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Wealth and Achievement Gaps: An Examination of Virginia Middle Schools

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**WEALTH AND ACHIEVEMENT GAPS:
AN EXAMINATION OF VIRGINIA MIDDLE SCHOOLS**

by


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A Dissertation Submitted to the Faculty of
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Requirement for the Degree of

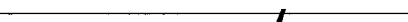
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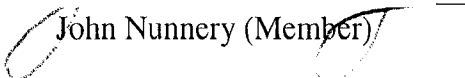
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ABSTRACT

WEALTH AND ACHIEVEMENT GAPS: AN EXAMINATION OF VIRGINIA MIDDLE SCHOOLS

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Old Dominion University, 2007
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Achievement gaps, the focus of this research, result from unequal achievement and the variance in achievement existing between different segments of the student population, for example, the difference in achievement between minority students and non-minority students. The No Child Left Behind Act of 2001 and AYP (Adequate Yearly Progress) focus on achievement gaps despite contradictory expressions about the efficacy of the act. The No Child Left Behind Act has created discussion and awareness of race, SES (economically advantaged and disadvantaged) and academic achievement.

There are conflicting beliefs about the impact of resources, funding and wealth on student achievement. This study explores those beliefs by reviewing related literature and obtaining data confirming relationships between district and locality indicators of wealth and funding and student achievement gaps in Virginia middle schools.

This study examines data from middle schools organized in the typical 6–8 grade, 6–7 grade and 7–8 grade design during the 2005–2006 school year. For each school, the researcher reviewed the percentage of students passing the Standards of Learning (SOL) assessments in English and math for the following student subgroups: White, Black, Latino, and economically advantaged and disadvantaged. Relationships between each of the six dependent variables and sixteen independent variables were determined using

descriptive statistics and through multiple regression analyses.

Nine of the 16 independent variables had significant relationships with the selected dependent variables. The nine variables were: median family income, percentage of residents below the poverty line, percentage of residents identified as minority, percentage of core academic classes taught by highly qualified instructors, per pupil expenditure, student teacher ratio, percentage of renters, number of renters and percentage of students eligible for free and reduced-priced lunches.

The analysis acknowledged that relationships exist between wealth, funding and academic achievement gaps. Although conclusions about causality between or among the variables cannot be determined from this data, it is apparent that achievement gaps continue to be a subject requiring additional attention.

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This dissertation is dedicated to my grandmother, Kate and my mother, Ann.
Without you both, there would be no me.

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Completion of this dissertation supports my belief that no prayer goes unanswered.

I am appreciative of my family for the patience and support during this process, especially my brothers, my mother, Ann because she instilled the love of learning and my husband, James because he has “lived” with Paulette and the dissertation. Thank you to my in-laws, my extended family – you have been tremendously patient and supportive.

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CHAPTER I

INTRODUCTION

Introduction to the problem

The achievement gap is an educational issue that has existed for many years; however, with the reauthorization of the 1965 Elementary and Secondary Education Act (Public Law 107-110), also known as the No Child Left Behind Act of 2001, this issue has emerged unequivocally as one that is frequently discussed and addressed in our schools. Barton (2004) referenced one of the fundamental principles of the No Child Left Behind Act, equal achievement, which refers to equal levels of achievement for all students irrespective of race, ethnicity, or income. Achievement gaps, a focus of this research, are the results of unequal achievement and the variance in achievement that exists among different segments of the student population. The difference in achievement between minority students and non-minority students or the difference in achievement between males and females or between economically advantaged and disadvantaged students are all examples of achievement gaps.

Academic achievement gaps between minority and non-minority students comprise only a fragment of the gaps that exist in education. Mickelson (2003) referenced differences in achievement germane to ethnicity and race when grades, drop-out rates, test scores, and other school-related variables are considered. Disparities have existed throughout the history of public education in the United States.

One possible catalyst for racial achievement gaps is encompassed in the historical

American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: Author.

perspective of education that depicts a vivid description of inequitable learning conditions for students of color. For example, prior to the 1954 *Brown v. Board of Education of Topeka, Kansas* decision, many students attended schools that were segregated by race. Racial segregation resulted in students of color attending inferior schools furnished with inferior materials and encountering other inadequate opportunities to achieve academic success (Alexander, 1943). This practice continues today to varying degrees; however, not only are students of color receiving inadequate educational opportunities, economically disadvantaged students are exposed to sub par standards and expectations. Kozol (1991) reflected on his observations as he visited schools in various cities and said,

What startled me most--although it puzzles me that I was not prepared for this-- was the remarkable degree of racial segregation that persisted almost everywhere. Like most Americans, I knew that segregation was still common in the public schools, but I did not know how much it had intensified (p. 2).

Reflections expressed by Kozol mirrored the sentiments and experiences of others in similar communities. Before an insightful discussion of achievement gaps can occur, it is critical that an historical background is introduced. The literature in the preceding section will outline historical and legal perspectives that have contributed to the current educational state of affairs for students of color.

Orfield (2001), in discussing the impact of inferior education on student success, maintained that the relationship between employment, income, and education is critical. Students who receive fewer, less meaningful educational opportunities are liable to receive less favorable economic opportunities. Education for all students must be of

superior quality. Singham (2003) stated that the source of the achievement gaps is affiliated with historical chronicles of ethnic relationships. As one possibility of narrowing gaps, educators, politicians, community members, and families should gain a better understanding of the history related to achievement gaps in order to recommend and implement strategies that narrow the gaps.

As educators focus on the achievement gap, there are many benefits for students, staff, and families. According to Boeck (2002), “The goal is to close the achievement gap. Economic status, race, and culture should not be predictors of academic achievement” (p. 17). Many educators propose strategies, programs and activities that can assist in closing the gap. Boeck reported that closing the achievement gap is indicative of a democratic society that provides all students with comparable educational preparation and circumstances to become productive citizens. Thus, closing the gap is an issue that addresses the needs of lower performing students and reflects an even greater societal need to prepare all students adequately to assume the roles of responsible adults.

English (2002) proposed that it is almost impossible to close the gap between majority and minority students because “the gap itself is part of the foundation of the measurement process” (p. 307). He maintained, “If IQ and other forms of achievement testing consistently show a bias toward variables of wealth, education levels, linguistic dexterity, and vocabulary breadth (all highly intercorrelated), they cannot be considered neutral to those same factors” (p. 307). The author concluded that if educators continue to support tests that disregard the cultural frameworks of students, then achievement gaps will continue to exist.

There are conflicting beliefs about the impact of resources and funding on student

achievement. This study will explore some of those beliefs by reviewing district and locality expenditures as they relate to student achievement gaps in the middle grades in Virginia.

Overview of the Chapter

Chapter I will discuss the historical and legal perspectives related to education in the United States and places an emphasis on education in the Commonwealth of Virginia. Laws, beliefs, and decisions that have precluded students of color from receiving equal education will be addressed. Support systems that have assisted students in their pursuit of education and trends related to gaps including ethnicity and socioeconomic status will be addressed. A discussion on achievement at the middle-school level ensues. The chapter then focuses more specifically on ethnic minorities, socioeconomic status, and their relationship to education. A theoretical framework related to ethnic minorities is addressed briefly. Definitions of school funding, school funding as it relates to student achievement and juridical references are discussed. The sample is described and the purpose of this study is stated. Terms are defined and the utility of the study is discussed. Research questions are specified, limitations of the study discussed, and the chapter summary is presented.

Historical and Legal Perspectives

The achievement gap cannot be discussed adequately without examining the educational conditions and opportunities that existed for minority children before and immediately after the landmark *Brown v. Board of Education of Topeka, Kansas* decision in 1954.

Virginia before Brown v. Board of Education of Topeka, Kansas. Alexander

(1943) described conditions that existed for Negroes before the Brown decisions. According to Guild (1996), in 1831, an enactment by the Virginia General Assembly prohibited people of color from giving or receiving any type of reading and writing instruction. In 1848, a portion of the criminal code prevented people of color from gathering together for religious purposes and giving or receiving any type of reading and writing instruction (Guild).

In 1869, the Constitution of Virginia mandated that public, free schools exist in all counties; however, Whites and Negroes would not be taught in the same schools. Alexander (1943) referenced the 1938-1939 school year during which there were 1,797 schools in Virginia; however, many of the schools for African Americans were one-teacher schools. The author described many of the school facilities as inadequate in terms of age of structure, water, safety, and equipment among other items. Many schools for Negroes did not have instructional materials or items to support instruction such as blackboards, textbooks, or libraries. Guidance services were limited.

In addition, Alexander (1943) reviewed what Negroes were doing to ameliorate their conditions. For instance, Virginia's Negro teachers attempted to earn salaries comparable to White teachers with comparable experience and education. Alexander told of a teacher in Norfolk, Virginia who decided to request equal pay from the school board. Initially, this request was denied. The teacher attempted to direct this request through the legal system; however, she was terminated before the case could be heard. Another teacher went to the school board and later went through the legal process. The case was sent back to a lower court at which time the school board decided on a plan that would make the salaries of Negroes equal to those of Whites within 3 years. This case also

prompted the Supreme Court to take a position on equitable salaries in the South.

Consequently, it is important to understand the conditions that existed previously to prevent the community and educators today from recreating systems that could mirror conditions that existed in the past. Conditions that existed historically also support the need to provide all students with appropriate education and resources today. Bartolomeo (2004) observed that many of the public schools in the southern states were segregated by law. The decision in the 1896 *Plessy v. Ferguson* case supported the premise that “separate but equal public facilities for African-Americans to be constitutional” (p. 2).

After Brown v. Board of Education of Topeka, Kansas. A study of legislation related to segregation and desegregation provides a glimpse at the inequitable educational systems that could result in inequitable academic outcomes for students, especially students of color. In fact, for years, African American students received an education that was supported with inferior supplies, materials, and buildings. Many conditions were not conducive to student achievement; however, students endured these conditions in spite of obvious differences in educational opportunities that existed between them and their White counterparts.

In the case of *Brown v. Board of Education of Topeka, Kansas*, Chief Justice Warren (as quoted in Winston, 1995) said, “It is doubtful that any child may reasonably be expected to succeed in life if he [or she] is denied the opportunity for an education” (p. 764). Winston further stated that when *Brown v. Board of Education of Topeka, Kansas* is interpreted to the fullest extent, it also suggests appreciating diverse groups of people. Exploring this case allows readers to understand the urgency to provide all students with ample educational opportunities.

Loevy (1997) discussed occurrences after the 1954 *Brown v. Board of Education of Topeka, Kansas* decision that orchestrated the southern states' resistance to the resolution set forth in the case. "Massive resistance" was the term coined to indicate the influence of the movement against the Brown decision. Davis (2004) recalled that in 1955, the Supreme Court issued an implementation order for *Brown v. Board of Education of Topeka, Kansas*, which ordered southern states to desegregate their schools with all deliberate speed. Ferguson and Mehta (2004) and Rodgers and Bullock (1972) reviewed deliberate speed as it related to desegregation and concluded that it was not clearly defined and as a result was subject to many interpretations. The concerns associated with the Brown decision contributed to the belief of Ferguson and Mehta that the Civil Rights Act of 1964 did more for integration than the *Brown v. Board of Education of Topeka, Kansas* decision. The Civil Rights Act was more specific in its expectations. For example, if schools received federal funds, they could not support discrimination. Furthermore, the Civil Rights Act of 1968 forbade discrimination in housing and provided people of color opportunities to attain housing in communities that would inadvertently allow their children to attend schools with more resources and funding.

The transcripts for students of color have included peaks in academic achievement. Grissmer and Flanagan (1998) posited two reasons for the gains in test scores for Black students during 1971 to 1984. First, civil rights laws and funding helped narrow the gaps and changed school experiences for Black students. Second, changes reflected in teachers and other school factors contributed to more positive, learning experiences for minority students. Because many people were content with segregation,

Supreme Court decisions and federal mandates coerced some to abandon antiquated beliefs about people of color. The No Child Left Behind Act has elicited similar responses inviting many to explore new beliefs about expectations for students of color as well as other student populations.

Schwartz (2001) discussed desegregation of all academic programs and activities as a strategy to close the achievement gap. Desegregation was designed to provide all students with equitable educational opportunities. Today, exploration of the history of segregation and desegregation allows for closer examination of traces of inequitable systems and educational opportunities for certain segments of the population. Moses (2004) summarized her feelings about race:

The concept of all people are created equal is at the root of our Constitution. But we all know that the original definition did not include women, poor folks, or people of color. Those rights were hard-won over the 225-year history of the United States. Even with that, it is evident that our problem as a society today is that because of systemic oppression and/or lack of opportunity, some groups in this country have not achieved equally --as measured by household income, education, employment, access to health care, etc. Whole groups of people, because of social bias, have systemically been prevented from gaining parity. (p. 2)

Ferguson and Mehta (2004) questioned whether segregation in public schools deprived Black children of equal protection under the U.S Constitution. The plaintiffs in *Brown v. Board of Education of Topeka, Kansas* hoped that giving Black children access to the schools and classrooms where White children studied would help to equalize

educational resources and academic outcomes. Even though separate but equal was found to be unconstitutional, many people, cities, and states refused to acknowledge the ruling.

Although dialogue related to the *Brown v. Board of Education of Topeka, Kansas* decision and the benefits of equitable learning opportunities for all students occur frequently, some students continue to experience learning situations similar to those that existed before the Brown decision. Green (1999) discussed the *Sheff v. O'Neill* (1996) case that determined de facto segregation in Hartford, Connecticut violated the state constitution. The state's school funding system was found unconstitutional because poorer school districts were at a disadvantage, which attests that segregation in schools continued to be a challenge late into the 20th century.

Furthermore, Green (1999) discussed the impact of state provisions on the elimination of de facto segregation in public schools. Green cited the *Griffin v. County School Board of Prince Edward County* (1964) decision that declared the county's decision to close public schools and give students tuition grants to private schools unconstitutional. Another case, *Green v. County School Board of New Kent County, Virginia* (1968) created the "Green factors." The Green factors are criteria used "to determine whether a school district had achieved 'unitary status,' or desegregated schools" (p. 140). A school is considered desegregated when student assignment, faculty, staff, transportation, extracurricular activities, and facilities are free of any traces of segregation. The ruling in the *Green v. County School Board of New Kent County, Virginia* declared that segregated or dual systems of public education had to be dismantled root and branch. Green factors are still used today in desegregation cases (Russo, Harris, & Sandidge, 1994).

Desegregation was a movement that received attention and resistance. In Virginia, the leadership in Prince Edward and Warren counties and the cities of Norfolk and Charlottesville illustrated this resistance by closing schools to prevent integration between 1954 and 1964. In spite of these occurrences, years later there were efforts such as the Federal Emergency School Aid Act of 1972 to support integration that gave funds to school divisions to maintain the racial balance in schools and to prevent isolation of minority students.

Today, there are legal mandates that encourage schools to ensure that all students are achieving at equitable levels. Public Law 107-110 or the No Child Left Behind Act of 2001 endorses this issue.

No Child Left Behind and adequate yearly progress. There are many opinions about the benefits of the No Child Left Behind Act of 2001. Many researchers examined the provisions of the act and communicated observations similar to Rose (2004) who described the No Child Left Behind Act as a federal mandate that outlines expectations and guidelines for schools, parents, teachers, and students to achieve safe and successful learning environments. According to the U.S. Department of Education (2004), No Child Left Behind embodies two major premises that state educators should examine: “standards for student performance and teacher quality” (p. ii). According to Rose’s review of AYP, school administrators are encouraged to ensure that all students achieve at the same levels. Additionally, AYP examines student achievement for specific subgroups: Blacks, Whites, Hispanics, Native Americans, Asians, students in special education, and economically disadvantaged and limited-English proficient learners. The goal is to help all students achieve academically and narrow the achievement gap.

Rose's (2004) commentary on No Child Left Behind Act of 2001 reiterated one premise of the Act that states that it is imperative to analyze data by demographics to ensure all subgroups are performing equitably in schools. The No Child Left Behind Act, like the Civil Rights Act of 1965, links federal funds to the expectations of the act. Rose believed it to be a simple concept: data has to be analyzed to improve test scores. Rose concluded that educators should not need No Child Left Behind Act to encourage them to examine gaps in achievement more carefully.

A discussion of AYP by Wiener and Hall (2004) culminated with specific examples of success stories related to AYP. One school located outside of Richmond, Virginia is 96% Black with 65% of the students with low-income status. This school met all the 2003 AYP goals. Another school in Sunrise, Florida, which was composed of two-thirds minority, half of which were from low-income status, more than 40% were limited-English proficient and students with disabilities also made AYP goals. Some schools are meeting the goals of AYP and narrowing the achievement gap. The 2003 examples are early references of schools that achieved AYP status; subsequently, many schools have achieved AYP status across the nation.

Although the No Child Left Behind Act of 2001 was written to benefit students, many people express concerns about the Act's limitations. Linn, Baker, and Betebenner (2002) addressed a concern that the goal of all students performing at or above grade level by 2014 appears to be unrealistic. Roach and Dervarics (2002) interviewed Rod Paige, the United States Secretary of Education from 2001 to 2005. Dr. Paige commented on No Child Left Behind Act by affirming that the act was designed to ensure that all students were demonstrating comparable levels of achievement and all systems were in

support of this endeavor. School systems encountering difficulty would receive support to redirect their performance. This ambitious goal provides direction and an objective to which educators and students can aspire.

Another concern discussed by Beaver (2004) is the ambitious goal of a highly qualified teacher in every classroom by the 2005-2006 school year; however, this might not be possible for several reasons. Beaver shared that highly qualified refers to academic qualifications and not necessarily the affective characteristics of a good teacher. There might be a highly qualified teacher in the classroom based on qualifications, yet, the teacher may lack the ability to establish meaningful relationships, have high expectations for all students, and treat students equitably. President George Bush even alluded to “the soft bigotry of low expectations” (p. 9). The soft bigotry of low expectations refers to those prejudices that surface when references are made to specific subgroups. In conjunction with qualifications, funding may prevent poorer districts from securing the resources to hire the most qualified teachers.

Similar to Beaver, Tyler (2003) commented that even though the No Child Left Behind Act of 2001 addresses the need for highly qualified teachers, it does not address specific pedagogy and teacher relationships related to student achievement. He thought that smaller school districts would encounter difficulty meeting No Child Left Behind Act requirements.

AYP monitors academic achievement gaps. Mathis (2004) discussed Dewey and his belief that “the goal of education is a democratic society” (p. 143). According to Mathis (2004), the belief that the No Child Left Behind Act of 2001 and AYP can reform American education is a fallacy; furthermore, in his article, he listed nine reasons why

AYP would not produce the desired outcomes. Two reasons were of particular interest to this study: funding inadequacies related to high poverty districts that already spend less to accomplish the same goals and the probability that 100% of the students will achieve the same high standard by 2014. Similarly, Kahlenberg (2004) believed that the goal should be to provide support to the students in high-poverty schools and school districts.

Hamilton (2004) commented on AYP and stated that to look at achievement and AYP satisfactorily, it is important to identify students' academic status and abilities. The goal of 100% proficiency in 12 years would be unrealistic, however, the concept of AYP encourages educators to look at disparities and develop strategies to eradicate the disparities. It might not be possible to narrow all gaps completely. In spite of some of the issues associated with the No Child Left Behind Act, there has been more focus on the gaps, strategies, and practices that can be employed to close them.

Many educators make excuses why the gaps cannot be narrowed or even closed. Haycock and Wiener (2003) summarized AYP by stating that people need to believe that "low achievement is the inevitable result of societal inequality" (p. 5). The authors stated that how we respond to the challenges of No Child Left Behind and AYP is a reflection of our own convictions as a society.

AYP is not only a measurement of scores in math, reading and language arts. There are other measures of school success that AYP captures. Schwartzbeck (2003) noted that when possible, as school administrators address AYP, it is best that they focus on total school reform and not isolated changes. In 2005, a representative group of Virginia school superintendents believed that the state accountability system was adequate and the majority of schools were doing well. Therefore, they preferred not to

adhere to the federal requirements of No Child Left Behind Act of 2001.

No Child Left Behind Act of 2001 and AYP focuses on the narrowing of achievement gaps in spite of the contradictory expressions about the efficacy of the act. According to Alexander & Riconscente (2005), the overall goal of the No Child Left Behind Act is to support all students in their pursuit of academic success

The Achievement Gap

References to the achievement gap can sometimes elicit images and data that are dubious and imprecise. The following data cite specific examples of achievement gaps that exist. The purpose of presenting the data is to provide an overview of achievement gaps and demonstrate where gaps exist. Williams (2003) discussed current trends in education that predict success. For example, an examination of 100 White kindergartners, disclosed that at age 17, over 95% would be in high school and reading on a 12th-grade level while 25% of their Black peers will have dropped out or if still in school, will read at an 8th-grade level.

Manning and Kovach (2003) discerned that the achievement gap in education is evident from kindergarten to secondary levels. Gaps are evident when Scholastic Assessment Test (SAT) scores are examined (U.S. Department of Education, 2001). Manning and Kovach noted that on average minorities performed lower than majority students did on various assessment measures. They also reported that “by the time poor and minority youth reach 8th grade, they are, on average about three grade levels behind other students” (p. 29). Likewise, Ipka (2002) examined SAT scores and reported that there is a gap between African American and European American students. On average, the 1993 scores indicated that African American students scored 91 points lower on the

verbal section and 106 points lower on the mathematics section of this examination.

Ethnic achievement gaps exist in various segments of our population. For example, Haycock (2001) reported that 3 in 10 African Americans compared to 7 in 10 Whites have mastered fractions, percents, and averages. In addition, 1 in 30 Latinos and 1 in 100 African Americans can perform elementary algebra and problem solve. Other examples were evident when Caldas and Bankston (1998) reviewed data from the 1993 U. S. Bureau of the Census. The data indicated that 12% of African Americans and 25% of European Americans obtained college degrees. Data from the Department of Justice (as quoted in Kuykendall, 2004) confirmed that “1 out of every 3 Black men under the age of 30 and 1 of every 6 Hispanic men of the same age were either in jail, on trial, or on parole” (p. 3). Furthermore, findings indicated that some Blacks who have not attained a college degree have also become economically disadvantaged citizens.

Nonetheless, eighth-grade math scale scores of the National Assessment of Educational Progress (NAEP) in Virginia demonstrated an 18 point increase in African American students’ math scores from 1996 to 2003 (“Education watch: Achievement,” n.d.). When eighth-grade science scale scores were examined, they showed 4-point increase in science scores from 1996 to 2000 for African American students. From 1990 to 2003, math scores increased by 20 points for African American eighth-grade students. (“Education watch: Virginia,” n.d.) According to the document, a 10-point increase equates to one year’s worth of learning.

Ethnic minorities and education. Although students learn and perform differently, achievement gaps speak to more profound gaps in areas including but not limited to teaching, learning, beliefs, expectations, and funding. Many researchers propose various

explanations for the mediocre levels of academic achievement of some students of color. No Child Left Behind Act of 2001 focused on outputs as opposed to inputs. McMillan (2003) defined outputs as the achievement gaps and inputs as resources or quality of instruction. The author believed that No Child Left Behind Act supports the status quo that the achievement of European Americans is the standard to which all other groups should be measured. Finally, McMillan proposed that if educators do not examine the inherent nature of the education process, they are destined to repeat the mistakes of the past.

Bainbridge and Lasley (2002) commented on an observation between students of diverse races and gender and submitted that nationally, African Americans perform below their White counterparts on standardized achievement tests. A Stanford University study indicated that when one group is aware that it is being compared to another, test scores are affected negatively with regard to race and gender. Thus, the authors concluded that continuing to track achievement by race might contribute to the achievement gap; however, they stressed that educators and leaders must be sensitive to the needs of diverse students.

Lashway (2003) reported, “Low-performing schools go hand in hand with the achievement gap. Many struggling schools serve largely minority populations whose test scores persistently fall below those of White students” (p. 2). There are many reasons why achievement gaps exist. Lewis (2003) discussed the results of a 40,000-student survey conducted by the Minority Student Achievement Network in Chicago. One finding suggested that some Black and Hispanic students only understood lessons half of the time. If this lack of cognition occurs daily over years, then gaps will continue to exist.

Navarro and Natalicio (1999) reviewed 1991 achievement and related data such as test scores, high school course enrollments, pass rates, drop-out rates, and college and university graduation rates in El Paso, Texas. The review confirmed that academic achievement was low and unacceptable for all students. There were gaps between ethnic minority or poor students and Anglo or more affluent students. To ameliorate these problems, leaders jointly created the El Paso Collaborative for Academic Excellence. This collaboration focused on academic achievement for all students, high school graduation rates, and better preparation for college. The leaders decided on an agenda for renewal that included preparing teachers and using data adequately to make informed decisions and implement strategic changes. Results of this agenda for renewal included the reduction in the number of low-performing schools, from 15 to zero, and increased the number of schools being recognized as exemplary schools.

In contrast to the results noted by Navarro and Natalicio, when Reid (2002) examined achievement gaps in the North Carolina school systems in 2002, the minority achievement gap had not changed much from the previous year; however, the number of minority students continued to increase each year.

Similar to McMillan, Mickelson (2003) proposed several arguments relevant to the achievement gap such as needed resources and how they relate directly to funding levels. The author claimed that “racial discriminatory practices that generate and allocate resources inequitably to schools contribute to the racial gap in outcomes” (p. 9). Reference was made to the stereotype threat, which suggested that culturally, Blacks are considered intellectually inferior. This notion could become a component of the Black students’ existence and perception of themselves. Stereotype threat might also affect the

way others perceive and respond to students of color. Another argument from Mickelson referenced state policies that encouraged school administrators to rely heavily on property taxes to fund schools, which inevitably creates funding inequities. Noguera and Akom (2000) said, “The gap is merely another reflection of the disparities in experience and life chances for individuals from different racial groups” (p. 2). They continued,

If the children of those who are most likely to be incarcerated, denied housing and employment, passed over for promotions or harassed by the police did just as well in school as those whose lives are largely free of such encumbrances that would truly be remarkable news (p. 3).

Many people are concerned about academic achievement for all students. Pollock (2001) inquired into the reasons why different racial groups achieve differently. The researcher believed that this question deserved extensive dialogue; however, according to Pollock, it is the question that is most censored. The author stated that many people have low expectations of specific races and very rarely are these expectations discussed so that they may be supplanted with other useful thoughts. Pollock suggested that Americans might accept some racial patterns of achievement; therefore, dialogue and planning are crucial to prevent the occurrence of unsatisfactory, racial achievement patterns. The No Child Left Behind Act has recently created more discussion associated with race and academic achievement.

Socioeconomic status and education. Socioeconomic status (SES) is an important factor when student achievement is discussed. Studies have reported relationships between SES and verbal skills. Bradley and Corwyn (2002) discussed SES and student achievement and used different approaches from other researchers; they believed some

teachers might interact differently with poorer children. Some teachers might not give poorer students as much positive attention as they do other students.

The research most often associated with the relationship between SES and education is the finding that high SES neighborhoods nurture positive results for students when school readiness and school achievement are considered. In the Department of Education's discussion on the status and trends in the education of Blacks, risk factors associated with student success or the lack of student success were identified (Hoffman, Llagas, & Snyder, 2003). The report concluded that four background factors influence student outcomes; one of the factors is living in a family receiving welfare benefits or food stamps. This is indicative of a student's SES, which has an effect on early reading and math skills.

Okpala et al. (2001) studied fourth-grade students in North Carolina. Findings suggested that there was a negative correlation between the percentage of students eligible to receive free and reduced-price meals and math achievement. Family SES and academic achievement are correlated. Students attending low-income schools scored lower than students from higher income schools.

Teachers and achievement. Having highly qualified teachers, a provision of the No Child Left Behind Act of 2001, implies that a relationship exists between teacher quality and student outcomes (Porter–Magee, 2004). This section focuses on teacher qualifications and its relationship, if any, to student achievement. Boeck (2002) commented that teachers are integral to closing the achievement gap and school board members must support student access to highly qualified teachers. Boeck indicated that additional resources might affect student outcomes. Goldhaber and Brewer (2000)

reviewed mathematics and science data related to teacher certification and student achievement at the high school level. Students of teachers with a mathematics degree or certification in mathematics outperformed students of teachers without subject matter preparation.

Banks (2000), Jones (2004), Sanchez, Li, and Nuttall (1995), and Wilson (n.d.) discussed the changing demographics of the United States and the challenge to support diverse groups adequately. These authors considered several methods to help professionals work with diverse groups. One method involved training culturally sensitive professionals who could enhance relationships and student achievement.

In a similar manner, Ladson-Billings (2000) enumerated strategies that could improve the preparation of teachers. The author shared that teachers have displayed their lack of adequate preparation when attempting to address the needs of diverse students. One strategy suggested by the author included changing the nature of the field experiences of preservice teachers, which would allow student teachers to work in communities that were more diverse. Another strategy used encouraged teacher-education programs to examine the preparation given to teachers as it relates to the students the teachers are going to serve. Banks (2000) and Gay (2004) believed that variations of culturally sensitive education could equip professionals in education with the tools needed to help all students succeed.

Moreover, Rolon (2002) commented that educators could support Latino students by providing staff development and financial incentives for teachers that would allow them to focus on helping Latino students. Another suggestion included the use of culturally sensitive pedagogy, which would encourage teachers to learn more about

Latino students and use this knowledge to increase student achievement.

When teachers understand the magnitude of their roles in the classroom, they begin to see the importance of each student, the importance of everything they say and do in their classrooms, and the impact their role has on the students. Graybill (1997) noted that White teachers could make a difference in the academic lives of African American students; however, African American teachers could make an even greater difference in the academic lives of African American students.

According to Steele (as cited in Aronson, 2004), stereotype threat contributes to the achievement gap. Aronson (2004) surmised Steele's theory that when students focus on the stereotypical comments and beliefs about the groups to which they belong, students inadvertently performed consistently according to the stereotypical beliefs. One familiar stereotype about Blacks and Latinos is the belief that they are unintelligent. The author stressed that educators should be aware of the stereotype threat and use strategies in the classroom that promote learning for all. For example, Aronson discussed using cooperative-learning opportunities for students. This strategy creates an environment that is inclusive of the diversity in the class. Another strategy that educators can use invites them to share the idea that students do become smarter the more they challenge themselves to learn more. This strategy allows students to understand that they can make a difference.

Landsman (2004) discussed that racism sometimes confines teachers to inaccurate beliefs about minority students and that compels them to have low expectations for students. The author referred to this as "the racism of low expectations" (p. 28). All students deserve adequate occasions to experience success. The information discussed

provides a framework for understanding how educators can create meaningful learning environments for all students.

Middle school and achievement. The transitions from elementary school to middle school and middle school to high school can be overwhelming for students. Students who are academically prepared at all levels experience less anxiety. Cooney (1998), in a report on middle grades readiness for success, asserted that the middle school years are preparatory and provide academic and social buttresses for high school learning. Schools that focus on improving academic performance report marked improvement in student achievement. Achievement gaps suggest that not all students perform at comparable, acceptable levels. Lashway (2003) cited demographics, insufficient resources, and ineffective school practices as three main reasons for low performance in schools. Lashway stated that additional resources could assist students in low-performing schools.

In a discussion of NAEP data, Loveless (2004) suggested that findings demonstrated an increase in Algebra I enrollment for eighth graders from 16% in 1990 to 28% in 2003; furthermore, the percentage of eighth graders answering problem-solving items correctly was 41.4%. However, the author shared that more than three fourths of the items on the eighth-grade tests are at least 4 years below grade level.

Loveless (2003) stated that the computation skills for students are low. He discussed the importance of basic skills and noted that basic skills or lack of basic skills has disproportionately affected African American students. This is a critical issue because basic-skill acquisition also predicts adult earnings.

It is important that students are prepared during the middle school grades to embrace and welcome the high school learning experience. Mizelle (1999) suggested that

many students entering high school are concerned about the level of difficulty of the curriculum and earning lower grades. The literature supported the belief that middle school preparation is critical to student success in the future both academically and socially.

School Finance and Funding

There are many variables to consider when school funding is examined. Nieto (2003) asked, “What do we pay for education, and how does the answer differ according to students’ race, ethnicity, social class, and above all, home address?” (p. 5). This question considers many of the variables associated with school funding.

Carey (2002a) reviewed national data related to finance and wrote, “The United States spent approximately \$412 billion on public elementary and secondary education during the 2001-2002 school year making it the largest single area of direct public expenditure, exceeding even national defense. There are 14,000 active school districts in the United States governing approximately 90,000 individual schools” (p. 8).

Carey (2004a) reported that 35 of the 48 states studied had a funding gap for minority students and 25 of the 49 states’ high-poverty districts received fewer resources than low-poverty districts. The author referenced the progress New Jersey officials made in terms of funding. Several programs were implemented to supplement the needs of low-income students. Consequently, New Jersey school districts experienced a decrease in the funding gap between low- and high-income students between 1998 and 2002.

Rothstein (2001a) discussed interstate funding inequality. He declared that because education is primarily a local and state function, federal policy addressing funding has been limited. Rothstein suggested that the federal government should

subsidize elementary and secondary education in low-spending states and gave specific strategies to help this work. One strategy addressed taking into consideration the varying purchasing power of the dollar between states. Rothstein concluded that spending in poor states needs to be adequate and should be orchestrated by the federal government. More funds for those in need might not solve all problems in public schools; however, it addresses one problem that has been ignored for a long time--inequity of funding.

According to Swanson and King (1991), there are various ways to fund public schools:

1. The flat grant allows each district to receive an identical award.
2. Power equalization gives states a standard amount of money per student for each unit of taxation.
3. Full state is where the state pays completely.
4. Foundation is a combination of flat and power equalization.

When school finance is discussed, it is also important to share the difference between horizontal and vertical equity. Horizontal equity occurs when all students receive equal amounts of funding. Vertical equity occurs when some students receive more or less funding based on their needs. According to Swanson and King (1991), horizontal equity is also known as equal treatment of equals and vertical equity is known as unequal treatment of unequals. When vertical equity is used, the needs of diverse students are considered.

Funding influences all areas of public education. Students benefit when districts and schools are sufficiently funded; however, teachers also garner benefits when school districts are adequately funded. Darling-Hammond (1996) said,

Unequal resources and inadequate investments in teacher recruitment are major problems. Other industrialized countries fund their schools equally and make sure there are qualified teachers for all of them by underwriting teacher preparation and salaries. However, teachers in the U.S must go into substantial debt to become prepared for a field that in most states pays less than any other occupation requiring a college degree. (p. 3)

In addition, Darling-Hammond reported on the blueprint for recruiting and supporting educators that was designed by the National Commission on Teaching and America's Future. One of the six goals for Year 2006 stated that high quality teaching is an integral investment for schools. A large percentage of budgets are allocated to instructional staff. Darling-Hammond (2003) commented that "the teaching profession must be competitive in terms of wages and working conditions . . . teacher salaries are about 20% below the salaries of other professionals with comparable education and training" (p. 3).

It is difficult to attract the best teachers to work in the more challenging schools. Berry (2004) contended that to retain teachers in challenging instructional environments, recruitment should be more extensive and teachers should receive more money. The literature is clear that teachers, especially those more experienced, will often relocate to schools with less challenging students and sometimes fewer minority students.

Very similar to the views expressed by Berry are the views expressed by Carey (2004b) who commented on a study that reviewed employment records of teachers in Texas from 1993 through 1996. Carey found,

The biggest factor was student achievement: teachers tended to move away from districts with many low performing students and toward districts where

performance was higher. They also moved away from high poverty schools toward lower poverty schools. Most disturbingly, race was also a significant factor. White teachers, who made up the large majority of teachers studied, tended to move away from high minority schools even after factoring out the influence of student achievement. (p. 16)

Carey proposed paying teachers more if they worked where the need is greatest. He stated that, “The children in under funded districts can learn if they have effective teachers . . . that will cost money, and right now the financial playing field is uneven” (p. 20).

Many states and school districts do what they can financially to support academic success for students. For example, Jerald and Haycock (2002) maintained that Kentucky, Maryland, and Delaware provide high poverty schools with extra funds for additional instruction before and after school, on weekends, during summer, or whenever is best for students. Another example is Chattanooga, Tennessee where teachers receive bonuses to work in the underprivileged schools. In Charlotte, North Carolina, teachers receive financial rewards to work in low-performing schools.

Although student achievement gaps provide the foundation for this study, gaps in teacher salaries as they relate to teacher years of experience will be addressed. Archer (2005) reviewed data from California districts and noted the differences in teacher salaries among the highest and lowest poverty schools. Results of the study indicated, “40 of California’s 50 largest districts allocate the least for the teachers in schools with the most students in poverty” (p. 3). Archer reported that a review of the financial cost for one student attending a high-poverty school and receiving 12-13 years of education

reflects a total of \$100,000 less than a student attending low-poverty schools.

Additionally, almost all of the 10 largest districts in California found that teachers in high minority schools were also paid less than were other teachers. The author concluded by asking, “Given the unequal resources, how could we expect that there would be anything else but an achievement gap (p. 18)?”

Many school division leaders and school administrators are using funding creatively and prudently to maximize student learning. Jehlen (2002) referenced Roosevelt High School in Los Angeles, which serviced about 5,000 students who were majority low income and Latino. One change that will occur at this school is the establishment of smaller school communities. The school is at a critical place in its existence because student test scores must improve. Jehlen commented that the school was promised assistance, including money. The hope is that the federal law will provide this struggling school support.

On average, schools are funded based on the following percentages: 7% federal, 46% state, and 47% local aid. Because the majority of a school district’s funding is derived from local property taxes, there can be discrepancies between affluent and less affluent communities (Biddle & Berliner, 2002). In 1998, data showing the annual expenditure per student by state revealed on average, Utah spent about \$3,800 per student and New Jersey spent \$8,801 per student. Even though differences between states exist, there are also differences within states. For example, in Virginia, the per pupil expenditure can range from \$6,000 to \$15,000 based on the locality of the school (Virginia Department of Education, n.d.).

Nelson and Gould (2001) reviewed data on teacher salaries and expenditures in

selected school districts in the United States. Virginia Beach and Newport News, two school divisions in Virginia, were represented on the list. When beginning salaries were examined and ranked, Virginia Beach was ranked 26th out of 100 during the 1990-1991 school year and 51st during the 2000-2001 school year. Newport News was ranked 35th during the 1990-1991 school year and 55th during the 2000-2001 school year. (p. 19). During the 1991-1992 school year in Virginia Beach, the general revenue per pupil was \$4,470 and in Newport News, the revenue was \$4,978. (pp. 20 & 21) Between the years 1991-1992 and 1998-1999, Virginia Beach school district increased its minority student population from 25.1% to 34.9%, whereas Newport News saw a rise from 41.1% to 60.3%. The data are consistent with national data showing changing ethnic demographics in communities. In this study, the writer will examine the relationship between ethnic demographics, school funding, and student achievement.

Skinner (2005) referenced Virginia's report card in the State of the States report and discussed the contents of this report. Virginia was graded using student achievement, standards and accountability, efforts to improve teacher quality, school climate, and resources. In reference to resources, which include equity and spending, evidence suggests that Virginia needs to modify its funding system. When equity was examined, the state received a low score, which suggested large differences in funding as it relates to property wealth. Based on the 2001-2002 per pupil spending figure, Virginia falls in the middle of all states.

There are several variables that can be used to explain further district and state variance in educational expenditures. Variables that measure property value, income, or percent of owner-occupied housing have an impact on district spending (Holland &

Tweeten, 1973). Texas used a cost of education index that factored in the geographic variables, which have an impact on education. These factors are beyond the control of the school system administrators (Taylor, Alexander, Gronberg, Jansen, & Keller, 2002).

School finance and funding and student achievement. Across the nation, some students in poorer areas do not receive comparable resources to students in more affluent areas. This section probes the literature related to funding and the relationship, defined or deduced, associated with student achievement. Biddle and Berliner (2002) commented that more funding could be used to attract better teachers to school districts; in turn, student outcomes are affected positively. Increased funding for schools may allow schools to reduce class size, which may have an impact on student achievement. Biddle and Berliner stated that disadvantaged students are more likely to be impacted by inequities in funding because they usually attend poorly funded schools that need the additional resources.

Odden (2003) analyzed information related to adequate funding for students. He discussed the shift from equity to adequacy and shared ramifications of adequate school funding. First, increased state aid must go directly to schools so that schools have an adequate funding base. Another consideration is that professional development funding must be directed to specific strategies that can help teachers improve student achievement. Adequate funding implies that schools provide differential levels of funding based on the needs of students. Finally, it is critical that schools use money more effectively. Odden suggested increasing teacher salaries as one method to construct an adequate finance system to improve student achievement. This dissertation will focus on district and locality expenditures including teacher years of experience.

In 2000, a discussion about inequities in two Illinois school districts was discussed. Elmwood Park School District 401 and Carpentersville School District 300 were on *financial watch*. According to Neas (n.d.), “Financial watch means that they are heavily in debt, have run up fiscal deficits, drained reserves, and borrowed funds to cover daily operating expenses” (p. 1). Elmwood Park is on the state’s financial watch list. Carpentersville was on the watch list too but was able to make cuts primarily in personnel. Carpentersville is still in need of additional funds. The author of this article stated that because of the funding gaps in these districts, it is reasonable to expect achievement gaps as well.

A 2002 study (People for the American Way, n.d.) provided additional examples of inequities in Illinois: Glencoe and Midlothian school districts. The Glencoe school district is a wealthy district with a per pupil expenditure of \$10,935, 2% minority enrollment, and 1% low-income student enrollment. On the other hand, Midlothian is a middle-class district with a per pupil expenditure of \$6,584, 39% minority enrollment, and 21% low-income student enrollment. Glencoe district administrators can provide students with additional resources such as smaller class sizes and technology. Midlothian administrators would like more money to provide students with smaller class sizes and teachers with higher salaries. There were achievement gaps between students in both districts. Students in the wealthier school district achieved at higher levels.

In contrast, a Virginia Senate Finance Committee examined the correlation between spending and tests scores in Virginia’s 134 school districts in 1993 and found that there was not a clear relationship between achievement and spending. Bracey (1995) suggested that because of the restrictions placed on funds being disbursed, it is difficult to

produce a connection with spending. Bracey did note that affluent districts considered it an investment in their students when they allocated additional funds per student.

School finance and funding and legal perspectives. Litigation related to school funding has been prevalent and will continue to occur until the manner in which public schools are funded is modified. School funding issues are extensive and could not be completely broached within the scope of this study; however, expenditures by districts and localities as they relate to academic achievement gaps will be investigated. Rebell (2004) stated that much of school funding has provided inadequate educational opportunities for poor and minority students. He contended, "Since 1989, there have been 29 such lawsuits, and plaintiffs have won 24 of them, with five of those victories occurring in the last two years alone" (p. 40). The author concluded that the adequacy lawsuits are supporting the goal to establish educational opportunity for all students.

The editors of Education Week ("Financing Better Schools," 2005) reported that 37 states and Washington D.C. considered funding critical, uncertain, and sometimes not available. The editors of the article commented that 43 states and D.C. use weights or adjustments to accommodate for students with additional and special needs. Twenty-six states and the District of Columbia use formulas that accommodate at-risk students and 9 states accommodate different regions in the states (e.g. urban versus rural). The editors also commented that states rated highly with regard to equity had some characteristics in common: a "relatively weak relationship between local property wealth and school revenues, less variation in spending across districts, and a smaller gap between the amount spent on students in the lowest spending districts and the state median spending per pupil" (p. 7).

Hoff (2005) discussed the *Montoy v. State* (2005) school-funding case that addressed the lack of adequate financing in Kansas public schools. At the time, the legislature had until April 12, 2005 to rectify the situation. Consequently, the Kansas Supreme Court decided the legislature should devise a plan to increase funding. Many legislators were opposed to the court's decision; however, by June 22, 2005, the legislation increased school funding by \$148.4 million. Gehring (2004) reported that Baltimore public school administrators experienced problems after they were given a deadline to mitigate the deficit. Programs were cut and the number of staff was reduced. It was believed that this affected and interfered with student achievement and adequate educational opportunities for students.

There are several cases devoted to issues of school funding and equity. One case, *Serrano v. Priest* (1971) required a greater equalization of educational resources in terms of wealth of the school district. A group of parents challenged the constitutionality of the public school financial system of California for failing to provide the children equal opportunity and quality of education. This case specifically addressed fiscal neutrality, which according to the decision, stated that a student's education could not be based on the wealth of a school district but the overall wealth of the state (LaMorte, 1996). This case illuminates the discrepancy in funding between low and high poverty districts.

Another case, *San Antonio Independent School district v. Rodriguez* (1973) questioned the dissimilarity in funding between low and high poverty areas. This case challenged the method of financing public school used by the state of Texas. School finance reform should start from the state process. Mexican American parents sued a school district in San Antonio claiming that the public education financial system of

Texas violated their constitutional rights under the Equal Protection Clause by failing to distribute funding equally among its school districts. The federal court ruled that the Constitution did not mandate equal funding among districts and ruled against the parents (Biddle & Berliner, 2002).

Alabama Coalition for Equity v. Guy Hunt (1993) rendered a decision that the state's school funding system was found to be unconstitutional. In this case, one of the arguments was that some children were receiving inadequate educational opportunities. This case refers to the issue of adequacy and whether students received all they needed to meet state standards (Owings and Kaplan, 2006)

Greenwald, Laine, and Hedges (1996) commented that additional funding does not equal increased achievement; however, it is important that schools have ample resources to accomplish goals. Green (1999) discussed several cases related to school funding: in Connecticut, *Sheff v. O'Neill* (1996), which addressed inequitable funding to districts and its relationship to educational opportunity; in Georgia, *McDaniel v. Thomas* (1981), which confirmed that school funding was related primarily to local government; and in Kentucky, *Rose v. Council for Better Education, Inc.* (1989) declared that the state did not provide an adequate education. The aforementioned cases demonstrate the diverse adjudications from the courts.

Peevely and Ray (2001) discussed *Tennessee Small School System v. McWherter* (1988) in which the method used by the state to fund local school districts was ruled unconstitutional. Plaintiffs claimed there was clearly an achievement gap between the schools receiving adequate funding and those who were not. The litigants were able to improve per pupil expenditure during the 5-year phase in of full funding.

When cases related to school finance issues are discussed, there are various decisions that are consistent with the belief that students should receive adequate resources regardless of the district in which they reside; however, there are other decisions that suggest otherwise and that relationships do not exist between the level of funding and academic achievement.

Statement of the Problem

This study will examine variables such as student demographics (ethnic differences and location), student poverty (economically disadvantaged), and student performance (academic outcomes and test scores) as they relate to district and locality funding.

The reauthorization of the Elementary and Secondary Education Act or the No Child Left Behind Act of 2001 created a heightened awareness of the variance that exists when student achievement is examined with regard to race and SES. The federal legislation has generated attention associated with educational mandates that may warrant additional funding.

For many decades, educators and other stakeholders examined student achievement and adopted practices that would maximize achievement for all students. When gaps persist in student achievement in spite of the instructional and curricula progress that has been made, educators and stakeholders must investigate alternative relationships. This study will explore possible relationships between funding variables and student outcomes by examining achievement gaps in Virginia middle schools.

There is a need to know if there is a relationship between district and local identifiers of spending, wealth, and student achievement gaps in Virginia middle schools.

This study will examine data from all Virginia school divisions. The school divisions are by nature very diverse and encompass varied student populations. The findings of this study will expand the knowledge base related to the relationships between district and local identifiers of spending, wealth, and student achievement gaps.

Purpose of the Study

Today, educators, legislators, parents and community members are concerned about closing the achievement gap. This trend is consistent with today's educational reform. The purpose of this study is to examine the relationships between district and local expenditures and student achievement gaps as measured by middle school state assessments in mathematics and English.

Ryan (1999) argued, "Because poor students typically have greater needs, schools composed of poor students are costlier to run than schools composed of middle- and upper-income students" (p. 257). This comment supports the premise that funding should reflect the needs of the students.

In the school divisions in Virginia, it is important to examine relationships between district and local expenditures and student achievement gaps. Results of this study will provide stakeholders with additional findings related to achievement gaps in Virginia middle schools.

Roach (2004) discussed the importance of closing the achievement gap. He contended that,

It's important for the health and future stability of the society to attend to the achievement gap. . . . and even here for the United States to continue to be the preeminent economy in the world, we have to have the preeminent work force of

the world, which means the work force that has the strongest skills (p. 1).

This addressed the larger purpose of education, which is to prepare students for life.

Even though many believe that racial discrimination has been eradicated and people should look beyond past indiscretions, Jacobsen et al. (2001) commented that racial discrimination continues to be a problem in labor markets and other aspects of American society. They contended that policies that reduce differences in skills between Blacks and Whites before they enter the workforce could reduce differences in workforce labor outcomes. Furthermore, this reason supports the need to narrow the achievement gaps in public schools.

Research Questions

The writer developed the following research questions to drive this study:

1. What are the patterns of achievement gaps?
2. Which factors predicted gaps between majority and minority (i.e., White and Black and White and Latino) student achievement in English in Virginia middle schools during the 2005 – 2006 school year?
3. Which factors predicted gaps between majority and minority (i.e., White and Black and White and Latino) student achievement in math in Virginia middle schools during the 2005 – 2006 school year?
4. Which factors predicted gaps in English achievement between students classified as economically advantaged and those classified as economically disadvantaged in Virginia middle schools during the 2005 – 2006 school year?
5. Which factors predicted gaps in math achievement between students classified as economically advantaged and those classified as economically disadvantaged in

Virginia middle schools during the 2005 – 2006 school year?

Limitations of Study

There are six major limitations of this study.

1. Data was collected from the 134 school divisions in Virginia. This is a limitation because in spite of the differences among and within the divisions, it still is a relatively small cross section of the school divisions in the nation.
2. The examination of data does not include students attending private schools. Data obtained from students attending private schools may or may not be consistent with data obtained from students attending public schools in Virginia.
3. Other factors might contribute to the achievement gap, which are outside the realm of this study. Ferguson and Ladd (1996) referenced a body of knowledge that reports relationships between education and higher income as a more feasible measure of student success; however, Ferguson and Ladd were cautious of those results because test scores are available closer to the time the education is provided whereas earnings are available years later.
4. Data retrieved from the FFIEC provides an estimated calculation.
5. The design of the study does not allow interpretation of cause and effect relationships.
6. There were schools that did not provide complete data.

The study will use data from test scores that were submitted to the Virginia Department of Education to measure relationships between achievement gaps and variables related to funding.

Definition of Terms

The following definitions best convey the meanings related to this study. African Americans will be used interchangeably with Black. Negro will be used sparingly to refer to African Americans from an historical context. When the writer refers to students of color and minority students, this is inclusive of African Americans and Latinos. The term Latinos will be used interchangeably with Hispanic Americans.

Achievement gap. Achievement gap is a term used to describe a persistent trend in the U.S educational system in which White students achieve greater academic success than students of color. The gap can also refer to the gap between girls' or boys' academic achievement (Achugbue, 2003).

Adequacy. Adequacy focuses on providing sufficient and absolute levels of funding to enable all children to achieve at high levels (Picus, 2000).

Civil Rights Movement. The Civil Rights Movement is known as the events that took place between 1955 and 1965 when minority groups across the United States, primarily in the South, rose up against all forms of institutional racism that perpetuated political, economic, and educational disparities within their communities (Achugbue, 2003).

Ethnic. Ethnic is defined as of or related to a particular race, nationality, language, religion or cultural heritage (Acabugue, 2003).

Equity. This term focuses on fairness and justice as they especially pertain to rights and protection under the law (Acabugue, 2003).

Minority. This term is often used in the U.S. to refer to persons who have historically been in the demographic minority when compared to Whites of European

descent (Acabugue, 2003).

No Child Left Behind. This law requires that all schools be held accountable for making sure that every student learns. Scores will be broken out by economic background, race and ethnicity, English proficiency and disability (“Stronger accountability,” n.d.).

Person of color. This term is commonly used to describe an individual who is not of White or European ancestry (Acabugue, 2003, p. 59).

Racism. Racism can be understood as individual and institutional practices and policies based on the belief that a particular race is superior to others. Often this results in depriving certain individuals and groups (based on their race or ethnic origin) of certain civil liberties, rights, and resources, hindering opportunities for social, educational, and political advancement (adapted from Acabugue, 2003, p. 64).

Segregation. A process of spatially isolating an ethnic subpopulation in areas where they cannot have the same access to valued resources as do those who are not isolated (adapted from Aguirre & Turner, 2001, p. 5).

Stereotype. A positive or negative set of beliefs held by an individual about the characteristics of a certain group (adapted from Acabugue, 2003, p. 73).

Summary

There are conflicting data related to the academic achievement gap and its relationships with other gaps such as funding and wealth. Kriesky and Poole (2003) summarized, “We must address the wrongs and injustices that have been ingrained in our public education system since desegregation” (p. 1). The profundity of this statement testifies to the inequitable conditions that existed in the past and that could still have

consequences and repercussions for some students today.

High academic achievement for all students is an issue that demands the attention and resources of the entire community. This study examined funding and wealth variables related to achievement. The goal was to create an arena that facilitates further understanding of achievement gaps and school funding in Virginia middle schools. For example, achievement gaps could not be adequately discussed or even understood without discussing diversity, race, or beliefs related to the narrowing or widening of the gap among other topics. Similarly, school funding could not be articulated without referencing specific court cases and decisions that have established precedent.

Teachers are an integral component of student achievement. Research suggests that the difference in student performance in a year between a student who had a good teacher as opposed to one who did not is one year of standardized achievement (Hanushek, 1992). Wright, Horn & Sanders (1997) cited teachers as the most important factor affecting student achievement. Frequent references in this dissertation are made to teachers because of their pivotal roles in the lives of students. Furthermore, research shows that the more experienced teachers relocate to districts that are more affluent. In Bell's (2002) discussion of strategies that can close the gap, he began and ended with essentially the same point--changing teacher beliefs about achievement as it relates to low-income and minority students.

Haycock (1998) stated that when the achievement gap is examined, teachers are critical players. She said that if students are given the best teachers, then variables like poverty and racism do not have a negative effect on student achievement. Haycock also discussed the need for professional development for teachers. Other authors such as

Kaplan and Owings (2003) shared that many teachers who are more experienced and have more credentials usually are assigned to teach the advanced courses. Many low income and minority students are not assigned to these courses.

David and Capraro (2001) said,

Teachers are faced with the extraordinary challenge of creating a classroom that enables children from diverse backgrounds to develop optimal learning tools applicable to the challenges of our post-industrial world. As diversity is on the rise in the U. S., a classroom is a reflection of that population. Therefore, teachers need a variety of options to choose from when working with diverse populations, under stressful conditions. (p. 2)

David and Capraro offered recommendations to help teachers increase effectiveness.

In an attempt to help teachers enhance their pedagogical skills and better address the needs of diverse student populations, teachers should engage in professional development and other post degree learning opportunities.

Evidence suggests that teachers in some low-performing, urban divisions are not privy to varied high quality professional development opportunities (Foster, 2004).

Porter-Magee (2004) asserted that the No Child Left Behind Act of 2001 focuses more on teacher content knowledge versus pedagogical training. This assertion supports the belief that content knowledge has a greater impact on student achievement.

This study will explore funding and achievement gaps in Virginia middle schools. As funding is examined, teachers will comprise three of the variables. Historically, certain segments of the population have been denied access to education. Today, some students are exposed to inferior educational opportunities based on their residence.

School divisions in Virginia are primarily funded by local property taxes, which may result in inequitable educational opportunities for students.

Darling-Hammond (2004) advocated that the No Child Left Behind Act of 2001 should improve the quality of education students receive. One of her recommendations is the following:

Leveraging more adequate and equitable state funding of public schools by requiring states to report and monitor school progress on Opportunity to Learn standards that reveal resources available to children (teacher qualifications, curriculum opportunities, materials and equipment) alongside their publication of achievement data. (p. 31)

This study will address variables similar to those referenced by Darling-Hammond in the aforementioned statement.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Orfield (2001) stated,

The consequences of unequal education have become more severe because employment and income are sharply linked to education more now than in the past. Post-secondary education is essential to significantly share in the benefits of economic growth, and the availability of well-paying manufacturing jobs with low educational requirements has declined greatly. High school graduates with no college or technical training have also experienced serious economic decline as educational requirements are increasing. High school dropouts find themselves in jobs that pay only half as much as a quarter century ago, in spite of the greater wealth in society. Those who drop out are far more likely to end up in the mushrooming prison population with staggering costs to the economy (p. 15).

The comments made by the researcher Orfield (2001) reflected the urgency to provide the opportunity for all students to receive an education. In addition, the author suggested that the academic achievement for all students is an educational issue that demands the attention and fiscal support of local, state, and federal stakeholders.

Throughout the history of this country, there is evidence of oppressive educational encounters that students of color experienced. Students such as the Little Rock Nine, the Norfolk Seventeen, and the plaintiffs in *Brown v. Board of Education of Topeka, Kansas* (1954) comprised a small percentage of this evidence. At this time, conditions continue to exist that might place some students of color and some economically disadvantaged

students (intentionally or unintentionally) in environments that are not conducive to high levels of learning or academic achievement.

Historically, people of color in the United States were not permitted to be educated. During the period before and after the decision of *Plessy v. Ferguson* (1896), students of color were educated separately from their White counterparts. Integration and mandated desegregation caused several southern states to exhibit massive resistance. The creation of the Southern Manifesto in 1956 is an example of resistance by these southern states because they did not want integration or desegregation. Rodgers and Bullock (1972) found that individuals who supported the Southern Manifesto believed the *Brown v. Board of Education of Topeka, Kansas* (1954) decision was rendered null and void and not applicable to the states that supported the southern manifesto.

Data exist that suggest that nonschool variables contribute more to student success than school-related variables. A study conducted by White (as cited in Marzano, 2003) concluded the home atmosphere has a very strong relationship with student achievement. This study will contribute to the literature related to equality of educational opportunity. Studies conducted by Coleman, Campbell, Hobson, McPartland, Mood, & Weinfeld (1966) and Jencks, Smith, Acland, Bane, Chen, & Gintis (1972) illustrated conflicting findings of relationships between school and nonschool factors on student achievement. Ten years after the *Brown v. Board of Education of Topeka, Kansas* (1954) decision, the study by Coleman et al. evaluated whether the educational opportunities for minority students are in balance with their White counterparts.

Research by Burtless (1996) suggested that the Coleman Report was one form of response to the mandate of the 1964 Civil Rights Act. The study conducted by Coleman

et al. (1966) included minority students who were classified as Negroes, American Indians, Oriental Americans, Puerto Ricans who lived in the continental U.S., and Mexican Americans. Initially, the researchers targeted 900,000 participants. However, they surveyed and analyzed pertinent data from 639,650 students enrolled in Grades 1, 3, 6, 9, and 12. The study also included staff members. With the exception of Oriental Americans, the findings suggested that the achievement of minority students depended more on the schools they attended. This was not the case for the majority of students. In a large number of disadvantaged students, there was evidence that showed improved academic achievement because of the quality of the school. Secondary findings suggested a link between teacher quality and minority achievement. Primary findings reported that the socioeconomic background of a student has a direct impact on achievement. The researchers recommended that schools should be fully integrated because the composition of the student populations has a direct relationship to the achievement of minority students. In this study, the researchers cited the relationship between family status and achievement.

Later, Jencks et al. (1972) reanalyzed data from the study conducted by Coleman et al. (1966) and reported findings that suggested no difference in support-expenditure funding between districts in the same state. In addition, the researchers noted that children from rich families remained in school longer than children who were from poor families. The researchers recommended equity in funding distribution; however, inequitable funding does not affect student achievement. Jencks et al. concluded that school reform would not lead to equal adults. The researchers contended that children are influenced more by what happens at home, on the streets, and on the television and that

change that persists into adulthood is only evident when academic achievement is demonstrated via the elementary test scores. Contrary to the reports by Jencks and Coleman, are the reports by researchers who encapsulated the effective schools research. Research that confirmed schools can and do make a difference.

This study will investigate the relationships between district expenditures, the fiscal identifiers of localities, and student achievement gaps. Educational and legal perspectives that relate to achievement gaps and inequitable opportunities for specific subgroups will be examined. Additionally, research will be conducted that examines several areas affiliated with academic achievement and issues pertinent to school funding and wealth. The writer will investigate educational issues from the 1800s to the present and will include an historical overview.

Educational and Legal Perspectives

One of the many impetuses for *Brown v. Board of Education of Topeka, Kansas* (1954) case was that Negro parents yearned for their Negro children to attend integrated public schools.

Segregation and beyond. Prior to the Brown decision, Alexander and Alexander (1985) reported there were five cases from Kansas, South Carolina, Virginia, Delaware, and Washington, D. C. jurisdictions that challenged the “separate-but-equal doctrine head-on” (p. 409). Chief Justice Warren (as cited by Alexander & Alexander, 1985) expressed the Supreme Court’s decision by affirming that

Segregation of White and colored children in public schools has a detrimental effect upon the colored children. The impact is greater when it has the sanction of the law; for the policy of separating the races is usually interpreted as denoting the

inferiority of the Negro group. A sense of inferiority affects the motivation of a child to learn. Segregation with the sanction of law, therefore, has a tendency to [retard] the educational and mental development of Negro children and to deprive them of some of the benefits they would receive in a racial[ly] integrated school system (p. 413).

Furthermore, Mawdsley (2004) referred to the Brown decision and noted, “No other court decision has had such a profound effect on public education generally and urban education specifically” (p. 245). Ten years after the implementation of the Brown decision in 1955, LaMorte (1996) referenced Chief Justice Warren who demanded that “defendants make a prompt and reasonable start toward full compliance with our May 17, 1954 ruling and . . . admit to public schools on a racially nondiscriminatory basis with all deliberate speed the parties to these cases” (p. 300). Despite the ruling, there were several localities that did not adhere to the decision as evidenced in the *Griffin v. County School Board of Prince Edward County* (1964) case that addressed the school division’s attempt to avoid desegregation.

Studies by LaMorte (1996) and Rodgers and Bullock (1972) showed that the school division closed all public schools and opened private schools to avoid integrating public schools. Justice Black’s opinion (as quoted by LaMorte) stated,

Closing the Prince Edward County schools while public schools in all the other counties of Virginia were being maintained denied the petitioners and the class of Negro students they represent the equal protection of the laws guaranteed by the Fourteenth Amendment. There has been entirely too much deliberation and not enough speed in enforcing the constitutional rights, which we held in *Brown v.*

Board, *supra*, had been denied Prince Edward County Negro children (p. 419).

Mawdsley (2004) referenced the *Rogers v. Paul* (1965) decision in which the desegregation plan in Fort Smith, Arkansas was unacceptable. Because the city integrated one grade per year, high school students continued to attend segregated schools. In addition, some of the courses were only offered at the high schools where Whites attended, thereby, rendering the plan as unacceptable. The court believed that the school division intentionally delayed desegregation in the schools. In Denver, Colorado (1973), the *Keyes v. School District No. 1* case extended the protection of desegregation to Hispanics and ruled that intentional discrimination is also unlawful. Denver officials built schools and defined school boundaries in such a manner that maintained a White concentration of students, which intentionally created schools that were segregated.

Twenty years later, Orfield et al. (1993) reviewed 1991-1992 data from the U.S. Department of Education. The data were submitted by states that had large minority populations: Virginia and Georgia did not submit data. The researchers discussed the federal report that indicated 77% of the students in schools with high poverty rates belonged to minority groups; whereas, 19% of the students in schools with low poverty rates belonged to minority groups. The findings suggested that segregation by race might also be segregation by poverty. Orfield et al. contended, "If poverty is systematically linked to educational inequality, as it consistently is in educational research, the very powerful link between racial and poverty segregation is a central element in perpetuating the educational inequality of minority students" (p. 22). Segregation was again cited as a concern.

Valverde (2004) referenced equity and adequacy as they relate to the

consequences of inequitable funding. First, historically segregation created schools that were noticeably different in terms of composition and wealth. Second, because of the onslaught of cases related to funding inequities among other issues, educators began to examine issues of adequacy. While examining adequacy, the researchers investigated whether students had ample resources to achieve academically. Valverde maintained that the Brown decision was the driving force behind many changes experienced by students of color and the decision will continue to be a motive for other transformations.

Despite the progress demonstrated by many students, Saddler (2005) referenced data published in 1985 by the College Board and the Carnegie Quarterly that indicated that Black males were (a) more likely to receive special education services than their White counterparts, (b) less likely to be in gifted or talented classes, and (c) more likely to be enrolled in general or vocational tracks. The data provided portraits of the dilemma that some Black students encounter in public education. Saddler noted that many of the points argued by Thurgood Marshall during the trial of *Brown v. Board of Education of Topeka, Kansas* (1954) have yet to occur because it is difficult to change the belief systems of some people even though the law mandates change. Saddler also referenced the findings of a 1998 study by the Western Interstate Commission for Higher Education that suggested students in rural, small town locations in southern states such as Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia scored below students in other rural areas.

Important acts. Implementation of The Civil Rights Act (1964) supported the Brown decisions by reiterating that

No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance (p. 787).

Even though the percentage of federal funds disbursed to school divisions is relatively small, school divisions receive federal funds that indirectly suggest that schools are under the auspices of The Civil Rights Act. Another act with provisions associated with funding and also supported the eradication of discriminatory practices and minority group isolation was the Emergency School Aid Act of 1972.

Since the 2001 No Child Left Behind Act has provided a plan of action for student achievement, Rudalevige (2003) reiterated that The No Child Left Behind Act of 2001 has been perceived as one of the most important acts of federal educational legislation and Hess (2003) suggested that the act augmented the role of the federal government in education. The No Child Left Behind Act of 2001 is designed to close the achievement gap with accountability, flexibility, and choice, so that no child is left behind. Paige (U.S. Department of Education, 2004) who was the U.S. Secretary of Education said,

No Child Left Behind ensures accountability, flexibility, as well as increased federal support for education. No Child Left Behind continues the legacy of the Brown v. Board decision by creating an education system that is more inclusive, responsive, and fair (p. 13).

The No Child Left Behind Act of 2001 encompasses eight major areas. One area addresses economically disadvantaged students and academic achievement. An

economically disadvantaged student is categorized as a student who is eligible for free- and reduced-priced meals. Another component of the act is highly qualified teachers. Students eligible for free and reduced – priced lunches and highly qualified teachers are two variables included in the current study. According to a report from the U.S. Department of Education (2004),

One of the most important ways to close the achievement gap and provide all children with a great education is to provide them great teachers. Highly qualified teachers according to the United States Department of Education must have a bachelor’s degree, the appropriate licensure, and knowledge of subject matter he or she teaches (p. 15).

The act also provides instruction for students who are limited-English proficient and who are immigrants--the goal is to help students achieve academic success. The needs of the parents are addressed because the Act affords the parents choices when their children attend failing schools. The Act was also designed to serve as an auxiliary to states when they redefined their accountability systems to ensure the needs of all students are addressed. States and school districts can use funding in the manner that best meets their needs. Finally, the last two areas addressed the two critical areas of helping all children learn to read and helping children with disabilities.

Picucci, Brownson, Kehlert, and Sobel (2002) suggested that No Child Left Behind Act of 2001 asserted that all children receive the “opportunity to obtain a high-quality education” (Sect. 1001). The best practices that support teaching and learning in high performing and high poverty middle schools included strategies that addressed the needs of individual students and provided extra services and support beyond those

traditionally offered by schools. In addition, Giroux and Schmidt (2004) examined the achievement gaps and the No Child Left Behind Act of 2001. The researchers noted that the focus on student testing disregarded the research equated with the testing of students especially in the urban and rural settings. The findings suggested that students in urban and rural settings perform poorly on standardized tests; consequently, schools should emphasize learning life skills as opposed to emphasizing testing. In addition, Giroux and Schmidt (2004) asserted that children be viewed as social investments. The researchers argued that the No Child Left Behind Act does not address student concerns and may actually leave more children behind. Wesson (as quoted in Giroux & Schmidt) said, "Let's be honest. If poor, inner-city children consistently outscored children from wealthy suburban homes on standardized tests, is anyone naive enough to believe that we would still insist on using these tests as indicators of success" (p. 221).

In May and June 2004, Sunderman, Tracey, Kim, and Orfield (2004) surveyed and addressed teachers' beliefs concerning the availability of adequate resources at schools to support schools fulfilling AYP expectations. The results determined that many teachers believed that there were not adequate resources to support fulfillment of the AYP expectations. Many believed that the No Child Left Behind Act of 2001 had a negative effect on schools. As more results were shared, teachers expressed the need for additional money for materials as well as additional opportunities for professional development. Teachers expressed concerns that the expectations of the No Child Left Behind Act also had negative effects on the teachers' morale and performance. In 2007, teachers express similar concerns.

In 2004, Loveless examined the data from a 1998 study that reported 41% of

eighth-grade math teachers had earned math degrees in the United States. The results of a 2003 survey with 250 teachers that included middle-school math teachers suggested that (a) only 22% of teachers majored in math in college, (b) 29% described professional development for math as not helpful, and (c) 80% believed that financial incentives for math teachers would be effective. Loveless concluded that No Child Left Behind Act had specific expectations of teachers; therefore, professional development is extremely critical. AYP had defined the academic expectations for educators and students. Abedi (2004) asserted,

Each year they must report student progress in terms of percentage of students scoring at the proficient level or higher. This reporting is referred to as adequate yearly progress (AYP). Each state establishes a timeline for all students to reach the proficient level or higher, which must be no more than 12 years after the start date of the 2001-2002 school year provided that the first increase occurs within the first two years (p. 4).

In spite of the many positive elements of the Act, Darling-Hammond (2004) cited examples of the adverse effects of the No Child Left Behind Act (2001) Act on student achievement. One case referenced a count that suggested 26,000 of the nation's 93,000 public schools failed to make AYP during the 2003-2004 school year. Another case referenced Manzanita and Golden Gate elementary schools. Manzanita had to meet targets in 18 categories whereas Golden Gate had to meet targets in 6 categories and succeeded. Manzanita School met all but one target; the school was classified as needing improvement. Some researchers have called this type of situation a diversity penalty because it seems that schools with more targets to meet or more subgroups to address

encounter difficulty by disproportionately being identified as needing improvement. Kim (2003) and Kane and Staiger (2003) reported that racially diverse schools have more targets to meet, which can present challenges that might result in schools not making AYP. There are other cases when educational leaders reported encountered difficulty recruiting the best teachers if they were labeled according to whether or not they met No Child Left Behind Act standards.

In addition, Darling-Hammond (2004) reported that some states made the decision to lower the standards so that schools would not be considered as failing. According to the researcher, students need more than tests to assess progress, they need effective instruction and sufficient resources. In addition, the researcher discussed other consequences of the No Child Left Behind Act of 2001 such as how some states abandoned accountability systems that might not be aligned with the goals of the Act. In addition, studies by Darling-Hammond, Karp (2004), and Lewis (2005) recommended that No Child Left Behind Act be fully funded.

Many educators initially expressed concerns about the No Child Left Behind Act of 2001 and the AYP guidelines. Fusarelli (2004) discussed the comments of a superintendent in North Carolina who explained to the leaders in his district that even though AYP data seek to address the performance of subgroups, it is critical that leaders do not blame the groups that might not have achieved as well as other groups. A positive component of the No Child Left Behind Act and AYP is the examination of data by subgroups that allow educators to identify the low subgroup performance within a school and use the data to make decisions that would enhance student learning. In addition to the positive aspects of the act, Fusarelli shared a negative aspect to the No Child Left Behind

Act and AYP--schools might fail to meet standard by a small margin. However, they are counted and given the same label as a school that failed by a larger margin. Karp (2004) argued that this failing label does not reflect the degree of improvement that might have occurred in schools. A school might be considered failing after two years and students are allowed to transition to schools that have made No Child Left Behind Act requirements. Karp believed that the No Child Left Behind Act refused to acknowledge that culturally, students learn differently. In addition, the researcher further explained that the Act might create a higher turnover in teachers and school administrators. Fusarelli concluded schools that had less student diversity (e.g., Minnesota schools) were doing well with No Child Left Behind Act and AYP guidelines; however, schools with a more diverse student population encountered difficulty reaching the goals.

Summary of legal perspectives. Miller (1995) indicated there were times when students of color and economically disadvantaged experienced inequitable learning opportunities. The writer examined the literature to address the legal concerns and references that related to providing equal educational conditions subgroups. The data suggested that historically students faced difficult barriers as they sought to achieve academic success. This pattern of difficulty is on going. The ramifications of the laws, acts, and legal decisions discussed should have ameliorated overall conditions for specific subgroups; however, individuals who resisted changes delayed the progress and created environments that did not support learning for all.

The effects of oppression and segregation can be very devastating to a community especially the oppressed populations. An illustration of this is the Kansas City Missouri School District that has been involved in five district court decisions, five 8th Circuit

decisions, and two Supreme Court decisions that addressed inequities that have existed in Kansas City since 1977. The school board and state were ordered to pay over \$2 billion to fund improvements in the division and help support desegregation efforts. The flight of White students from schools created large minority student populations that fostered lower levels of funding because much of the majority population relocated to neighboring suburban areas. Mawdsley (2004) suggested that the Eighth Circuit ruled that the achievement gap was related to prior segregation.

This section researched and illuminated the conditions that existed and traced the progression that has allowed the United States to arrive at the No Child Left Behind Act, which addressed a relevant issue to many educators--the achievement gap. Many variables contribute to student achievement and academic gaps. The writer reviewed a cross section of these variables and its relationships to academic gaps.

The Gap and Academic Achievement

Howard (2002) indicated that closing the academic achievement gap was an essential priority for the 21st century. The researcher further suggested that students who are not White, middle or upper class, and English speaking do not always benefit as much from school systems. Howard referenced Blacks who for many years were prohibited from receiving an education. In addition, when they did receive an education it was inferior to that of their White counterparts. Howard commented on the education that Native Americans received and stated, "It is no mere coincidence that those racial, cultural, linguistic, and economic groups who have for centuries been marginalized by the force of Western domination are the same groups who are now failing or underachieving at disproportionate rates" (p. 12).

Achievement gap. The academic achievement gaps continue to be a concern for students enrolled in kindergarten through Grade 12 in the United States. Between 1970 and 1990, there was narrowing of the achievement gap. However, in 1994 the NAEP reported gaps in academic achievement between White and African American students in reading, math, writing, and science (Ashford, 1997).

In the United States, achievement gaps are prevalent throughout society. For example, research by Bacharach, Baumeister, and Furr (2003) examined data from the 1988 and 1994 National Education Longitudinal Study, which included about 26,000 eighth graders in the initial study. In the studies, 668 Black children and 5,463 White children were the targeted subjects. The researchers examined the variables of gender, race, and science scores on students enrolled in the 8th, 10th, and 12th grades to develop their conclusion. The overall findings concluded there were gaps in the academic achievement between Black and White students, between boys and girls, and that the science gap continued throughout high school. Specifically, Black students received an average science score of 16.92 and White students averaged 3.55 points higher ($p < .001$).

Baenen, Dulaney, Yaman, and Banks (2002) reported on academic achievement gaps in North Carolina. The state administrators created the North Carolina Commission on raising achievement and closing gaps, consequently, smaller gaps in achievement between Black and White students in Wake County Public Schools were reported at the end of the year. In addition, Baenen et al. also noted the costs associated with strategies, programs, and resources needed to narrow gaps. The per pupil expenditure in Wake County was relatively lower when compared to other school divisions.

Another study by Cowley and Meehan (2002) investigated the achievement gaps

in 47 high performing schools. The study examined high performing schools and identified the schools that provided support to low income and minority students to help them achieve. Cowley and Meehan identified and stated the common factors for high performing schools were (a) teachers' commitment to continual learning, (b) improvements in the areas of learning culture, (c) shared goals for learning, and (d) teachers who were effective.

Another survey that generated findings about achievement gaps was conducted by Ferguson, Clark, and Stewart (2002). The survey included 7,120 Black, 17,562 White, 2,491 Hispanic, 2,448 Asian, and 4,507 mixed-race students in Grades 7 through 12. The participants were asked and responded to the following three questions:

1. What was your grade point average last term?
2. How much of the material that you read for school do you understand very well?
3. What percentage of the time do you completely understand the teacher's lesson?

Ferguson et al. concluded that Black and Hispanic students had lower grade point averages and reported less understanding of teacher lessons and material that they read for school. The findings of the study were consistent with findings of other studies. Ferguson et al. indicated that the teacher's expectations of the students played a critical role in academic achievement. McGee (2004) indicated the achievement gap warranted attention because "the achievement gap is not about students who are failing, but about a system that has failed students" (p. 101).

Reasons for the gap. Many have speculated about the reasons for the gap. Howard

(2002) believed that people make assumptions about the learning capabilities of others when they are unfamiliar with specific groups. The targeted-group members are usually assigned to lower expectations. Howard suggested that ignorance was another reason for the gap and said, "One of the dilemmas of dominance is that we are often blind to the negative impact our imagined goodness and normalcy have on others who do not share the demographic advantages of dominance that have favored our group" (p. 14).

According to Howard, privilege affords some advantages over others that again created gaps in achievement for students.

Beckford and Cooley (1993) reported that the poverty level of students affected their performance in the Pennsylvania schools. A large number of Black students attend schools with a high poverty rate among the population. Beckford and Cooley also referenced the impact of home and family support on student achievement.

Barton (2003) correlated achievement and gaps and explored school factors. Examples of school factors are teacher preparation, teacher experience, attendance, and technology-assisted instruction according to Barton. These factors reflected negatively on the gaps between minority and majority students. Barton said, "Teachers with three or fewer years of experience are twice as likely to be in schools with a high level of minority enrollment than in schools with a low level" (p. 12). Barton summarized the findings and encouraged educators not to place blame but to continue to have high expectations for all students.

How to close the gap. Closing the achievement gap requires an understanding of the various sources that contribute to the widening gap. When academic achievement is explored, several reasons for the gap and several solutions are noted. Howard (2002) said,

Success begins with equitable educational outcomes, so the task of closing the achievement gap is essentially the task of unraveling the crippling effects of past and present social dominance. The issue of educational equity is not about testing; it is about teaching, learning, funding, and creating relationships that work (p. 10).

Beckford and Cooley (1993) and Davison et al. (2004) recommended the recruitment of competent teachers and administrators. In addition, to help students achieve success, more of the teachers and administrators hired should be Black. The researchers also recommended that these educators serve as role models for students of color.

According to Holloway (2004), minority achievement is best achieved when teacher expectations are high for all students. Holloway proposed that teacher sensitivity evidenced by the teacher's consideration of language acquisition, the background, and culture of the students help to establish relationships. In a related study, Hrabowski (2002) discussed raising minority achievement in mathematics and science. The study focused on families who participated in Meyerhoff Scholars Program in Baltimore. The program specifically addressed the needs of students of color by promoting high expectations and providing support to help students accomplish their goals.

There are different perspectives that can be adopted to foster the concept of closing the achievement gap. Jackson (2003) commented,

The nagging achievement gaps between different ethnic and socioeconomic groups are creating issues that simply won't go away. Schools in which Black, Latino, and Native American students consistently show worse academic outcomes than White and Asian students will inevitably be perceived as places of

institutional racism, even if the educators who work in them believe they are doing everything possible to level the playing field. The only way out of this dilemma is to cease trying to be identity-blind and start building identity-sensitive education (p. 585).

Kreuger and Whitmore (2001) studied the impact of smaller classes on the achievement gap of Black and White students. This study replicated a previous study conducted on the Tennessee's Project STAR. This project was designed to look at class size and the consequences of student assignment to smaller classes. Kreuger and Whitmore commented that class-size reduction is a costly educational intervention. The targeted students were 6,200 kindergartens through Grade 3 students per grade and 7,700 Grades 4 through 8 students per grade. The targeted students and teachers were randomly assigned to smaller classes for 2.3 years. The researchers concluded that smaller classes benefited minority students and that those students in the smaller classes had higher test scores. In addition, other findings suggested that students who were assigned to smaller classes in kindergarten through Grade 3 were more likely to take the SAT or ACT exam. Kreuger and Whitmore speculated why minority students performed better when assigned to smaller classes and concluded that teachers had an opportunity to teach more material to students. Kober (2001) addressed policy makers and recommended allocating equal resources to schools based on the needs of students.

McGee (2004) conducted a study that examined the test scores of the targeted students in 59 high poverty schools over a three-year period. Interviews with school personnel and on-site observations were conducted in selected schools to corroborate initial findings. The research data related to student achievement supported smaller class

sizes because it facilitated more time to work with the students. In addition, McGee suggested five policy recommendations for schools in Illinois when evaluating the variables for high poverty and high performance. McGee generated these recommendations because of what successful high performing high poverty schools in Illinois can teach us. Of the five recommendations, the writer selected the following three and included them in the literature review:

1. Increase the funding for prevention of reading problems and early intervention for low-income students.
2. Reallocate and reform educational funding to ensure that schools educating a high number of high poverty students have adequate and equitable resources to implement successful parent engagement, family literacy programs, and to extend academic learning time by operating beyond the normal school day and beyond the traditional school year.
3. Provide specific professional development training for all staff members, school and district administrators, and board members who work in high poverty schools.

Meehan, Cowley, Schumacher, Hauser, and Croom (2003) conducted a study addressing achievement gaps in high performing schools in Kentucky. Classroom observations were conducted in 213 classrooms in 18 schools. All schools were high achieving. However, 9 had minimum achievement gaps and 9 had larger socioeconomic and racial gaps. Meehan et al. reported that the findings from this study were descriptive and not causal. The findings also referenced the need for appropriate professional development opportunities for teachers; specifically, the use of research-based professional development programs to improve classroom management and

organizational skills or professional development to help teachers create classrooms that are welcoming and safe. The topics for professional development should reflect on the best practices in classrooms that are associated with minimal gaps in achievement.

Thompson and O'Quinn (2001) reviewed the research-based points designed to close the achievement gap in North Carolina by 2010. Three of the points addressed the need for experienced, well-prepared teachers for African American students, smaller class sizes in the early grades, and additional support and follow up for students and families (e.g., summer programs). The writer believes additional resources should support the points. Porter and Soper (2003) indicated that ultimately to close the achievement gaps in the schools and districts will require total reform that begins with a complete assessment of individual needs. This study will assess the existence of achievement gaps in Virginia middle schools.

Achievement in middle schools. Graham, Taylor, and Hudley (1998) conducted two studies exploring middle school achievement values. The first study examined 304 African American sixth, seventh, and eighth graders who completed nomination information and questionnaires. The nominations asked students to nominate other students that they admired, respected, and wanted to be alike. The responses on the nomination data reflected that the males and females preferred high-achieving girls and that African American males valued academic achievement less than African American girls. When educators understand the variables that help students succeed, appropriate instruction can be developed to help close the achievement gaps and help improve the relationships between the students and teachers. The second study conducted by Graham, Taylor, and Hudley targeted 401 African Americans, Latinos, and Whites enrolled in

grades 6 through 8. Again, the study examined value nominations. White boys and girls valued high achievers within their own ethnic groups. The authors concluded that there might be relationships between school performance and value nominations.

Cooney (1998) concluded the following:

Getting students ready to take a high-level English course and a solid algebra course taught to college preparatory standards is the best way to ensure that students will be ready for the challenges of high school and future learning (p. 4).

Picucci (2002) referred to the report, *Turning Points: Preparing American Youth for the 21st Century*, in which educators were charged to improve middle school education.

Picucci's data from the 1998 NAEP show that eighth graders scored below basic achievement levels in reading with 28%, in mathematics with 35%, and in science with 35%.

Academic achievement and minorities. Several studies focused research specifically on the academic performance of students of color. Fratt (2003) reported on the Houston Independent School district's program entitled Beating the Odds III Study. Fratt quoted Houston's Chief Academic Officer, Robert Stockwell who said, "There's a trap of thinking you need to do something secret for minority students. If you want them to do well, start with clear expectations and teach" (p. 2). In this school district, about 90% of African American and Hispanic 4th and 10th graders passed the reading and math tests. In 1994, the passing rate was 38%. This district is narrowing the achievement gap between minority and nonminority students.

Gutman, Sameroff, and Eccles (2002) studied 1,481 families of seventh-grade students in the state of Maryland. They reported that African American adolescents

experience multiple risks. The more risks African American adolescents experience, the worse their academic outcomes. Risk factors included but were not limited to maternal education, neighborhood poverty, and marital status.

There are opportunities to mitigate the consequences of risk factors. An illustration of this is teachers connecting with African American students by learning more about their culture and using culturally relevant examples, which helps students relate to the material or curriculum. It is evident that there are many brilliant Black students who have not connected with schools (Irvine, 1999). Ipka (2002) explored the difference in student performance between desegregated and resegregated schools in the Norfolk Public Schools and found that gaps in math and science existed in both situations.

Lloyd (2001) reported on his study related to science and math achievement of minority students. Lloyd examined the responsible parties for student success in math and science such as parents, teachers, students, and institutional factors and sought to find their relationship to student success. Some have speculated that former teachers, teachers with bad attitudes about students of color, the students, and parents were responsible for the lack of student success. The results indicated that primarily institutional racism and people with low expectations of students contribute to low levels of student success. It was very anecdotal and demonstrated that a myriad of factors affected the achievement of minority students.

There are several factors related to gaps in achievement that are not usually addressed. For example, Lee (2002) discussed per pupil expenditure and the drop-out rate. Lee noted the increase in per pupil expenditure by 60% from 1970 to 1986 and only

17% from 1986 to 1997. The slowdown of minority students' academic progress was aligned with the shift in per pupil expenditure between both timeframes. Lee also referenced the drop-out rate of minority students, which has been 1.5 to 2 times higher than Whites.

When Trent (1997) examined the St. Louis Public Schools fifth- and eighth-grade Stanford Achievement Test scores, the results suggested 7% of the reading test scores could be explained by race alone. When student background (i.e., age, sex, and SES) was included, 23% of the reading test scores could be explained by race and student background. Race accounted for 75% of the variance when math scores are examined; 20% of the math test scores could be explained with race and student background. It is evident that race has a significant effect on achievement in St. Louis schools (Trent).

Caldas and Bankston (1998) discussed two diametrically opposed views: segregation is an impediment to student achievement and segregation is beneficial to students. The researchers examined data of 42, 000 high school 10th graders. The test scores used were from the Louisiana graduation exit exam, which all students must pass before they are awarded a high school diploma. Seventy-one percent of the African American students were below the median whereas 66% of Whites scored above the median. Sixty-three percent of African Americans were in schools with more than 50% African American populations and only 14% of Whites attended schools that were majority African American. The authors stated, "Separate and unequal continues to describe quite well the educational situation of African American students in Louisiana" (p. 546). When *among* school differences are examined, race is a factor; however, when *within* school differences were examined, race was not as factor. SES was a factor. The

authors expressed concerns about high minority schools and low achievement scores.

Lee, Winfield, and Wilson (1991) reviewed NAEP data for eighth-grade African American students. The researchers contended that families of high-achieving African Americans were from a higher social class. Furthermore, higher achieving African Americans read more pages in school, did more homework, and performed better academically, according to recorded grades. The authors concluded, “A more disciplined environment; exposure to an enriched curriculum that includes frequent classes in science, art, and music; and a rigorous program of remediation in reading foster better school performance among African American students” (p. 82).

Various studies discuss African American males and academic performance. Noguera (2003) asserted that Black males are overrepresented in special education, and in schools, many Black males are seen as less intelligent with more behavior problems. Moreover, these students sometimes receive more severe discipline for school offenses. Noguera stated, “Generational differences, especially when compounded by differences in race and class, often make it difficult to communicate effectively with youth” (p. 453).

In spite of some of the stereotypes associated with African American or Black student achievement, Bergin and Cooks (2000) studied competition among 41 students in the Toledo EXCEL program and noted through interviews and grade analysis that many students of color were very competitive. The authors thought that teachers should help students understand the importance of learning as opposed to simply earning a grade.

Sojourner and Kushner (1997) reviewed the data of 1, 868 African American students and acknowledged that 70% of the students were classified as low SES and that SES was a consistent predictor of math and reading achievement. Their contention was

that although many of the students were not achieving high academically, they had high self-concepts. Based on these findings, the role of the educator is to connect the high self-concept with academic achievement. Chief Justice Warren (as cited by Alexander & Alexander, 1985) reminded us that feelings of inferiority impact student motivation.

Sanchez, Bledsoe, Sumabat, and Ye (2004) studied 51,949 Hispanic students and a control group of 46,546 non-Hispanic students. The instrument used to measure achievement was the Texas Assessment of Academic Skills in English and Spanish. The authors declared that Hispanic students scored the lowest when compared with other ethnic groups. Sanchez et al. (2004) recommended more intense reading at the elementary level for Hispanic students.

Some African American students do not fully benefit from schools for several reasons. Teachers may not always teach on the appropriate grade or curricula level and that places some students at a disadvantage. Hale (2004) advocated that staff should be knowledgeable of the backgrounds and needs of all students. In addition, she advocated that all students should be reading on grade level by the first grade and schools should provide support to African American families.

There continues to be speculation about the academic needs and performance or lack there of some students of color. Kuykendall (2004) attested that “many educators still respond to students who are different in predictable ways--they isolate them, ignore them, retain them, suspend them, expel them and in far too many instances, they fail to love them or teach them” (p. 14). The author concluded there are many strategies that can support student achievement: many of which require funding.

Students benefit from working collaboratively as is evident by Johnson’s (1993)

study of 715 sixth- and seventh-grade African American students. Johnson contended that cooperation was the preferred method for working in classrooms with African American students.

The literature involves diverse findings related to achievement and students of color. The researchers addressed several factors. For example, school factors are important; however, families are also critical to the success of students. Sampson (2002) discussed the importance of helping parents understand the significance of sending students to school prepared to learn.

Education, academic achievement, and SES. As educators address the funding needs of students, it is more productive to view schools and localities as “high-need versus resource-rich” (Truscott & Truscott, 2005, p. 123). Generally, children from these two areas achieve differently. Living in poverty or high-need areas has been a strong predictor of lower levels of achievement (Truscott & Truscott). These authors acknowledged that per pupil allocations are sometimes lower in areas with higher percentages of students in poverty.

A study conducted by Roscigno, Tomaskovic-Devey, and Crowley (2005) supported research that identifies positive relationships between family background (i.e., income and parental education) and student achievement. The review of data from the National Longitudinal Survey and Common Core of Data included random samples of 25 eighth-grade students in 1,000 public middle schools. Student data was collected in the 8th, 10th, and 12th grades. The results demonstrated that schools with a concentration of poor and non-White students exhibited lower levels of achievement. One of the author’s concluding statements referenced the focus on family and school variables as opposed to

place or location of families, which contribute significantly to student success.

White, Reynolds, Thomas, and Gitxlaff (1993) reexamined data of 30, 000 students in 22 districts. These authors defined SES according to eligibility for Chapter 1 and examined the relationship between SES and individual student performance as opposed to aggregate student performance. When data is explored using aggregated data, SES accounted for 72% of the variance in student achievement whereas SES accounted for less than 20% of the variance when individual student data is used. These authors concluded that beliefs that support the negative relationship between SES and student achievement are counter productive and inaccurate.

Baker, Keller – Wolf, and Wolf - Wendel (2000) examined the relationship between SES and eighth-grade reading and math scores for aggregate race groups. Overall, Whites and Asians had higher SES values and higher math and reading scores. These authors further examined ethnic groups to understand better the performances of specific ethnic groups. For example in the Asian /Pacific Island subgroup, Chinese students had an average lower SES and performed well on the reading and math assessments whereas Korean students have high SES and high scores. Analyses reflected that in the Hispanic group, Cuban students had higher SES and academic performance compared to the students in other Hispanic groups. The findings of this study suggested that readers and researchers must be conscious about information that provides aggregate racial classifications of students. It can be misleading.

Likewise, Rodriguez (1997) reviewed trends in student achievement in science related to SES and gender within ethnic groups. The data from the 1998 National Education Longitudinal Study reflected higher gains for males. An examination of

advanced placement data indicate that even though the number of African American females taking the test is small, the female students are passing advanced placement science tests at a higher percentage than African American males. Conversely, Schullo and Alperson (1998) noted when low SES students are examined, female students are more at risk for failure than males in terms of algebra performance.

Zady, Portes, DelCastillo, and Dunham (1998) studied students and parents working together on three academic tasks while being observed. When responses to the tasks were explored, parent literacy was a concern because some parents were not functioning at high levels of literacy, which delayed progress and comprehension of directions and assignments. As a result, the authors concluded that parental educational attainment and background experiences could support or mitigate student success.

Alspaugh (1996) studied reading and math achievement in 10 low SES schools and 10 high SES schools. The achievement gap for math was smaller than the gap in reading in low SES schools. The author concluded that when student achievement and behavior are considered, SES is more of a factor than race. Data derived from a study conducted by the Economic Policy Institute found that, as early as prekindergarten, there are differences in average cognitive scores between children in high and low SES groups.

As with many variables related to student achievement and achievement gaps, it is a challenge to attribute the causes of some of the results of student achievement. The data related to SES confirm the influence of SES on student achievement.

Math achievement. Byrnes (2003) stated,

Even when one controls background variables, White students are predicted to answer 4% more items correctly than Hispanic students (e.g., 50% vs. 46%

correct), and Hispanic students are predicted to answer 4% more items correctly than Black students (e.g., 46% vs. 42% correct) (p. 325).

This author also found that “minority students in a given school tend to perform worse than White students in the same school mainly because of differences in these background variables. Matching students along these variables essentially eliminates ethnic differences in performance” (p. 324).

Rech and Stevens (1996) studied 251 Black students from economically disadvantaged families. The students held negative beliefs about math. The researchers used 12 intact classes in inner-city schools and concluded that attitude toward math must be addressed when working with Black students and efforts should be made to help students experience success that might affect their attitudes. Although all students must understand the relevance of math in society, the researchers suggest that it is critical that Black students are shown the relevance of math. One recommendation discussed the need for staff development to help teachers better educate Black youth.

Despite research that shows minority youth have low-academic self-confidence and are discouraged by low achievement, Signer, Beasley, and Bauer (1996) found that females who were excelling in school were least likely to request advanced math and lower achieving students were more likely to request advanced math. In addition, African American students in low-level math classes anticipated attending college.

Lubienski (2001) suggested that the math courses students take are more related to SES than race. This author suggested that students from low SES and African American students need more support in terms of complex problem-solving skills.

Berry (2003) posited on the learning preference of African American students and

referenced the relational style of learning, which among other things focuses on people, creativity, and divergent thinking. Berry believed that African American students connected to the “larger whole” (p. 246). The author concluded that when teachers understand cultural messages students can experience academic success.

Teachers. It is difficult to attract and keep teachers in more challenging school districts (Donlevy, 2002; Foster, 2004) for a variety of reasons ranging from student composition and behavior to staff compensation. Grissmer and Kirby (1997) maintained that reform of teacher compensation is needed to improve teacher quality.

Darling-Hammond analyzed data from 65,000 teachers, 13,000 principals, and 5,600 school districts. Data was retrieved from questionnaires and other information submitted into a database. Among other findings, Darling-Hammond discussed the positive relationship between teachers with Masters Degrees and educational outcomes. Another finding supported the relationship between per pupil spending and student outcomes in fourth-grade math in 1990 and 1996.

McCoy (2005) studied 107 eighth-grade algebra students in a North Carolina public school district. The researcher noted that at three of the schools, the teachers were veterans; however, at the fourth school, the teachers did not possess the years of experience or training. The researcher reported that teachers who are not trained can negatively impact student achievement.

Fetler (1999) studied California’s high schools and math results. He found a teacher’s years in service were positively related to test results. The researcher acknowledged the shortage of math teachers in California and the impact this has on student achievement. Fetler found schools with larger numbers of teachers on emergency

permits witnessed lower achieving students.

Standards of Learning

In Virginia, the Standards of Learning (SOL) describe student expectations and learning in kindergarten through Grade 12. The Standards have been in existence since 1995. The Virginia Standards of Learning tests or assessments which were created in 1998, measure student performance and level of preparedness as they relate to mastery of the Standards. Students are expected to master at least 70% of the material related to these standards.

The eighth-grade math standards include computation, measurement, geometry, probability, data analysis, statistics and algebra. Some eighth-grade students may also pursue advanced math courses. As students prepare to take the math SOL assessments, they are invited to become problem solvers and to develop the ability to apply mathematical concepts to practical situations (Johnson & Johnson, 2000). The ultimate goal is to provide students with the tools to help them succeed in life whether or not they choose to pursue higher education endeavors.

The eighth-grade English standards encourage students to delve into literature, writing, and research. The English standards help students to develop an appreciation for literature and to be able to interpret various forms of literature. Students learn how to write effectively and to identify correct grammatical conventions (Johnson & Johnson, 2000). Ultimately students learn to improve verbal and written communication skills.

The scale score range for SOL scores is 0 – 600. In order for a student to pass the math and English SOL assessments and to be considered proficient, he or she must score between the 400 – 499 range; if a student scores above a 500, the student is considered

advanced. A score below 400 is considered failing (Johnson & Johnson, 2000).

Different forms of standardized testing do not measure or address teacher efficacy or student intelligence (Kornhaber, 2004). Inevitably, there will be students who for a variety of reasons, will not perform well on standardized tests. For this study, achievement gaps in Virginia middle schools as they relate to the results of the math and English SOL assessments will be reviewed. Certainly, there are other gaps in achievement in Virginia middle schools that are not measured by SOL assessments and therefore not the focus of this study.

Summary

This section addressed academic achievement relative to different variables. The concept of achievement gaps is one that commands vociferous responses from many stakeholders. This concept is indeed a critical issue because the group or groups deemed as the group or groups not achieving as high may encounter other difficulty outside of the school setting. Many students who do not perform at their highest potential and capacity in school perform similarly in life (Portes, 2005). Portes also referred to these students as students placed at risk. Understanding achievement gaps is a current educational concern on various levels. The literature review initially focused on assorted views about why gaps exist and possible strategies that could be employed to close them. There are many reasons for academic achievement gaps and even more recommendations about how they should be closed. This study will review the state of Virginia's student achievement gaps and the relationships, if any, to school funding and the fiscal identifiers of localities.

Middle school years are critical periods during the development of students. It is during this period that students are encouraged or discouraged and motivated to continue

or surrender to failure. The research suggests that as students become older, the influence of the peer groups increases and the influence of parents decreases (Kunjufu, 1988). The research related to minority students presents a picture that the students can achieve at high levels; however, they must be given many opportunities, support, and resources. Furthermore school staffs must understand the culture of student populations in order to provide appropriate differentiated instruction (Tomlinson, 2003).

Closing achievement gaps in schools will prevent the repetition of historical faux pas that created inequitable learning environments. Students who are inadequately prepared during school become adults who work with the next generation and also prepare them inadequately (Portes, 2005). Our economy now dictates that high school students graduate and earn some postsecondary education (Roderick, 2003).

Funding and Achievement

School funding. The Maryland Department of Education (2002) created a visionary panel to examine Maryland's Public Schools and share recommendations for improvement. One of the recommendations from the panel addressed, "full funding of existing reform plans designed to solve our worst educational problems" (p. 14). They concluded, "Implementing the recommendations in this report will require a considerable amount of money" (p. 15). This comment mirrors the state of events in school divisions around the United States.

Carey (2002b) reported on programs that addressed funding based on the needs of low-income districts during the 2001-2002 school year. Thirty-eight states allocated funds to address low-income districts. Some states adjusted their basic state aid formulas to accommodate the needs of districts in need of additional funds and other state agencies

created “categorical” (p. 1) grants to support poorer students. Many state administrators used student eligibility for free and reduced-price meals, poverty data calculated by the census bureau, households receiving temporary assistance for needy families benefits, or the food stamp program to determine numbers of students in need. The majority of state administrators used the free and reduced-price meals designation. Carey concluded that many understand the importance of directing additional funds to low-income students; however, programs designed to meet the needs of low-income students must be improved.

Farkas (2003) said,

Housing segregation by income translates into very different possibilities for per pupil expenditures across school districts. This has led to proposals in many states for Robin Hood laws requiring wealthier communities to divert some of their school funding to less wealthy communities (p. 1143).

Farkas examined racial discrepancies in education and suggested that implementing programs to address these discrepancies require more research and financial support.

When school funding is discussed, very rarely is there an opportunity to explore the manner in which the problem existed historically. When some school districts suffer financially, it is critical to examine the source of the problems. An article by Jung (2003) discussed Alabama’s midyear budget shortfalls, which affected educational funding between 1930 and 2001. Alabama relied heavily on state funding, which is not traditional; most states rely on local funding for schools. Jung concluded that in order for Alabama’s public schools to be funded adequately, the state must refocus the dependence on sales and income taxes to local property taxes. Alabama needs other sources to fund

schools.

Miles, Odden, Femanich, and Archibald (2004) conducted a study to explore professional development expenditures in five large urban districts ranging in size from 47,000-85,000 students. These authors stated that the amount spent on professional development was only 3.6% of the district's total operating budget. The authors reported that district administrators relied heavily on outside funding and commented that because funding for professional development is external, it gives the appearance that professional development is extra and not an integral part of teacher development.

Reynolds (2000) shared that there are differences between dollars spent per pupil in high-poverty districts and dollars spent in low-poverty districts. Reynolds observed that students in high-poverty districts need additional support and resources that additional funding could provide. The author referred to programs that close achievement gaps. For instance, one program at the Department of Defense Education Agency schools educates low-income and minority students and helps them achieve at comparably higher rates than their counterparts in public schools do. Darling-Hammond (2004) reiterated the sentiments expressed by Reynolds that wealthier school divisions spend at least 10 times more than the poorest schools.

When academic performance is reviewed, variables outside the control of school officials that impact performance should be examined (Duncombe & Yinger, 1998). For instance, Stein (1979) referred to the fiscal capacities of some communities that could not support full educational services for all students, especially students who might need additional resources. Fiscal capacities are determined by fiscal identifiers such as unemployment rate, per capita income, or median family income, which inevitably may

relate to the percentage of students in need. According to Owings and Kaplan (2006), fiscal capacity is not easily computed; however, it provides a better indication of the locality's ability to fund schools. This study will examine selected funding data related to localities as well as school divisions.

School funding and student achievement. Hanushek and Somers (1999), in their discussion of funding inequities, found mean differences across states that amount to inequities in resources for students. Hanushek and Somers also said, "State differences in spending indicate no relationship with student performance on math and reading tests" (p. 31). In contrast, when intrastate spending is examined, only Black females show positive relationships between school resources and labor market outcomes.

Killeen, Monk, and Plecki (2002) analyzed the 1992, 1995, and 1998 data related to money spent on professional development. The authors stated that districts allocated about 3% of their total general expenditures to professional development. Some schools should devote more time and funds to staff development for teachers. Larger and urban school districts spent more money on instructional staff. During the 3 years examined, spending remained about the same.

Luo (2004) examined the impact of different funding structures on student achievement. The study included 10 states and results indicated that full-state funding outperformed other methods, such as districts funded primarily by local funding.

In an examination of the relationship between instructional expenditures and student achievement in 128 school systems in Alabama, Lockwood and McLean (1993) explored the instructional expenditures for materials and supplies. The authors believed that materials and supplies were a good measure of educational funding. They noted that

instructional expenditures accounted for between 7% and 9% of the achievement variance on the Stanford Achievement Tests in Grades 4 and 8 when a curvilinear relationship is assumed. Ferguson and Ladd (1996) also studied schools in Alabama's 127 public school districts and found relationships between teacher test scores, teacher education, class size, and student achievement. These authors reported that, overall, African American children, especially boys in urban areas, demonstrated smaller gains than Whites did between the third and fourth grade. They recommended additional resources to support schools and communities.

In a report on funding in South Carolina (Hurley & Hopkins, n.d.), all districts except one where students had low scores were also known for low spending. High performing districts are spending above the target amounts. Based on the data in this report, poor student performance is related to lack of funding in many districts. There is a correlation between poverty and test results. One of the conclusions addressed the uncertainty about the amount of additional funding that low-income students would need to be more successful; however, it is evident that there is a need for additional funding.

In a related area of study, Wainer (1993) discussed the effect of finance on education by examining the relationship between per pupil expenditure and state rankings on SAT scores. Relationships were not identified between per pupil expenditure and SAT scores. Some school districts spent more on pupils and ranked low on SAT scores; however, for every \$1,000 spent, a state's NAEP ranking improved by two places.

Munoz et al. (1999) conducted a study on funding and student performance in an urban Kentucky county. Data revealed per pupil expenditures did not account for student achievement; however, SES, the percentage of Black students, and the economic status of

the area surrounding the school were better predictors of student success. These three variables accounted for 82% of the variability in the score. The authors suggested that researchers and policymakers should address non-school factors (e.g., school readiness and home resources) that contribute to student achievement. These authors concluded that “educational reforms that claim to be successful should continue focusing efforts on non-school variables that affect student achievement. Equity in funding is a useful but not sufficient mechanism for obtaining higher levels of student achievement” (p. 28).

Reyes (2003) conducted a school productivity study that involved an urban middle school with high levels of poverty and high numbers of Hispanic students. Student data was retrieved from the Texas Assessment of Academic Skills. The data reflected no significant difference in math between teachers of varied levels of preparation. When reading is examined, students taught by long-term substitutes scored higher than students taught by teacher with reading certification did. The author proposed that teacher education programs are not addressing the complexities of an urban campus. One of the principals theorized that long-term substitutes hired to teach reading were versed in bilingual education and could help students make meaningful connections to the material being taught. One teacher interviewed shared that her reading preparatory program did not prepare her adequately to address the needs of Hispanic students in an urban environment. The author suggested that in high-poverty middle schools intended and actual use of resources might need to be reexamined.

School funding and legal perspectives. Ciotti (1998) discussed the Kansas City, Missouri case in which a federal judge ordered the school district to design an educational plan that would improve education for Black students and foster

desegregation. He recommended designing a plan without consideration of cost that local and state taxpayers would fund. The school district spent an overwhelming amount of money. Per pupil spending was almost \$11,700. Ciotti concluded that the Kansas City plan was unsuccessful. Student achievement did not improve. The achievement gap between Black and White students continued to exist. The author concluded that the only benefits to this plan were the modern and improved facilities and equipment.

Two concepts in school funding cases are adequacy and equity. Heise (2002) referred to educational spending in New York City. The state authorities claimed that spending was adequate because students were receiving funds that met their basic needs. The court believed that the teaching force, class sizes, curriculum, and infrastructure were not conducive to or adequate for student achievement. In North Carolina, a similar case discussed the gap in achievement between students who were at risk and those who were not at risk. This court suggested that more funds would close the gap (Heise).

Heise (2002) defined funding equity as the “pending gaps” (p. 648) between and among districts. Funding equity compares the adequacy of funding and the quality of education among districts. In fact, Heise argued that school enrollment and residential patterns are related. Schools reflect the neighborhoods in which they are located; however, neighborhoods are often segregated by income and race.

Stiefel, Schwartz, Berne, and Chellman (2005) discussed New York’s school finance system and its impact on students in New York City. Their contention was that courts now use regression analyses to “determine whether the variables of interest--race, age, or gender--is related to the key outcome (employment, for example) controlling for other legitimate or possible influences on the outcome” (p. 157). Specifically, in

Campaign for Fiscal Equity, Inc. v. State of New York (2001) it was decided that the state violated the education clause, which reads as follows: “The legislature shall provide for the maintenance and support of a system of free common schools, wherein all of the children of this state may be educated” (p. 170). The court dismissed the argument that there was a relationship between school funding and race; however, the authors found that there was a negative relationship between state aid and non-White students. They concluded and expressed concern that New York was allocating state aid in a manner that would place students of color at a disadvantage.

Summary

The literature which examines the relationship between funding and achievement presents conflicting findings. It is evident that students who are classified as low-income or are eligible to receive free and reduced – priced lunches require additional resources to succeed in schools. The allocation of additional funds does not always translate to increased academic achievement. Farkas (2003) proposed additional research and financial support to enhance student achievement. The research component suggests an assessment and identification of the needs of specific localities (Porter and Soper, 2003), followed by the deliberate and accurate implementation of policies and programs in support of student achievement. The implementation of policies and programs may require additional funding; however, the research and data would effectively direct the allocation of funds. Another area of dissent is the impact of per pupil expenditure on student achievement, which will comprise one area of focus in this study.

At times, the courts have presented decisions that support relationships between funding and student achievement. Today, cases continue to challenge the constitutionality

of school funding with relation to gaps in student achievement and resources.

Summary of Literature Review

Today there is a need to stay abreast of educational issues related to achievement gaps especially at the middle school level. Student achievement for all subgroups is a critical issue that demands the resources and attention of many stakeholders. The review of literature for this study began with a discussion of the historical perspectives of inequitable learning conditions for students amidst inequitable conditions for all people of color.

Although *Plessy v. Ferguson* (1896) was based on a Louisiana statute related to railroads and separate but equal accommodations for passengers (Klarman, 2004), the culture of separate but equal handicapped people of color in other arenas. Cases challenging the constitutionality of segregation did not reach the Supreme Court until 1951-1952 (Klarman). The *Brown v. Board of Education of Topeka, Kansas* (1954) decision elicited mixed emotions both for the Supreme Court justices (Klarman) and the nation at large. The justices avoided school desegregation cases as much as possible after the *Brown v. Board of Education of Topeka, Kansas* decision until the Little Rock case, *Cooper v. Aaron* (1958). This case referenced the Little Rock Nine which discussed the journey of nine students who had to be accompanied by national guardsmen to attend school. Locally, there was a comparable case in Norfolk, Virginia in *Leola Pearl Beckett v. The School Board of the City of Norfolk* (1956). Seventeen students known as the Norfolk Seventeen endured formidable conditions as they attempted to attend school and begin integrating the public schools in Norfolk. Today, the No Child Left Behind Act addresses equitable conditions for subgroups.

The literature related to academic achievement addressed several variables that will be examined during the study. Findings from studies have shown that there are several factors that contribute to student achievement. This study will focus on the gaps that exist and the relationship, if any, to variables related to school and locality indicators of wealth and funding. Many of the cases referenced above supported the need for additional funding to help narrow the gaps and promote student achievement.

CHAPTER III

METHODOLOGY

Introduction

This study was designed to examine the relationships between middle school achievement gaps and variables related to SES and ethnicity, selected school expenditures, and fiscal identifiers of localities. Many studies have investigated relationships between district expenditures and student achievement; however, few have investigated district expenditures and fiscal identifiers as they relate to gaps in academic achievement. As early as James (1972) the argument was made that students from middle-class and poor families have different educational needs from students from wealthy families. Similarly, Levin (1973) commented that students from economically disadvantaged backgrounds require more resources and financial investment to narrow the gap.

Chapter 3 will provide an explanation of the design of the study, sample selection, data collection procedures, and statistical analysis to be used to evaluate the study. This study was based on a nonexperimental, quantitative research design that evaluated the relationships between funding variables (i.e., district and localities) and gaps in academic achievement. The following research questions were addressed by this study:

1. What are the patterns of achievement gaps?
2. Which factors predicted gaps between majority and minority (i.e., White and Black and White and Latino) student achievement in English in Virginia middle schools during the 2005 – 2006 school year?
3. Which factors predicted gaps between majority and minority (i.e., White and

Black and White and Latino) student achievement in math in Virginia middle schools during the 2005 – 2006 school year?

4. Which factors predicted gaps in English achievement between students classified as economically advantaged and those classified as economically disadvantaged in Virginia middle schools during the 2005 – 2006 school year?
5. Which factors predicted gaps in math achievement between students classified as economically advantaged and those classified as economically disadvantaged in Virginia middle schools during the 2005 – 2006 school year?

According to federal definitions, a student is economically disadvantaged if he or she meets the following criteria: 1. is eligible for Free or Reduced priced meals, 2. receives Temporary Assistance for Needy Families (TANF) resources, or 3. is eligible for Medicaid.

Subjects, Sample Characteristics, and Size

The Census Bureau estimated the 2005 population of the Commonwealth of Virginia as 7,567,465. Data indicated that the median family income was \$61,309, which was approximately \$7,000 over the United States average. The data demonstrated that only 7.2% of the families lived below the poverty level in Virginia compared to the 10.1% throughout the United States. In addition, 25.0% of the population was under the age of 18 and the leading employment industries are education, health, and social services.

The data related to the 310 middle schools in Virginia during the 2005-2006 school year were reviewed and analyzed for this study. This included all public middle schools that reported SOL data for the selected subgroups to the Virginia Department of

Education for the 2005-2006 school year. In addition, the data related to the diverse school divisions and localities in Virginia was reviewed. The study identified variables that consistently predict achievement or gaps in achievement.

Measures

The achievement gaps in math and English were reviewed between the (a) majority students, (b) minority students (i.e., Black and Latino), (c) economically disadvantaged students, and (d) advantaged students in Virginia middle schools.

Achievement gaps were calculated by reviewing the data retrieved from each middle school's Report Card which was compiled by the Virginia Department of Education. For each middle school, the percentage of students passing the Standards of Learning (SOL) assessments in English and in math for the following subgroups: White, Black, Latino and economically advantaged and economically disadvantaged. In 1995, the SOL assessments were established and designed to measure the academic achievement of the Virginia Public Schools.

The economic achievement gap measured the difference between the percentage of students who passed and were classified as economically disadvantaged and the percentage of students who passed and were classified as economically advantaged in math and English. Similarly, the ethnic achievement gap measured the difference between the percentage of non-minority students who passed math and English SOL and minority (e.g., Black and Latino) students who passed math and English SOL.

Research Design

The design of this study assessed the relationships between the funding characteristics of middle school programs in Virginia and student achievement gaps. The study was limited to the public middle schools in Virginia.

This regression analysis explained the relationship between selected variables indicative of public school expenditures, the fiscal identifiers of the localities, and achievement gaps. The descriptive statistics, including but not limited to range, mean and standard deviation were reported for all variables.

Data Gathering

Data for this study was obtained from each Virginia school division's website, the Virginia Department of Education and the FFIEC (Federal Financial Institutions Examination Council) Geocoding System. Tract definitions used in the geocoding system are based on the 2000 census data. More specifically, for this study, the tract definitions with demographics from the 2000 census in conjunction with the address of the middle school provided an estimated calculation of the fiscal identifiers of the localities. The 2005-2006 information found in the census tract was estimated from the 2000 census data. The sixteen variables and descriptors below are the independent variables. Although the model includes the sixteen variables, the variables could be classified into three groups: teachers, students and localities. The data relevant to the teachers and students were obtained from the Virginia Department of Education's state reports, individual divisions, and district websites. Each middle school's report card was reviewed to acquire the relevant data. The following data related to teachers will be collected:

1. Student teacher ratios (stratio). This information provided an indication of the average ratios at each school. The ratio does not address class size independently since student teacher ratios can be skewed when all teachers as well as itinerants are included in the equation. The student teacher ratio is generated by dividing the number of students by all educators, including administrators, counselors, special teachers, etc., and other adults who serve the site.

2. Average number of years of teacher experience (teaexp). This information provided an indication of the number of years of experience at the schools. There is research that suggest schools with high minority percentages and high poverty have teachers with fewer years of experience.

3. Percentage of teachers with advanced degrees (teadeg). This information identified the level of knowledge and expertise of the teachers throughout the school divisions. Teachers with advanced degrees will provide additional resources in support of student achievement. Fetler (1999) confirmed in his study that teacher experience and preparation are significantly related to achievement.

4. Percentage of core academic classes taught by teachers who are considered highly qualified (clahqua). The teachers who met the federal definition of highly qualified teachers according to the No Child Left Behind Act literature were identified. No Child Left Behind Act of 2001 stated that highly qualified teachers would better support the instructional programs at schools.

The following data related to students was collected:

1. Number of students (numstu). The enrollment numbers for each middle school was reported. The Virginia Department of Education collected statistics on the number of

students enrolled in public schools on September 30th. Research conducted by Meier (1996) supported the relationship between small school size and an environment more conducive to student achievement.

2. Per pupil expenditure (pupexp). Student expenditure varied from division to division, therefore, examining this variable supported the exploration of the relationships between the dollar amount spent per pupil and student achievement.

3. Percentage of students who are eligible for free or reduced-price meals at each school (fredlun). The No Child Left Behind Act literature discussed economically disadvantaged students and the need to support higher levels of academic achievement for the aforementioned students.

4. Percentage of minority students at each school (stumin). The No Child Left Behind Act literature discusses the achievement of students identified as minorities. One of the goals is to narrow the gap in achievement between minority and non-minority students.

The following data related to the fiscal identifiers of the localities was collected:

1. Median family income (medfinc). The median family income referenced the wealth of the locality relative to the capacity of the residents. Rothstein (2001b) recommended increasing the income for modest income families as an opportunity to help narrow the achievement gap.

2. Number of residents (res). Demographic information identified the number of taxpayers who contributed to the fiscal capacity of the locality.

3. Percentage of residents who live at or below poverty level (respov). This information addressed the ability of the residents to support the financial needs of the

locality. Rothstein (2001b) maintained that housing subsidies to low-income families might have an effect on achievement by reducing student mobility.

4. Percentage of residents identified as minorities (resmin). Data summarized and supported the research that localities with a higher percentage of minorities have less capacity to support the needs of the school division. Patterson, Kupersmidt, and Vaden (1990) conducted a study with 868 children in Grades 2 through 4 and found that Black children were twice as likely as White children to come from low income homes.

5. Percentage (perown) and number of units owner occupied (numown) and percentage (perren) and number of units renter occupied (numren). The data differentiated between residents who pay residential property taxes and residents who do not directly pay property taxes.

The following data represented the gaps in achievement or dependent variables: (a) the difference in achievement between economically advantaged and disadvantaged students in math; (b) the difference in achievement between economically advantaged and disadvantaged students in English; (c) the difference in achievement between majority (i.e., White) and minority (i.e., Black and Latino) students in math; and (d) the difference in achievement between majority (i.e., White) and minority (i.e., Black and Latino) students in English.

Data Analysis

Multiple regression analyses were conducted to examine the relationships between middle school achievement gaps and funding variables related to school districts and localities. The analyses were conducted using all the variables as one model. Six multiple regression analyses were conducted with measures of school funding for each

dependent variable. The achievement gaps were calculated by reviewing the data retrieved from each middle school's Report Card which was compiled by the Virginia Department of Education. For each middle school, the percentage of students passing the Standards of Learning (SOL) assessments in English and in math for the following student subgroups were reviewed: White, Black, Latino and economically advantaged and economically disadvantaged. The six dependent variables and the corresponding descriptors are as follows:

1. The difference or gap between the percentage of white students who passed and the percentage of Black students who passed English SOL assessments at each middle school identified (gwbe).
2. The difference or gap between the percentage of white students who passed and the percentage of Black students who passed math SOL assessments at each middle school identified (gwbm).
3. The difference or gap between the percentage of white students who passed and the percentage of Latino students who passed English SOL assessments at each middle school identified (gwle).
4. The difference or gap between the percentage of white students who passed and the percentage of Latino students who passed math SOL assessments at each middle school identified (gwlm).
5. The difference or gap between the percentage of students classified as economically advantaged who passed and the percentage of students classified as economically disadvantaged who passed English SOL assessments at each middle school identified (gecoe).

6. The difference or gap between the percentage of students classified as economically advantaged who passed and the percentage of students classified as economically disadvantaged who passed math SOL assessments at each middle school identified (gecom).

The variables related to wealth and funding are the independent variables and the gaps in achievement are the dependent variables. In order to determine if significant relationships exist, it was determined that the following statistics would be reported: R^2 or *R squared* which is an indication of the strength of the relationship between the predictor and criterion variables, F and the associated p value which denote the overall strength of the model, t and p values which indicate the impact of each predictor variable on the criterion variable, and the semipartial or part correlation, which when squared, represents the percentage of variance in the criterion variable that can be attributed to the predictor variable when the other variables are controlled (Green & Salkind, 2005). The alpha level for statistical significance in this study was $p = .05$. Variables were considered significant when $p < .05$. Multiple regressions were accomplished using the Statistical Package for the Social Sciences (SPSS) software.

Summary

This non-experimental, quantitative research design study examined the relationships between selected variables (i.e., district and localities) and gaps in academic achievement. The variables represented community wealth and school related variables that were indicators of wealth and funding. The gaps in academic achievement were indicative of the difference in percentage of students passing the Standards of Learning

(SOL) assessments in English and in math between student subgroups for each middle school in Virginia that met the criteria for the study.

Chapter IV

RESULTS OF THE STUDY

Introduction

This study examined the relationships between selected school district variables and local fiscal identifiers and student achievement gaps using data from Virginia public middle schools. During the 2005 – 2006 school year, there were 310 middle schools in Virginia that were configured in the typical 6 – 8 grade, 6 – 7 grade and 7 – 8 grade structure. Configurations that differed from the established criteria, for example, 5 – 8 grade or 6 – 9 grade design, were not included in the analyses.

School district variables related to students and teachers, including variables such as percentage of teachers with advanced degrees at the school and percentage of students who received free or reduced priced lunches during the 2005 – 2006 school year, were examined. Variables related to fiscal identifiers of the localities, including, median family income were also examined. Achievement gaps were calculated by reviewing the data retrieved from each middle school's Report Card which was compiled by the Virginia Department of Education. For each middle school, the researcher reviewed the percentage of students passing the Standards of Learning (SOL) assessments in English and in math for the following student subgroups: White, Black, Latino and economically advantaged and economically disadvantaged. The economic achievement gap measured the difference or gap between 1) the percentage of students who passed English and were not eligible to receive free and reduced priced lunches and 2) the percentage of students who passed English and were eligible to receive free and reduced priced lunches. Similarly, the economic achievement gap was calculated for math achievement. The

ethnic or racial achievement gap measured the difference or gap between 1) the percentage of white students who passed English and 2) the percentage of Black students who passed English. In addition, the ethnic or racial achievement gap measured the difference or gap between 1) the percentage of white students who passed English and 2) the percentage of Latino students who passed English as determined by the SOL assessments for the 2005 – 2006 school year. Achievement gaps related to ethnicity and race were calculated for math.

Data for this study were acquired from the Virginia Department of Education and the FFIEC (Federal Financial Institutions Examination Council) Geocoding System. The tract definitions with demographics from the 2000 census in conjunction with the address of each Virginia middle school provided an estimated calculation of the fiscal identifiers of the localities. The study responded to the following questions:

1. What are the patterns of achievement gaps?
2. Which factors predicted gaps between majority and minority (i.e., White and Black and White and Latino) student achievement in English in Virginia middle schools during the 2005 – 2006 school year?
3. Which factors predicted gaps between majority and minority (i.e., White and Black and White and Latino) student achievement in math in Virginia middle schools during the 2005 – 2006 school year?
4. Which factors predicted gaps in English achievement between students classified as economically advantaged and those classified as economically disadvantaged in Virginia middle schools during the 2005 – 2006 school year?
5. Which factors predicted gaps in math achievement between students classified

as economically advantaged and those classified as economically disadvantaged in Virginia middle schools during the 2005 – 2006 school year?

The first question was answered using descriptive statistics. The second, third, fourth and fifth questions were answered using descriptive statistics and multiple regression analyses for each dependent variable. Multiple regression is a multivariate technique used to determine relationships between one dependent variable and two or more predictor-independent variables.

This chapter is organized into four sections. The next section provides descriptive data related to the independent and dependent variables. The third section discusses the relationships between all independent variables and each dependent variable, which will provide responses to research questions 2, 3, 4 and 5. The summary follows.

Descriptive Statistics for Dependent Variables

The dependent variables considered for this study are measures of gaps in academic achievement in Virginia middle schools. The six dependent variables and the corresponding descriptors are as follows:

1. The difference or gap between the percentage of white students who passed and the percentage of Black students who passed English SOL assessments at each middle school identified (gwbe).
2. The difference or gap between the percentage of white students who passed and the percentage of Black students who passed math SOL assessments at each middle school identified (gwbm).
3. The difference or gap between the percentage of white students who passed and the percentage of latino students who passed English SOL assessments at

- each middle school identified (gwle).
4. The difference or gap between the percentage of white students who passed and the percentage of Latino students who passed math SOL assessments at each middle school identified (gwlm).
 5. The difference or gap between the percentage of students classified as economically advantaged who passed and the percentage of students classified as economically disadvantaged who passed English SOL assessments at each middle school identified (gecoe).
 6. The difference or gap between the percentage of students classified as economically advantaged who passed and the percentage of students classified as economically disadvantaged who passed math SOL assessments at each middle school identified (gecom).

Question #1 – What are the patterns of achievement gaps?

Table 1 displays the descriptive statistics for each dependent variable for Virginia middle schools during the 2005 – 2006 school year.

Table 1

Achievement Gaps Between Subgroups in English and Mathematics,
Virginia Middle Schools 2005-2006

Subgroup gap	<i>N</i>	<i>M</i>	<i>Min.</i>	<i>Max.</i>
White/Black English	280	15.53	-84	69
White/Black math	270	22.46	-50	53
White/Latino English	218	15.13	-28	49
White/Latino math	205	18.05	-44	72
Economic English	306	16.91	-30	86
Economic math	306	23.03	-53	64

Note. Min. = minimum, Max. = maximum, Economic English = economically advantaged/disadvantaged English, Economic math = economically advantaged/disadvantaged math.

For this study, the criteria to determine critical gaps will be whether or not the difference in percentage points of SOL student achievement exceeds 11 percentage points, which is the average standard deviation for the 6 dependent variables or gaps. Collectively, the majority (> 50%) of schools had gaps that were 12 percentage points or higher.

During the 2005 – 2006 school year, 280 middle schools in Virginia reported data that reflected gaps between white students and black students in English. The gaps ranged from -84 to 69 percentage points with a mean gap of 15.53 percentage points. Figure 4-1 shows the range of gaps. The highest gaps in achievement of 11, 14 and 15 points were each associated with 16 schools. The data reported that 32.9% of schools had gaps of 11 percentage points or less.

There were 270 middle schools in Virginia that reported data indicating gaps

between White students and Black students in math. The gaps ranged from -50 to 53 percentage points with a mean gap of 22.46 percentage points. Fifteen schools had gaps of 19 percentage points and thirteen schools had gaps of 26 percentage points. The data reported that 11.1% of schools had gaps of 11 percentage points or less.

There were 218 middle schools in Virginia that reported data indicating gaps between white students and latino students in English. The gaps ranged from -28 to 49 percentage points with a mean gap of 15.13 percentage points. There were 9 schools with gaps of 1 point and 9 schools with 14 points. In addition, 38.1% of the schools had gaps of 11 percentage points or less.

There were 205 middle schools in Virginia that reported data indicative of gaps between white students and latino students in math. The gaps ranged from -44 to 72 percentage points with a mean gap of 18.05 percentage points. There were 11 schools with gaps of 21 percentage points and 10 schools with gaps of 8 percentage points. Furthermore, 34.1% of schools had gaps of 11 percentage points or less.

Gaps between students classified as economically advantaged and economically disadvantaged in English were manifest in 306 middle schools in Virginia. The gaps ranged from -30 to 86 percentage points with a mean gap of 16.91 percentage points. There were 24 schools with gaps of 13 percentage points and 20 schools with gaps of 22 percentage points. Equally important, 22.9% of schools had gaps of 11 percentage points or less.

Gaps between students classified as economically advantaged and economically disadvantaged in math were manifest in 306 middle schools in Virginia. The gaps ranged from -53 to 64 percentage points with a mean gap of 23.03 percentage points. Figure 4-6

shows the range of gaps and the mode for each gap. The highest gaps in achievement of 18, 22 and 27 percentage points were each associated with 17 schools. Overall, 8.8% of schools had gaps of 11 percentage points or less.

The gaps in achievement between white and latino students in English reflected the smallest range of 77 percentage points, whereas, the gap between White and Black students in English displayed the largest range of 153. The largest gap in achievement of 86 percentage points was evident in English between students classified as economically advantaged versus economically disadvantaged.

Table 2 presents the gaps studied and the percentage of schools that displayed gaps of 11 percentage points or less. For gaps in achievement between White and Black students in math, only 11.1% of the schools had gaps of 11 percentage points or less. Similarly, for gaps in achievement between students classified as economically advantaged and economically disadvantaged in math, only 8.8% of the schools had gaps of 11 percentage points or less whereas 38.1% of schools had gaps of 11 percentage points or less when the gap between White and latino students in English was examined.

Table 2

Percentage of Schools With Gaps of 11 Percentage Points or Less,
Virginia Middle Schools 2005-2006

Subgroup gap	% of schools with 11 points or less
White/Black English	32.9
White/Black math	11.1
White/Latino English	38.1
White/Latino math	34.1
Economically advantaged/disadvantaged English	22.9
Economically advantaged/disadvantaged math	8.80

Note. An acceptable measurement for this study is an achievement gap of 11 percentage points or less.

Descriptive Statistics for Independent Variables

The following descriptors were used for the independent variables: (1) median family income (medfinc), (2) number of residents (res), (3) percentage of residents below poverty line (respov), (4) number of residents minority (resmin), (5) number of homeowners (numown), (6) percentage of homeowners (perown), (7) number of renters (numren), (8) percentage of renters (perren), (9) student teacher ratio (stratio), (10) average years of teacher experience (teaexp), (11) percentage of teachers with advanced degrees (teadeg), (12) percentage of classes taught by highly qualified teachers (clahqua), (13) number of students (numstu), (14) per pupil expenditure (pupexp), (15) percentage of students eligible for free and reduced priced lunches (fredlun) and (16) percentage of minority students (stumin). Refer to chapter 3 for complete definitions of all variables and abbreviations.

Table 3

Descriptive Statistics for Independent Variables, Virginia Middle Schools 2005-2006

Independent variable	<i>N</i>	<i>M</i>	Min.	Max.
Median income	310	\$67,644	\$10,768	\$184,674
Number of residents	310	5,643.90	666	15,190
Percentage of residents below poverty	310	9.8	0.0	63.5
Percentage of residents who are minorities	310	29.15	1.1	99.65
Number of homeowners	310	1,522.44	0	3,872
Percentage of owners	310	65.25	0.0	99.37
Number of renters	310	588.61	5	2,855
Percentage of renters	310	27.17	.45	100
Student teacher ratio	305	11.63:1	3.59	15.28
Average years of teacher experience	310	12.18	6	20
Percentage of teachers with advanced degrees	310	45.48	17	70
Percentage of classes taught by HQ teachers	310	95.05	57	100
Number of students	310	795.17	61	1,801
Per pupil expenditures	310	\$9,054	\$7,084	\$16,984
Percentage of students eligible for FRP lunch	308	36.04	1.04	94.26
Percentage of students who are minorities	309	35.82	0.0	99.8

Note. *N* = no. of middle schools reporting data, HQ = highly qualified, FRP = free and reduced-price.

Table 3 displays the descriptive statistics for each independent variable for Virginia middle schools during the 2005 – 2006 school year. Virginia localities represent diverse populations, resources and characteristics which was evident in the descriptive statistics. For instance, according to the data retrieved from the FFIEC, the maximum median family income included in this study was \$184, 674 during the 2005 – 2006 year. Descriptive statistics helped to identify patterns which were germane to this study. For example, the mean percentage of residents below the poverty line was 9.8% which was relatively low; however, the maximum percentage of residents below the poverty line reported by one locality was as high as 63.5%. Consequently, this variable, number of residents below the poverty line, had an effect on student achievement gaps in Virginia middle schools. Another area of interest related to Virginia localities is the mean percentage of renters, which as indicated in Table 3, was 27.17%. This variable also had an effect on student achievement gaps.

The descriptive data related to teachers and students in Virginia middle schools were included in Table 3. The following represent selected descriptive statistics for the independent variables.

The average number of teachers with advanced degrees included in this study was 45.48%, $SD=10.99$. The minimum number of teachers with advanced degrees was 17% and the maximum was 70%. Approximately 50% of the schools in this study had at least 50% of their staff with advanced degrees. Other data indicated that all middle schools in Virginia were staffed with highly qualified teachers for core classes. The range was 57% to 100%. Student teacher ratios measured the number of students to educators per building. According to the data, middle schools in Virginia average 11.63 students per

educator. An analysis of wealth as measured by the eligibility for free and reduced priced lunches revealed that the average percentage of students eligible for free and reduced priced lunches is 36.04% with a range from 1.04% to 94.26%. Concerning per pupil expenditure for the 2005 – 2006 school year, the average for Virginia middle schools was \$9,053.63 compared to the overall state's average which was \$9,202. The maximum per pupil expenditure in Virginia middle schools is \$16,984.

Question #2 - Which factors predicted gaps between majority and minority (i.e., White and Black and White and Latino) student achievement in English in Virginia middle schools during the 2005 – 2006 school year?

Gaps in English between White and Black students (gwbe)

The alpha level for statistical significance used in this study was $p = .05$. The results of the multiple linear regression analysis of the sixteen independent variables and the dependent variable, gaps between White and Black students in English, yielded a significant relationship $R^2 = .14$, $F(16, 257) = 2.57$, $p = .001$ indicating that 14% of the variance in the gaps between White and Black students in English could be explained by the linear combination of the 16 independent variables. The results of this analysis are found in Table 4. The results shown are the t and p values for each independent variable and their significant contribution to the prediction equation when $p < .05$.

Table 4

Relationships Between Independent Variables and English Achievement Gaps for
Student Subgroups: White and Black

Independent variables	B	<i>t</i>	Sig. (<i>p</i> value)
Median family income	.24	2.06	.04*
No. of residents	-.13	-.58	.57
Percentage of residents below poverty	.13	1.33	.19
Percentage of minority residents	-.09	-.78	.44
No. of homeowners	.22	.91	.37
Percentage of homeowners	-.02	-.16	.88
No. of renters	-.01	-.09	.93
Percentage of renters	.22	1.56	.12
Student teacher ratio	-.15	-2.07	.04*
Avg. years of teacher experience	.01	.10	.92
Percentage of teachers with adv degrees	-.02	-.26	.80
Percentage classes taught by HQ teachers	-.19	-3.01	.00*
No. of students	-.01	-.07	.95
Per pupil expenditure	.09	1.04	.30
Percentage students eligible for FRP lunches	.08	.60	.55
Percentage students identified as minority	-.00	-.03	.98

Note: HQ = Highly qualified. FRP = Free and Reduced Priced. * $p < .05$

Closer examinations of the coefficients revealed 3 variables that were statistically significant ($p < .05$): median family income $t(273) = 2.06, p < .05$, student teacher ratio $t(273) = -2.07, p < .05$ and percentage of core academic classes taught by highly qualified teachers $t(273) = -3.01, p < .05$. The other independent variables had p values that exceeded .05. The standardized coefficient beta weights assess the importance of the independent variables. The most important independent variable in this analysis was median family income, with the highest standardized regression coefficient beta score of 0.24. Based on the t -ratio, this coefficient was significant.

The part correlations indicate the percentage of the statistically significant variables that uniquely accounts for the gaps between White and Black students in English when other variables are in the equation are controlled (Green & Salkind, 2005). The variables were median family income which accounted for 1%, student teacher ratio which accounted for 1% and percentage of core academic classes taught by highly qualified teachers which accounted for 3% of the unique variance of the analysis.

This analysis found a relationship between the 16 independent variables and the dependent variable, gaps between White and Black student achievement in English. Specifically, as median family income increased, achievement gaps became larger. As student teacher ratios increased, achievement gaps decreased. When the percentage of core academic classes taught by highly qualified teachers increased, gaps in achievement decreased. The study substantiated the relationship between income and funding and academic achievement gaps related to White and Black students in middle school English.

Gaps in English between White and Latino students (gwle)

The results of the multiple linear regression analysis of the sixteen independent variables and the dependent variable, gaps between White and latino students in English, yielded a significant relationship $R^2 = .22$, $F(16, 196) = 3.44$, $p = .000$ indicating that 22% of the variance in the gaps between White and latino students in English could be explained by the linear combination of the 16 independent variables. The results in Table 5 show the t and p values for each independent variable and the significant contribution to the prediction equation when $p < .05$.

Table 5

Relationships Between Independent Variables and English Achievement Gaps for
Student Subgroups: White and Latino

Independent variables	<i>B</i>	<i>t</i>	Sig. (<i>p</i> value)
Median family income	.22	1.72	.09
No. of residents	-.07	-.30	.77
Percentage of residents below poverty	.10	.83	.41
Percentage of minority residents	-.09	-.68	.50
No. of homeowners	.01	.02	.98
Percentage of homeowners	.02	.11	.91
No. of renters	.29	2.22	.03*
Percentage of renters	-.09	-.60	.55
Student teacher ratio	-.07	-.86	.39
Avg. years of teacher experience	-.12	-1.67	.10
Percentage of teachers with adv degrees	-.04	-.50	.62
Percentage classes taught by HQ teachers	-.06	-.89	.37
No. of students	-.03	-.29	.77
Per pupil expenditure	.26	2.64	.01*
Percentage students eligible for FRP lunches	.23	1.41	.16
Percentage students identified as minority	-.28	-1.74	.08

Note: HQ = Highly qualified. FRP = Free and Reduced Priced. * $p < .05$

Further examination of the coefficients resulted in 2 variables that were statistically significant: number of renters $t(212) = 2.23, p < .05$ and per pupil expenditure $t(212) = 2.64, p < .05$. All other independent variables had p values that exceeded .05. The standardized coefficient beta weights assess the importance of the independent variables. The most important independent variable in this analysis was the number of renters, with the highest standardized regression coefficient beta score of 0.29. Based on the t -ratio, this coefficient was significant.

The part correlations indicated the percentage of the statistically significant variables that uniquely accounted for the gaps between White and latino students in English. The variables were number of renters which accounted for 2% of the variance of the analysis, and per pupil expenditure which accounted for 3% of the unique variance of the analysis.

This analysis found a relationship between the 16 independent variables and the dependent variable, gaps between White and latino student achievement in English. Specifically, as the number of renters increased, the gaps increased. As the per pupil expenditure increased, the gaps also increased. This analysis validated the relationship between funding and academic achievement gaps related to White and latino students in middle school English.

Question #3 - Which factors predicted gaps between majority and minority (i.e., White and Black and White and Latino) student achievement in math in Virginia middle schools during the 2005 – 2006 school year?

Gaps in math between White and Black students (gwbm)

The results of the multiple linear regression analysis of the sixteen independent variables and the dependent variable, gaps between White and Black student achievement in math, yielded a significant relationship $R^2 = .17$, $F(16, 247) = 3.13$, $p = .000$ indicating that 17% of the variance in the gaps between White and Black students in math could be explained by the linear combination of the 16 independent variables. The results in Table 6 report the t and p values for each independent variable and specific variables that have made a significant contribution to the prediction equation when $p < .05$.

Table 6

Relationships Between Independent Variables and math Achievement Gaps for Student

Subgroups: White and Black

Independent variables	<i>B</i>	<i>t</i>	Sig. (<i>p</i> value)
Median family income	.24	2.03	.04*
No. of residents	-.16	-.69	.49
Percentage of residents below poverty	.18	1.78	.08
Percentage of minority residents	-.17	-1.54	.13
No. of homeowners	.28	1.19	.23
Percentage of homeowners	-.02	-.12	.91
No. of renters	.01	.05	.96
Percentage of renters	.29	2.05	.04*
Student teacher ratio	-.05	-.71	.48
Avg. years of teacher experience	.12	1.75	.08
Percentage of teachers with adv degrees	-.07	-.88	.38
Percentage classes taught by HQ teachers	-.03	-.42	.67
No. of students	.07	.82	.42
Per pupil expenditure	.23	2.77	.01*
Percentage students eligible for FRP lunches	-.05	-.34	.73
Percentage students identified as minority	-.12	.82	.42

Note: HQ = Highly qualified. FRP = Free and Reduced Priced. * $p < .05$

Additional examination of the coefficients resulted in 3 variables that were statistically significant ($p < .05$): median family income $t(263) = 2.03$, percentage of renters $t(263) = 2.05$, $p < .05$ and per pupil expenditure $t(263) = -2.77$, $p < .05$. All other independent variables had p values that exceeded .05. The standardized coefficient beta weights assess the importance of the independent variables. The most important independent variable is percentage of renters, with the highest standardized regression coefficient beta score of 0.29. Based on the t-ratio, this coefficient was significant.

The part correlations indicate the percentage of the statistically significant variables that uniquely accounted for the gaps between White and Black student achievement in math. The variables were median family income which accounted for 1%, the percentage of renters which accounted for 1% and per pupil expenditure which accounted for 3% of the unique variance of the analysis.

This analysis found a relationship between the 16 independent variables and the dependent variable, gaps between White and Black student achievement in math. Specifically, as median family income increased, gaps became larger. When the percentage of renters increased, the gaps increased. As per pupil expenditure increased, achievement gaps increased. The study confirmed that there is a relationship between income and spending and academic achievement gaps related to White and Black students in middle school math.

Gaps in math between White and Latino students (gwm)

The results of the multiple linear regression analysis of the sixteen independent variables and the dependent variable, gaps between White and latino student achievement in math, yielded a significant relationship $R^2 = .22$, $F(16, 183) = 3.18$, $p = .000$ indicating that 22% of the variance in the gaps between White and latino students in math could be explained by the linear combination of the 16 independent variables. The results in Table 7 report the t and p values for each independent variable and specific variables that have made a significant contribution to the prediction equation when $p < .05$.

Table 7

Relationships Between Independent Variables and math Achievement Gaps for Student
Subgroups: White and Latino

Independent variables	<i>B</i>	<i>t</i>	Sig. (<i>p</i> value)
Median family income	.22	1.67	.10
No. of residents	-.06	-.21	.83
Percentage of residents below poverty	.05	.45	.65
Percentage of minority residents	-.04	-.27	.79
No. of homeowners	.10	.37	.71
Percentage of homeowners	.02	.17	.87
No. of renters	.18	1.36	.18
Percentage of renters	-.09	-.61	.54
Student teacher ratio	-.21	-2.42	.02*
Avg. years of teacher experience	.06	.79	.44
Percentage of teachers with adv degrees	-.04	-.46	.65
Percentage classes taught by HQ teachers	.00	.04	.97
No. of students	.15	1.58	.12
Per pupil expenditure	.28	2.85	.01*
Percentage students eligible for FRP lunches	.18	1.03	.31
Percentage students identified as minority	-.05	-.32	.75

Note: HQ = Highly qualified. FRP = Free and Reduced Priced. * $p < .05$

Additional examination of the coefficients resulted in 2 variables that were statistically significant: student teacher ratio $t(199) = -2.42, p < .05$ and per pupil expenditure $t(199) = 2.85, p < .05$. All other independent variables had p values that exceeded .05. The standardized coefficient beta weights assess the importance of the independent variables. The most important independent variable in this analysis is per pupil expenditure, with the highest standardized regression coefficient beta score of 0.28. Based on the t-ratio, this coefficient was significant.

The part correlations indicated the percentage of the statistically significant variables that uniquely accounted for the gaps between White and latino student achievement in math. The variables were student teacher ratios which accounted for 3%, and per pupil expenditure which accounted for 4% of the unique variance of the analysis.

This analysis found a relationship between the 16 independent variables and the dependent variable, gaps between White and latino student achievement in math. Specifically, as the student teacher ratios increased the gaps decreased. As the per pupil expenditure increased, the gaps also increased. This analysis verified that there is a relationship between spending and academic achievement gaps relative to White and latino students in middle school math.

Question #4 - Which factors predicted gaps in English achievement between students classified as economically advantaged and those classified as economically disadvantaged in Virginia middle schools during the 2005 – 2006 school year?

Gaps in English between students classified as economically advantaged and

economically disadvantaged (gecoe)

The results of the multiple linear regression analysis of the 16 independent variables and the dependent variable, gaps between economically advantaged and disadvantaged student achievement in English yielded a significant relationship $R^2 = .19$, $F(16, 284) = 4.14$, $p = .000$ indicating that 19% of the variance in the gaps in English achievement between students classified as economically advantaged and economically disadvantaged could be explained by the linear combination of the 16 independent variables. Table 8 reports t and p values for each independent variable highlighting variables with significant contributions to the prediction equation when $p < .05$.

Table 8

Relationships Between Independent Variables and English Achievement Gaps for
Student Subgroups: Economically advantaged and economically disadvantaged

Independent variables	<i>B</i>	<i>t</i>	Sig. (<i>p</i> value)
Median family income	.10	.93	.36
No. of residents	.12	.54	.59
Percentage of residents below poverty	.29	3.12	.00*
Percentage of minority residents	-.37	-3.29	.00*
No. of homeowners	-.03	-.14	.89
Percentage of homeowners	.04	.31	.76
No. of renters	.03	.24	.81
Percentage of renters	.09	.65	.51
Student teacher ratio	-.04	.64	.53
Avg. years of teacher experience	-.04	-.07	.95
Percentage of teachers with adv degrees	.02	.26	.80
Percentage classes taught by HQ teachers	.01	.20	.84
No. of students	.10	1.27	.21
Per pupil expenditure	.21	2.77	.01*
Percentage students eligible for FRP lunches	-.26	-2.05	.04*
Percentage students identified as minority	.16	1.18	.24

Note: HQ = Highly qualified. FRP = Free and Reduced Priced. * $p < .05$

Further examination of the coefficients resulted in 4 variables that were statistically significant: percentage of residents below the poverty line $t(300) = 3.12, p < .05$, percentage of residents identified as minorities $t(300) = -3.29, p < .05$, per pupil expenditure $t(300) = 2.77, p < .05$ and percentage of students eligible for free and reduced priced lunches $t(300) = -2.05, p < .05$. All other independent variables had p values that exceeded .05. The standardized coefficient beta weights assess the importance of the independent variables. The most important independent variable in this equation was percentage of residents identified as minorities, with the highest standardized regression coefficient beta score of -0.37. Based on the t-ratio, this coefficient was significant.

The part correlations indicated the percentage of the statistically significant variables that uniquely accounted for the gaps in English between economically advantaged and economically disadvantaged student achievement. The variables were percent of residents below the poverty line which accounted for 3%, percent of residents identified as minorities which accounted for 3%, per pupil expenditure which accounted for 2% and percent of students eligible for free and reduced priced lunches which accounted for 1% of the unique variance of the analysis.

This analysis found a relationship between the 16 independent variables with the dependent variable, gaps in English achievement between economically advantaged and economically disadvantaged students. Specifically, as the percentage of residents below the poverty line increased gaps became larger. As the percentage of residents identified as minorities increased, the gaps decreased. When the per pupil expenditure increased, the gaps also increased. As the percentage of students eligible for free and reduced priced

lunches increased, gaps in achievement decreased. This analysis confirmed that there is a relationship between wealth and academic achievement gaps in English relative to students classified as economically advantaged and economically disadvantaged.

Question #5 - Which factors predicted gaps in math achievement between students classified as economically advantaged and those classified as economically disadvantaged in Virginia middle schools during the 2005 – 2006 school year?

Gaps in math between students classified as economically advantaged and economically disadvantaged (gecom)

The results of the multiple linear regression analysis of the 16 independent variables and the dependent variable, gaps between economically advantaged and disadvantaged student achievement in math yielded a significant relationship $R^2 = .20$, $F(16, 284) = 4.35$, $p = .000$ indicating that 20% of the variance in the gaps in math achievement between students classified as economically advantaged and economically disadvantaged could be explained by the linear combination of the 16 independent variables. The results in Table 9 report the t and p values for each independent variable and specific variables that have made a significant contribution to the prediction equation when $p < .05$.

Table 9

Relationships Between Independent Variables and math Achievement Gaps for
Student Subgroups: Economically advantaged and economically disadvantaged

Independent variables	<i>B</i>	<i>t</i>	Sig. (<i>p</i> value)
Median family income	.13	1.02	.23
No. of residents	-.07	-.32	.75
Percentage of residents below poverty	.29	3.14	.00*
Percentage of minority residents	-.27	-2.46	.01*
No. of homeowners	.06	.26	.80
Percentage of homeowners	-.04	-.35	.73
No. of renters	.13	1.27	.21
Percentage of renters	-.05	-.35	.73
Student teacher ratio	.02	.21	.83
Avg. years of teacher experience	.00	.01	.99
Percentage of teachers with adv degrees	.01	.08	.94
Percentage classes taught by HQ teachers	-.13	-2.21	.03*
No. of students	.15	-1.82	.07
Per pupil expenditure	.20	2.73	.01*
Percentage students eligible for FRP lunches	-.27	-2.13	.03*
Percentage students identified as minority	.02	.14	.89

Note: HQ = Highly qualified. FRP = Free and Reduced Priced. * $p < .05$

A closer review of the coefficients revealed 5 variables that were statistically significant: percentage of residents below the poverty line $t(300) = 3.14, p < .05$, percentage of residents identified as minorities $t(300) = -2.46, p < .05$, percentage of core academic classes taught by highly qualified teachers $t(300) = -2.21, p < .05$, per pupil expenditure $t(300) = 2.73, p < .05$ and percentage of students eligible for free and reduced priced lunches $t(300) = -2.13, p < .05$. All other independent variables had p values that exceeded .05. The standardized coefficient beta weights assess the importance of the independent variables. The most important independent variable in this analysis was percentage of residents below the poverty line, with the highest standardized regression coefficient beta score of 0.29. Based on the t-ratio, this coefficient was significant

The part correlation indicated the percentage of the statistically significant variables that uniquely accounted for the gaps in math achievement between students classified as economically advantaged and economically disadvantaged. The variables were the percentage of residents below the poverty line which accounted for 3%, the percentage of residents identified as minorities which accounted for 2%, the percentage of core academic classes taught by highly qualified teachers which accounted for 1%, per pupil expenditure which accounted for 2% and the percentage of students eligible for free and reduced priced lunches which accounted for 1% of the unique variance of the analysis.

This analysis found a relationship between the 16 independent variables with the dependent variable, gaps in math achievement between students classified as economically advantaged and economically disadvantaged. Specifically, as the number of

residents increased, gaps became larger. As the percentage of residents identified as minorities increased, the gaps decreased. When the percentage of core academic classes taught by highly qualified teachers increased, academic gaps decreased. As per pupil expenditure increased, achievement gaps increased. When the percentage of students eligible for free and reduced priced lunches increased, achievement gaps decreased. This analysis confirmed that there is a relationship between wealth and academic achievement gaps related to English achievement between students classified as economically advantaged and economically disadvantaged.

Summary

The study examined 16 predictors of student achievement in Virginia middle schools and their relationship to achievement gaps. The model with all 16 predictors best explained the variance in achievement between subgroups: English gaps between White and Latino students (i.e. $R^2=22\%$) and math gaps between White and Latino students (i.e. $R^2=22\%$). The model least explained the variance in achievement between subgroups: English gaps between White and Black students (i.e. $R^2=14\%$).

The 16 variables used in the analyses were shown to have relationships with the dependent variables; however, further examination of the correlational analyses resulted in 9 of the 16 research variables reflecting significant relationships with the selected dependent variables. The 9 variables were: median family income, percentage of residents below the poverty line, percentage of residents identified as minority, percentage of core academic classes taught by highly qualified instructors, per pupil expenditure, student teacher ratio, percentage of renters, number of renters and percentage of students eligible for free and reduced priced lunches.

In this study, there were variables that collectively as one set of predictors were found to contribute to the overall variance of selected dependent variables; however, independently correlational analyses were not significant ($>.05$). The 7 variables were: the number and percentage of homeowners, number of residents, average years of teacher experience, percent of teachers with advanced degrees, number of students, and percent of minority students.

Multicollinearity occurs when several independent variables are highly correlated with each other. In this study, the collinearity statistics, namely the tolerance values revealed that multicollinearity was not an issue. Tolerance values measure the correlation between independent variables and can vary between 0 and 1. The closer to zero, the tolerance value is for a variable, the stronger the relationship between this and the other predictor variables. In this study, tolerance levels that were less than .01 relate a level of multicollinearity. As shown in Table 10, none of the tolerance values reported were less than .01.

Table 10

Measures of multicollinearity of independent variables based on tolerance values

Independent variable	Significant relationships with achievement gaps					
	WBE	WBM	WLE	WLM	ECOE	ECOM
Median income	.25	.25	.25	.26	.24	.24
Number of residents	.06	.06	.06	.06	.06	.06
Percentage of residents below poverty line	.32	.32	.30	.30	.33	.33
Percentage of residents who are minorities	.27	.27	.24	.23	.23	.23
Number of homeowners	.06	.06	.06	.06	.06	.06
Percentage of owners	.19	.19	.22	.22	.18	.19
Number of renters	.26	.27	.24	.23	.26	.26
Percentage of renters	.17	.17	.19	.18	.17	.17
Student teacher ratio	.61	.60	.60	.59	.60	.60
Average years of teacher experience	.74	.77	.74	.74	.73	.73
Percentage of teachers with advanced degrees	.54	.53	.50	.49	.56	.56
Percentage of classes taught by HQ teachers	.83	.83	.82	.81	.84	.84
Number of students	.48	.50	.50	.51	.44	.44
Per pupil expenditures	.49	.49	.43	.43	.51	.51
Percentage of students eligible for FRP lunch	.17	.16	.16	.15	.18	.18
Percentage of students who are minorities	.17	.17	.15	.15	.16	.16

Note. WBE = White/Black English, WBM = White/Black math, WLE = White/Latino English, WLM = White/Latino math, ECOE = economically advantaged/disadvantaged English, ECOM = economically advantaged/disadvantaged math, HQ = highly qualified, FRP = free and reduced-price.

Chapter four presented the analyses of the data collected for this study. Chapter five contains a discussion of the findings, the overall interpretations of the research and recommendations for stakeholders.

CHAPTER V

SUMMARY OF FINDINGS, INTERPRETATIONS AND RECOMMENDATIONS

In the first chapter the problem was stated and the purpose of the study was discussed. It was imperative to disseminate information related to achievement gaps and strategies that can be adopted to reduce gaps. The review of literature which supported the current study was presented in chapter two. The literature increased the knowledge base about the criterion and predictor variables that were used in this study. Chapter three outlined the design of the study and chapter four provided the statistical findings. Chapter five provides a discussion of the findings, the overall interpretations of the research, implications for future research and the recommendations for stakeholders. The overall purpose of this study was to increase understanding of the disparities in achievement that exist in Virginia middle schools.

Introduction

This study examined the relationships between selected school district variables, local fiscal identifiers, and student achievement gaps using data from selected Virginia public middle schools for the 2005 – 2006 school year. The reauthorization of the Elementary and Secondary Education Act, also known as the No Child Left Behind Act of 2001, created a heightened awareness of the variance that exists when student achievement is examined with regard to race and socioeconomic status (SES). This awareness, among other factors, provided the impetus for this study. When achievement gaps are discussed, many speculate about the causes and the most effective methods that can be adopted to narrow these gaps while improving student achievement for all. One goal of the No Child Left Behind Act is that all students will perform at or above grade

level by 2014. Statistically, this goal will present a challenge to educators. In addition, the goal requires public school administrators to provide leadership by applying research based strategies to narrow gaps in student achievement. The current literature review sometimes cited funding or related factors as causes for achievement gaps. In addition, funding was cited as a resource that can be used to improve student achievement and to narrow these gaps. For example, in an article by Kober (2001), the need to provide high poverty and high minority schools with more resources was emphasized.

This study reported descriptive statistics and results of the multiple regression analyses for each of the six dependent variables or the gaps in student achievement. All relationships between independent variables and dependent variables, although small, were significant.

Examination of descriptive statistics

The descriptive statistics for the 6 dependent and 16 independent variables provided a lucid picture of the conditions that exist in, around, and for schools and families. These statistics offered a depiction of achievement gaps in Virginia middle schools that supported the research related to ethnic or racial and economic achievement gaps. An examination of the data revealed outliers, however, even when they were excluded, there were schools with significant gaps in student achievement.

There were two achievement gaps or dependent variables with means that were at least 20 percentage points: the mean gap between White and Black students in math was 22.46 percentage points, and the gap in math for students classified as economically advantaged and disadvantaged was 23.03 percentage points. Individual school performances reported egregious differences such as 46 percentage points in math

achievement between students classified as economically advantaged and disadvantaged. Another school reported a disparity of 38 percentage points in English between White and Latino students. There were schools with the inverse where minority and economically disadvantaged students outperformed majority and economically advantaged students. This presented an issue which is outside the confines of this study.

The descriptive statistics provided a glimpse of the poverty or wealth that exists in Virginia localities. For example, in some localities, more than 75% of students were eligible for free and reduced priced lunches. With reference to another indicator of wealth, the mean percentage of residents below the poverty line, the mean was 9.8% which was relatively low; however, the maximum percentage of residents below the poverty line, reported by one locality, was as high as 63.5%. The descriptive statistics presented gaps in achievement among students and communities in Virginia.

Dependent Variable: Gaps in English achievement between White and Black students

Of the 310 eligible middle schools in Virginia, 274 reported data related to White and Black students in English. Based on the results of the analysis, the researcher arrived at three conclusions: 1. although small, the model substantiates a relationship between the independent variables and the dependent variable, 2. three independent variables provided statistically significant relationships with the dependent variable and 3. there is a relationship between income and the White-Black achievement gap in English. Further explanations of these conclusions follows.

Although the 16 independent variables in the model only accounted for 14% of the variance in the dependent variable, the relationship is statistically significant. Three

variables (median family income, student teacher ratio, and percentage of classes taught by highly qualified instructors) provided statistically significant relationships with the dependent variables (gaps between White and Black students). The median family income had a statistically significant positive relationship with the dependent variable indicating that as incomes increased, student achievement gaps also increased. The mean family income associated with this dependent variable is \$69,706.23. Schools in localities where residents earn incomes beginning at \$69,706.23 reported gaps in student achievement between White and Black students in English. According to Orr (2003), children from wealthier families are afforded more resources, such as computers and private tutors, which contribute to their superior academic performance. Similarly, minority students who are not achieving at levels comparable to their majority counterparts may not begin school at levels of preparedness that are similar to their majority counterparts. Arriving at a similar conclusion, Kober (2001) observed that achievement gaps are evident before students begin school. These differences in levels of preparedness or gaps in achievement, if not detected and addressed early can contribute to larger gaps in achievement. Student teacher ratio reflected a statistically significant negative relationship with the dependent variable, indicating that as the ratio increased, student achievement gaps decreased. Buildings with mean student teacher ratios of 11.77 students to staff experienced smaller gaps, however, as the ratio increased gaps decreased. This does not support the research related to smaller student teacher ratios. The percent of classes taught by highly qualified teachers beginning at 95% had a statistically significant negative relationship with the dependent variable, demonstrating that as the percent of core classes taught by highly qualified teachers increased, the gaps

decreased. This suggests that certified, highly qualified instructors do have an effect on student achievement as they relate to White and Black student achievement gaps in math. As evidence of this, Thompson and O'Quinn (2001) asserted that African – American students in North Carolina would benefit from working with experienced, well – prepared teachers.

There is a relationship between income and the White-Black achievement gap in English. The variable, median family income, is a reflection of wealth in relation to the localities.

Dependent variables: Gaps in math achievement between White and Black students

Of the 310 eligible middle schools in Virginia, 264 schools reported data for White and Black students in math. Based on the results of the analysis, the researcher arrived at three conclusions: 1. although small, the model substantiates a relationship between the independent or predictor variables and the dependent variable, 2. three variables provided statistically significant relationships with the dependent variable and 3. there is a relationship between funding and the White-Black achievement gap in math. Further explanations of these conclusions follows.

Although the independent variables in the model only accounted for 17% of the variance in the dependent variable, the relationship is statistically significant. Three variables (median family income, percentage of renters, and per pupil expenditure) provided statistically significant relationships with the dependent variable, gaps between White and Black students in math. The median family income had a statistically significant positive relationship with the dependent variable indicating that as the incomes increased, student achievement gaps also increased. The mean family income

associated with this dependent variable is \$70,324.37. Schools in localities with family incomes beginning at \$70,324.37 reported gaps in student achievement between White and Black students in math. Access to or the lack of resources may contribute to the gaps in academic performance on the SOL math assessments. Minority students who are not achieving at comparable levels may not begin school at the same level of preparedness which can contribute to gaps in achievement. In support of this interpretation, Manning and Kovach (2003) in a review of Michigan schools, concluded that equity in funding in conjunction with early childhood literacy could help narrow achievement gaps. The percentage of renters reported a statistically significant positive relationship with the dependent variable indicating that as the percentage of renters increased, student achievement gaps also increased. This variable is one that is moderately correlated to family income ($r = -.45, p < .05$), as percentage of renters increased, median family income decreased. Localities with mean percentage of renters of 27.8% also had gaps in achievement between White and Black students in math. The per pupil expenditure has a statistically significant positive relationship with the dependent variable, gaps between White and Black students in math, indicating that as the per pupil expenditure increased beginning at \$9,147.75, student achievement gaps increased. The per pupil expenditure variable must be interpreted with caution because it reflects the division's overall per pupil expenditure and does not reflect how much each specific school spent per pupil. Taking this information into consideration, per pupil expenditure is an indication of district funding.

There is a relationship between funding and the White-Black achievement gap in math. Two of the three variables which are moderately correlated are related to income:

median family income and percentage of renters. There is also a relationship between funding and the White-Black achievement gap in math. The per pupil expenditure is the division's allocation of funds which support student achievement.

Dependent variables: Gaps in English achievement between White and Latino students

There were 310 middle schools in Virginia that were eligible to be included in the study; however, 213 schools reported data for White and Latino students in English.

Based on the results of the analysis the researcher arrived at three conclusions: 1. although small, the model substantiates a relationship between the independent or predictor variables and the dependent variable, 2. two variables provided statistically significant relationships with the dependent variable and 3. there is a relationship between funding and the White-Latino achievement gap in English. In a related study of approximately 100,000 students in Texas by Sanchez et al. (2004), the authors concluded that Hispanic students should receive more intensive reading instruction at the elementary levels.

Although the independent variables in the model only accounted for 22% of the variance in the dependent variable, the relationship is statistically significant. Two variables (number of renters and per pupil expenditure) provided statistically significant relationships with the dependent variable, gaps in English achievement between White and Latino students. The number of renters reported a statistically significant positive relationship with the dependent variable indicating that as the number of renters increased, student achievement gaps also increased. Localities with mean number of renters of 608 reported gaps in achievement between White and Latino students in math.

The per pupil expenditure had a statistically significant positive relationship with the dependent variable indicating that as the per pupil expenditure, beginning at \$9,209.01, is increased, student achievement gaps increased. This per pupil expenditure variable was interpreted with caution since it reflects the division's overall per pupil expenditure. The per pupil expenditure variable is an indication of district funding.

There is a relationship between income and the White-Latino achievement gap in English. Number of renters is an indication of the wealth of the locality. There is also a relationship between funding and the White-Latino achievement gap in English. The per pupil expenditure is the division's allocation of funds in support of student achievement. In this case more spending is related to larger gaps for White-Latino students in math.

Dependent variable: Gaps in math achievement between White and Latino students

Of the 310 schools that were eligible for the study, 200 reported data for White and Latino students in math. Based on the results of the analysis the researcher arrived at three conclusions: 1. although small, the model substantiates a relationship between the independent or predictor variables and the dependent variable, 2. two variables provided statistically significant relationships with the dependent variable and 3. there is a relationship between funding and the White-Latino achievement gap in math. Further explanations of these conclusions follows.

Although the independent variables in the model only accounted for 22% of the variance in the dependent variable, the relationship is statistically significant. Two variables (student teacher ratio and per pupil expenditure) provided statistically significant relationships with the dependent variable, gaps in English achievement between students classified as economically disadvantaged and advantaged. The student

teacher ratio showed a statistically significant negative relationship with the dependent variable indicating that as the ratio increased, student achievement gaps decreased.

Buildings with mean student teacher ratios beginning at 11.93 students to staff experienced smaller gaps. This does not support the research that suggests small student teacher ratios impact student achievement.

The per pupil expenditure has a statistically significant positive relationship with the dependent variable indicating that as the per pupil expenditure is increased beginning at \$9,266.78, student achievement gaps increased. In this study, per pupil expenditure will be interpreted with caution. Per pupil expenditure is an indication of district funding and wealth.

There is a relationship between funding and the White-Latino achievement gap in math. The per pupil expenditure is the division's allocation of funds in support of student achievement. In this case more funding in terms of larger per pupil expenditures is related to larger achievement gaps for White-Latino students in math.

Dependent variable: Gaps in English achievement between students classified as economically disadvantaged and advantaged

There were 310 schools that were eligible for this study, 301 reported data for students identified as economically advantaged and disadvantaged in English. Based on the results of the analysis the researcher arrived at three conclusions: 1. although small, the model substantiates a relationship between the independent or predictor variables and the dependent variable, 2. four variables provided statistically significant relationships with the dependent variable and 3. there is a relationship between funding and the White-Black achievement gap in math. Further explanation of these conclusions follows.

Although the independent variables in the model only accounted for 19% of the variance in the dependent variable, the relationship is statistically significant. Four variables (percentage of residents below the poverty line, percentage of residents identified as minorities, per pupil expenditure, and percentage of students eligible for free and reduced-priced lunches) provided statistically significant relationships with the dependent variable, gaps in English achievement between students classified as economically disadvantaged and advantaged. Percent of residents below the poverty line had a statistically significant positive relationship with the dependent variable indicating that as the percentage of residents below the poverty line increased, student achievement gaps also increased. Schools in localities with a mean of 9.7% of residents below the poverty line reported gaps in student achievement between students identified as economically advantaged and economically disadvantaged in English. In addition, Truscott and Truscott (2005) reported relationships between living in poverty or high – need areas and lower levels of achievement. Because this and other studies report that income is related to student achievement, students who are classified as low-income or economically disadvantaged do not always achieve at levels comparable to students who are classified as economically advantaged.

The percentage of residents identified as minority had a statistically significant negative relationship with the dependent variable indicating that as the percentage of residents identified as minorities increased in a locality, beginning at 29.22%, achievement gaps decreased. This relationship may reinforce the belief that the economic achievement gap is based on the economic status of families and not race. The data related to economically disadvantaged students were not disaggregated by race. The per

pupil expenditure had a statistically significant positive relationship with the dependent variable indicating that as the per pupil expenditure, beginning at \$9,058.69, is increased, student achievement gaps increased. Again, per pupil expenditure was interpreted with caution; it is an indication of district funding. The percentage of students eligible for free and reduced- priced lunches had a statistically significant negative relationship with the dependent variable indicating that as the percentage of students eligible for free and reduced priced lunches increased, the achievement gap decreased. Based on the findings, when 36.22% of students receive free and reduced-priced lunches, schools may be more cognizant of the needs of their student populations and may provide appropriate and relevant resources and instruction in support of English achievement.

There is a relationship between funding and the economic achievement gap in English based on the significance of independent variables: percent of residents below the poverty line, the per pupil expenditure and the percent of students eligible for free and reduced priced lunches.

Dependent variable: Gaps in math achievement between students classified as economically advantaged and disadvantaged

Of the 310 schools eligible for inclusion in the study, 301 reported data for economic achievement gap in math. Based on the results of the analysis the researcher arrived at three conclusions: 1. although small, the model substantiates a relationship between the independent or predictor variables and the dependent variable, 2. five variables provided a statistically significant relationship with the dependent variable and 3. there is a relationship between income and the economic achievement gap in math. Further explanation of these conclusions follows.

Although the independent variables in the model only accounted for 20% of the variance in the dependent variable, the relationship is statistically significant. Five variables (percentage of residents below the poverty line, percentage of residents identified as minorities, percentage of classes taught by highly qualified instructors, per pupil expenditure, and percentage of students eligible for free and reduced-priced lunches) provided a statistically significant relationship with the dependent variable, gaps in math achievement between students classified as economically disadvantaged and advantaged. The percentage of residents below the poverty line reported a statistically significant positive relationship with the dependent variable indicating that as the percentage of residents below the poverty line increased, student achievement gaps also increased. Localities with means of 9.7% of residents below the poverty line also had economic achievement gaps in math. In a related area of study, Roscigno, Tomaskovic-Devey, and Crowley (2005) identified relationships between family background (i.e., income and parental education) and student achievement. In the current study, the percentage of residents identified as minorities, beginning at 29.22%, had a statistically significant negative relationship with the dependent variable indicating that as the percentage of residents identified as minorities increased in a locality, the achievement gaps decreased.

The percentage of core academic classes taught by highly qualified teachers had a statistically significant negative relationship with the dependent variable indicating that as the percentage of core academic classes taught by highly qualified teachers increased beginning at 94.9%, achievement gaps decreased. This finding distinctly supports the research associated with the impact of instruction on student achievement. Per pupil

expenditure, beginning at \$9,058.69, had a statistically significantly positive relationship with the dependent variable. Percentage of students eligible for free and reduced-priced lunches, beginning at 35.8% had a statistically significant negative relationship with the dependent variable demonstrating that the more students receiving free and reduced-priced lunches in a building, the smaller the achievement gap.

There is a relationship between income represented by residents below the poverty line and the percentage of students eligible for free and reduced priced lunches and the economic achievement gap in math.

Table 11 summarizes the information above and responds to the following:

1. Which factors predicted gaps between majority and minority (i.e., White and Black, GWBE and White and Latino, GWLE) student achievement in English in Virginia middle schools during the 2005 – 2006 school year?
2. Which factors predicted gaps between majority and minority (i.e., White and Black, GWBM and White and Latino, GWLM) student achievement in math in Virginia middle schools during the 2005 – 2006 school year?
3. Which factors predicted gaps in English achievement between students classified as economically advantaged and those classified as economically disadvantaged, GECO, in Virginia middle schools during the 2005 – 2006 school year?
4. Which factors predicted gaps in math achievement between students classified as economically advantaged and those classified as economically disadvantaged, GECOM, in Virginia middle schools during the 2005 – 2006 school year.

Table 11

Independent Variables That Show Significant Relationships With Gaps in Student Achievement

Independent variable	Significant relationships with achievement gaps					
	WBE	WBM	WLE	WLM	ECOE	ECOM
Median income	X	X				
Residents who are minorities					X	X
Percentage of renters		X				
Student teacher ratio	X			X		
No. of Renters			X			
Per pupil expenditures		X	X	X	X	X
Percentage of residents below poverty					X	X
Percentage of classes taught by HQ teachers	X					X
Percentage of student eligible for FRP lunch					X	X

Note. WBE = White/Black English, WBM = White/Black math, WLE = White/Latino English, WLM = White/Latino math, ECOE = economically advantaged/disadvantaged English, ECOM = economically advantaged/disadvantaged math, HQ = highly qualified, FRP = free and reduced-price.

Overall interpretations of research

In chapter one, the contention was, references to the achievement gap can sometimes elicit images and data that are dubious and imprecise; this study presented Virginia middle school data that was clear and definitive. Achievement gaps exist between White and Black students, White and Latino students, and students classified as economically advantaged and economically disadvantaged.

Although conclusions about causality between or among the variables could not be determined from the data, it is apparent that achievement gaps continue to be a subject that requires additional attention. In addition, the results of the regression analyses suggest that there are relationships between variables related to wealth and funding and achievement gaps. This study did not ascertain whether gaps are decreasing or increasing from year to year; the study identified that gaps exist and there are specific variables that are related to the gaps. This study did not attempt to study the confluence of variables that contribute to student achievement; however, the selected variables illustrated the impact of family, localities, teachers, students and schools on student achievement.

Nine of the sixteen independent variables or 56% of the independent variables showed significant relationships with selected dependent variables. The impact of the nine independent variables on student achievement should not be underestimated. When gaps in student achievement are reviewed, students must be seen in an holistic manner. When variables like median family income and the percentage of residents below the poverty line impact achievement gaps, it is imperative to address more than the three R's (reading, writing and arithmetic) when students report to schools. Kober (2001) reminded

us that gaps exist before students begin school as indicated by the varied levels of student preparedness.

Per pupil expenditure, although calculated at the district level was the variable that occurred most frequently in 4 of the 6 dependent variables. The sixteen independent variables in the model accounted for variances ranging from 14% of the dependent variable to 22% of the dependent variable. The independent variables accounted for high percentages of variance in the gaps between White and Latino students in English and math (GWLE & GWLM). The smallest percentage of variance occurred in the dependent variable (GWBE), gap between White and Black students in English.

All variables selected for this study measured an element of funding or wealth. The study confirms there is a relationship between district funding and local fiscal identifying variables and student achievement gaps in Virginia middle schools. Based on the data, there are relationships among the six dependent and sixteen independent variables.

Implications for future research

The current study examined sixteen variables and the relationships to achievement gaps in Virginia middle schools. Future research in related areas should include the following:

1. Experimental studies regarding the relationships between wealth and achievement gaps. These studies would allow for causal relationships to be interpreted based on the findings.
2. Qualitative studies regarding the relationships between wealth and achievement gaps should be conducted. Methods such as direct observation, participant

interviews and questionnaires should be employed to acquire individual and group perspectives (Marzano, 2003). This would allow researchers to address depth as opposed to breadth in educational research.

Recommendations for stakeholders

In general, as we explore this concept of achievement gaps, it is critical to first acknowledge that gaps exist and that improvement and change are warranted. Next, initiatives, research, and strategies should be investigated to determine their relevance and suitability to a specific school or division. Marzano (2003) advocated using the “35 years of research” (p.1) to enhance educational practices. Finally, applied strategies should be implemented with ongoing evaluation. The goal is to improve and change the techniques used in public education to meet the needs of all students thus closing existing gaps.

There were significant relationships between the model with the 16 independent variables and each dependent variable, however, the strength of the relationships (between 14% and 22%) suggest that other variables, not addressed in the current study, explained the majority of the variance in the dependent variables. The relationships between the 9 independent variables and 6 dependent variables provide the foundation for the recommendations for stakeholders. The recommendations are based on the findings that approximately 98% of the middle schools in Virginia displayed gaps in achievement between economically advantaged and economically disadvantaged students, approximately 65% of the middle schools in Virginia displayed gaps between minority and non-minority students and the percentage of core classes taught by highly qualified instructors had an impact on student achievement.

Based on the descriptive statistics, it is evident that achievement gaps exist at the middle school level in Virginia. It is imperative to review research related to middle school achievement and use the current research to increase educational opportunities for students, for example, refer to reports from the National Middle School Association (NMSA). Examples of the recommendations from the NMSA's publication entitled *Fundamentals for Student Success in the Middle Grades* included the importance of exposing middle school students to relevant curricula and expert teachers. The findings also suggested that schools in which teachers and students worked in teams and teachers planned together had higher academic performance ("National middle school," n.d.). It is important to know the research.

McGee (2004) recommended providing professional development opportunities for all staff and board members who work in high poverty schools. Based on the data, 98% of the middle schools in Virginia contain gaps in achievement when students identified either as economically advantaged or economically disadvantaged were examined. Suggested professional development includes diversity awareness training to help all stakeholders understand the needs of diverse populations (students and families) (Banks, 2000; Hale, 2004 & Kunjufu, 2002) and relational driven instruction that promotes the establishment of meaningful relationships as an integral part of instruction and achievement for diverse populations (Rogers & Renard, 1999).

The results of this study suggest that the percentage of core classes taught by highly qualified instructors impact student achievement. All students should be provided with equal opportunities to benefit from highly qualified, effective instructional staff

regardless of the school, race, poverty level, or physical address. Research conducted by Wright, Horn & Sanders (1997) recognized that teachers affect student achievement.

There were 306 middle schools with gaps in achievement that were related to the economic status of students and families. When appropriate, apply practices of 90/90/90 schools in which 90% of the students are eligible for free and reduced priced lunches, 90% of the students are ethnic minorities, and 90% of the students are achieving at high levels. Schools classified as 90/90/90 schools contained the following characteristics: focus on achievement, clear curriculum, frequent assessment and multiple opportunities to improve, emphasis on nonfiction writing and collaborative scoring of student work (Reeves, D. B., n.d.).

The study concluded that gaps in achievement exist when data related to students of color and economically disadvantaged students are examined. According to the effective schools research, schools that were successful at educating all students demonstrated the following characteristics: clear mission, high expectations, instructional leadership, opportunity to learn, student time on task, safe and orderly environment and home school relationships (“Association for effective,” n.d.).

This study explored school and non-school related variables. It is vital to apply the premise and adage espoused by many educators and other related stakeholders; it takes a village to raise a child. Also, identify community resources that can support students and families as they engage in the learning experience. In addition, Munoz et al. (1999) recommended exploring non – school factors that contribute to student achievement.

Perhaps the most important stakeholder in the lives of children is the parent. The findings concluded that wealth is a factor in student achievement gaps. Parents and schools must work collaboratively with the understanding that parents with diverse levels of wealth respond to schools differently. As evidence of this, a study by Lareau (2003) reported that working-class and poor parents viewed educators as social superiors whereas middle class parents viewed them as equals or even subordinates. Different learning opportunities for children can be created by these beliefs. The author concluded that the social position of a family, primarily related to wealth, has an impact on the outcomes in life.

Understand the relationship between wealth and funding and student achievement gaps and the impact this understanding should have on decisions made at the district, state and possibly federal levels related to effective school funding. Wealth should provide stakeholders with an indication of student needs. Funding should strategically sustain the indicators of student needs and not contribute additional hardships on schools and school districts (Owings & Kaplan, 2006). The recommendations above provide foundations for reform that can be implemented in schools and divisions in order to narrow achievement gaps in Virginia middle schools.

Summary

The findings in this study suggested a relationship between wealth, funding and gaps in student achievement in Virginia middle schools. Wealth does not always translate into resources that are available to children such as access to computers or private tutors; it can also provide some parents with more opportunities to spend quality time with their children which has been linked to student achievement (Orr, 2003). It is imperative that

educators consciously and diligently make efforts to establish relationships with all families and all students and to educate them. School leaders must be ready to prepare staff members to work effectively with and respond culturally to all students and families. As needs assessments are conducted and the research and best practices related to student achievement are reviewed and used in Virginia middle schools, continuous evaluation of the efficacy of these best practices should occur. Manning and Kovach (2003) indicated that the source of achievement gaps exists outside the walls of schools; the researcher proposes there are many sources of gaps, both inside and outside the walls of schools.

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