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An Analysis of the Impact of Magnet School Student Selection on Student Achievement and Student Attitudes Toward School

Suzanne Mrzlak Melliger
University of Nebraska at Omaha

AN ANALYSIS OF THE IMPACT OF MAGNET SCHOOL STUDENT SELECTION ON STUDENT ACHIEVEMENT AND STUDENT ATTITUDES TOWARD SCHOOL

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Suzanne Mrzlak Melliger

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ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

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Supervisory Committee

Name	Department
[signature]	Educational Administ Supv.
[signature]	Teacher Education

[signature]
Chairman

May 3, 1991
Date

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Dedication

To my husband, Dave, and my sons, Travis and Michael, for their love, support, and never-ending patience with me.

To my parents, Nick and Theresa Mrzlak, for teaching me from the moment of my birth that I can accomplish whatever I set my mind to accomplish!

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CHAPTER I

INTRODUCTION

Magnet Schools

History of Magnet Schools

Magnet schools appear to be one alternative to the question of how society can desegregate the public school systems. The need to desegregate became apparent in 1954 when the Supreme Court ruled in the Brown v. Topeka Board of Education 347 US 483, 74 S.Ct. 686, 98 L.Ed. 873 (1954) landmark case that separate is not equal and public school systems must be desegregated.

The magnet school is a means to achieve desegregation through a voluntary choice. School system officials charged with the task of creating alternatives, could create an attractive magnet school that was more appealing than sending children on long bus rides to attend a distant neighborhood school. To do this, the varying interests of many individuals have to be considered since all parents choosing a magnet school education for their child anticipate a high quality educational environment for their child. To meet the perceived needs of school districts' clientele, different types of magnet schools have been developed.

Types of Magnet Schools. While there is a long history of various types of magnet schools, magnet schools are relatively new in the Omaha Public School District (OPS). They were developed to expedite the desegregation of the school system. The first magnet school in OPS was Druid Hill, established in 1981, as a math and science magnet. To comply with the desegregation edict, school district officials developed educational programs which would appeal to students of all ages and socioeconomic areas of the system. This included accommodating the different needs of the elementary and secondary students. It is because of these differences that school districts were compelled to create and offer different types of magnet schools to the general public.

In OPS, magnet schools focus on a specific theme. The themes deal with specific subject matter, such as mathematics (e.g. Druid Hill) and science (e.g. King Science Center). A cursory examination of materials from other public school districts reveals themes that center around fine arts (e.g. theater, music, dance) that are geared to teaching styles; or, that revolve around students' learning styles. Some magnet schools cater to the gifted student while others are a school-within-a-school program directed to only a segment of the total school population. In structure, emphasized content, and predominant teaching strategies, magnet schools

may differ.

Successes and Shortcomings of Magnet Schools. Magnet school programs are faced with many challenges. They must provide an attractive educational program, contribute to racial balance in the school district, and do so in a way that, the students and parents continue to support them as an alternative attendance center.

Magnet schools enjoy many successes. In a Rand-funded study conducted by researchers Paul Hill, Gail Foster and Tamar Gendler, "special-purpose public schools in urban areas are more effective than regular public schools because they place greater emphasis on molding student values and can make on-site decisions" (Omaha World Herald, p. 3-A). The researchers found that these successful schools have simple and sharply defined missions. While critics of magnet schools suggest that magnet schools work because they select students who fit them, the truth is just the opposite; magnet schools influence students' attitudes and behavior so effectively that most students ultimately fit in (Omaha World Herald, 1990).

Although magnet schools have been praised for their effective role in desegregating school systems with innovative, instructional programs, they have not been without criticism. Those same magnet schools have

been perceived by some as skimming school districts of the cream of the crop. They have been accused of existing to educate only the elite. There is some belief that magnet schools create a split system, in which there are the have-not schools as well as the have schools: i.e., the magnet schools.

In addition to these charges, magnet schools can be considered a fiscal nuisance. Taxpayers may not look favorably at supporting expensive educational programs when perhaps their children will not be allowed to attend the costly school of their choice simply because they are at enrollment capacity.

Omaha Public Magnet Schools

O.P.S. Concept of Magnet Schools. The O.P.S. concept of magnet schools is guided by the following beliefs:

> "Magnet schools provide excellent learning opportunities with a focus on curriculum areas which have been selected by community committees, staff, and the Board of Education. Students receive instruction in the standard curriculum of the district and also specialized instruction which is not available in other schools. Magnet schools use these specialized learning opportunities to attract students and achieve a racial balance appproximating that of the community at large. The magnets must work towards excellence in both the academic school program and the magnet focus. They must also affect public opinion about the magnet programs as a means of encouraging racial balance

> in district-wide school enrollments" (OPS Department of Instruction, p. 3).

Operating under these beliefs, the King Science Center was established in 1984 to attract children with an interest in science.

Functions of King Science Center. In the Omaha Public Schools, the King Science Center academic curriculum clearly identifies the essential knowledge, skills, and concepts that enable all students to be academically successful. Administration and staff endorse the belief that it is imperative that stratification of students is minimal. The effective program of structured, direct instruction ensures that academic engaged time is maximized for all students. High quality instruction is emphasized by the administration as the major function of the school.

It is the basic responsibility of the King Science Center to provide students every day learning skills in reading, computation, communication and social studies. The professional staff subscribes to the belief that all children can learn, and that all children are expected to reach high standards. The sequentially planned science program is designed to develop scientifically literate citizens who use and understand the knowledge and processes of science, and realize the impact of science and technology on the future of society.

The advancement in technology enhances the learning environment with efficiency, accuracy, programmed drills, high interest, and the development of higher level thinking skills. It is the basic function of King Science Center to provide instruction in the common learnings and opportunities for the development of those skills, habits, attitudes, and character traits essential in our culture.

Criterion for Student Selection at King Science Center. Students at King Science Center are selected on a basis of neighborhood and race in a computerized random draw. In order for a student to be included in the draw, an application form must be completed and sent to their neighborhood school or to the Student Personnel Services Department of the OPS. Student Personnel Services enters all applicants' names into a computer. This computer is programmed to pick an appropriate number of males, females, black and non-black students. Before the actual draw occurs to select students, some places at the school have already been filled. These places are filled by students from Franklin Learning Center, a primary magnet school in the district, who have been grandfathered into the magnet program if that is their wish. Students already have been chosen in a computer draw in order to attend Franklin Learning Center. This grandfather clause allows the students continuity in a magnet

program if they so desire.

Another section of students are randomly drawn from the applications of students from the neighborhood of the King Science Center. Sixteen percent of the entering fourth graders are from this neighborhood draw. Eighty-eight percent of the students residing in the King Science Center neighborhood are black.

The number of males, females, black, and non-black students who are selected through the neighborhood random draw and from the Franklin grandfather clause group is then entered into the computer. According to the Student Placement Office, after the computer sorts through this information, it randomly chooses the remaining students to equally fill the spaces for gender and racial balance. This one and one-half hour computer selection process occurs in March of each year.

Critical Concerns and Issues

National Concerns. The student selection process in magnet schools varies from district to district and sometimes from magnet to magnet within a district. The underlying factor in selection process decisions is racial balance because it is a widely used tool to address racial imbalance among students in public school districts that are under court ordered desegregation. Not only must the individual magnet schools be racially

balanced, the existence of the magnet schools must not off-set the racial balance of the other schools in the district.

Local Concerns (OPS). In OPS there are several different methods in place for student selection into the six magnet schools operating as of 1990. Druid Hill is a magnet school which offers a math and computer theme for students in grades K-6. The selection process at King Science Center is different from the process in place at Druid Hill. The student composition there is largely affected by the movement activity of the residents of the Druid Hill neighborhood. Like King, Druid Hill also accepts students from Franklin Learning Center who choose to be grandfathered into the math and computer program. The difference between the two schools is the percentage of students who are permitted to enter the school because they live in the neighborhood of the magnet school. Druid Hill accepts all neighborhood students who wish to attend the school. This allows very few blacks throughout the rest of the city to attend the school as most of the available spots for the black students are taken by neighborhood students. Given the variety of selection criteria, what criteria makes a difference in the success of children?

Statement of the Problem

Clearly several methods exist for student selection for magnet schools. What is not evident is what affect the student selection process has on student achievement and student attitudes toward school. A process which carries with it the political pressures from taxpayers should surely be given careful consideration. If the student selection process for magnet schools is a factor of support from the general public, then school officials should be aware of the effects of their chosen selection process on their students.

The purpose of this study is to determine the relationship between student selection criteria and student achievement and the relationship between selection criteria and student attitude toward school.

Hypotheses

There is no significant difference in the selection criteria and student achievement.

H-1 There is no significant difference in student achievement between black and non-black students.

H-2 There is no significant difference in student achievement between male and female students.

H-3 There is no significant difference in student achievement between randomly selected students and those grandfathered into a school.

H-4 There is no significant difference in student achievement between neighborhood students and non-neighborhood students.

There is no significant difference between selection criteria and student attitudes toward school.

H-5 There is no significant difference in student attitudes between black and non-black students.

H-6 There is no significant difference in student attitudes between male and female students.

H-7 There is no significant difference in student attitudes between randomly selected students and those who were grandfathered into school.

H-8 There is no significant difference in student attitudes between neighborhood and non-neighborhood students.

Methodology

To test the hypothesis, there is no significant difference in the selection criteria and student achievement, the researcher used the California Achievement Test (CAT) E. Educational professionals representing various ethnic groups were asked to review the items for CAT E and F. Their goal was to identify test content that might reflect an inaccurate or stereotypic portrayal of any ethnic or gender group (CTB/McGraw-Hill, p. 11). According to Conoley and Kramer, 1989,

> "The CAT E is one of the best standardized achievement batteries available. The available data about test quality are comprehensively and (usually) clearly reported; the standardization process appears to have been carried out as well as is possible; reported reliabilities are at least as good as the best of the competing batteries, with a laudable emphasis on standard errors; content validity is clearly and thoroughly described and procedures used to minimize ethnic and gender bias and to evaluate the passage dependency of reading comprehension items were exemplary; scales and reporting formats for results are carefully designed and effectively presented" (Conoley and Kramer, p. 133).

CAT Normal Curve Equivalent Scores from 25 students in each of the groups and were used to analyze the relationship between student achievement and each of the selection criteria variables: black and non-black, male and female, Franklin grandfather clause students and non-

grandfather clause students, and neighborhood and non-neighborhood students. Testing was targeted on fifth graders. Four-hundred students were included in the study, 393 of whom were fifth graders and the remaining 7 sixth graders. The neighborhood sample consisted of 18 fifth graders and 7 sixth graders.

The researcher administered the Hare Self-Esteem Scale to the same twenty-five students in each of the groups in order to assess students' attitudes toward school. The instrument was scored and the researcher analyzed the relationship between the students' attitudes and each of the selection criteria variables: black and non-black, male and female, Franklin grandfather clause students and non-grandfather clause students, neighborhood and non-neighborhood, 400 students in total.

The Hare Self-Esteem Scale was designed to measure self-esteem in school age children, especially those 10 years old and above. The HSS consists of three 10-item subscales that are arena-specific (peer, school, and home) and presented as distinct units. The sum of all 30 items is viewed as a general self-esteen measure. Items were chosen to include both self-evaluative and other-evaluative items. The items are also intended to induce respondents to report a general sense of the self-feeling within each arena (Corcoran and Fischer, 1987).

> "Test-retest correlations indicate fair stability with three-month correlations ranging from .56 to .65 for the three subscale scores and .74 for the general scale. The HSS general scale correlated .83 with both the Coopersmith Self-Esteem Inventory and the Rosenberg Self-Esteen Scale, indicating excellent concurrent validity. The HSS subscales also correlate significantly with changes in life status and with predicted arena-specific activities (e.g., reading achievement scores with school subscale). This suggests that changes in arena-specific sources of self-esteem do not result in changes in the level of general self-esteem" (Corcoran and Fischer, p.393).

The researcher used only the School Self-Esteem Scale arena of the HSS when assessing the relationship between student selection process and attitude toward school within each of the control groups. Students in each group have attended King Science Center for a minimum of one year prior to testing.

Definition of Terms

CAT-

California Achievement Test: a standardized test used in the Omaha Public Schools to measure student achievement in a multitude of objectives and compare Omaha Public School students with other students nationally at the same grade level.

draw-

A computerized random selection process used by Omaha Public Schools to select a given number of students who will be allowed to enroll in a magnet school program.

Franklin grandfather group-

Students who are allowed automatic enrollment at King Science Center in the fourth grade because they attended Franklin Learning Center in the third grade.

HSS-

Hare Self-Esteem Scale: an instrument used to measure a students' self-esteem relative to his/her peers, home, and school.

Magnet school-

A school which offers an enhanced program of instruction that is not available in other schools.

Limitations

Although there are several magnet schools in the Omaha Public School System, this study is limited only to students enrolled at the King Science Center.

In addition, 393 of the 400 students participating in the study were those who had been at King Science Center for one year. The remaining 7 students attended King Science Center for two years. These exceptions were students in the neighborhood group, because this group is the result of a recent policy change in the student selection process at King Science Center. Previously, there was no provision for neighborhood students to receive a guaranteed percentage of placement at King Science Center. Thus, in order to analyze a sufficient number of students' CAT scores and HSS scores in this group, the researcher used seven students who attended King Science Center for two years.

Assumptions

The researcher made the assumption that the Normal Curve Equivalent Score from the California Achievement Test was a good indicator of student achievement for each of the sub-groups described. The researcher also assumes that the students answered the Hare Self-Esteem Scale accurately and honestly.

CHAPTER TWO

REVIEW OF LITERATURE

Dating back to 1635, when the Boston Latin School was founded, magnet schools have served as an innovative approach to educating thousands of America's youth. While the impetus for the original magnet school was to educate a small intellectual elite sector, magnet schools of today exist mainly to serve two purposes: desegregation and educational innovation. (Metz, 1988). "In 1954 the U.S. Supreme Court ruled in Brown v. Board of Education that segregated schools were unconstitutional, and the Court mandated school systems to put an end to segregative practices" (McMillan, p. 7). "Magnet schools became a vehicle of both court-ordered and voluntary desegregation plans in many major cities as far back as the mid-1970's" (Lewis, p. 9). This chapter examines and synthesizes the research regarding successful magnet schools, types of magnet schools, and weaknesses of magnet schools. Attention is given to ways of attracting people to magnet schools and magnet school student selection.

Successful Magnet Schools

Just as researchers once attempted to write the recipe for creating effective schools, practicioners today would like to do the same for the development of successful magnet schools. Certainly there is no magic

checklist for the development of a successful magnet school, however, there are some characteristics of effective magnet schools which continue to surface in the literature. Fundamental components of successful magnet schools can be synthesized into the following major categories: quality school leadership, healthy financial resources, strong community support, and continual program evaluation.

School Leadership. School leadership is a major success factor in magnet schools. The principal must be enthusiastic, committed to the program, and knowlegeable about magnet school philosophy. "In educationally effective magnet schools, the principal played the key role in developing the program and in organizing school resources" (Blank, p. 272).

Financial Resources. Magnet schools cost a great deal of money. They have higher average costs per pupil than non-magnet schools in the same districts - and the quality of education is positively related to the extra cost (Blank, 1984). The high costs are attributed to enhanced curriculum choices, transportation demands, and low teacher:student ratios.

In order to get parents to send their children on a forty minute bus ride to school each day, the school district must be able to ensure that the

benefits of the educational program in the magnet school far outweigh the inconvenience of attending a school many miles from home. To accomplish this, school districts must allow a greater budget for program development in magnet schools. Students must have access to strong administrators, strong teachers who often have more years of teaching experience and thus demand higher salaries. Magnet schools must provide advanced technology among other amenities which other schools are not under such great pressure to provide for their clientele.

Also associated with the high cost of magnet school programs is the transportation expense. "Complete transportation services must be provided at no expense to the participating students" (Uchitelle, p. 302). The transportation cost was 18% of the 1990-1991 budget at King Science Center in Omaha, Nebraska.

Low student:teacher ratios are another costly factor of successful magnet schools. Once again, magnet programs are expected to offer more to students than other schools in the district in order to lure students away from their neighborhood school, thus the added incentive of low class size is a desirable option.

Community Support. To guarantee the success of any school program, there must be loyalty built in from the community as well as

from the students and staff of the school. "The magnet schools that offered high-quality education generally benefited from extensive community involvement and support" (Blank, p. 272).

One way to elicit greater support for magnet programs, is to make certain that there is districtwide access and voluntary participation in the program. "Especially where admission is not selective, magnets allow far more open access to students of all colors and economic backgrounds than do neighborhoods and suburban schools" (Metz, p. 59).

Centralized Theme. The very nature of magnet schools requires that there is a theme for the school. When they talk about successful magnet schools, researchers routinely cite the need for a definite, appealing, distinctive magnet theme. Themes vary from community to community based on the perceived needs of the clientele and, at times, the age level the magnet program is designed to serve.

Program Evaluation. Finally, continual evaluation of the program is indicative of successful magnet schools. Successful magnet school programs are never "finished." They are always in the process of re-evaluation and revision. In designing a magnet school, there must be plans to conduct regular surveys to determine the range of educational choices or options the system will offer. "Each school must establish a five-year

plan, against which its progress will be evaluated" (Clinchy, p. 10). The curriculum is, of course, the basis of the program and many times an emphasis on a particular subject area serves as the theme for the magnet school. There must be some mechanism for reviewing the curriculum to ensure that it is rigorous and fair (Wright, Chance and Smith, 1989).

Types of Magnet Schools

Knowing that one characteristic of effective magnet schools is the identification of a definite, appealing, distinctive magnet theme, school districts have been quite innovative in the development of the magnet school programs. Most often the theme of a magnet school is set only after a careful analysis of community perceptions of students' needs. School district officials must first understand what the members of the group want and secondly, why they want it (Estes, Levine, and Waldrip, 1990). Magnet school themes range in focus from individual subject areas to teaching styles to age level of clientele.

Subject areas. City Magnet School in the Lowell Massachusettes Public School System, Lowell, Massachusettes, was the result of planning by George Richmond. The school was designed to engage students, parents, and teachers in the building of a miniature society. In the fall of 1981, it was the first microsociety school in the nation. The City Magnet School

provides students with a strong, traditional program in the basic skills. "In this magnet school, however the students learn basic skills as they legislate, adopt budgets, pass tax measures, administer justice, govern, or simply communicate with one another regarding commercial and legal matters. They read, write, and use mathematics with purpose" (Richmond, p. 233).

Upon a personal site visit to the Amstoy School Tri-Lingual Magnet Center in Gardena, California, the researcher noted the facility is a school within a school. This setting offers three languages: Japanese, Spanish, and English. The intent of the program is to produce students who are bi-lingual, bi-literate in either English-Spanish or English-Japanese. The students participate in activities that emphasize cultural heritage which will enhance the appreciation and worth of mankind, as well as to learn the basic skills of reading, writing, and mathematics.

Teaching Styles. In New York City, the Isaac Newton School for Science and Mathematics, a junior high school, has encouraging test scores and low dropout rates. Many students go on to some of New York City's competitive academic high schools. The community superintendent of that school at the time of its conception, Anthony Alvarado, said the program was an outgrowth of two goals: making schools suit the talents

of the teachers and the needs of the students (Sylvester, 1989).

Loyola Village Elementary School Conservatory of Fine and Performing Arts in Los Angeles, California, was one of fifty-five magnet schools found in the Los Angeles area in 1980. The educational philosophy of this particular school is that it is important to educate the entire brain. Educational researchers are aware that it is the processes of the right side of the brain which are directly related to artistic production and creativity. In a personal interview with the researcher, Vince Crowell, vice principal of the Conservatory, stated that, "It is the humanistic area, the first to be dropped in any budgetary belt tightening, that may one day prove to be one of the more important aspects of our lives."

Age levels. The most prevalent magnet curricular themes differ somewhat at the elementary level from the secondary level. Themes most popular in elementary schools are: open nontraditional; fundamental, traditional; language/humanities/multicultural; and talented and gifted. The secondary level prefers the following themes: visual/performing arts; science/math/technology; careers/vocational; academic/honors; and language/humanities (McMillan, 1980).

As is evident in the few samples cited, there are many options for themes of magnet schools. The most substantial elementary themes are pedagogical (style of teaching); the most attractive secondary themes are content-oriented (arts, sciences, humanities, etc.) (McMillan, 1980). The creativity of district officials when designing a magnet program may be what sells the school choice to parents who are wavering in their decision to send their student to a school other than their neighborhood school. Innovative programs are appealing to the public as are "back to the basics" programs. Community involvement in determining the theme of a proposed magnet school is essential.

Shortcomings of Magnet Schools

Even though district officials may have carefully researched, planned, and implemented what they believe is the ideal magnet school, they are inevitably faced with problems. Successful magnet schools can raise new problems of equity with nonmagnet school parents and students. Issues of equal access, equal resources, equal prestige, and elitism arise between magnet and nonmagnet schools. Some problems exist because parents fear that the creation of magnet schools would destroy their neighborhood schools. "There have been complaints when magnets were receiving 'first class' treatment while the non-magnets were being

treated as 'second class' schools" (Tsapatsaris, p. 10). In some cases there is a vast gulf between magnet and non-magnet programs (Cohen, p. 18). "They draw fire for receiving extra resources and for creaming good students from a city's other schools" (Metz, p. 59).

In situations where the schools operate on a first-come, first-served basis, there are inequities. Joyce Charles, a PTA activist from Prince George's County, Maryland, is not happy with her county's much-acclaimed magnet school system. "There are lines of people wrapping around Largo High School for days," she says, "and they still don't get their kids into the school they choose" (Sylvester, p. 59).

"As many school districts have learned, the ultimate goal may be to make every school special in some way" (Lewis, p. 11). To make a magnet school clearly superior is to run the risk of creating a dual system of elite magnet schools and mediocre regular schools (Rossell and Glenn, 1988). This poses quite a dilemma for officials who are trying to market a program in order that voluntary desegregation will take place.

Attracting People to Magnet Schools

Different factors affect the choice to attend a magnet school. Certain factors may attract one sector of people to magnet school programs while those same factors may not be as appealing for other

public sectors in the decision of whether or not to attend a magnet school.

Acceptance of location. "Taking a sanguine view of the conditions for white acceptance, in order for a magnet school in a black neighborhood to succeed with whites, there must be a general sense that whites will, in fact, be in the majority" (Estes, Levine and Waldrip, p. 7).

> "According to the research analyses of Levine and Eubanks (1980), and Rossell (1985), magnets that are successful in inducing white students to travel to a mixed or predominantly black neighborhood have attractive school features such as an image of excellence, a special curriculum, a charismatic principal, a good faculty, and/or an attractive facility" (Estes, et al., p. 8).

Appeal factors. Estes, Levine, and Waldrip (1990) rely on Royster, E. C., Baltzell, D.C., and Simmons, F. C. (1979) studies of magnet school "appeal" for both white and black students and report that,

> "Schools were chosen for their appeal factors in the following order: (1) program, (2) faculty, (3) principal, (4) school location, (5) quality of the school plant, (6) opportunities provided for parent involvement, (7) voluntary nature of the magnet, and (8) opportunity provided by the school for "another chance" for students perceived as having behavior or learning problems" (Estes, et al., p. 8).

Continuing to report on magnetism in terms of preference for both black and white students, Estes, et al. (1990) maintain that the "image of excellence" was more important to a school's magnetism than was the

school's uniqueness in curricular or instructional program. Estes et al. (1990) rely on Rossell's studies when they reveal that "selectivity, or perceived selectivity" of magnet schools is more important to many parents, white and black, than the specific magnet theme. In fact, Rossell argues that "the more racially isolated the school, the greater the selectivity, or perception of selectivity, there should be" (Estes, Levine, and Waldrip, 1990).

Magnetism in general is related to still other factors. For instance, studies indicate that parents tend to choose schools that in some way match their personal value systems. "Many parents will not select a dilapidated school, no matter how sound its educational program, if other alternatives exist" (Uchitelle, p. 303).

The ranking of magnet schools' "appeal" factors changes when one considers an elementary program versus a secondary program. Compare the rank order from McMillan (1980) which list the factors that attract parents and students to magnet schools in both elementary and secondary schools (see Table 1, following).

Table 1

Factors That Attract Parents and Students to Magnet Schools

Elementary	*Secondary*
1. Program	1. Program
2. Faculty	2. Voluntary nature of magnet
3. Voluntary nature of magnet	3. Alternative nature of magnet
4. Alternative nature of magnet	4. School location
5. Parent involvement	5. Principal
6. Facilities	6. Facilities
7. Principal	7. Faculty
8. School location	8. Parent involvement

Note the difference in ranking of the quality of staff at the elementary schools in comparison with the ranking which quality of staff received at the high school level.

Magnet School Student Selection

Developing entry criteria is a key policy decision. To expose the public to what is available to some children in a school district and then to tell them it is not available to their student does not set well with

taxpayers. In general, it is not a good practice to advertise what is not for sale. Of course, the main reason that magnet schools exist is to draw students to schools which might otherwise have an imbalanced enrollment. Thus, racial balance must be a consideration in developing entry criteria. Generally, selection may incorporate such specific factors as achieving racial balance or meeting certain academic standards, but other commonly used methods include lotteries, degree of interest in the program, and location of residence. "Districts often use multiple criteria, in part to encourage students with diverse interests and varied ability to participate. This not only promotes equity, but also keeps parents from viewing the program as unfair or exclusive" (U.S. Dept. of Edu., p. 24).

First come first served. "In the Lowell Massachusettes School System, students are admitted on a first-come, first-enrolled basis until the minority and non-minority percentages are filled. Later applicants are put on a waiting list. Majority children are given priority in heavily minority schools, and vice versa" (Tsapataris, p. 9). Magnet programs in large cities, including Boston, Milwaukee, and Buffalo, choose students on a first-come, first-enrolled basis, always with attention to racial balance (Cohen, 1984).

Student screening. "Most of Houston's magnet programs exercise a large measure of discretion in their selection of students. In most of these magnets, students with academic or behavioral problems are screened out" (Cohen, p. 18).

Blank completed a two-year national study of student selection processes in magnet schools and found that high-quality education in magnet schools does not stem from highly selective methods of admitting students. The magnet schools identified as providing high-quality education served average as well as high-ability students. Of the 45 schools in the sample, only 14 used achievement test scores, grade-point averages, or other selective methods of admitting students (Blank, 1984). "A key finding from the study is that the degree of selectivity bears no relationship to the quality of education provided by a given school" (Blank, p. 271).

Frequently accused of elitism, selective schools have sometimes had to fight for their survival. "The argument is twofold: first, that separation of children by ability is undemocratic and thus intrinsically wrong; and second, that selective schools skim off the brightest children, forcing other schools to deal solely with mediocre and below-average students" (Doyle and Levine, p. 266).

"Schools of choice bring with them a new set of concerns that administrators must solve--the most equitable method of selection for parents, the need to maintain racial and ethnic balance in the choices, new systems of communicating with parents that offer information and guidance to every family, and careful evaluation to make sure the choices really do offer curricular and instructional changes" (Lewis, p. 11). To accomplish all of this and still manage to make all other schools in the district look and feel equally "special" is no small task.

Chapter 3

Methodology

Purpose. The purpose of this study was to determine the relationship between student selection criteria and student achievement and the relationship between selection criteria and student attitude toward school.

Hypotheses

Hypothesis Number 1. There is no significant difference in the selection criteria and student achievement.

H-1 There is no significant difference in student achievement between black and non-black students.

H-2 There is no significant difference in student achievement between male and female students.

H-3 There is no significant difference in student achievement between randomly selected students and those grandfathered into a school.

H-4 There is no significant difference in student achievement between neighborhood students and non-neighborhood students.

Hypothesis Number 2. There is no significant difference between selection criteria and student attitudes toward school.

H-5 There is no significant difference in student attitudes between black and non-black students.

H-6 There is no significant difference in student attitudes between male and female students.

H-7 There is no significant difference in student attitudes between randomly selected students and those who were grandfathered into school.

H-8 There is no significant difference in student attitudes between neighborhood and non-neighborhood students.

Procedures

Instruments. To test the hypothesis, there is no significant difference in the selection criteria and student achievement, the researcher used the Normal Curve Equivalent Score from the total battery of the California Achievement Test Form E.

To test the hypothesis, there is no significant difference in the selection criteria and student attitude toward school, the researcher used the Hare School Self-Esteem Survey.

Sample. Eight groups of 25 students were studied in order to test for each hypothesis. All of the students studied had attended King Science Center for at least one year. Of the 400 students in the sample, 393 were 5th grade students. The remaining 7 students were in the 6th grade at King Science Center. These 7 students were part of the nieghborhood selection group. It was necessary to include 6th graders in the neighborhood selection group because there were not 25 fifth grade students who had been at King for 1 year and who resided within the King neighborhood boundaries.

Chapter 4

Presentation of Data

The hypothesis, there is no significant difference between selection criteria and student achievement, has been divided into four sub-hypotheses which measured the difference in achievement scores between black and non-black students, male and female students, Franklin and non-Franklin students, and neighborhood and non-neighborhood students.

Table 2

CAT E Normal Curve Equivalent for Black and Non-Black Students

	No. of Cases	Mean	Standard Deviation
Black	25	51.92	17.10
Non-Black	25	71.92	18.14
t-value	3.92		

Hypothesis Number 1-- Academic Achievement

Black and Non-Black Students. Table 2 shows the data from the black and non-black achievement score comparison. Twenty-five 5th graders were used in each sample, one group consisting of all black

students and the other non-black students. Given the information presented, a *t*-test was applied to determine whether there was a significant difference in achievement between black and non-black students. The *t*-score for 25 cases to be significant at the .05 level must be 2.06. The actual *t*-score for this sample was 3.92. This suggests that a significant difference does exist in student achievement between black and non-black students. The black students in this sample scored significantly lower on the California Achievement Test E than did the non-black students in the sample.

Male and Female Students. The sub-hypothesis, there is no significant difference in student achievement between male and female students, is addressed in Table 3. Again, there were 25 cases in the sample and a *t*-test was applied to determine whether there was a significant difference in student achievement between male and female students. The *t*-score, which compared the mean of the males to the mean of the females, from these samples was 1.15. Although female students did score higher than male students, the *t*-score is not great enough to consititute a significant difference in the scores, as the value necessary to consider the scores to be significantly different at the .05 level, is 2.06 for 25 cases.

Table 3

CAT E Normal Curve Equivalent for Male and Female Students

	No. of Cases	Mean	Standard Deviation
Male	25	59.56	20.75
Female	25	66.52	20.90
t-value	1.15		

Hypothesis H-3, there is no significant difference in student achievement between randomly selected students and those who were Franklin students grandfathered into school, was tested and accepted. Table 4 illustrates that the 25 students in each group, previous Franklin students and non-Franklin students, scored similarly enough on the California Achievement Test E that the *t*-score for the comparison of groups was 1.91. Again, this is less than the 2.06 which is necessary to determinine the difference is a significant one at the .05 level.

Table 4

CAT E Normal Curve Equivalent for Franklin and Non-Franklin Students

	No. of Cases	Mean	Standard Deviation
Franklin	25	71.80	19.65
Non-Franklin	25	60.92	19.78
t-value	1.91		

Neighborhood and Non-Neighborhood Students. Table 5 shows that the sub-hypothesis, there is no significant difference in student achievement between neighborhood and non-neighborhood students, is accepted. The *t*-score on the comparison of these groups was 1.96. This score is very close to meeting the .05 level of significance, however, it does fall short. The non-neighborhood group did score higher than the neighborhood group on the California Achievement Test E.

Table 5

CAT E Normal Curve Equivalent for Neighborhood and Non-Neighborhood Students

	No. of Cases	Mean	Standard Deviation
Neighborhood	25	52.72	16.84
Non-Neighborhood	25	62.92	19.08
t-value	1.96		

Hypothesis Number 2--Student Attitude

Black and Non-Black Students. Tables 6, 7, 8, and 9 address the hypothesis, there is no significant difference between selection criteria and student attitudes toward school. The hypothesis has been treated in four separate sub-hypotheses, each of which is addressed in the following tables.

Hypothesis H-5, there is no significant difference in student attitudes between black and non-black students, is accepted. A *t*-score of 2.06 to determine whether there was a significant difference in the attitude scores of the two groups. The *t*-score of these two groups was 1.99, which was very close to constituting a significant difference

between black and non-black attitudes toward school. The non-black students scored higher on the Hare Self-Esteem Scale in the school arena than did the black students.

Table 6

Hare Self-Esteem Scale for Black and Non-Black Students

	No. of Cases	Mean	Standard Deviation
Black	25	28.28	6.10
Non-Black	25	31.20	3.76
t-value	1.99		

Male and Female Students. Table 7 shows the difference in student attitude toward school between male and female students is a significant difference. The *t*-score for these groups is 2.52. This score exceeds the required 2.06 score which is necessary to consider the difference in the mean of the two groups to be significant. The female students scored significantly higher than the male students in student attitude toward school.

Table 7

Hare Self-Esteem Scale for Male and Female Students

	No. of Cases	Mean	Standard Deviation
Male	25	28.60	5.37
Female	25	32.04	3.96
t-value	2.52		

Franklin and Non-Franklin Students. The sub-hypothesis, there is no significant difference in student attitudes between randomly selected students and those Franklin students who were grandfathered into school, was proven to be true. As Table 8 shows, the Franklin students scored only slightly higher than the non-Franklin students in the samples. The *t*-score for the groups was .97, which does not constitue a significant difference at the .05 level.

Table 8

Hare Self-Esteem Scale for Franklin and Non-Franklin Students

	No. of Cases	Mean	Standard Deviation
Franklin	25	31.40	3.83
Non-Franklin	25	30.00	5.88
t-value	.97		

Neighborhood and Non-Neighborhood Students. Table 9 shows the comparison of the neighborhood and non-neighborhood students' Hare Self-Esteem Scale in the school arena. The difference is not a significant one as the *t*-score for these groups is only .93. Again, the *t*-score needed to reach 2.06 in order that the difference in the survey scores be considered significantly different. The non-neighborhood students scored only slightly higher than the neighborhood students in the sample.

Table 9

Hare Self-Esteem Scale for Neighborhood and Non-Neighborhood Students

	No. of Cases	Mean	Standard Deviation
Neighborhood	25	28.84	4.26
Non-Neighborhood	25	30.28	6.23
t-value	.93		

In dealing with the hypothesis that there is no significant difference between selection criteria and student achievement, sub-hypothesis H-1, was not accepted. Black students did not score as high as non-black students on the California Achievement Test E.

Testing the hypothesis that there is no significant difference between selection criteria and student attitude toward school, it was found that H-6, there is no significant difference in student attitudes between male and female students, was not accepted. Female students scored higher on the Hare Self-Esteem Scale in the school arena than did male students.

Chapter 5

Summary, Conclusion, Recommendations

Summary

Student selection criteria for magnet schools is an important issue. In March of 1991, there were 1400 student applications for 170 openings at the King Science Center in Omaha, Nebraska. The selection criteria used in OPS for King Science Center is based on race, gender, previous attendance at a primary magnet school, and neighborhood. The impact of selection criteria on student achievement and student attitude toward school have been studied.

Consider the following hypotheses dealing with student achievement:

There was a significant difference in student achievement between black and non-black students, with non-black students scoring higher than black students, thus H-1 was rejected.

Hypothesis H-2 was accepted, as there was no significant difference in student achievement between male and female students.

Hypothesis H-3 was accepted, as there was no significant difference in student achievement between randomly selected students and those students from Franklin Learning Center who were grandfathered into King

Science Center.

Hypothesis H-4 was accepted, as there was no significant difference in student achievement between neighborhood and non-neighborhood students.

Following are the findings of the hypotheses which deal with student attitude toward school:

Hypothesis H-5, there is no significant difference in student attitudes between black and non-black students, was accepted.

Hypothesis H-6, there is no significant difference in student attitudes between male and female students was rejected, as female students scored significantly higher than the male students in the sample.

Hypothesis H-7, there is no significant difference in student attitudes between randomly selected students and those students who were grandfathered into King Science Center from Franklin Learning Center, was accepted.

Hypothesis H-8, there is no significant difference in student attitudes between neighborhood and non-neighborhood students, was accepted.

Conclusion

The *t*-test was selected as a reasonable statistical tool to test for

differences between mean scores of the groups on both achievement and attitude. The findings indicated that a significant difference in achievement existed between black and non-black students. Further, there was a significant difference in attitude that existed between male and female students.

One might speculate as to why the 5th grade students at King Science Center scored so similarly on the California Achievement Test. The mere fact that parents of students at King Science Center must take the initiative to make a special application for their child's enrollment at the school suggests that these parents are involved in their child's educational career. Parents know that their student has been selected to attend the school while others were turned away. Academics are perhaps stressed more by King Science Center parents, and by a greater number of the parents than at other schools. The majority of the 5th graders at King experience this emphasis, and thus they tend to score similarly. At other schools throughout the district one might question whether there is the same degree of parental involvement in the students' educational career.

The majority of the students scored similarly on the school arena of the Hare Self Esteem Scale which measured students attitude toward school. All of the students in the samples had attended King Science

Center for at least one year prior to answering the survey questions. Thus, they all shared many of the same experiences. They all attended a school with a stable educational atmosphere. The similar scores on the HSS could be attributed to the fact that all of the students have attended school in the same setting for a minimum of one year.

Recommendations

Personnel at the King Science Center should be aware of the significant differences in achievement between black and non-black students and the significant differences in attitude between male and female students. While awareness of the differences is not enough, it is an important first step.

Secondly, King Science Center personnel need to develop an action plan aimed to reduce the gap in achievement between their black and non-black students, and another action plan to improve males' attitudes toward school. After careful review, the plans should be implemented, evaluated, and revised as necessary.

The action plan designed to reduce the difference in achievement between black and non-black students should include a thorough analysis of the CAT scores of the students in the samples. On those learner objectives which the black students scored lower than their non-black

counterparts, a disaggregation of learner outcomes should be prepared. This process would include the identification of concepts necessary to master the objective. It would also specify any important processes necessary to master the objective. Every step needed to complete the objective should be noted.

To address the difference in attitude between male and female students, faculty members at King Science Center should be well-indoctrinated in the philosophies of Teacher Expectations and Student Achievement (TESA). Careful attention should be given to the teaching behaviors of King faculty, and a special emphasis placed on the development of non-sexist education techniques.

Finally, it is evident that more can be learned from further research. For instance, are there differences that exist between black and non-black females and black and non-black males in terms of achievement and attitude toward school? Possibly, a study of these group comparisons could lead to the development of effective teaching strategies that would reduce differences in achievement and attitude toward school in those samples.

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OMAHA PUBLIC SCHOOLS

OPS PERMISSION TO COMPLETE STUDY

DIVISION OF RESEARCH
3215 CUMING STREET OMAHA, NEBRASKA 68131-2024 (402) 554-6251

December 21, 1990

Ms. Susie Melliger
12254 Shirley Street
Omaha, Nebraska 68144

Dear Susie,

Permission is herewith granted for you to proceed with your field project as outlined in your proposal. Please coordinate your efforts with the principal(s) involved and any central office staff who may serve as resource persons.

May we take this opportunity to wish you every success in completing your project.

Sincerely,

Irving C. Young
Coordinator of Research

cc: Robert Jorgensen, Principal
King Science Center at Mann

Dr. Paul J. Malcom, Staff Assistant
Research Division

APPENDIX B

BLACK SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
262953	32	29	Rose
263333	28	28	Murcek
266288	66	30	Rose
253920	30	28	Montgomery
266099	42	35	Geisler
262242	67	35	Urbach
266682	72	31	Montgomery
266280	71	37	Urbach
266335	66	29	Montgomery
263536	45	25	Geisler
265107	32	13	Geisler
265851	66	24	Urbach
264828	38	29	Murcek
266273	54	27	Geisler
256488	73	18	Montgomery
266325	46	34	Montgomery
260868	60	32	Rose
262248	71	37	Murcek
254650	28	24	Urbach
266294	40	27	Rose
266292	59	29	Geisler
265493	45	24	Rose
289876	42	27	Montgomery
252850	87	37	Geisler
265632	38	18	Urbach

APPENDIX C

NON-BLACK SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
261724	69	40	Murcek
261541	73	31	Urbach
261324	99	33	Montgomery
260710	71	29	Geisler
284970	77	33	Geisler
262033	93	34	Urbach
260599	81	32	Rose
261371	83	32	Murcek
254555	34	30	Murcek
255314	99	27	Geisler
260702	81	36	Geisler
252871	69	36	Montgomery
261041	58	29	Urbach
262350	83	30	Murcek
253692	61	27	Rose
258548	61	29	Urbach
258091	36	27	Rose
262520	75	35	Geisler
274441	56	23	Montgomery
909414	71	33	Urbach
261437	99	36	Geisler
260722	83	32	Urbach
261397	87	28	Geisler
262136	53	30	Rose
260968	46	28	Montgomery

APPENDIX D

MALE SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
257157	47	28	Geisler
263669	74	33	Urbach
262953	32	29	Rose
260710	71	29	Geisler
253920	30	28	Montgomery
262033	93	34	Urbach
290467	36	25	Geisler
263536	45	25	Geisler
265107	32	13	Geisler
261041	58	29	Urbach
262350	83	30	Murcek
253692	61	27	Rose
262520	75	35	Geisler
274441	56	23	Montgomery
267572	74	36	Urbach
260868	60	32	Rose
909414	71	33	Urbach
261437	99	36	Geisler
261397	87	28	Geisler
262136	53	30	Rose
260968	46	28	Montgomery
259814	87	33	Rose
274439	47	29	Urbach
263350	34	24	Montgomery
265632	38	18	Urbach

APPENDIX E

FEMALE SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
263017	69	33	Urbach
261724	85	40	Murcek
261541	73	31	Urbach
261324	99	33	Montgomery
284970	77	33	Geisler
266386	50	32	Montgomery
260599	81	32	Rose
261371	83	32	Murcek
262242	67	35	Urbach
266280	71	37	Urbach
254555	34	30	Murcek
263050	64	34	Murcek
255314	99	27	Geisler
260702	81	36	Geisler
252871	69	36	Montgomery
258548	61	29	Urbach
263358	52	31	Geisler
258091	36	27	Rose
262892	99	35	Murcek
262248	71	37	Murcek
263144	52	26	Montgomery
254650	28	24	Urbach
266294	40	27	Rose
260722	83	32	Urbach
255370	39	32	Geisler

APPENDIX F

FRANKLIN SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
261724	85	40	Murcek
261541	73	31	Urbach
261324	99	33	Montgomery
260710	71	29	Geisler
284970	77	33	Geisler
253920	30	28	Montgomery
262033	93	34	Urbach
266386	50	35	Montgomery
260599	81	32	Rose
261371	83	32	Murcek
254555	34	30	Murcek
255314	99	27	Geisler
260702	81	36	Geisler
252871	69	36	Montgomery
261041	58	29	Urbach
262350	83	30	Murcek
253692	61	27	Rose
258548	61	29	Urbach
258091	36	27	Rose
262520	75	35	Geisler
274441	56	23	Montgomery
909414	71	33	Urbach
261437	99	36	Geisler
260722	83	32	Urbach
261397	87	28	Geisler

APPENDIX G

NON-FRANKLIN SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
263017	69	33	Urbach
257157	47	28	Geisler
263669	74	33	Urbach
263333	28	28	Murcek
266288	66	30	Rose
266099	42	35	Geisler
262242	67	35	Urbach
262488	50	33	Murcek
266682	72	31	Montgomery
263050	64	34	Murcek
265851	66	24	Urbach
263358	52	31	Geisler
263357	40	22	Montgomery
256488	73	18	Montgomery
262892	99	35	Murcek
267572	74	36	Urbach
262248	71	37	Murcek
260767	90	39	Rose
263144	52	26	Montgomery
254650	28	24	Urbach
276315	90	27	Murcek
265493	45	24	Rose
255370	39	32	Geisler
252850	87	37	Geisler
265632	38	18	Urbach

APPENDIX H

NEIGHBORHOOD SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
261858	70	25	Murcek
262953	32	29	Rose
256066	36	30	Montgomery
256059	56	32	Pavel
256575	87	25	Rose
258225	69	33	Gamble
266280	71	37	Urbach
266335	66	29	Montgomery
256046	34	30	Pavel
259271	38	28	Geisler
263294	36	34	Murcek
242823	38	26	Melliger
258326	50	29	Eubanks
258189	59	25	Melliger
266273	54	27	Geisler
266488	78	36	Geisler
266792	44	24	Murcek
255955	81	36	Melliger
266325	46	34	Montgomery
266295	35	24	Urbach
253898	59	22	Gamble
263144	52	26	Montgomery
254650	28	24	Urbach
266294	40	27	Rose
266292	59	29	Geisler

APPENDIX I

NON-NEIGHBORHOOD SELECTION GROUP DATA

Student ID	CAT NCE	Hare SES	Homeroom
263017	69	33	Urbach
257157	47	28	Geisler
263669	74	33	Urbach
263333	28	28	Murcek
266288	66	30	Rose
284970	77	33	Geisler
266099	42	35	Geisler
262242	67	35	Urbach
262488	50	33	Murcek
266682	72	31	Montgomery
263050	64	34	Murcek
265107	32	13	Geisler
265851	66	24	Urbach
264828	38	29	Murcek
263358	52	31	Geisler
263357	40	22	Montgomery
256488	73	18	Montgomery
262892	99	35	Murcek
267572	74	36	Urbach
260868	60	32	Rose
262248	71	37	Murcek
260767	90	39	Rose
276315	90	27	Murcek
265493	45	24	Rose
252850	87	37	Geisler

APPENDIX J

HARE SELF-ESTEEM SURVEY SCHOOL ARENA

Name _____ Student Number_____
(Please print)

In the blank provided, please write the letter of the answer that best describes how you feel about the sentence. These sentences are designed to find out how you generally feel when you are in school. There are no right or wrong answers.

a = Strongly disagree
b = Disagree
c = Agree
d = Strongly agree

_____ 1. My teachers expect too much of me.

_____ 2. In the kinds of things we do in school, I am at least as good as other people in my classes.

_____ 3. I often feel worthless in school.

_____ 4. I am usually proud of my report card.

_____ 5. School is harder for me than most other people.

_____ 6. My teachers are usually happy with the kind of work I do.

_____ 7. Most of my teachers do *not* understand me.

_____ 8. I am an important person in my classes.

_____ 9. It seems that no matter how hard I try, I never get the grades I deserve.

_____ 10. All and all, I feel I've been very fortunate to have had the kinds of teachers I've had since I started school.