CHAPTER II

REVIEW OF LITERATURE

Introduction

The primary purpose of this chapter is to synthesize the literature on the effectiveness of magnet schools. A historical overview of magnet schools will be presented along with background information on the development of the magnet school programs in Portsmouth, Virginia, and specifically at Hunt-Mapp Middle School. In order to provide a comprehensive overview of the topics associated with magnets schools, this chapter has been organized to also include the topics of student achievement as it relates to student race/ethnicity, gender differences, and attendance. Parent perceptions on school effectiveness will also be presented. A summary of the literature review will culminate chapter two.

Historical Overview of Magnet Schools

Magnet school programs can offer diverse educational choices at the elementary, middle, and secondary levels. Ideally, these programs draw students from all attendance areas and offer specialized instruction in a particular area. Magnet schools offer students and parents the opportunity to select the focus of their educational program. This choice is offered by some districts as an attempt to meet the diverse needs of students and create racial balance within the selected school (Metz, 1988).

Blank (1989) concluded that the magnet school concept is a recent innovation in American educational history that has been associated with school reform and reorganization, especially in urban districts. In contrast, Hunter (1994), stated that the
magnet school movement is “by no means a new revolutionary approach to educational reform....it has a historical foundation and has been extensively studied and analyzed with regards to its feasibility and success” (pp. 9-10).

Historically, magnet schools have their roots in the concept of district-wide specialty schools, such as the Bronx School of Science, the Boston Latin School, Chicago’s Land Tech, and San Francisco’s Lowell High School, some of which have been in existence since the turn of the century. (Steele & Levine, 1994; Blank & Archbald, 1992).

The Boston Latin School’s admissions policy reserved 35 percent of the seats in the school for African-Americans and Hispanics. In 1995, a white student challenged the policy because she was denied admission to the city’s Boston Latin High School because of the quota. In August 1996, U. S. District Judge W. Arthur Garrity ordered Boston Latin to accept the student for the fall, of 1996 pending a trial in the case. In that decision, the Judge stated that the current quota might well be unconstitutional (Hendrie,1996). However, as the effort is made to record its history, there is a realization that controversy exists. Based on the federal court, magnet schools are defined as those “... having a distinctive program of study to attract a cross-section of students from all racial groups voluntarily” (Estes, Levine, & Waldrip, 1990 p.99).

Hunter (1994) and Ascher (1990) purport that the Boston Latin School, founded in 1635, was really the first magnet in the United States. Hunter continues that in 1870, Dunbar High School was founded as a magnet because black parents were able to select this school for their children, no matter where they lived in the District of Columbia.
During this period, magnet schools were generally non-neighborhood schools selected by parents because of some perceived trait, such as an excellent academic reputation. On the contrary, according to Waldrip, the first true magnet school was created in Tacoma, Washington, in 1968; and in 1969, the Trotter School of Boston, Massachusetts, was second (Clinchy, 1995). No matter which was first, there is little dispute about why most magnet schools exist today or about which case directed its focus.

White flight from urban to suburban school districts, has caused practically everyone, including the federal courts, to seek out alternative educational programs that encourage voluntary desegregation rather than force desegregation through court ordered busing. To achieve this process, innovative educational programs labeled magnet schools have emerged (Rossell, 1985). They grew out the need to comply with the Supreme Court’s historic Brown v. the Board of Education decision of 1954 and their need to desegregate schools (Ascher, 1990; Ascher & Burnett, 1993; Clinchy, 1995; Gordon, 1989; Steel & Levine, 1994). In its decision, the U. S. Supreme Court unanimously outlawed segregation and declared that racially separate schools are inherently unequal. This ruling overturned the high court’s previous decision in Plessy v. Ferguson, which had allowed state-imposed segregation, calling such schools “separate but equal” (Gordon, 1989, Alexander, 1993).

Magnet Schools and Desegregation

Magnet schools pledged to help bring about desegregation while still providing students and parents with a choice of educational settings and institutions by attracting students of all racial groups to distinctive, high quality course offerings that were not
available in neighborhood schools. Lower courts that applied the Brown decision issued
desegregation orders to school districts across the country. Districts that had maintained
historically all-black and all-white schools were ordered to open doors to all comers. In
some districts, desegregation meant redrawing school boundary lines, which meant busing
students to outlying districts.

The creation of magnet schools is clearly associated with desegregation and
integration of schools. Significant court cases affecting the establishment of magnet
schools include Brown v. Board of Education (1954), Green v. County School Board of
New Kent County (1968), and Swann v. Charlotte-Mecklenburg Board of Education

In Brown v. Board of Education, the U. S. Supreme Court effectively abolished
the policy of separate but equal; which meant doing away with separate educational
facilities for black and white students. Braddock & Crain (1984) contend that the initial
conception of the impact of school desegregation as expressed in 1954 in the Brown
decision has run its course. They state that, “the schools are the place in which society
socializes its next generation of citizens....the U. S. can not afford segregated schools, if
this nation is genuinely committed to providing equality of opportunity to every citizen”
(Braddock & Crain, 1984 p. 264).

Although the 1954 Supreme Court decision in Brown v. Board did not instantly
end school segregation, it destroyed the constitutional foundation upon which legalized
segregation in the South rested, and made future gains possible. This case ended the
notion of ‘separate but equal facilities.’
Forty years later, some individuals feel that society is struggling to provide equal access and equal opportunity for all students. In April 1993, a Woodstock forum addressed the progress of African-American education since Brown v. Board of Education. The panelists’ views were mixed. Some felt that society continues to fight discrimination, insufficient funding to provide an education to youth, and discovering strategies for effective teaching and learning. Others point out the achievement of Blacks with higher test scores, greater college enrollment, and the increase in attainment of college degrees and successful careers. All panelists felt that politics greatly influence education in that politicians have control of the entire system. Even with the control, politicians are said to be so detached from education, that they do not understand what the needs of schools are (Woodstock, 1993).

The Green v. New Kent County (1968) case ruled that freedom of choice, that is, allowing students to attend the school of choice, was not effective in desegregating public schools and, therefore, not allowed. In Swann v. Charlotte-Mecklenburg (1971), the Supreme Court ruled that a district court has the authority to order a desegregation plan that imposed the transporting of students from their neighborhood school to another school in the district in order to achieve desegregation (Gordon, 1989).

School desegregation received much notoriety in the 1960s and 1970s and, researchers turned to the study of magnet schools and effective schooling the 1980s (Ascher & Burnett, 1993). Magnet schools are a popular strategy for increasing inter-social exposure in the public schools. One of the major motivations for the creation of magnet schools is white resistance to participating in racially balanced schools (Ascher,
1990). Foster (1973) stated in an early evaluation of magnet schools as a strategy for
desegregation that, “the magnet concept is a message to the white community which says
in effect: this is a school that has been made so attractive educationally (magnetized), that
you will want to enroll your child voluntarily, in spite of the fact that he will have to go to
school with blacks” (p. 7).

In urban school districts where there is a large population of minority students and
what are considered black schools, the question comes to mind--what student composition
ratio can make a historically black school in a mixed or predominately black neighborhood
attractive to white students? The magnet school offers methods of drawing white students
and parents out of the comforts of suburbia to a school that attracts them to educational
innovations, competent staff, and a sense of belonging. Ascher & Burnett (1993) noted
that white parents were quick to share their concerns about poor facilities, lower quality of
instruction, and threats of danger from which their children are presumably safe in the
white middle-class schools.

Problems of Magnet Schools

One major concern of parents in the desegregation of schools, was the distance
that their children had to travel to and from school. If some children must travel long
distances to school, while others live in the surrounding neighborhoods, those students
who live close by, mostly white, will tend to feel that they own the school while others feel
like visitors (Metz, 1994). Also students who ride the bus to school may be limited in the
amount of extra curricular activities in which they may participate. Desegregation gives
black children access to the better educational facilities and programs that white parents
used their influence to obtain for their own children (Metz, 1986). Desegregation, therefore, changes the political balance in society as it requires children of different races to share the same schools and classrooms and so to have access to the same privileges. Resistance to desegregation must be understood as being in part resistance to this equalization, not just to racial contact.

Metz (1988) contends that “magnet schools can desegregate across lines of social class, achievement, and race, and serve all their students well” (p. 55). Several researchers support the notion that for the good of the society, white children need to be in desegregated school as well as neighborhoods just as much as minority children do (Metz, 1988; Ascher & Burnett, 1993; and Estes et al., 1990). Gamoran (1996) believes that schools with distinct purposes, “provide social capital for those students who cannot find it in their homes and neighborhoods” (p. 4).

In a policy study by Clewell & Joy (1993) in Montclair, New Jersey school district, several plans for providing choice in education to the public were evaluated. Montclair, New Jersey has successfully desegregated its elementary schools through a voluntary magnet school plan based on choice in education. The purpose of the Montclair study was to evaluate the effectiveness of the district’s plan by providing racial balance, quality, and diversity across schools.

Montclair’s magnet system is a voluntary plan which allows parents to select a school, rather than being assigned one. There are several reasons for affording parents within the community choice in school programs, they are: the promotion of educational excellence, the increase in parental school involvement, an increase in varied program
offerings, and improvement of racial balance throughout the district’s schools. As a result of the implementation, schools characterized by extreme racial imbalance before the magnet plan became racially balanced as a result of choice initiatives (Clewell & Joy, 1993).

According to the researchers, school faculties in Montclair School District also became mixed, thus providing minorities with positive role models to follow. Diversity among school programs was preferred by most parents in the community. What was seen as one of the most successful aspects of the magnet program was that disparities between scores of varying racial groups was diminished as a result of the program (Clewell & Joy, 1993).

Research suggests that to achieve real integration, a city must move beyond monitoring enrollments at the school level (Ascher & Burnett, 1993). There are basically two types of magnet school structures, full-site magnet and program within a school (PWS). In full site magnet schools, all students are transfer students mixed together in the magnet program. In the PWS, only part of the school is comprised of transfer students who have access to the magnet curriculum. PWS magnets are usually situated in schools that were mostly minority prior to desegregation efforts. These programs achieve overall building desegregation by attracting enough white transfer students to balance the number of neighborhood minority students already in the school (Steele & Levine, 1994 and West, 1994).

West (1994) offers support for the claim that many magnet schools are overflowing with racially segregated classrooms. Racial desegregation with PWS is
partially damaging to the minority students who constitute the non-magnet portion of the
school, because it “labels them as inferior to the white transfer students who constitute the
bulk of the magnet students within the school” (West, 1994 p. 1).

The schools which develop reputations as ‘good’ tend to be in the areas with more
affluent families who have more education and more prestigious occupations; therefore,
the social class of the clientele is higher. Metz (1986, 1988) stated that it is an open secret
that schools are not the same despite the appearance of standardization. Realtors
encourage houses to prospective clients according to their school attendance area when
the school has a local reputation for high quality. Magnet schools were initiated as a
means of deterring white flight by providing high quality special programs that would
encourage parents to keep their children in the local schools (Musumeci & Szczpkowski,
1993).

**Magnet School Assistance Program**

In addition to the fact that the magnet schools were created as a desegregation
strategy, and grew through federal support, the development of magnet schools in
America’s education should also be accredited to the concerns of education decision-
makers in their efforts to improve the quality of education. Significant support came to
the magnet school movement came in 1976 when Congress passed an amendment to the
Emergency School Aid Act which specifically allocated funds to be utilized by districts for
magnet programs as a part of the desegregation process (Hunter, 1994 and Ascher, 1990).
By the 1981-82 school year, there were 1,019 magnet schools in 138 school districts and
by 1983 theme-based programs existed in all areas of the nation with a particularly high
proportion of schools in the Southeastern urban districts (Steele, 1994). In 1981 however, there was a repeal of the amendment supporting magnet schools which drastically reduced federal funds by $375 million for the 1982 fiscal year (Ascher, 1990).

Funds have been made available under a Magnet Schools Assistance Program (MSAP) which was first enacted on August 11, 1984 (Steele & Levine, 1996). Through this federal support program, magnet schools have received substantial assistance from the federal government. In the first grant cycles (1985 - 1991), over $739 million was awarded to school districts to support the development and implementation and/or expansion of magnet programs (Steele, 1994). The stated purposes of MSAP are to:

- eliminate of minority group segregation and discrimination among students and faculty in elementary and secondary schools;
- encourage the voluntary elimination, reduction, or prevention of minority group isolation in elementary and secondary schools with substantial proportions of minority group students; and
- encourage the development of courses of instruction within magnet schools that will substantially strengthen the knowledge of academic subjects and the grasp of tangible and marketable vocational skills of students attending such schools. (Ascher, 1990 and Steele & Levine, 1994, 1996).

Local educational agencies must submit a proposal which outlines the program and specify the plan of action which will be needed to accomplish the project. The process is very competitive, and all local educational agencies must adhere to the federal guidelines and objectives that are stated by MSAP. If approved, the local educational agency will be a part of a grant cycle receiving funds to support the magnet school programs within the district. There are two school districts within the state of Virginia which are currently receiving federal support, Roanoke City School District and Alexandria Public School District (Steele & Levine, 1996).
Selectivity

Direct comparison of academic achievement between magnet and non-magnet students is a sensitive procedure (Jirtle, 1986). The political ramifications of finding significant achievement differences between these students can be considerable. If achievement gains are greater for magnet students that for non-magnet students, the issues of equity and “brain drain” of the “creaming” of the high achievers from non-magnets to magnet arise. On the other hand, if achievement gains are greater for non-magnet students than for magnet students, the issue of wasted resources may arise. Finally, if achievement gains are comparable for magnet and non-magnet students, many people may be pleased with the apparent equity of the school system; others may decide that if all school types are equal, they will send their children to the schools closest to their homes (Jirtle, 1989, Hunter, 1994).

It has been argued that magnets frequently do “cream” off good students at the expense of non-magnets and therefore contribute to isolation by achievement and economics, if not by race, in the remainder of the district’s schools. The problem of creaming has generally been tackled by studying admissions criteria. Dentler (1990) found nearly two-thirds of the magnets in his study to be selective by some admissions criteria, although half of the magnets with the highest achievement were not selective; and Blank (1989) found that only 15 percent of his sample used such “highly selective” criteria as test scores. However, as it has often suggested that even when a magnet school has no admissions criteria, most of the students are selected because simply having to choose a magnet, selects out those students who “choose not to choose,” and with very rare
exceptions, students with failing grades, or records of bad behavior or truancy, do not get selected in magnets (Ascher and Burnett, 1993).

Magnet Schools and Academic Achievement

Blank and Archbald (1992) found in their research that magnet schools have been shown to produce renewed motivation for education among students, parents, and teachers in some magnet schools have improved the academic performance of students. Improved academic achievement for all students is considered a key objective for magnet programs. It is seemingly the promise of improved academic achievement through greater resources and higher quality educational programming that helps motivate parents to pursue an integrated educational experience for their children (Ross, 1994).

Despite continuing debate, there is evidence that desegregated schools improve minority students’ achievement, especially when the students attend desegregated schools from the earliest grades (Metz, 1988). Because magnet schools have a double objective, voluntary racial integration and racial integration, research on magnet school generally focuses on the accomplishment of these objectives.

As to whether magnet schools are effective, the answer is not clear. Two major researchers have differing views. Both Blank (1984, 1989) and Dentler (1990) used 1983 data on 45 magnet schools in 15 urban districts. Blank stressed the educational achievement of magnets reporting 80 percent of the magnet schools had average reading and math achievement scores above their district average. Within the study, Blank concluded in his findings that, “magnet schools can and do provide high-quality education in urban school districts....we found a wide variation in educational quality within the total
sample” (Blank, 1984 p. 270). Dentler however, concluded that magnets vary as much as non-magnets in their ability to deliver educational quality. To support his findings, Dentler cited data from schools for which there were reading and math achievement scores:

- 26 of the 45 magnet schools equaled or exceeded the mean reading scores from their districts, 14 exceeded the district’s average by 10 or more points, and seven exceeded it by at least 30 points. The reading scores of six magnet schools were below average.
- Most magnet schools equaled or exceeded district averages in math, 13 of them by 10 points or more, and six by at least 30 points. Seven fell below average in math (Inger, 1991).

Hill, Foster, and Gendler (1990) performed a third study which included inner-city public and Catholic schools as well as three magnet schools. They found that the magnet schools and the Catholic schools far exceeded the ‘zoned’ schools in graduation rates, percentages of students completing an academically demanding college prep course, percentages of students taking the SAT, and SAT scores. Gamoran (1996) continues to support the conclusion of Hill and his associates. In his study, Gamoran suggests that students learn more in public magnet schools than they do in either public comprehensive high school, private schools or Catholic schools. Gamoran based his study on data collected on 4,000 urban high school students. Gamoran (1996) contends that, “higher achievement may also result from students’ greater sense of membership, or social bonding in private and specialized public schools” (Gamoran, 1996 p.3).

Gamoran compared achievement growth of students in magnet schools, Catholic schools, and secular private schools to that of students in public comprehensive schools during the first 2 years of high school. He used 1988 and 1990 data from the National Educational Longitudinal Study. It was found that Catholic and private students’ raw
scores in mathematics, sciences, reading, and social studies had a distinct advantage over the public school magnet. Gamoran statistically controlled for the initial difference in schools’ socio-economic mix and students’ prior academic achievement.

As a result, magnet school students made greater gains over two years in reading, social studies, and science than students in Catholic and private schools. Catholic students gained more math knowledge (Gamoran, 1996). The differences were small, however they were significant. He concluded,

“Magnet schools are more likely to serve disadvantaged students than comprehensive schools, yet rate at least as well in academic climate, social attachment, and course taking. For the average student, magnet schools appear to produce higher achievement, at least in reading and social studies” (Gamoran, 1996 p.14).

Researchers Musumeci and Szczypkowski (1993) were involved in a three year study with fourteen magnet school programs in New York State. The study focused on the racial balance in the magnet programs, student performance, and planning and development procedures utilized during program implementation. Musumeci and Szczypkowski found that magnet schools dramatically reduced racial isolation throughout the districts studied.

Within their three year study, Musumeci and Szczypkowski concluded that magnet schools were shown to provide students with more integrated learning environments. They found that district-wide academic achievement increased in the magnet schools which also included a reduction in the disparities in levels of achievement between students of varying racial and ethnic backgrounds. In accordance with more equal
achievement among students of varying racial and ethnic backgrounds, disparities in levels of achievement between male and female students narrowed in magnet school programs (Musumeci & Szczypkowski, 1993).

Larson, Witte, Staib, and Powell (1993) also conducted an evaluative study of the secondary magnet schools in Montgomery County, Maryland. This study examined the effectiveness of the magnet programs at achieving the school system’s objectives of racial balance and increasing student achievement. The evaluation designed, examined, and compared data from both magnet and non-magnet programs. Racial balance was shown to be effective, with many white students attending what were considered primarily minority schools prior to the implementation of the magnet program. Math and science scores increased in the magnet schools while differences in scores between races decreased. In addition, program quality throughout magnet schools was shown to improve. Although the magnet programs being examined focused primarily on academic excellence, student attitudes toward the school programs also improved (Larson et al., 1993).

Magnet schools have been suggested as a solution to the problems of urban education (Metz, 1988). They have served to provide urban communities with superior means of delivering instruction to all students. Results of the evaluations indicate that magnet school programs help to facilitate improved educational services to urban communities, by:

- helping to desegregate schools through voluntary choice initiatives,
- increase academic performance of all students,
- decrease disparities in achievement between racial, ethnic, and gender groups,
• increase parental and community involvement and support for school programs,
• increase the effectiveness of staff development programs, and
• increase student, teacher, parental and community perceptions of school programs.

Recommendations of magnet school evaluations include: careful strategic planning for program implementation, leadership and staffing, the gradual introduction of magnet programs within the district, the elimination of district wide attendance zones, increased parental participation in school programs, and provisions for increased staff development to better enable educators to facilitate more effective specialized and interdisciplinary instructional opportunities (Musumeci & Szczyokowski, 1993; Clewell & Joy, 1993, Larson et al., 1993, Jirtle, 1986, Green, 1989, Metz, 1986,1988, Blank, 1989, Clinchy, 1995, and Gamoran, 1996).

Appendix 1 presents several studies that compare students and teachers of magnet school programs with those that are not enrolled in magnet program. Group membership (magnet, non-magnet) is considered the independent variable; other variables may be compared.

Middle Schools and Achievement

The middle school movement emerged from the study of early adolescence psychology in the early 1960’s. As early adolescence came to be viewed increasingly as a crucial phase of human development, scholars began to advocate the creation of a special educational environment in which students ages 10 - 14 could experience the changes inherent in this phase. The junior high school model was considered to be too rigidly organized in the image of the senior high school to achieve this purpose.
Early adolescent children move from concrete to formal operations, and typically seek answers to a range of problems. They may be independent learners, but at the same time they want to be shielded from defects or mistakes that prompt ridicule. Their opinions and values are subjected to experiences that challenge and may alter them. Their rapid physical growth may make stamina brief; and their social preoccupation with others and with themselves can affect their attention spans (Wall, 1981).

Middle school educational theory diverges on the desired tone and pace of the middle school environment. One approach is that the developmental changes described above require a safe, protective environment. A second approach is that a safe, protective environment for 10-14 year olds will generate boredom and thereby interfere with developmental processes. A consensus exist that middle school environment should provide a transition from the self-contained elementary classroom to the departmentalized structure of the high school.

Research suggests that the middle schools include of three grade levels to prevent students from having to change school after a shorter period of time (Brown, 1981). The most common middle school grade combination appears to be 6-8.

Gains in academic achievement for middle school students may be hampered by three factors:

- the giving of homework is often more emphasized than the asking of questions that lead to learning;
- the curriculum content often overlaps with that of elementary school to the extent that speed in completing material becomes a goal so that the student or class can move on to something new; and
- the idea that different topics are studied differently is often not imparted to students (Ward, 1982).
Research indicates that the developmental diversity among middle school students makes individualized instruction more important at this level than at any other. Problem-solving activities that emphasize “right thinking” over “right answers” are crucial to the cognitive development of the middle school students (Wall, 1981). The attention given to the problems identified, coupled with the middle school’s attention to the cognitive development levels of individual students can be predicted to have a positive effect on the academic achievement of students in grades six through eight.

History of Desegregation and Magnet Schools in Portsmouth, Virginia

In the fall of 1962, Portsmouth Public Schools began to desegregate its previously racially separate schools. The first desegregation plan featured freedom of choice for all grade levels and for students of all races. This plan was approved by the former federal Department of Health, Education, and Welfare (HEW). In 1965, the freedom of choice plan was challenged by the NAACP. As a result, in 1969, the district was ordered to design and implement a new assignment plan for students and faculty. The federal courts ordered the district to use all available techniques to convert the district to a racially unitary district and to dismantle the vestiges of the dual school system. The district complied and was declared UNITARY on August 10, 1971.

The School Board adopted a new voluntary desegregation plan in 1991, to deal with demographic and housing changes. The plan re-configured the schools into K-5 elementary schools, 6-8 middle school, and 9-12 high schools. This plan called for the closing of one high school and the converting of another high school into a middle school.
On October 15, 1992, the School Board adopted a plan for the use of magnet schools for the purpose of desegregation and for the improvement of academic achievement. On January 21, 1993, the Board formally approved magnet programs at one high school, one middle school (Hunt-Mapp Middle School), and two elementary schools. The district felt that with the combination of compulsory and voluntary methods of desegregation, would result in a more effective way of increasing community support for schools.

Portsmouth Public Schools proposed to eliminate, reduce, or prevent minority group isolation in elementary and secondary schools with substantial portions of minority students by meeting three objectives:

- “1. By June 30, 1995, as a result of school closing and the implementation of a school magnet for math, science, and technology at Norcom High School, the district will have reduced minority group isolation at the school by establishing a minority representation in the student body that is less than 75%.
- 2. By June 30, 1995, as a result of school closing and the implementation of a school magnet for math, science, and technology at Hunt-Mapp Middle School, the district will have reduced minority representation in the student body that is 67%.
- 3. By June 30, 1995, as a result of the implementation of a Math/Science/Technology Magnet Program at Douglass Park Elementary School and a Montessori Magnet Program at Park View Elementary School, the district will have reduced the minority percentage to less that 80% at Douglass Park and to 68% at Park View” (Parent, 1993 pp. 40-41).

Portsmouth Public Schools proposed to improve academic achievement in the target magnet school sites by offering special academic help to students who participate in the magnet school programs by meeting three objectives:

- “1. By June 30, 1995, as a result of implementation of the magnet school program at I. C. Norcom High School, the average SAT score will have increased to 800; the percentage of students taking AP courses will have increased to 10%,
with 50% attaining a score of 3 or higher; the average percentile score on the Test of Achievement and Proficiency at the 11th grade will be at least 55.

- 2. By June 30, 1995, as a result of the implementation of the special magnet programs at Douglas Park Elementary School and Park View Elementary School, the mean composite score on the Iowa Test of Basic Skills administered in the Spring of 1994 will be equal to or will exceed the district average at the fourth grade level.

- 3. By June 30, 1995, as a result of the implementation of the special magnet program at Hunt-Mapp Middle School, the mean composite scores on the Literacy Passport Test and mean composite scores on the Iowa Test of Basic Skills will equal or exceed the district average” (Parent, 1993 pp.41-42).

Official student enrollment is obtained each year on the last school day of September. The following tables provide data on overall student enrollment, information on demographic characteristics by gender, race/ethnicity, and socio-economic status. The data collected is based on the student enrollment count for September 30th for each year (State of the Division Report, 1997). Table 1 shows a decline in the overall enrollment in Portsmouth Public Schools from the 1993-94 school year through the 1996-97 school year. A report of the enrollment in Portsmouth Public Schools over a two year period (1995-96 through 1996-97) is shown in Table 2. During the 1992-93 school year, 32.70% of the students in Portsmouth were white; 66.10% of the students were black, and 1.2% were classified as other (Table 3). Table 4 shows that during the 1992-93 school year, 41.81% of the students in Portsmouth Public Schools paid for their lunches and 58.19% of the students received free or reduced lunch.
Table 1
Overall Enrollment for the Middle Level: 1993-94 to 1996-97

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<td>Middle School</td>
<td>4,596</td>
<td>4,625</td>
<td>4,153</td>
<td>4,059</td>
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<tr>
<td>Grade 6</td>
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<td>1,363</td>
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<td>1,433</td>
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<td>1,490</td>
<td>1,690</td>
<td>1,365</td>
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<td>Total for the District</td>
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<td>17,779</td>
<td>17,891</td>
<td>17,845</td>
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Table 2
Enrollment by Gender and Level: 1995-96 to 1996-97

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<tr>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
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</tr>
<tr>
<td>Middle School</td>
<td>2,083</td>
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<td>2,065</td>
<td>1,994</td>
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<td>District Total</td>
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<td></td>
<td>50.6%</td>
<td>49.4%</td>
<td>50.7%</td>
<td>49.3%</td>
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Table 3
Enrollment by Race/Ethnicity and Level: 1995-96 to 1996-97

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<td>Black</td>
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<td>Black</td>
<td>White</td>
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<tr>
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<tr>
<td>District Total</td>
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<td></td>
<td>68.0%</td>
<td>30.7%</td>
<td>67.7%</td>
<td>30.7%</td>
</tr>
</tbody>
</table>
Table 4
Enrollment by Socio-Economic Status and Level: 1995-96 to 1996-97

<table>
<thead>
<tr>
<th></th>
<th>1995 Free or Reduced lunch</th>
<th>1996 Pay for lunch</th>
<th>1996 Free or Reduced lunch</th>
<th>1997 Pay for lunch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle School</td>
<td>2,581</td>
<td>1,572</td>
<td>2,458</td>
<td>1,601</td>
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<tr>
<td>District Total</td>
<td>11,027</td>
<td>6,864</td>
<td>11,009</td>
<td>6,836</td>
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<td></td>
<td>61.6%</td>
<td>38.4%</td>
<td>61.7%</td>
<td>38.3%</td>
</tr>
</tbody>
</table>

Background of Portsmouth City Schools

In 1993, Portsmouth, Virginia, which is located in the Hampton Roads area of Southeast Virginia, was a city with a population of 103,907. The city covers 29.9 square miles of land and is surrounded on three sides by 15.6 square miles of waterway. Portsmouth had an ethnic population that was 51% white, 48% black, and 1% Hispanic and other. There had been a general decrease in the population of the city by .6% while the population of Virginia had increased by 12%.

Portsmouth has six public housing projects consisting of 1,906 units with approximately 5,440 residents. In 1993, 2,589 of the children were under 18 years of age. There are an additional 1,520 subsidized units throughout the city. Also, during 1993 twenty thousand residents of the city receive public assistance. Portsmouth ranked third in the state communities with of youth living in poverty (Lowe, 1992, Schools Profile and Review, 1997). It also ranked 11th in the state for percentage of youth population (Schools Profile and Review, 1997). The city had a civilian labor force of 50,801 with an unemployment rate of 6.7%. The largest employer of the city is the Norfolk Naval
Shipyard. In 1993 defense cuts and tough competition led to a reduction in the work force by 1200 or more (Keller, 1993).

Portsmouth serves many students who are from homes with little education, family poverty, and low social economic status. According to Schools Profile and Review (1997), the community and student information for 1995-96 results for Portsmouth Public Schools are:

- 67% of the adults in the district are reported as having a high school education as compared to 75% in the state of Virginia.
- 15% of the families within the district are below the federal poverty level.
- The 1994 Median Adjusted Gross Income is $17,512 which is a drop from the previous year of $121.00.
- 58% of student within the division had approved applications for free or reduced price lunch during the 1995-96 school year, as compared with 32% for the state of Virginia (Schools Profile and Review, 1997 p.7).

The 1995-96 Composite Index of Local Ability-to-Pay for education is a weighted division level measure that includes local adjusted gross income, local sales tax, local value of real property, and it reflects both the student population and the local population. According to a preliminary Virginia’s Educational Disparities (1997), Portsmouth’s fiscal effort, or the district’s amount of funding spent on public education is $1.3729. Portsmouth is ranked number 65, which is a high level of effort. However, with a ranking of 117, Portsmouth’s ability to pay for public education is low. Portsmouth’s Local Composite Index is $37,440.

**Hunt-Mapp Middle School Magnet Program Development**

Hunt-Mapp Middle School has approximately 1,200 students enrolled. There are approximately 400 students in the magnet program. Hunt-Mapp Middle School is a partial site magnet program, which is called a program within a school (PWS). The
program was designed so that parents would see Hunt-Mapp Middle as a part of a K-12 program that provides students with an outstanding basis for rigorous studies leading to lucrative careers in math, science, and technology. In view of the significant amount of interest in aerospace shown by parents in a parents’ survey issued in 1993, the middle school has an aerospace theme (Parent, 1993). Students who are zoned for Hunt-Mapp Middle and those students who are outside of the attendance zone are enrolled in the magnet program.

All students must file an application to be in the program at Hunt-Mapp Middle School. This application is submitted based on an interest in the aerospace theme. Students must have a C average, good attendance, and a good behavior record. Between 60 and 70 percent of all students in the program have been on the honor roll and have perfect attendance. Parents are supportive and complimentary of the teachers and efforts to encourage the students. Many parents say they have seen an positive attitude change in their children i.e., they like school more and an increase in homework completion.

In the program, students learn about technological systems, desktop publishing, multi-media presentations, spreadsheets, and computer programming. The program also consists of learning activities employing aerospace exploration studies and research integrated into the core curriculum through laboratory experimenting, networking, communication, and intensive subject-related field projects. These studies are unique to Hunt-Mapp for middle school students.

Instruction, field trips, and the classroom decor reflect the aerospace theme. Students have benefited from learning experiences and mentorships in conjunction with
community resources. Supporting agencies include the National Aeronautic and Space Administration (NASA), Norfolk Naval Shipyard (NNSY), The Chesapeake Bay Foundation, Virginia Marine Science Museum, The Living Museum, and The Air and Space Museum. Students study weather analyses and prediction and principles of flight. The students also built a wind tunnel to test air flow over different shapes and model planes which students constructed themselves.

The magnet students have communicated with students all over the country by way of the internet about similar projects they were participating in. The magnet students presented a Cooperative Achievement in Science and Technology Project (CAST) in Washington, D. C. in 1995, to scientists and technologists all over the country.

Through the Astronauts Club, students built remote control ultralight airplanes, and in cooperation with NASA personnel and local airport experts, students were taught how to control the flight of the models. In partnership with the Chesapeake, Virginia Ultralight Club, the Hunt-Mapp Ultralight Club built an ultralight airplane during the 1996-97 school year.

There are twelve teachers involved in the magnet program, four at each grade level, six through eight. In order to implement this strategy, teachers were trained and staff development workshops are held for magnet teachers during the school year and in the summer to provide additional approaches in the delivery of instruction. Teachers received computer training in order to guide their students through two computer projects per year using all available resources. Many of the teachers have taken NASA sponsored
classes to train them to integrate the aerospace theme into the teaching of the district’s curriculum.

The program is characterized by a strong curriculum based upon SSC (Scope, Sequence, and Coordination) and by teaching math that includes the mathematical concepts in Algebra I and Geometry. These courses are normally offered at the high school level. All eighth grade students that are enrolled in the magnet program are taking the same academic courses: English 9, Algebra I, World Geography, (9th grade courses), and 8th grade science.

**Aerospace Magnet Educational Programs**

Since the late 1960’s, a new era of aviation and aerospace magnet educational program implementation has emerged. By the 1990s, many of the nation’s public school systems have implemented aviation and aerospace instructional program which have proven themselves to be successful vehicles for instilling in students the knowledge, skills, and attitudes necessary to either enter rewarding careers in aviation and aerospace industries or to pursue post-secondary educational opportunities (Alicia Coro, 1994). She also stressed the importance of using technology based hands-on problem-solving activities to effectively improve student academic achievement and enhance student motivation. The utilization of hands-on problem-solving activities has added to the motivational value of various aerospace education curricula.

The Survey of Magnet Schools Analyzing a Model for Quality Integrated Education (1983) was the first national survey of aviation magnet schools. Eighteen schools completed the survey. Schools included both new and long-standing programs
with a general emphasis on responding to community and industrial needs in the area of career education. All programs surveyed were shown to have low drop-out rates and increasing or stable enrollments. Most schools surveyed included local businesses and industries in program implementation and all schools surveyed utilized Federal Aviation Administration resources. In addition, most schools surveyed had active advisory committees and program articulation with feeder schools and colleges. Community awareness for program initiatives was shown to be generally high, with partnerships and internship programs common. It was also shown that proactive leadership played an important role in levels of program success. Although the survey showed that magnet school programs can be effective in improving educational quality and assisting with school desegregation in urban schools, programs throughout the nation were shown to vary widely in quality and effectiveness. Even though variations in the schools surveyed as evident, with the information derived, a conceptual model of an “ideal design” for an urban magnet aerospace program of instruction could be constructed.

In the “ideal magnet aerospace program”, district wide access for students is available on the basis of voluntary preference. The curricular theme is definite, appealing, and distinctive, and the school principal and staff are willing to provide, and capable of providing instruction within the chosen theme. In addition, in an ideal program, school districts must periodically review the curriculum for rigor, fairness, and accountability. It is also crucial that school facilities are placed geographically on sites chosen for their racial, ethnic, and socioeconomic neutrality. In addition, student enrollment must reflect the demographics of the communities it serves. Transportation to and from the school
program must be provided for, and school security must be adequate. Finally the ideal aerospace magnet program must be properly funded during early implementation phases if success is to be encouraged. From survey analyses, Blank, Dentler, Baltzell, and Chabotar (1983) developed a ten-step strategy for developing effective magnet school aerospace education programs:

- 1. Identify district education problems to be addressed,
- 2. Establish the district’s desegregation and education objective for the program,
- 3. Design the overall strategy for meeting desegregation and education objectives,
- 4. Appoint strong leaders for program implementation,
- 5. Identify and develop program resources,
- 6. Design individual school programs and select staff,
- 7. Write and develop curriculum,
- 8. Program and school publicity and recruiting,
- 9. Motivating and organizing students and staff, and
- 10. Maintain support for program.

Achievement, Gender, and Race/Ethnicity

The use of magnets for the purpose of school desegregation is over fifteen years old, and according to Gordon (1989), has yet to be proven effective. No desegregation planner should disclaim the desirability of desegregating a school system, because the existence of schools is for the purpose of teaching and learning. Learning and academic achievement should be for all students and in today’s society, there is a need to bridge the achievement gap that lies along the racial and gender lines.

Since the report, A Nation at Risk, political and educational leaders have been involved in various attempts to reform and restructure American education. In 1989, the Governors of the nation, met in Virginia and committed themselves to a nationwide
program of educational reform. They developed six Goals to guide their efforts for improving the nation’s educational system. There is a continued impetus to improve student achievement. Goal Three addresses student achievement and citizenship.

According to Goal Three,

“By the year 2000, all students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter including English, mathematics, science, foreign languages, civics, and government, economics, arts, history, and geography, and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning and productive employment in our nation’s modern economy” (Goals Panel, 1991 p.2).

A stated objective of this goal is the academic performance scores for minority students will more closely mirror that of the student population as a whole.

The progress of the nation has been charted for five years, using 1990’s data as baseline measures of progress. The year 1990 is also the year that the National Education Goals were officially adopted (Goals Panel, 1995). There has been some progress since the initial year. The 1995 Scorecard, which is a midway point, provides an opportunity to reflect on the progress that has been made and determine what needs to be done. The Scorecard indicates that national performance has improved in five areas but unfortunately declined in seven (Goals Panel, 1995).

Measuring students’ progress toward higher achievement has been the purpose of the National Assessment Educational Progress (NAEP) since its beginning in 1969. In 1994 trend assessments in science, mathematics, reading, and writing have been analyzed and reported. Trends in average performance differences between white and black students, white and Hispanic students are noted (NAEP, 1994). NAEP analyzed student
achievement trends in three age subgroups: 9, 13, and 17; and three grade level subgroups: 4, 8, and 11.

Based on 1994 data, there has been an overall pattern of narrowing gaps in mathematics and reading between black and white students. Both the 1970 and 1994 gaps for 13 year-olds in reading were not significantly different. The gap between black and white males decreased slightly until 1986; since that time, it returned to a non-significant level. The average writing scores’ gap remained relatively the same at each grade level. Despite the narrowing of the gap, white students at all grades and ages assessed had average scores in each area that were higher than the average scores of black students. The same assessment was made for trend analysis between white and Hispanic students (NAEP, 1994).

On average, Americans tend to stay in school longer than anyone in the world. The typical American worker has attended more years of school, and is more likely to have graduated from college than his or her counterpart in almost any other country (Education Commission of the States, 1995). Forgione (1997) reported findings that were contrary to popular myths:

- United States’ eighth graders have more hours of instruction than other countries,
- United States’ eighth graders do as much homework as other countries; and
- Japanese eighth graders watch as much television as U. S. eighth graders (Forgione, 1997).

However, American students continue to perform poorly in comparison to their international peers. One way of gauging overall performance is to compare students in the United States with other countries which compete in a global economy. This type of
comparison is a premier indicator for business leaders. Studies in the past have shown that younger American students do better by international standards than older students and slightly better in reading than in math and science (Forgione, 1997).

The Third International Math and Science Study (TIMSS) of 1995 was coordinated by the International Association for the Evaluation of Educational Achievement (IEA). This study was considered to be the world’s largest, most comprehensive, and most rigorous international comparison. There were more than a half million students tested at three grade levels in 41 countries, which is far more than any previous study (Forgione, 1997). TIMSS compared student achievement, teaching, curricula and the lives of students and teachers.

Because economic progress relies on the expertise of mathematicians, scientists, doctors, and engineers, in additions to national differences in average performance economists often ask how well America’s best students measure up to international standards. According to TIMSS, both Korean and Japanese eighth graders were more than six times as likely as American eighth graders to be among the top ten percent of all math students from 41 countries who participated. More specifically:

- The U. S. was below average in mathematics - 20 countries outperformed the U. S.; 13 countries performed similar to the U. S.; and 7 countries performed below the U. S.
- In comparison with the major trading partners, Japan, France, Canada performed above the U. S. in eighth grade mathematics, and England and Germany performed similar to the U. S.
- The U. S. was above average in science - 9 countries outperformed the U. S.; 16 countries performed similar to the U. S.; and 15 countries performed below the U. S.
- In comparison with the major trading partners, Japan performed above the U. S. in eighth grade science, England, Canada, and Germany performed similar to the U. S., and France performed below the U. S. (Forgione, 1997).
The TIMSS report also concluded that mathematics taught in the U. S. is not as challenging as it is in other countries; and what is taught in the eighth grade, is generally taught in the seventh grade in other countries. U. S. teaches procedures and not understanding, and teachers in this country rarely develop mathematical concepts (Forgione, 1997).

Parent Perceptions and School Effectiveness

A crucial factor in a child’s schooling is the impact of the parents’ attitudes toward school. The home environment has been shown to have a direct influence on increasing affective, behavioral, and cognitive learning (Wahlberg, 1984). The effectiveness of a school and the district as a whole, determine what happens in the classroom. The perceptions of parents on the effectiveness of a school is paramount.

What determines a school’s effectiveness? The Effective Schools Movement in the United States has steadily grown and emerged to be one of the most respected methods of evaluating school improvement (Murray, 1995). Ronald Edmonds (1982) identified an effective school as one which there is:

- Strong leadership
- An orderly, humane climate
- Frequent monitoring of student progress
- High expectations and requirements for all students, and
- Focus on teaching important skills to all students.

Several researchers and educators expanded the original list to include characteristics such as:

- Safe and orderly environment that is not oppressive and is conducive to teaching and learning,
• A clear school mission through which staff members share a commitment to
  instructional goals, priorities, assessment procedures, and accountability,
• Instructional leadership by a principal who understands and applies the
  characteristics of instructional effectiveness,
• A climate of high expectations in which the staff members demonstrate that all
  students can master basic skills,
• Increased student time-on-task,
• Frequent monitoring of student progress, and improved student performance
  and instruction based on the results, and
• Positive home-school relations in which parents support the school’s basic
  missions and play an important part in helping achieve it (Levine and Ornstein,

These characteristics became an integral part of the general effective schools’
correlates to help determine student success and to identify major concerns.

Effective schools recognize that parents are partners, not adversaries.

Administrators and teachers should seek to involve parents in meaningful ways in their
children’s education. Parents, will in turn, volunteer their time and talents. Because
effective schools are not the same, and may be very of what the school’s mission and their
role in its fulfillment. This will lead to positive attitudes, perceptions and a productive
working relationship within the school. Gauthier and other researchers believe that in
effective home-school relations, “parents understand and support the basic mission of the
school and are made to feel that they have an important role in achieving this mission”
(Gauthier, Pecheone, and Shoemaker, 1985 p.391).

In a recent environmental survey of middle school parents (Foster-Harrison and
Bullock, 1997), parents were asked to identify qualities they believed were important for
the school to be considered inviting, warm, and friendly for parents and students. The
number one choice for parents of six, seven, and eight grade students is a “clean, neat
building”. Eighth grade parents continued by indicating that “a welcome sign, examples
of students’ work on the walls, and directions to the office” are qualities for a friendly, inviting, and warm school (Foster et al., 1997).

The National Commission on Excellence (1987) conducted a study which involved approximately 1,000 parents of 10 to 14-year olds. The question was asked, “What matters to them in reference to their children and school?” (Peel and Foster-Harrison, 1997) Similar answers were received, which are summarized as:

- “I want to know that my child is safe!
- I want to know that my child knows at least one adult well enough to go to if support is needed.
- I want to know that the school is concerned about helping my youngster develop constructive friendships.
- I expect that the school will provide my youngster with opportunities to get involved in activities.
- When my child comes home from school, I want to know there have been enough good experiences to want to return the next day.
- I want to know the school is teaching what my child will need to be prepared for high school.
- I want teachers to keep me informed on progress.
- When I visit the school, I want to feel welcomed by teachers and administrators.
- I’d like to know that the school is making every effort to provide opportunities for parents to be informed about what to expect from youngsters over these years” (p.43).

Blank (1984), in a study of magnet schools, found evidence that magnet schools create higher levels of parent and community interest than do other schools. Levine et al. (1980) found that magnet schools have more parent support and involvement because they are voluntary and because parents that enroll their students tend to be more interested in their child’s education. In Blank’s study, he found that the level of involvement of magnet school parents was only slightly higher than that of other parents. However, their level of satisfaction with the quality of education provided by the magnet schools was consistently higher (Blank, 1984).
Summary

Magnet schools are designed to offer a curriculum or methods of instruction that is so attractive that students will choose to attend rather than be force to do so as in the case of mandatory busing. Magnet schools were created as an instrument for desegregation/integration purposes and are most effective when they are used as a part of a district wide effort in this concern.

Acceptance of the magnet school concept has been widespread. Green (1989) reported that it is due to four major reasons:

- an attractive alternative to force busing,
- increased curricular offering and varied teaching methods,
- interest in quality public education, and
- career education (Green, 1989).

While magnet programs provide urban districts with the channels of helping desegregate schools through voluntary choice initiatives, other benefits include:

- increased academic performance of all students,
- decreased disparities in achievement between racial, ethnic, and gender groups,
- increased parental and community involvement and support for schools, and
- increased effectiveness of staff development programs.

In planning for implementation of magnet schools or programs, it is paramount to have input from the key stake-holders - parents, students, teachers, principals, and district curriculum personnel if the magnet schools are to meet community needs and expectations.

Parent and community interest and participation in magnet schools is higher than in non-magnet schools. Parents welcome the magnet schools because they afford them a choice in their child’s educational opportunities. As a result, parent satisfaction of their
child’s education in magnet schools is consistently higher than that of non-magnet school parents.

In the following chapter, Chapter 3, Methodology, the procedures to be followed during the study will be outlined. The purpose of the methodology section is to acquaint the reader with a description of the research methodology used in this study, a description of the subjects under study, descriptions of the instruments used to measure dependent variables, and a description of the statistical procedures to be followed within the study.