, then, in addition to naming other magnet schools and knowing something about them, magnet parents should also have visited other magnet schools. If the ad

campaigns are unsuccessful in inducing magnet parents to visit another magnet school, then the the liklihood that parents would voluntarily transfer their children is fairly remote. Table 5.7 shows the percentage of parents who have visited another neighborhood school.

TABLE 5.7

Percentage of Parents Who had Visited a School Which They Named

| Type of School Named | Type of Parent | | | | | |
|---|---|---|---|---|---|---|
| | Magnet | | | Nonmagnet | | |
| | Majority | Minority | Combined | Majority | Minority | Combined |
| Magnet | 44 | 34 | 39 | 3 | 11 | 6 |
| Nonmagnet | 13 | 7 | 10 | 36 | 26 | 32 |
| Combined | 51 | 39 | 45 | 38 | 34 | 36 |

Only 39 percent of the magnet parents have ever visited another magnet school. On the basis of this evidence alone, one might expect the volume of transfer requests in the magnet cluster to be relatively low because parents are unlikely to transfer their children to schools they have never seen.

In addition, the magnet/nonmagnet contrast in Table 5.7 shows that the proportion of magnet parents who have visited another magnet school (39 percent) is not much greater than the proportion of nonmagnet parents who have visited another nonmagnet school (32 percent). Thus, the tendency of magnet parents to visit other magnet schools is barely above the population tendency to visit other schools generally. In other words, the ad campaigns in the magnet cluster have not been very successful in getting magnet parents out to visit other magnet schools.

Once again, with respect to minority/majority differences, although less than half the parents in each ethnic group have ever visited another magnet school, proportionately more of the majority parents (44 percent) have visited another magnet school than minority parents (34 percent).

In summary, the ad campaigns in the magnet cluster are making parents familiar with the term "magnet schools' program," but they are not providing enough parents with specific information about the programs at their own school or other magnet schools. Futhermore, these ad campaigns are apparently more effective for majority parents than for minority parents, as was evidenced by the minority-majority discrepancy on nearly every measure of parents' knowledge used in this study. Thus, the information campaign in the magnet cluster should be made more extensive and effective.

PARENTS' SATISFACTION WITH SCHOOLS

Parental satisfaction with the schools is an essential ingredient for the success of an educational program. Whenever new programs or plans are

introduced in the schools, they will not survive long without the sustained acceptance and support of the parents in the community. It is especially important to assess satisfaction with the schools when minority/majority group composition is subject to potential change through desegregation efforts. In the current survey, parental satisfaction was inferred through their responses to several questions about aspects of the schools which they like, aspects of the schools which they would like to see improved, and the "grade point average" with which parents rated their schools.

Parent Comments on the Schools.

Parents were asked two questions: "Is there one thing which you particularly like about the program or staff at your school?" and "Is there any single thing which you would like to see changed for the better at your school if it could be?" The responses to these open-ended questions were categorized into major types of information and are presented in Tables 5.8 and 5.9 by magnet status and minority/majority group membership.

Considering first the overall level of comments, it is apparent from Table 5.8 that only about 15 percent of the magnet and nonmagnet parents had nothing favorable to report about their schools. The high level of willingness to comment favorably on the schools is a partial indicator of school satisfaction throughout the elementary schools in Area 2. There were, however, magnet-nonmagnet differences in comments about specific topics. Magnet parents tend to endorse their schools programs and organization more frequently than do nonmagnet parents, while nonmagnet parents tend to endorse the school-parent-child relationships of their schools more frequently than do magnet school parents. That is to say, in the domains emphasized by the magnet schools, namely program embellishments and to a certain extent organizational alterations, the magnet parents appear more satisfied than nonmagnet parents.

TABLE 5.8

Percentage of Parents Commenting Favorably About Aspects of Their Schools by Magnet and Majority/Minority Status

| Category of Response | Type of Parent | | | | | |
|---|---|---|---|---|---|---|
| | Magnet | | | Nonmagnet | | |
| | Majority | Minority | Combined | Majority | Minority | Combined |
| School Programs | 41 | 35.6 | 38.3 | 18.4 | 26.4 | 21.4 |
| School-home-child Relationships | 13.1 | 8.5 | 10.8 | 20.7 | 24.5 | 22.1 |
| Staff | 29.5 | 28.8 | 29.2 | 39.1 | 28.3 | 35.0 |
| Materials and Facilities | 0 | 0 | 0 | 2.3 | 5.7 | 3.6 |
| Organization | 4.4 | 6.8 | 5.0 | 0 | 3.8 | 1.4 |
| No Comment | 11.5 | 20.3 | 15.8 | 19.5 | 11.3 | 16.4 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| n = | 61 | 59 | 120 | 87 | 53 | 140 |

TABLE 5.9

Percentage of Parents Suggesting Improvements in Various Aspects of their Schools by Magnet and Majority/Minority Status

| Category of Response | Type of Parent | | | | | |
|---|---|---|---|---|---|---|
| | Magnet | | | Nonmagnet | | |
| | Majority | Minority | Combined | Majority | Minority | Combined |
| School Programs | 19.7 | 15.3 | 17.5 | 11.5 | 11.3 | 11.4 |
| School-home-child Relationships | 4.9 | 3.4 | 4.2 | 1.1 | 9.4 | 4.3 |
| Staff | 9.8 | 3.4 | 6.7 | 20.7 | 1.9 | 13.6 |
| Materials and Facilities | 6.6 | 1.7 | 4.2 | 3.4 | 5.7 | 4.3 |
| Organization | 8.2 | 8.5 | 8.3 | 13.8 | 13.2 | 13.6 |
| No Comment | 50.8 | 67.8 | 59.2 | 49.4 | 58.5 | 52.9 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| n = | 61 | 59 | 120 | 87 | 53 | 140 |

How Parents Grade Their Schools

Parents were asked to give their schools a letter grade similiar to a report card to express what they thought of their children's schools. The results for magnet and nonmagnet minority and majority parents are presented below in Table 5.10 as a "grade point average" with 4.0 indicating an "A," and 1.0 indicating a "D." The average for all parents representing the Area 2 elementary schools was slightly above a "B," a grade notably higher than the 2.8 GPA reported for all MCPS parents on a countywide survey of parent attitudes in 1979. Magnet parents are on the whole slightly more satisfied with their schools (GPA = 3.36) than nonmagnet parents(GPA = 3.21); however, this finding does not apply within each ethnic group. When majority and minority parents are compared to their respective counterparts in the nonmagnet sample, it appears that majority parents give the magnet schools higher grades (3.45) than nonmagnet majority parents (3.14); whereas minority parents in magnet schools grade their schools lower (3.29) than nonmagnet minority parents grade their own schools (3.35). This pattern of differences in grading (significant at the .08 level of confidence) suggests that in magnet schools the majority group parents are more satisfied, while in the nonmagnet schools the minority group parents are more satisfied. Recall from Table 5.8 that magnet majority group parents were more willing than minorities to comment favorably on school programs, while the opposite pattern was

observed in the nonmagnet parents. Taken together, these findings suggest that, on the whole, magnet parents may be quite satisfied with their schools but that majority group parents are more satisfied than minority parents.

TABLE 5.10

"Grade Point Average"
Given to the Child's School

| | Majority | Minority | Total |
|---|---|---|---|
| Magnet | 3.45 | 3.29 | 3.36 |
| Nonmagnet | 3.14 | 3.35 | 3.21 |
| All-MCPS 1979 Survey | - | - | 2.81 |

Note: 4.0 = "A", 1.0 = "D"

VOLUNTARY REQUESTS TO TRANSFER CHILDREN

Parent knowledge of, and satisfaction with, schools will not necessarily contribute to desegregation in a magnet cluster. If there are no voluntary transfer requests among schools, there will be no desegregation movement. Thus, parents were asked whether or not they had ever submitted a request to transfer their child to another school. This question was primarily intended to obtain a repetition of an analysis performed last year on all transfer requests submitted within the Area 2 elementary schools over a period of four years. In that analysis[1] it was concluded that the magnet schools program had stimulated a higher volume of transfer request activity throughout the cluster and that there was a higher rate of nonmagnet in-transfers to the cluster than of magnet cluster out-transfers. To some extent, then, the magnet program had reached part of its goals. However, it was found in that analysis that the overall volume of tranfer requests, about ten percent, was not high enough to provide for the volume of pupil movement needed to achieve desegregation throughout the cluster (estimated to be about 30 percent).

[1] John C. Larson, Takoma Park Magnet School Evaluation: Desegregation Study, Department of Educational Accountability, Montgomery County Public Schools, Rockville, Maryland, January 1980.

TABLE 5.11

Percentage of Parents Submitting Transfer Requests, By Magnet and Majority/Minority Status.

| Category of Response | TYPE OF PRETRANSFER SCHOOL | | | | | |
|---|---|---|---|---|---|---|
| | Magnet | | | Nonmagnet | | |
| | Majority | Minority | Combined | Majority | Minority | Combined |
| Transfer Request | 17 | 12 | 14 | 2.5 | 0 | 1.5 |
| No transfer Request | 83 | 88 | 86 | 97.5 | 100 | 98.5 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| N = | 61 | 59 | 120 | 87 | 53 | 140 |

SUMMARY

The parent survey was designed to assess the dissemination of information about the magnet schools' program, as well as parents' satisfaction with the programs and their response to the program for the purposes of desegregation. The fact that about 73 percent of the magnet parents were familiar with the term "magnet schools" compared to only 27 percent of the nonmagnet parents suggests that many had been reached by some form of information. This level of information appears relatively high considering the fact that there is in any single year about a 12 percent out-transfer rate together with an estimated 15 percent in-transfer rate. Somewhat fewer parents, about 64 percent, knew that their child's school was part of the magnet schools' program.

However, parents lack a detailed knowledge of their own schools' programs as well as those in other magnet schools. Only 36 percent of the magnet school parents could name a magnet feature of their school. In addition, parental knowledge of anything specific about other schools in the magnet cluster was at about the same level as nonmagnet parents' knowledge of other schools in their neighborhoods. These data suggest two conclusions. Parental knowledge of the magnet schools' programs in other schools may be mediated largely through their own schools rather than through any other outside agent; and, whatever the means through which magnet parents learned about other schools in the magnet cluster, these means were not much more effective in imparting knowledge of other school programs than the "normal" channels of communication among other elementary schools. The relative lack of detailed knowledge of other cluster schools' programs may explain in part the relatively low level of school transfer requests as well as the lack of desegregation movement.

The data on parental satisfaction with the schools suggest that while the parents included in this study are in general quite highly satisfied with their schools, magnet school parents tend to be even more satisfied with their school programs. From one viewpoint, then, it can be said that the magnet school efforts to provide attractive school programs succeeded to a certain

extent, as noted in Chapter IV, and that this success may have resulted in higher levels of parent satisfaction with their own school programs. Ironically, the relatively high satisfaction with their own schools coupled with the relatively low knowledge of other school programs probably reduced the incentives for magnet school parents to transfer their children to other magnet schools for the purposes of desegregation. From the parents' point of view, then, the magnet schools could be seen as a program success but not a desegregation success.

## CHAPTER VI

## PUPIL ACADEMIC PERFORMANCE IN MAGNET AND NONMAGNET SCHOOLS

### BACKGROUND

The interest in pupil achievement in magnet schools comes from several different perspectives. First, since the goal of desegregation through magnet schools is to achieve quality integrated education, many minority or majority group parents hope to see the academic achievement of their children improve through attendance in schools with improved school programs. This is certainly one of the basic motivations for a parent to transfer a child to an "attractive" magnet school. At the same time, some majority group parents want to know whether their children attending schools with higher minority group concentrations will be exposed to the same quality of instruction and keep pace academically with their peers in low-minority schools. Finally, a third group of parents may want their children to be exposed to a more diverse educational program in magnet schools without having to sacrifice academic performance for that broader educational experience. The first group would hope to see their children gaining more academically from magnet schools than those in nonmagnet schools. The second and third groups would hope to see their children gaining at least equally with nonmagnet pupils, but certainly not falling behind academically. Thus, there is a broadly based interest in studying the academic achievement of magnet school pupils.

There are a number of difficulties in translating these fairly direct questions into testable hypotheses for this evaluation study. The fact that a study of magnet school effects on pupils was not begun when the magnet school program was begun severely limits the kinds of questions which can be adressed. First, the effects at each grade level are of interest, or at least the different effects on pupils in lower and upper elementary levels. However, measures at the beginning or end of each grade are not available. Second, the various magnet school programs differ in their emphases between basic academic skills, foreign language, cross-cultural exposure, individualized instruction, in-depth science, provisions for gifted/talented, and other aspects of school programs. A complete assessment of magnet school effects would examine outcome measures specific to each of these programs. However, the available measures permit only an examination of standardized achievement test scores. Finally, schools typically lose 15 to 20 percent of their pupils each year due to the general population mobility in the county. Thus, a three-year longitudinal study, for example, would include in the final analysis only about half of the pupils who started in the program. A study of achievement scores in MCPS has shown that pupils remaining in a school between third and fifth grade tend to score higher in both of those grades than pupils who moved out of or into the school after third grade. Thus, the pupils included in a longitudinal study would not be representative of the total student body.

Nonetheless, with the data available from school records, it is possible to examine in a limited manner the effects of magnet schools on pupils' academic achievement. For the purposes of this analysis, we have framed the following question:

Do pupils attending the Takoma Park Cluster magnet schools gain more in academic achievement between third and fifth grade than their peers attending the nonmagnet schools in the same area?

METHOD

Pupil Selection

Since the third and fifth grade standardized achievement test scores from previous years exist on computerized records, it was possible to assemble the scores of all third and fifth grade pupils tested in the Area 2 elementary schools between spring third grade just prior to the onset of the magnet schools program (1977) and spring fifth grade at the end of the third year of the program (1980). This group of students includes two cohorts of children who passed from third to fifth grade during the magnet schools program. The total number of Area 2 elementary pupils tested in these two cohorts was 3,606. Of this group, the number tested in both third and fifth grades at the same school (or at the upper elementary school into which they would normally articulate) was 1,698, or about 47 percent of the total number tested. The number of pupils included in the final analytic comparisons are indicated in Table 6.1.

TABLE 6.1

Number of Pupils Included in Comparison of Magnet and Nonmagnet Pupil Achievement Gains

| | ETHNIC GROUP | | | | |
|---|---|---|---|---|---|
| | Asian | Black | Hispanic | White | Total |
| Magnet | 11 | 86 | 14 | 247 | 358 |
| Nonmagnet | 51 | 219 | 32 | 1038 | 1340 |
| Total | 62 | 305 | 46 | 1285 | 1698 |

Measures

Subtests of the Iowa Tests of Basic Skills were selected for the analysis as representative of several aspects of academic performance. These were the following:

- Vocabulary
- Reading Comprehension
- Spelling
- Math Concepts
- Math Problem Solving

The fifth grade test for each of these measures was taken as the outcome measure, and the third grade measure was used as the pretest. The third grade score on the Verbal section of the Cognitive Abilities Test was used as an additional pretest indicator for the vocabulary, reading, and spelling subtests; and the Quantitative score was used similarly for the math subtests.

## Procedures

The analysis was based on a comparison of the magnet school fifth grade scores with their expected scores, based on expectations obtained from pupils in the nonmagnet schools in Area 2. The expected fifth grade scores were obtained in the following manner.

The pupils who had attended nonmagnet schools in Area 2 and were tested in both grades between spring 1976 and spring 1980 were selected as the reference group for developing expected scores. These pupils were divided into four ethnic groups — Asian, black, Hispanic and white. For each of these groups, an equation was developed predicting their fifth grade subtests from a combination of the third grade subtests listed above and their Cognitive Abilities Test score. These equations were then applied to the scores for each ethnic group of the magnet and nonmagnet pupils in the analytic sample to determine what fifth grade score they would be expected to have if they had progressed at the same rate as the nonmagnet reference group. The expected scores were subtracted from the actual fifth grade scores to determine the extent to which the pupils performed higher or lower than expected. This difference score, then, was compared between the magnet and nonmagnet groups to determine whether there were any differences in their progress from third to fifth grade. Details of this procedure are included in the Appendix.

## RESULTS AND CONCLUSIONS

The results of this analysis appear in Table 6.2 separately by ethnic group.

TABLE 6.2

Difference (in NCE points) Between Magnet and Nonmagnet Groups in Gains Between Third and Fifth Grade on Selected Academic Subtests

| | ITBS SUBTEST | | | | |
|---|---|---|---|---|---|
| | Vocabulary | Reading Comprehension | Spelling | Math Concepts | Math Problems |
| Asian | 4.41 | 1.21 | 3.66 | -1.15 | 5.90 |
| Black | -2.29 | 1.47 | 2.61 | -2.18 | 1.10 |
| Hispanic | -0.57 | 3.72 | 3.91 | 4.52 | 4.62 |
| White | -0.39 | -0.01 | -0.74 | -1.85 | -0.24 |

The difference between observed fifth grade scores and expected fifth grade scores is interpreted as academic gain between third and fifth grade. The data in Table 6.2 indicate the differences between magnet and nonmagnet group gains. Positive differences indicate that the magnet group gains exceeded those for the nonmagnet group. Conversely, negative numbers indicate that the nonmagnet group gains were greater than the magnet group's. The numbers are reported in the metric of NCE scores.

None of the differences in Table 6.2 are statistically significant at the .05 level of confidence. There is a tendency for Asian and Hispanic pupils to gain slightly more (one fourth to one third of a standard deviation) in

certain subtests in the magnet schools; however, with the small number of cases for these groups noted in Table 6.1, these differences were not large enough to produce statistical significance. A more closely controlled study of these groups in larger numbers may reveal significant program effects.

One conclusion appears justified from these data. The achievement gains of majority group pupils in magnet schools are virtually the same as those of their peers in the nonmagnet schools in Area 2. Thus, it cannot be said that majority group pupils attending magnet schools with higher concentrations of minority pupils will tend to gain less academically than their peers in lower-minority schools.

## CHAPTER VII

## CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine the design and operations of the Takoma Park Cluster magnet schools and their effects on pupils, their parents, and racial isolation. The rationale for a magnet schools plan is to employ quality educational programs as a means of attracting and/or retaining pupils of various ethnic types within a set of schools so that the disparities between schools in their minority percentages will be minimized or eliminated. This evaluation examined the successive components of the magnet schools plan from its design, to the implementation of quality programs in the schools, to the effects of these programs on pupil achievement as well as parents' knowledge and school transfers, and finally to the effect of the magnet school plan as a whole on desegregation within the cluster. Three primary conclusions are summarized in the following section together with several secondary conclusions which contribute to an understanding of the major findings. This chapter concludes with several policy recommendations.

### QUALITY SCHOOL PROGRAMS

Attractive, quality school programs were established throughout the magnet cluster. These programs were in general more highly endorsed by teachers than were the school programs in nearby nonmagnet schools, and the magnet school parents were more satisfied with these programs than the nonmagnet parents were with the programs in their own schools.

### PUPIL ACHIEVEMENT

Pupils attending magnet schools gain in their academic achievement between third and fifth grade at the same rate as their peers in nonmagnet schools.

### DESEGREGATION

Even though the overall minority composition of the cluster increased at a slightly slower rate than that of nearby nonmagnet schools, the magnet program had a negligible effect on desegregation within the cluster, as noted in the interim report one year ago. The lack of within-cluster desegregation is illustrated below in Figure 7.1 by comparison to a conceptual representation of maximum desegregation.

Figure 7.1A illustrates an idealized conceptual model of the convergence of the cluster schools' minority compositions toward the overall average within the cluster. Even though the cluster average percentage minority may increase over time, the schools should become balanced within the cluster. Figure 7.1B shows the actual changes in the MCPS magnet school cluster in the minority group compositions from the premagnet year in 1976 through the fall of the fourth year of the magnet program in 1980. Even though several schools converged somewhat toward the cluster mean, the discrepancies between schools were as great in the fourth year as in the premagnet year.

Figure 7.1
Conceptual illustration of maximum within-cluster desegregation compared to actual changes in composition of minority enrollments for magnet schools

Figure 7.1A
CONCEPTUAL MODEL OF TOTAL WITHIN-CLUSTER DESEGREGATION

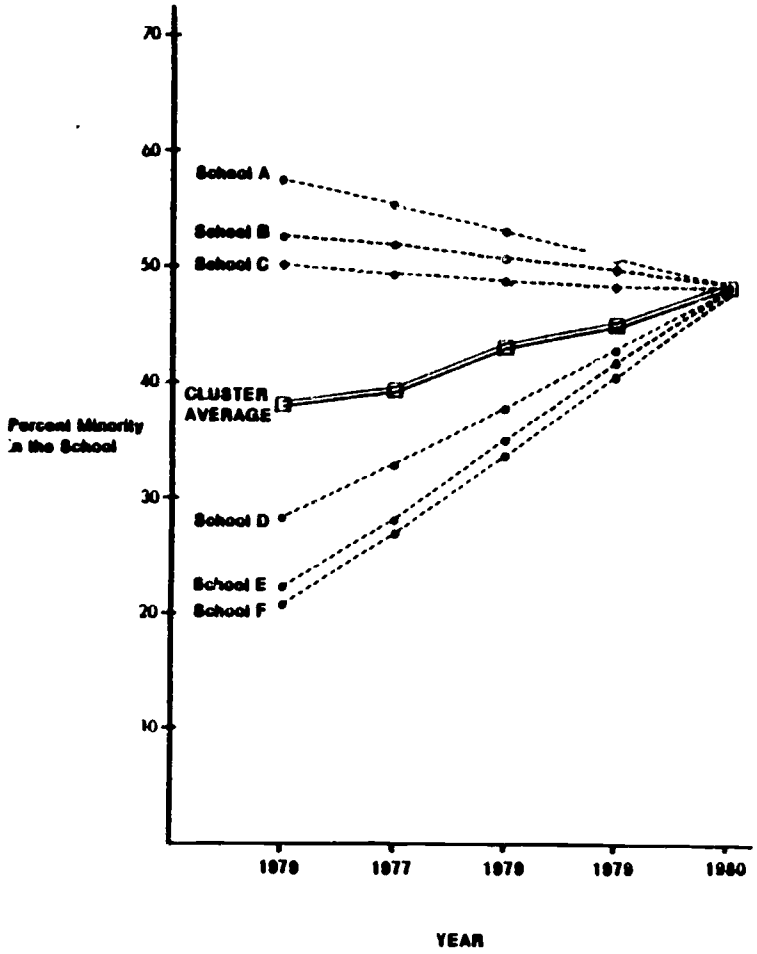
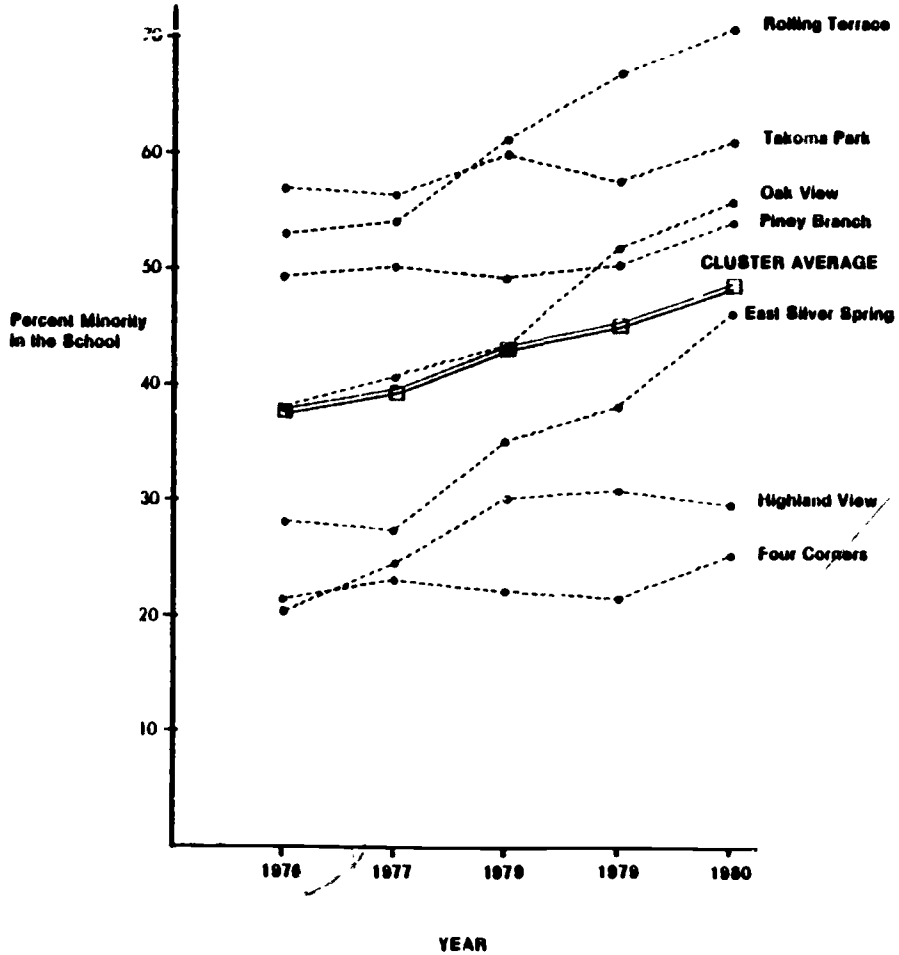



Figure 7.1B
MINORITY GROUP COMPOSITION OF THE TAKOMA PARK CLUSTER MAGNET SCHOOLS
1976 to 1980



Another indicator of desegregation, cited by the Emergency School Assistance Act (ESAA) guidelines, is that no school should be more than 20 percentage points discrepant from the overall district average percentage of minority pupils. According to this criterion, during the premagnet year, there were three of the seven cluster schools within the ESAA guideline and four in excess of the criterion; in the fourth year of the magnet program, there were only two of the seven schools within 20 percentage points of the district average and five above that level. Thus. the magnet schools as established and operated thus far, have contributed little toward within-cluster or within-dist ict desegregation.

Taken together, these findings suggest that quality educational programs are a necessary but by no means sufficient condition for achieving desegregation throughout the magnet schools. A variety of conditions may have impeded desegregation even though the quality school programs were established, and the secondary findings summarized in the following sections suggest several reasons why desegregation was not accomplished.

SELECTION OF SCHOOLS FOR THE CLUSTER

Too few low-minority schools were included in the magnet cluster design. For any desegregation cluster design, the minority composition of the cluster should approximate that of the overall school district. However, even at the start of the magnet program, the cluster average percentage minority enrollment was already more than 20 percentage points above the district mean. This means that even if all the schools in the cluster had behaved in the manner shown in the idealized model (Figure 7.1A) the net result would have been that all the schools would be in violation of the ESAA guidelines, and thus considered by the Office of Civil Rights as being defacto segregated. To put in another way, the lack of a sufficient number of white students in the cluster probably doomed the project from the beginning. Only a large influx of white families into that geographic area, or aggressive recruiting of noncluster students, could have permitted the desegregation objective to be achieved.

CLUSTER DESIGN CONSTRAINTS ON SCHOOLS' ATTRACTING ABILITY

Considering just the within-cluster desegregation problem, the magnet concept could operate most effectively when pupils from any one school could potentially transfer to any other school. The more this maximum range of choice was constrained, the more limited became the maximum potential for interschool movement and desegregation. Two conditions within the cluster constrained this range of choice:

- First, grade articulation patterns required children from three lower elementary schools to attend two other other upper elementary schools. Thus, there was no possibility for these schools to "compete" with each other for pupil transfers. Of course, grade pairings among schools may contribute toward desegregation, but they do so as a mandatory plan and not as part of the magnet schools concept per se.

- Second, the various magnet schools shared magnet program features as well as other attractive characteristics, and thus reduced potential for differential parent choices and pupil transfers.

ARTICULATION OF PROGRAM ATTRACTIONS WITH SCHOOL MINORITY COMPOSITION

Magnet programs need to attract white pupils to high-minority schools and minority pupils to low-minority schools. Yet, the cluster school which had one of the highest minority compositions in the district housed a Spanish-bicultural program as its magnet feature. Such a program could be expected to attract relatively more Hispanics than other ethnic groups. In addition, a program for English for Speakers of Other Languages (ESOL) was also located in that school and had been successfully meeting the educational needs of that community for several years prior to the magnet program. Since this program typically attracts Hispanic and Asian pupils, it also could have increased the minority population of this already impacted school. It would serve the goals of desegregation better if programs with a high appeal to minorities were located in low-minority schools

EXCLUSION OF NONMAGNET PUPILS FROM MAGNET POLICY

An open enrollment policy throughout the area allowed pupils in nonmagnet schools to transfer into the cluster, but such pupils were not actively recruited nor provided transportation as part of the magnet plan. Thus, considerable potential was lost for attracting majority group pupils into the high-minority cluster.

LEVEL OF PARENT AWARENESS

The parent interview data suggest that even though the term "magnet schools program" had high recognition value among the magnet school parents, they were lacking specific information about the programs in their own schools and those in the other schools of the magnet cluster. Since informed choice is a prerequisite to voluntary pupil transfers for desegregation, more widespread knowledge of the magnet school programs, and the manner in which specific children's needs could be met by a magnet program, would likely have contributed to a greater number of pupils transfers.

DEMOGRAPHIC CONDITIONS

The magnet schools concept has often been utilized in localities losing majority group pupils to surrounding schools (i.e., "white flight"). A demographic analysis of this community suggested, however, that the declining white enrollments in the area were not due to white flight nor to increasing enrollments in private schools but to the fact that as majority group pupils graduated out of the elementary schools or moved due to the normal mobility throughout the district, they were not replaced as fast as in prior years. New households formed in the county tended to have fewer or no children. On the other hand, minority families have had a higher in-migration rate and larger households than majority families. This condition, when coupled with the restriction of magnet transfers to within-cluster schools as noted above, limited the potential for the magnet schools to attract more majority group pupils from outside the cluster.

RECOMMENDATIONS

A number of recommendations for enhancing the desegregation effectiveness of the magnet schools concept follow from the foregoing conclusions. These recommendations are offered here as potential guidelines for future planning.

## Enhance the Distinctiveness of the Magnet Programs

When magnet programs are planned for schools as special attractions, they should have distinctive qualities not shared with other schools. Otherwise, there would not be a strong enough reason to transfer from a nearby school which already might have such similar features or from the neighborhood school whose very proximity functions as a magnet. Distinctive program attractions may possibly be accomplished with no increase in expenditures; however, potential increases in costs may be necessary if a qualitatively superior program is to be offered which is capable of overcoming the allegiance to neighborhood schools. Serious consideration should be given to allocating substantial extra funds to magnet schools, keeping in mind the possible negative consequences of unequal allocation among schools.

## Increase Parental Awareness of Magnet Schools

Regardless of the magnet cluster design or the program attractions, parents must be widely and thoroughly informed about the program. Too few parents were aware of the specific features of their own schools and of the programs in other schools within the cluster. Since voluntary transfers for desegregation purposes depend upon informed choices by parents, additional means of informing parents and even actively recruiting students for special programs should be initiated.

## Coordinate Desegregation Planning with Other School System Priorities

School desegregation may be productively articulated with other school system policies for adapting to changing conditions. As attempted to some extent in the current cluster, priorities planning for desegregation could be tied directly to other school system thrusts:

- Reducing underutilization costs incurred in small schools by facilitating school closings through provisions of an attractive alternative magnet program
- Introducing special services that cannot be supported systemwide such as all-day kindergarten programs, gifted and talented programs, or vocational services

## Modify the Cluster Design

As noted above, the modus operandi of a magnet schools concept is to achieve racial balance in individual schools by means of voluntary transfers within a cluster of schools. Further, the cluster of schools must be racially balanced with respect to the ESAA guidelines for school districts, (e.g., the overall percentage of minority pupils in the cluster must fall within 20 percentage points of the district average) both at the outset of the desegregation plan as well as at its completion. This requirement is important to note because the magnet school concept is not intended to alter the overall percentage of minority pupils in the cluster, but to even out the school minority percentages in the cluster.

In planning a magnet schools' cluster, it is therefore extremely important that care be taken to include a wide enough mix of both high-minority and low-minority schools as part of the cluster. Clearly, the more high-minority schools assigned to the cluster, or the higher the percentage of minority

pupils in a selected school, the greater the number of low-minority schools required to obtain a cluster average minority percentage which approximates the district average.

It is difficult to prescribe in advance the numbers of schools of each type required for a magnet cluster, since the specific cluster design will depend upon the percentage of minority pupils in the high- and low-minority schools, the sizes of these schools, the expected rate of transfers among schools, and the feasibility limitations of transportation time, distance and cost. The essential criterion for cluster planning, however, is to compose a cluster the overall minority composition of which approximate the school district mean. In assessing the likely rate of voluntary transfers, it must be noted that a high-minority school paired with a single low-minority school to form a two-school cluster will require a relatively high rate of transfers in order to racially balance the two schools. On the other hand, the greater the number of low-minority schools included in a cluster with only one or two high-minority schools, the fewer are the transfers that will be required from any one school. In addition, where a high-minority school is relatively underutilized, relatively fewer minority pupils will have to transfer out, since the school can become racially balanced by filling its empty classrooms with majority group pupils, preferably from a large number rather than a smaller number of low-minority schools. Thus, school size, cluster size utilization rate, percentage of minority pupils and geographic propinquity must be carefully considered in formulating magnet school clusters. Appendix A illustrates the effect of some of these variables in one type of magnet plan and suggests where the magnet concept has the most likely chance of success as a tool for creating racial balance.

## APPENDIX A

As discussed in the text, the success of a magnet program in promoting racial balance depends on school size, cluster size, percentage of minority pupils, utilization rate, and geographic propinquity.

The effects of some of these factors are illustrated in the examples below, which show, under varying conditions:

- The number of outgoing transfers required of each school in the magnet school cluster; and
- The impact on the racially isolated school's total enrollment when it becomes the magnet.

The conditions which are varied in the example are:

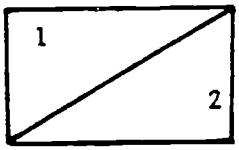
- The number of predominantly white schools which are paired with a single racially isolated school in a cluster; and
- The desired percent of minority enrollment to be achieved in the magnet school.

Example 1: Assumes that the magnet school in the cluster starts off with an enrollment which is 50 percent minority; and that each school in the cluster (including the magnet) starts off with an enrollment of 300 students.

| Number of Predominantly White Schools to be Paired With Each Magnet School | Desired Percent of Minority Students in Racially Isolated School After It Is Transformed Into the Magnet School | | |
|---|---|---|---|
| | 40% | 30% | 20% |
| 1:1 | 30 / 300 | 60 / 300 | 90 / 300 |
| 1:4 | 14 / 342 | 32 / 396 | 57 / 471 |
| 1:9 | 8 / 364 | 18 / 444 | 35 / 580 |
| 1:14 | 5 / 365 | 13 / 469 | 25 / 625 |

Explanatory Notes

A




1 Number of out going transfers required from each cluster school

2 Final enrollment in magnet school

B. Areas of table surrounded with bold lines show those alternatives which involve less than 10 percent (30 students) transferring out of their neighborhood schools.

Example 2: Assumes that the magnet school in the cluster starts off with an enrollment which is 40 percent minority; and that each school in the cluster (including the magnet) starts off with an enrollment of 300 students.

| Number of Predominantly White Schools to be Paired With Each Magnet School | Desired Percent of Minority Students in Racially Isolated School After It Is Transformed Into the Magnet School | |
|---|---|---|
| | 30% | 20% |
| 1:1 | 30 / 300 | 60 / 300 |
| 1:4 | 16 / 342 | 36 / 396 |
| 1:9 | 9 / 364 | 23 / 444 |
| 1:14 | 7 / 365 | 17 / 469 |

Example 3: Assumes that the magnet school in the cluster starts off with an enrollment which is 30 percent minority; and that each school in the cluster (including the magnet) starts off with an enrollment of 300 students.

| Number of Predominantly White Schools to be Paired With Each Magnet School | Desired Percent of Minority Students in Racially Isolated School After It Is Transformed Into the Magnet School | |
|---|---|---|
| | 20% | |
| 1:1 | 30 | 300 |
| 1:4 | 16 | 342 |
| 1:9 | 9 | 364 |
| 1:14 | 7 | 365 |

As these examples illustrate, the higher the original degree of racial isolation in the school, the more predominantly white schools must be included in the cluster to reach a desired racial balance. As shown in Table 1, given the assumptions of the present model, if one wishes to change a school's minority enrollment from 50 percent to 20 percent, and still not have more than 10 percent of the students in each school in the cluster transfer, then the cluster must be comprised of at least 15 schools, only one of which is racially isolated.

However, if one wishes to change a school's minority enrollment from 40 percent to 20 percent, then only 9 perdominantly white schools need be linked to the racially isolated school in the cluster (Example 2).

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