School Facilities in the Nation's Capital:
An Analysis of Student Achievement, Attendance, and Truancy

by Ronald Gerald Taylor

B.A., 1995, Morehouse College
M.S.A., 2001, Trinity University

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Linda Lemasters
Associate Professor of Educational Administration

The Graduate School of Education and Human Development of The George Washington University certifies that Ronald Gerald Taylor has passed the Final Examination for the degree of Doctor of Education as of March 12, 2009. This is the final and approved form of the dissertation.

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Ronald Gerald Taylor

Dissertation Research Committee

Linda Lemasters, Associate Professor of Educational Administration, Dissertation Director

Sharon Dannels, Associate Professor of Educational Research, Committee Member

Carl V. Hill, Health Scientist Administrator for The National Institutes of Health, Committee Member

Dedication

To Mom, Lisa, and Imani, the three ladies of my life. I love you!

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you are my addiction. And, lastly, thank you to the Almighty for all that you have done for me.

Abstract of Dissertation

School Facilities in the Nation's Capital: An Analysis of Student Achievement, Attendance, and Truancy

The purpose of this study was to examine the possible relationship between the condition of school facilities in the District of Columbia Public Schools (DCPS), as measured by the Facilities Condition Index (FCI), and academic proficiencies in mathematics and reading, as measured by the Stanford Achievement Test, Ninth Edition, (Stanford 9) in 2005, as well as attendance and truancy rates for the corresponding school year.

This quantitative study consisted of a nonexperimental design wherein the academic and social proficiencies of students in schools whose facilities were deemed acceptable were compared to those whose facilities were categorized as unacceptable. A Spearman rho correlation served as a confirmation of the strength and consistency of the possible relationship between school facilities and student achievement, attendance, and truancy.

The examination of the DCPS 2005 Stanford 9 testing data, 2005 DCPS FCI rates, and attendance and truancy rates indicated that students attending schools categorized as acceptable were higher performers in all four aforementioned categories of achievement. The Spearman rho correlation confirmed these findings by establishing a consistent relationship; as the FCI of a building improved so did the students' achievement measure.

The study's data supported the following conclusion: A consistent measurable relationship exists between the variable of building facility condition and the variables of reading proficiency, mathematics proficiency, attendance, and truancy rates.

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CHAPTER 1: INTRODUCTION

Over the past 17 years, the physical condition of America's public schools has received considerable attention (Kozol, 1991; Ruszala, 2008). The Council of Educational Facility Planners International reported that the standardized test scores for students in the District of Columbia Public Schools (DCPS) were lower in schools for which the building condition had been rated poor than they were in buildings rated as being in fair condition (Edwards, 1991; Schneider, 2003). Citizens often are not proud of the schools in their communities despite the important role of the schools in the lives of their children (Meek, 1995). According to a 2003 publication, one in four schools reported at least one type of on-site building as being in less than adequate condition (Schneider). The U.S. General Accounting Office (USGAO, 1995) documented numerous individual accounts of threats to student safety caused by poor building conditions. More recently, Bullock (2007) found that building condition is related to student achievement in middle schools in the Commonwealth of Virginia.

In one of the earliest and most thorough studies on school facilities and student achievement, McGuffey (1982) studied whether or not school building age and condition had an impact upon students' achievement beyond the influence of socioeconomic status (SES). This research involved 188 school districts with 986,686 students. The Iowa Test of Basic Skills (ITBS) were administered to fourth-, eighth-, and eleventh-grade students. The SES variable was controlled using multiple regression methodology. Based on the results, reading and math achievement scores in the fourth and eleventh grades appeared to be the most influenced by building age.

The relationship between school facility characteristics and student achievement for two schools located in a rural area of Tennessee was studied by Bowers and Burkett (1987). The first school in question was the newest in the division; it had opened in 1983. The second school was the division's oldest school, which had been completed in 1939. The older school housed 825 students, whereas the new school's enrollment was at the building's capacity of 758 students. The researchers noted that the newer school was equipped with modern heating and cooling systems as well as acoustical controls and fluorescent lighting. The older facility was equipped with a coal-fired furnace and some window air conditioning units. In comparing the two buildings, the researchers also noted that the color schemes and furniture were drastically different between the two schools. Nevertheless, the buildings served similar socioeconomic areas. The researchers randomly selected 132 students from the newer building and 127 from the older facility. The students selected for the sample were fourth- and sixth-grade students. The study took place during the 1986-1987 school year. The researchers concluded that the students attending the newer school attained a statistically significant higher level of achievement than did their counterparts at the older school. Although the aforementioned research indicated a possible effect on student achievement as measured by building conditions, the reliability seems to be threatened by the fact that the researchers randomly selected different numbers in the two groups.

Four years later a study of the condition of school buildings and the effect of the conditions on student achievement was conducted by Edwards (1991). The researcher randomly selected 52 DCPS schools. The researcher rated building conditions according to each school's parental opinions. Based on parental survey responses, schools were

judged by the researcher as poor, fair, or excellent. The researcher chose also to control for SES. The reported results indicated that students in school buildings rated as being in poor condition scored significantly lower on the Comprehensive Test of Basic Skills (CTBS) than did students in schools in better condition. Students attending school buildings deemed to be in poor condition reflected achievement that was 6% below that of students in schools in fair condition and 11% below that of students in schools in excellent condition. Edwards also considered parent involvement as a variable in the study of building condition and student achievement in the DCPS. The analysis of data using standardized test scores and parental ranking surveys offered an innovative opportunity to establish a relationship between school condition and student achievement. Lemasters (1997) summarized Edwards' research results regarding the DCPS: "As the condition of a school building worsens with age, the older a school was, the greater negative impact the facility would have on a student" (p. 51). Although Edwards' work showed promise of a connection between building condition and student achievement, more than 16 years had passed since her research and the current study. Furthermore, the sample included fewer than half of the district's schools, rather than the full population as was the case in this dissertation research.

Cash (1993) investigated whether or not the condition of school facilities had an effect on student achievement and behavior within rural school systems in the Commonwealth of Virginia. Buildings were rated as being substandard, standard, or above standard in their overall physical condition and cosmetic ranking based on the Commonwealth Assessment of Physical Environment (CAPE). The ITBS were administered to students who attended the schools involved in the study. Cash found that

students in the above-standard buildings scored higher than did those students in the buildings rated as substandard. The findings, as important as they are to the body of research, are over 15 years old; furthermore, the findings relate only to a rural population.

In 2006, Castronuovo conducted research regarding the consolidation of two Washington, DC schools: an underperforming, impoverished elementary school and a middle school with similar attributes. This thesis focused on the planning of the new, consolidated prekindergarten through eighth-grade school facility and a comparison of the new school's location and the location of the neighborhoods in which most of the school's students resided. Although Castronuovo theorized that the decision to create the school was based on economic data and political maneuvers instead of sound research, the study failed to follow the progress of this decision, and no valid comparison was completed to determine if student achievement improved as a result of the new facility condition. This research was primarily an examination of the process used to plan school facilities as well as the possible outcomes of such a plan. Castronuovo's study is similar to this dissertation in that it examined Washington, DC Public Schools with a focus on facilities and the possible connection to the disenfranchisement of impoverished youth; however, it does differ greatly due to the lack of emphasis on student achievement, attendance, and truancy.

Ruszala (2008) examined the condition of high school facilities in Virginia to determine whether or not there was a correlation between building condition and teacher satisfaction. Two survey instruments were used in her study: CAPE and the Teacher Opinionaire of Physical Environment (TOPE). The CAPE was designed and administered by Cash in 1993; the TOPE was designed by Ruszala in 2006, to measure teacher

satisfaction in relationship to specific school building conditions. In the Ruszala study, the CAPE findings indicated that close to 50% of surveyed principals rated their school buildings as standard, whereas the other half of the respondents rated their school buildings as above standard. The Pearson correlation analysis indicated a moderately positive correlation between the overall building condition rating on the CAPE and the overall teacher satisfaction rating on the TOPE. This recent research examined metropolitan school divisions in the mid-Atlantic region of the United States; however, it reviewed the relationship between condition of facilities and teacher attitudes rather than student achievement, attendance, and truancy. Ruszala (2008) did find an indirect relationship, which is discussed in further detail in chapter 2.

As demonstrated through the studies presented in this introduction, the effect of the facility on both the learner and the teacher was the topic of research in the past, both distant and recent. There were no studies, however, that examined the District's schools in the way this research did.

Researchers have been studying the possible effects of school facilities condition on student achievement through various measures and designs for more than 26 years (McGuffey, 1982; Ruszala, 2008). Many of these studies have been thorough, systematic, and innovative; most have not examined the Washington, DC Public Schools.

According to a 2007 *Washington Post* report (Nakamura & Haynes), DCPS needs to spend $120 million to make emergency repairs to schools to address heating and air conditioning problems, a backlog of work orders, and fire code violations. Most experts and educators connected with DCPS have agreed that many buildings are in dire need of renovation and repair.

Problem Statement

Many schools in the nation house students and teachers who find themselves in a physical environment that adversely affects their morale and, in many cases, their health (Frazier, 1993). Often, when strategies are presented to reform the educational process, there is no mention of improving the physical site where teaching and learning occur (United States Department of Education [USDOE], 2002). Decaying school facilities send the wrong message to students, teachers, and community members (Carnegie Foundation for the Advancement of Teaching, 1988). In a 2005 New York State school facilities and student health report (Healthy Schools Network, 2005), researchers reported that students who attended schools with environmental hazards that impacted indoor air quality were more likely to miss class and, therefore, lose learning opportunities. Three quarters of schools in the United States have reported a need to spend money on repairs, renovations, and modernizations to put the schools' buildings into good, overall condition (USDOE). Several researchers have linked student achievement, behavior, and attendance to physical building condition (Earthman, Cash, & Van Berkum, 1996; Edwards, 1991; Schneider, 2003).

Analysis of this topic and review of the available knowledge base revealed that, although research had been conducted including syntheses and meta-analysis, there appeared to be a gap in the research. The gap was noted in three areas: a lack of studies on this topic that utilized an entire population as a data set; a lack of research that addressed student attendance, truancy, and building conditions as variables in the same study; and a lack of analyses of DC school facilities, in that only two such studies were found. It is asserted that the use of an entire school system's high-stakes testing

population as a measure of student achievement, with truancy and attendance as additional variables, will provide further understanding of the possible relationship between the aforementioned variables and school facility conditions. Therefore, a gap in the research was identified, and this study began to examine DCPS in a more scholarly and thorough manner.

Purpose of the Study

The purpose of this study was to examine the possible relationship between the condition of DCPS school facilities and student achievement, truancy, and attendance in DCPS. The assessment of a school building's condition was based on an objective measure used by the DCPS: the Facility Condition Index (FCI). The assessment of student achievement was based on performance on the spring 2005 administration of the Stanford Achievement Test, Ninth Edition (Stanford 9). Specifically, students' proficiencies in mathematics and language arts were compared, as well as student attendance and truancy rates. The study, comparative in nature, included 135 of the 143 DCPS schools; 8 schools were excluded because their achievement data were unreported, due to lack of participation in the Stanford 9 testing. These schools were unreported for one of three reasons:

1. Their students were not of testing age (between 3rd and 8th grade or in 10th grade).

2. The population served did not include at least 40 tested students. Because 40 is the minimum number of tested students required to be reported under No Child Left Behind (NCLB), DCPS does not report data in Adequate Yearly Progress (AYP) report cards for schools with fewer tested students.

3. The population was a special education center where most or all of the students enrolled did not take standardized tests.

The intent of this research was to identify the relationship between the condition of school facilities and student achievement, specifically, whether or not school facility condition was a factor in student achievement, as measured by the Stanford 9 achievement test (mathematics proficiency and reading proficiency), as well as rates of student attendance and truancy. The effects of school facilities were explored through a comprehensive literature search; only two documented studies were found that focused on building condition and subsequent effects on student achievement in the DCPS system. The broader of the two studies was conducted more than 16 years ago. Neither study investigated the possible relationship between attendance rates, truancy rates, and facility conditions. Neither study used the entire student standardized testing population as subjects for comparison with every school building in the school system that housed them; the researcher believed that proceeding in this manner could provide strong evidence of the possible relationship between these variables.

Research Questions

1. Is there a relationship between the math proficiency of students in DCPS and the FCI?

2. Is there a relationship between the reading proficiency of students in DCPS and the FCI?

3. Is there a relationship between the attendance rates of students in DCPS and the FCI?

4. Is there a relationship between the truancy rates of students in DCPS and the FCI?

Research Hypotheses

1. A negative correlation exists between the math proficiency of students in DCPS and the FCI, wherein, as the facility conditions ratings improve (scores decline) so do the math proficiency scores of DCPS students on the Stanford 9 achievement test.

2. A negative correlation exists between the reading proficiency of students in DCPS and the FCI, wherein, as the facility conditions ratings improve (scores decline) so do the reading proficiency scores of DCPS students on the Stanford 9 achievement test.

3. A negative correlation exists between the attendance rates of students in DCPS and the FCI, wherein, as the facility conditions ratings improve (scores decline) so does the rate of student attendance in DCPS.

4. A positive correlation exists between the truancy rates of students in DCPS and the FCI, wherein, as the facility conditions ratings improve (scores decline) so does the rate of student truancy in DCPS.

Need for the Study

Researchers have compiled an extensive amount of information on the subject of student achievement and its connection to school facility conditions; however, a breach in information was identified. This gap in the research included the following: No studies included student achievement, attendance, and truancy as variables, and only two studies examined Washington, DC Schools with regard to this research topic (Edwards, 1991; Schneider, 2003).

In 2008, Smith recommended the use of a national, norm-referenced measure of student achievement to fill a void in the scholarly research regarding school facilities and student achievement. The Stanford 9 achievement test, which was administered as the measure of student achievement in DCPS in 2005, is a national, norm-referenced achievement exam. Smith further recommended a study examining the relationship between SES and school facility condition to determine the possibility of a direct relation as suggested by findings in his study. Bullock (2007) recommended that race and gender be included as variables with regard to the effect of school facilities on student achievement. Geier (2007) also recommended studies examining and controlling for SES to, "quiet the statistical noise emanating from this variable" (p. 118).

The current study of DCPS included a stratified section for both SES and linguistic and cultural diversity (LCD), including ethnic diversity (i.e., race). This stratification was accomplished by identifying the process through which DCPS categorized schools in the two previously mentioned subgroups. The aforementioned subgroups were made up of schools that had been identified to receive additional assistance (i.e., funding or staffing or both) because of the SES of their LCD populations. These groups were then studied and compared against their mainstream counterparts, under the same parameters that were used to analyze the entire DCPS population to answer this study's research questions. This process is further examined and explained in chapter 3 and chapter 4.

Geier (2007) acknowledged that principals can be biased and subjective when asked to rate their own buildings; therefore, one of the recommendations for further research was to have an expert in building conditions evaluate the facilities to ensure an

objective evaluation. Use of the FCI by engineering consultants adhered to this recommendation.

Both Fritz (2007) and Geier (2007) recommended that an urban area be included in research regarding the possible effect of school facility conditions on student achievement. In addition, Fritz acknowledged a limitation of his study in the use of only sixth-grade proficiency tests as a measure of student achievement. The use of DCPS as a population, as well as multiple grade-level results on the Stanford 9 achievement test satisfied both of these recommendations for future research.

McGowen (2007) recommended that researchers expand the study of school facilities and student achievement to encompass larger populations, suggesting that such expansion might provide more statistically significant data. This study fulfilled that recommendation.

Edwards (2006) recommended that the following two questions be considered in future research:

1. Is there a correlation between a school building's overall condition and pupil attendance percentages?
2. Is there a correlation between the condition of the physical learning environment and academic achievement, as evidenced by standardized test scores? (p. 142)

Both of these questions are incorporated within the research questions for the current research study of DCPS facilities. The recommendation for various studies confirmed the need for the current research.

Conceptual Framework

This study was grounded in research focusing on the impact of the conditions of school facilities on student achievement as well as attendance and truancy. A historical overview of school facilities is provided to describe the evolution of building design and purpose. In addition, research regarding condition of school facilities and the effect on student achievement was examined to fully understand the conditions of school buildings nationally, regionally, and locally.

History of School Facilities

The construction of public schools in the United States began in the mid-19th century. Many of the first schools of the nation were urban schoolhouses, which were simple and small. Boston's Quincy Grammar School, built in 1848, is regarded as the original fully graded public school building in the United States (Graves, 1993). The first three floors of the building housed 12 classrooms. Each room contained a desk and chair for each pupil. This architecture type became the quintessential design for schools nationwide (Cutler, 1989).

Gyure's (2001) research on the history of school architecture noted that the first public high school in America was the Boston English Classical School, established in 1821. Before its opening, high school was meant for the privileged and was found only in private academies. John D. Philbrick, former superintendent of the Boston schools, helped to build the school with amenities such as toilets on every floor, a gymnasium, and an assembly hall. Boston English Classical School was considered to be a state-of-the-art structure (Gyure).

Philadelphia's initial high school building was constructed in 1838. Chicago, Cleveland, and St. Louis each built their first separate high school building in 1855 (Burch, 1994). The first high school west of the Allegheny Mountains is believed to have opened in 1846 in a Cleveland basement. In early high schools children sat on benches or at desks bolted to the floor in orderly rows facing the teacher (Gyure, 2001). High school classes often were taught in the same room as primary classes (Burch).

The availability of education began to spread beyond the privileged to freed slaves. In 1870, the nation's first African American high school—the Preparatory High School for Colored Youth—was established in Washington, DC. It was located in the basement of the 15th Street Colored Presbyterian Church (Gyure, 2001).

The earliest safety concern of public schools related to proper ventilation systems. Most school lighting was derived from sunlight through two large windows (Gyure, 2001). Early school structures were not designed purposefully for education; instead, they resembled enlarged houses. Some analysts believe there was no intentional symbolism in the designs of early schools (Hickman, 2002).

According to Gyure (2001), Henry Barnard is credited with being one of the first people to recognize the need for careful design of schools in matters such as architecture, ventilation, and lighting; he did so in the mid- to late-1800s. Barnard sparked a new discussion on the relation between pedagogy and architecture throughout the United States. James Johnonot was another key figure in the early design of schools (Hickman, 2002). Barnard and Johnonot were similar in that they were both educators rather than architects. Johnonot was instrumental in discussing architectural style, furnishings, outbuildings, ventilation, and decoration of the school grounds.

In the early 1900s, architects moved to the open plan for schools. This change allowed for light and air to circulate farther into the building, creating a healthier environment. The centers of the buildings were lit by skylights and served as atriums or assembly halls. Sunlight was viewed as essential during the early 1900s; because of the lack of electricity, sunlight was needed for students to see the lessons. In addition, sunlight was thought to be a deterrent to illness (Gyure 2001).

School Facility Conditions

Together with roads and highways, schools represent one of the country's largest infrastructure investments. Many schools built in the 1950s and 1960s were expected to stay in operational condition for 75 years without major repair; however, they are now in dire need of immediate maintenance attention. Districts are experiencing facility breakdowns that are occurring earlier and appearing to be more serious than ever expected (Klauke, 1988). According to a 1985 Council of Great City Schools report, school officials were spending an average of 3.3% of their total budget on maintenance, one half of the amount that had been spent 4 years prior (Klauke). The 1985 Council of Great City Schools report stated that without a large influx of capital improvements, schools in inner-city school districts would continue to deteriorate. According to Klauke, a third of inner city or urban schools were more than 50 years old at that time.

Frazier (1993) wrote that many school facilities in America were deteriorating, thereby contributing to poor air quality, which can affect students' ability to concentrate. Furthermore, school-age children are far more susceptible to contaminants such as asbestos or radon found in some older school facilities than are adults. A national survey conducted by the American Association of School Administrators found that 74% of

school facilities needed to be replaced or repaired immediately; another 12% were shown to be unsatisfactory or inadequate places of learning (Hansen, 1992).

In 1991, 37 states were affected by budget shortfalls. When such a development occurs, maintenance is often one of the first things cut (Frazier, 1993). Deferred maintenance results in premature building deterioration, indoor air problems, increased repair and replacement costs, and reduced operating efficiency of equipment. The cost for deferring maintenance quadrupled in 8 years, from $25 billion in 1983 to $100 billion in 1991 (Frazier; Hansen, 1992). Rising energy costs have contributed to a lack of funds for maintenance. When utility costs exceed the prebudgeted amount, 40% of districts in the nation have reported using funds previously designated for maintenance to offset the cost (Frazier; Hansen). Nothing has occurred to change this phenomenon in the 16 years since the conclusion of Hansen's research; the rising cost of energy has compounded the problem.

Poor school facilities in urban areas contribute to low morale and high dropout rates (Frazier, 1993). These facilities are not conducive to new approaches or reforms related to teaching and learning, with 37% of rural schools' having inadequate science lab facilities, 40% having inadequate space for large-group instruction, 13% reporting an inadequate library or media center, 23% lacking adequate space to accommodate parent support, 82% lacking space for day care, and 66% reporting inadequate space for before- and after-school care (Dewees, 1999).

In 1995, the USGAO reported a high number of inadequate buildings in urban, suburban, and rural areas. In 1998, the average school building was 42 years old

(Dewees, 1999); however, that statistic is a decade old. Many buildings are deteriorating or are in a condition of disrepair due to lack of maintenance.

Hirsch (1999) asserted that the aim of this or any other civilization is to steer nature toward humane and worthy ends: "Democracy is a form of shared community decision making that requires that those participating possess sufficient shared information and ideas that communication and deliberation can be accomplished in an effective and efficient manner" (p. 74). That being said, one must ask if humane and worthy ends are being sought for all across this country and if there are such disparities in the school buildings that children attend. Cohen and Hill (2005) wrote, "Students should have an equal educational opportunity to learn regardless of where they sit, who they are, or how they process information" (p. 93).

The U.S. Department of Education concluded in a 2002 report on school facilities that environmental conditions in schools, including poor lighting, inadequate ventilation, and inoperative heating affect the learning, health, and morale of students. In 2004, Earthman rated temperature, heating, and air quality as the most influential factors with respect to affecting student achievement. Lighting also was cited as an important element with regard to its effect on student achievement.

Student Achievement

School building age and condition do have an impact upon students' achievement beyond the students' socioeconomic background (McGuffey, 1982). Facilities should further academic standards and programs of the school; the program of the school cannot be totally successful if the facilities are inadequate (Smith, 1984).

The Saginaw Schools Project study (Claus & Girrbach, 1985) examined the relationship between student achievement and building facilities. This study of 31 schools was conducted in the Saginaw School System in Michigan. School Improvement Surveys were administered to the staff of each school to identify and determine possible solutions for facility inadequacies. Goals at each school were achieved at a 70% to 100% level. There were also increases in the students' performance in both math and reading. During the 5-year study, student performance on standardized achievement tests increased in the highest achievement category and declined in the lowest achievement category (Frazier, 1993).

During the 1986-1987 school year, 280 fourth- and sixth-grade students schooled in two separate buildings, the oldest and newest in rural Tennessee, were tested to determine whether or not student achievement, health, attendance, and behavior were related to the condition of the school facility. A significant difference was found between the two groups of students. The students in the new building performed much better than the students in the older building in all categories, including reading, language, and mathematics (Bowers & Burkett, 1987). This study is further discussed in chapter 2.

The boundary of the facility with regard to the learner has too infrequently been considered in planning school facilities. Traffic noises have resulted in harmful influences on teacher effectiveness, which is considered vital for student learning (Cutler, 1989). The overall climate of a school setting has an effect on the attitudes and behavior of both students and staff (Bowers & Burkett, 1987). The condition of the building can also play an increased role with regard to student achievement.

In a Nebraska study, Pool (1993) found that 40% of school building administrators believed their facilities hampered needed changes in their instructional programs. With the majority of their buildings' being 40-90 years old, administrators reported that rooms in their schools were uncomfortable and obsolete. More than half (55%) of the administrators said their buildings were not handicapped accessible (Pool). It has been established that adults are affected by their environment; children are no different (Frazier, 1993). Deferred maintenance in buildings can result in peeling paint, falling plaster, nonfunctioning toilets, poor lighting, inadequate ventilation, and nonfunctioning heating and cooling units (Frazier).

Outdated facilities have an adverse effect upon the learning process for students, whereas, safe, modern, and environmentally controlled facilities enhance the learning process (Earthman & Lemasters, 1996). In the past, facilities were built without adequate reference to the program or students. A school building should make learning possible, not impede it. It is generally accepted that the school facility can improve or weaken the educational process (Raywid, 1996). According to Chan (1988), the educational value in school buildings can be increased by the aesthetics of a school facility. Lemasters' (1997) analysis of studies from 1980 to 1997 recognized specific aspects of facility conditions that had a positive effect on student achievement. All of these studies suggested that a relationship existed between school facilities and student achievement. It is the goal of this study to extend this research to determine if this relationship exists in DCPS and, further, if there is a relationship between facility conditions and attendance and truancy. More specific information on these studies, with supporting evidence, is presented in chapter 2.

A study on building condition effects on student achievement in select urban high schools in Virginia found that student achievement scores were higher in schools that were in better condition. Additional findings indicated that science achievement scores also were better in buildings with better science laboratory conditions (Hines, 1996). The distinctions among the findings of these studies are further examined and addressed in chapter 2.

A quality school environment can enhance student achievement (Gaylord, 1988). A California architect and a school facility researcher observed increases of up to 20% in student achievement the 1st year that some children were placed in new school buildings (Ayers, 1999; Graves, 1993). The factors responsible for overall student achievement are ecological in that they act together as a whole in shaping the context within which learning takes place (Lackney, 1997).

Researchers have discovered that the physical condition of a school can make a difference and have an effect on student achievement. Color, lighting, and other elements can combine to aid student achievement (Rouk, 1997). Data have suggested that many variables can have an effect on student achievement, and other literature has indicated that student attitudes and behaviors improve when the facility improves (Lemasters, 1997). Nevertheless, Earthman and Lemasters (1996) cautioned readers that despite the preponderance of research supporting the findings, there still is no evidence of a causal relationship between school facilities condition and student achievement. The lack of data may be due to the fact that the majority of the research has been nonexperimental.

Chan (1988) surmised that the aesthetics of a school facility are related to student learning. He believed that the visual features of a school building could represent the

image of love for children and the importance of their education. He claimed to have found in studies that student achievement was enhanced in quality school buildings. Lemasters (1997) appeared to agree with Chan, concluding that educators, architects, and those responsible for school facilities planning should consider the impact of building conditions, lighting, and site noise in maintaining, building, or remodeling schools because of the evidence that these variables impact student achievement and behavior.

In Texas, 17 middle schools with the highest-ranked facilities were measured against 17 middle schools with the lowest-ranked facilities in an attempt to find a relationship between facilities and student achievement. The results revealed that student achievement measures were higher in the 17 middle schools with the highest-rated facilities (O'Neill, 2000).

Geier (2007) examined the condition of elementary schools in Michigan using the Michigan Educational Assessment Program (MEAP) as a measure of student achievement. Specifically, the MEAP measures third-, fourth-, and fifth-grade reading and mathematics levels. Three independent variables were used in addition to the school facility conditions: SES (free and reduced-price lunch status), median household income, and student density. Using a multiple regression technique, it was determined that building condition contributed very little to student achievement as measured by the MEAP, as the findings were not statistically significant.

Although Geier (2007) found no link between student achievement and school facility condition, Fritz (2007) identified a statistically significant relationship between school condition and the proficiency subtest results in reading and science for sixth-grade students in Ohio who moved into a new school. Student achievement was measured

according to the Ohio sixth-grade proficiency test as reported in the Local Report Card (LRC). Building LRCs were collected for a group of 26 schools to provide measures of student achievement 2 years before and after their moving into a new school building. It is unclear why the research of Geier and Fritz produced different outcomes; however, it can be asserted that the different student achievement assessment and different building condition assessment may have contributed to the results.

Bullock (2007) concluded that students in newer or recently renovated buildings performed better than did their counterparts in substandard facilities. Analysis of middle school students' performance on the Virginia Standards of Learning (SOL) examinations in mathematics, English, and science revealed a statistically significant higher level of achievement for students attending schools characterized by Bullock as standard school buildings compared to students attending schools categorized as substandard. These cases and their findings are discussed in further detail in chapter 2; however, the studies provide support for the assertion that there is a relationship between student achievement and school facilities.

In 2008, Smith attempted to identify conditions of school facilities that related to public high school students' achievement in South Carolina. In this study, student achievement was measured through the High School Assessment Program. The researcher concluded that five areas related to school facility condition affect the performance of students: science lab equipment; cosmetic condition of paint and furniture; ability to supervise and provide security; adequacy of the heating, ventilation, and air-conditioning systems; and the availability, functionality, and size of athletic facilities.

In summary, the major components of the conceptual framework for this study include the history of school facilities, the condition of school facilities, and the effects of school facilities on student achievement. Many of the school facilities in this country are in severe disrepair, and researchers have shown that relationships can exist between facility conditions and student achievement. Collectively, these topics generated a preponderance of findings to support the hypothesis that a relationship exists between the condition of school facilities and student achievement. It is within the conceptual framework that this relationship exists; it is by no means an assertion that the relationship shown by previous researchers is causal. The current research was nonexperimental, just as many of the studies reported in chapter 1 and chapter 2.

Theoretical Framework

John Dewey believed that knowledge is acquired through a person's senses and is subject to revision (as cited in Boydston, 1991). Theoretically, a form of knowledge can be a person's self-worth and the value of his or her education. If it is accepted that self-worth and educational worth are knowledge, it can be proposed that a student is gaining information about these concepts daily through the quality of his or her educational environment, thereby affirming the connection between the school facility and student wellbeing. Tanner (2000) agreed with Dewey when he stated, "The first line of reasoning [is] that the school environment influences behavior and attitude. Next, behavior and attitude influence learning; therefore, the physical environment must affect learning" (p. 312).

The work of a number of educational theorists supported this research regarding the possible effects of school building conditions on student achievement, attendance, and truancy. For purposes of this research two theorists were selected: Paulo Freier and

Abraham Maslow. Both Freier and Maslow addressed equity of opportunity or lack thereof. Freier made specific reference to societal injustices, societal constructs, and empowerment of the downtrodden through education to change their destiny (Taylor, 1993). Maslow's hierarchy of needs theory explained how an individual's growth potential is related directly to the level of needs that have been fulfilled. These needs, according to Maslow, begin at the lowest level, the need for human survival—physiological needs—to the need for self-actualization (Maslow & Lowery, 1998).

These theorists and their work inspired the need for this research regarding possible inequity of educational facilities and the effect of facilities on the achievement, attendance, and truancy of the students they house. The lack of research involving an entire school system, the limited research of this type involving Washington, DC, the nation's only city-state, and the lack of research on this topic that included attendance and truancy rates as variables affected by building conditions demonstrated a need for the study.

Studying school attendance rates and truancy independently could offer interesting results; combining them in this study allowed for a more thorough research study and possibly more reliable results. The study of attendance alone or truancy alone would have excluded vital information. Washington, DC Schools (DCPS) defines truancy as students who are chronically truant, missing 15 or more days from school in a given school year. Examining attendance rates alone would allow for holes in this study. For example, it is possible for a school to have a high rate of attendance with a few absent students consistently missing school; therefore, although the overall absentee rate is low, the intensity of the infraction is very significant. Including truancy rates might also

provide vital information about a certain subgroup in the school. Perhaps a particular race or economic group is representing a consistently higher percentage of the truants than they represent in the overall school enrollment; this type of analysis could reveal a trend not readily noticeable through examination of attendance rates alone.

The importance of examining an entire school system lies in the systemic analysis that is available from access to such information. The vast majority of research in the area of school facilities condition and its possible relationship with the learners has focused primarily on samples of populations. The use of samples can be a powerful, reliable, and valid method of producing statistically significant results; however, no statistician would argue that study of a sample of a population is more reliable than a similar study of an entire population.

Methodology

The goal of this study was to utilize a nonexperimental quantitative method, including Spearman rho correlation analysis, to examine the possible relationship between school facilities and student achievement, attendance, and truancy in Washington, DC Public Schools (DCPS). The 2005 FCI was used to measure school conditions. The measurement of student achievement was based on the results of the Stanford 9 achievement test. The results of the spring 2005 Stanford 9 achievement test were selected to measure DCPS student achievement in reading and mathematics for two reasons:

1. DCPS created, and began using in 2006, its own standardized exam, District of Columbia Comprehensive Assessment System (DCCAS); this measure did not have a

record of validity or reliability. The Stanford 9 achievement test is a national, norm-referenced exam.

2. The facility ratings were applied only in 2005, thus coinciding with the same year as the Stanford achievement measure.

The possible relationships between school conditions and mathematics proficiency, reading proficiency, attendance rates, and student truancy rates were examined.

Limitations

This study focused on school facilities, student achievement, attendance rates, and truancy rates in DCPS, using the testing population from which to garner the data. Results, therefore, may not be generalized to other geographic locations or school districts.

For the purpose of this study, school facilities were characterized as either acceptable or unacceptable; however, the original FCI tool ranked schools as unsatisfactory, poor, fair, or good. Those schools rated as unsatisfactory or poor on the original FCI were categorized as unacceptable, and schools rated as fair or good on the original FCI were categorized as acceptable for purposes of this research.

Socioeconomic status (SES) and linguistically and culturally diverse (LCD) populations were examined separately in the study to compare results to the cumulative results to ensure validity. Information regarding these factors is presented in chapter 3 and chapter 4.

Definitions

Aesthetics. Aesthetics refer to the physical attributes that contribute to the appearance of a school building, including, but not limited to, paint color, plants, windows, floors, doors, awnings, and other aspects of décor and function.

Attendance rate. This term represents the average daily percentage of students present in school during a given school year.

Condition. Condition refers to the physical state of a school building: the adequacy of a school building to properly house and facilitate the educational process.

Chronic truant. A chronic truant in DCPS is a student with at least 15 unexcused absences in a school year.

Density. This term is used to explain overcrowding. It refers to a situation in which the enrollment of the school is greater than the capacity of the permanent building(s) and instructional space by more than 5%.

Facility. Facility refers to any structure that is deemed to be a portion of a school plant.

Facility Conditions Index (FCI). The FCI is a rating system that was utilized by DCPS in 2005.

Maintenance. Maintenance refers to efforts to enhance the general preservation of a school building (e.g., painting, cleaning, and servicing furnaces and air-conditioning units).

Mathematics proficiency. Mathematics proficiency is defined as the attainment of a mathematics mean score at or above the 40^{th} percentile on the 2005 Stanford 9 achievement test by approximately 50% (48.67%) of the students at a DCPS school.

Reading proficiency. Reading proficiency is defined as the attainment of a reading mean score at or above the 40th percentile on the 2005 Stanford 9 achievement test by approximately 40% (41.92%) of the students at a DCPS school.

Population. Population is defined as students who attended a school in DCPS during the 2004-2005 school year and participated in adequate yearly progress (AYP) high-stakes testing, conducted with the Stanford 9 achievement test. DCPS reported AYP data for schools with a testing population of 40 or more students.

Proficiency. This is a ranking given to a student in DCPS indicating that the student has attained a "high" level or degree of mastery in a specific skill set.

Student achievement. Student achievement refers to the scores attained by students on standardized achievement tests.

Synthesizing. Synthesizing refers to the combining or condensing of several research results and conclusions under a single body of knowledge into a manageable document.

Truancy rate. Truancy rate refers to the percentage of students considered to be chronic truants in a given DCPS school.

Summary

Many school facilities across the country are dilapidated, depressing, and dangerous (Crampton, Thompson, & Hagey, 2001). As the school infrastructure crumbles, there appears to be a lack of priority for rehabilitating the scores of school buildings that are in need of being either replaced or revitalized. The available research on the effect of school facility condition on student achievement, as mentioned throughout chapter 1, lacks depth with reference to Washington, DC. The depth of this

study is threefold: The study of an entire school system's facility conditions and student achievement rarely was performed, the use of attendance rates and truancy as variables was not found in other studies, and the development of school facility ratings by a third party, who was not a stakeholder, was not found in the review of research literature conducted for this study. Many students locally, regionally, and nationally continue to perform under their potential, according to Cohen and Hill (2005), and researchers are trying to determine if underperformance is related to perceived and real poor conditions of schools.

The details of this quantitative study are discussed in the remaining chapters. In chapter 2 the literature relevant to the effects of school facilities on student achievement, attendance, and truancy is critically reviewed. The phenomenon is reviewed at the national, regional, and local levels.

CHAPTER 2: LITERATURE REVIEW

Introduction

This chapter presents a review of the literature pertinent to the effect of school facilities on student achievement. An exhaustive search was conducted through the use of the Proquest Informational Database, the Journal of Educational Administration, the National Clearinghouse for Educational Facilities, ERIC Clearinghouse for Educational Management, and the Council of Educational Facilities Planners for publications and dissertations that had examined the connection between school building condition and student achievement, attendance rate, and truancy rate. This review included a focus on school facility conditions at the local, regional, and national levels. The local scope was limited to the Washington, DC Public Schools. The regional scope was narrowed to the mid-Atlantic region of the United States. The national scope referred to school facilities in the United States and its territories.

Several key terms guided the initial review of literature: school buildings, school facilities, school conditions, student achievement, educational equity, and school building ratings. The preliminary search of these terms yielded numerous studies and articles pertaining to school facilities and the effects on student achievement and attendance and truancy rates, many of which were completed prior to 1991. There were very few documents that specifically mentioned DC Public Schools. Upon further research, more thorough data were discovered regarding the condition of school facilities and the effect on student achievement, including facility equity, density, school size, and dilapidated infrastructure (Hines, 1996; O'Neill, 2000; Bullock, 2007).

Theoretical Framework

The theoretical framework upon which this research was based stems from the work of two educational theorists: Paulo Freire and Abraham Maslow. The work of these two individuals was shown to have a direct correlation to the need to explore the condition of school facilities with regard to the effect on student achievement, attendance, and truancy.

Freire paid specific attention to describing the oppressive nature of the world from the perspective of those of meager means. Such theories and opinions have been significant to educators who have traditionally worked with those individuals who do not have a voice and those who are oppressed. It has been shown that those with the least economic power have the worst school buildings, both aesthetically and functionally (Taylor, 1993). Freire's idea of creating pedagogy for the oppressed, as well as the ways through which to further this idea, created an impetus for this work. Another relationship to Freire's work can be shown, specifically his concern with "conscientization"—developing critical consciousness, consciousness that is understood to have the power to transform reality and the hopelessness of some desolate communities when a new modern place of learning sprouts like a rose through concrete in their community (Taylor).

Freire (as cited in Taylor, 1993) alleged that human beings are subjects and that human beings make alterations and, therefore, can, through their actions, make changes to the humanity in which they exist. The difference, according to Freire, is with objects; people become objects when they lose hope and accept fatalism and docility as a necessary fact of life. Cohen and Hill (2005) concurred with this assertion: "Few will

argue that the physical environment impacts the people within it. And this contention has been put forth strongly in the planning of educational facilities" (p. 23).

According to Freire, education is never value neutral. Education and schooling are the products of choices made by those who control society. Therefore, education and schooling are essentially political. For this reason, school facilities reflect social economic status, as noted in the work completed by Edwards (1991) in Washington, DC.

Boydston (1991) wrote, "What the best and wisest parent wants for his own child, that must the community want for all its children. Any other ideal for our schools is narrow and unlovely: acted upon, it destroys our democracy" (p. 81). This sentiment can be linked closely to the work done by Schneider (2003) regarding the public educational facility conditions in Chicago and Washington, DC. Schneider's work indicated significantly higher scores in both math and reading on standardized tests for students with facilities that were rated as superior to their counterparts. Furthermore, as Boydston inferred, the parents in the schools that performed at a lower level in Schneider's research want as much for their children as the parents in the Chicago and Washington communities served by schools whose standardized test scores were higher.

Maslow established a hierarchy of human needs based on two categories: deficiency needs and growth needs. With regard to the deficiency needs, each lower need must be met before a person can move to the next level (Huitt, 2004). Maslow believed that once each of an individual's needs has been filled, if the need reoccurs, the individual will act to remove the deficiency that has returned. The deficiency needs are divided into five levels (See Figure 1.): (a) physiological: hunger, thirst, thermal comfort; (b) safety and security: not being in physical danger; (c) belongingness and love: being collegial with others, being

accepted; (d) esteem: being recognized as competent, given approval; and, (e) self-actualization: morality, creativity, spontaneity, problem solving.

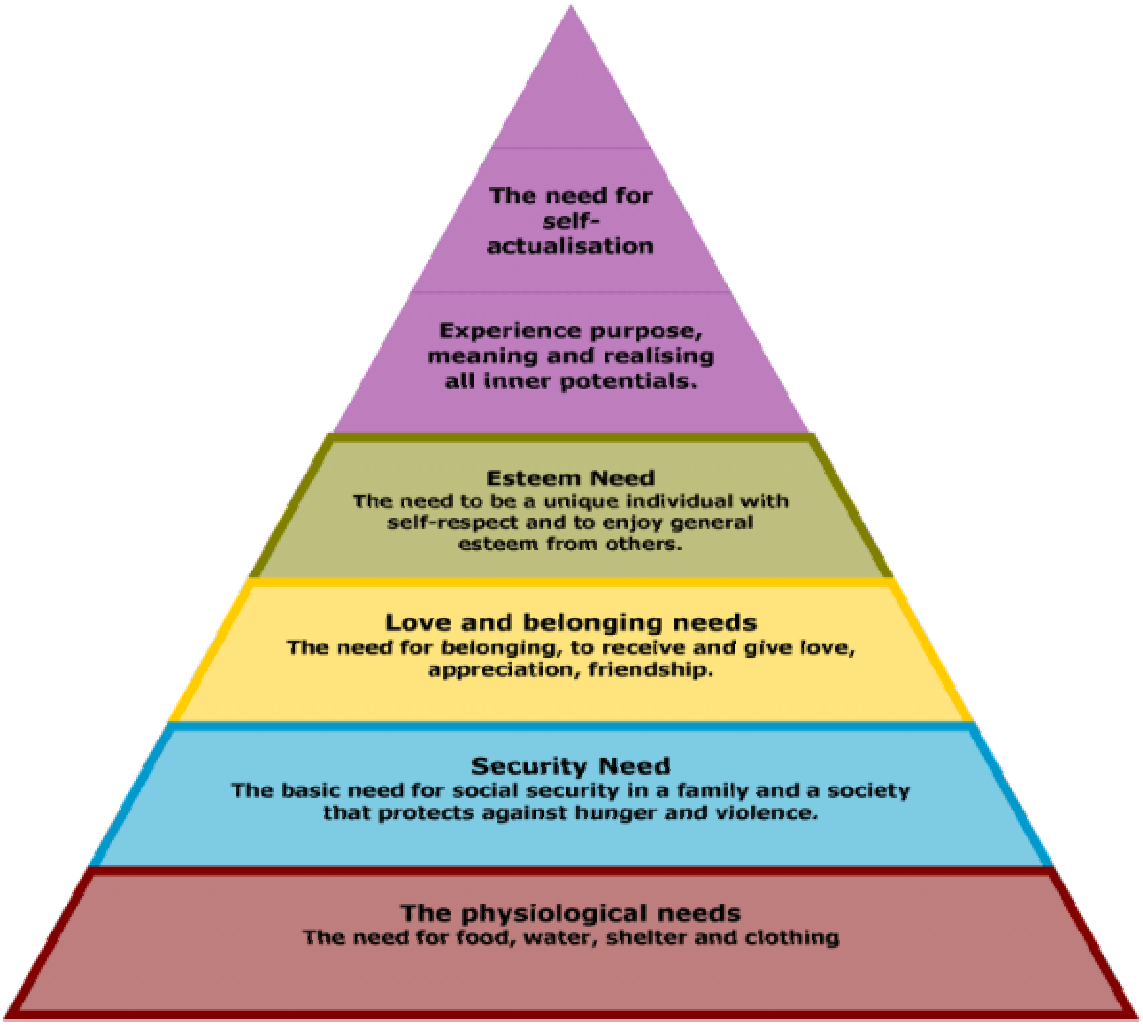

Figure 1: Maslow's hierarchy of needs.

Simmons, Irwin, and Drinnien (1987) surmised that Maslow believed that a human cannot move to satisfy his or her growth need until deficiency needs are satisfied. In Maslow's first construct of this theory he included just one growth need; the need for self-actualization.

After later research, Maslow expanded his theory to include lower level growth needs prior to the level of self-actualization and one level beyond that level (Maslow & Lowery, 1998). None of the changes to this theory, however, augmented the basic premise that one cannot move to address higher level needs until basic physiological needs have been met.

Bullock (2007) found that building condition is related to student achievement. The results of this study appear to support Maslow's theory. Middle school level students in the Commonwealth of Virginia performed better in new or remodeled schools than they did in older buildings. An assertion can be made that the more modern school facilities supported more of the lower level needs of students, both aesthetically (newer paint color and quality of furniture) and physiologically (sunlight through windows and consistent thermal comfort), thereby, according to Maslow, allowing the students to pursue satisfaction of higher level needs.

Maslow's hierarchical theory is often represented as a pyramid with the larger base of the pyramid representing the lower needs and the upper point representing the highest need, need for self-actualization (Huitt, 2004). Maslow asserted that the only reason for an individual's not moving well in the direction of the highest level is societal hindrances. Maslow cited education as one of those blockades. This assertion was in agreement with Castronuovo (2006), who made the following statement in referring to the school facilities' conditions decision-making process in Washington, DC: "Decisions based on economic data and political maneuvers, as opposed to sound educational research, will result in large schools located beyond the students' home neighborhood" (p. 2). In Castronuovo's opinion, the decisions made about the school were not made with the children's best interest in mind,

hence creating a possible blockade or hindrance to the educational excellence of which Maslow spoke.

The aforementioned works of Paulo Freire and Abraham Maslow lend themselves to varying opinions regarding educational inequities. These theorists also have inspired opinion and conversation around the question of how societal institutions (schools, government, etc.) are fueled and at times sustained by the circumstances arising from such inequities in education and society as a whole. The relationship between school building condition and student achievement is aligned to the scholarly work of Freire and Maslow in that the inequities of the conditions of the school buildings appear to be linked directly to the academic performance, or lack thereof, of students on standardized assessments. Furthermore, it can be inferred that the relationship and implications of this relationship extend much further: that school attendance and truancy rates, along with the overarching goal of schooling—to produce productive members of society— are linked to the fulfillment of lower level needs, identified by Maslow as the starting point for success in life.

School Facilities

The review of related literature is organized into three geographical sections, with each component containing subgroups, to address the major components of the conceptual framework: school facilities, student achievement, student attendance, and truancy. The geographical sections are categorized as national scope, regional scope, and local scope. National scope refers to the United States of America and its territories; regional scope refers to the mid-Atlantic region of the United States, which for purposes

of this research was restricted to Delaware, Maryland, Virginia; local scope refers to Washington, DC.

To systematically represent the diverse topics investigated within the national scope it was necessary to create subcategories. The following subcategories for the national scope were created based on the depth and breadth of the information collected: safety and health, age or maintenance, design, density, building equity, attendance, and truancy. Although all of the collected research studies fit within the previously mentioned categories, some studies overlapped, investigating multiple topics. In those cases, the study was placed in the most applicable category. Both the regional and local scopes by their nature were narrower. The lack of studies found in those areas made it unnecessary to create subcategories for the local and regional studies.

School Facilities – National Scope

Safety and Health

In 2003 a study conducted in Texas found that 68% of Region XIII principals indicated that many of the individual heat controls in instructional areas were broken or exhibited other problems (Lair, 2003). According to Lair, the schools in the Texas study were randomly selected, and the case study research was conducted using a mixed-method approach. The COPE building assessment, which was also employed by Cash (1993), Hines (1996), Lanham (1999), and Ruszala (2008), was utilized in Lair's study as a means to assess school facility condition. Lair admitted that the self-reporting analysis of the COPE was a limitation of the study, along with the small sample size of schools and the aggregate nature of the data. Data related to building structure, maintenance, and housekeeping were collected from the schools' principals using the COPE, and student

achievement was measured using the percentage of students at each school passing the Texas Assessment of Academic Skills (TAAS) subtests of reading, mathematics, and writing and the percentage passing all the TAAS tests from 1994 to 2001. The researcher tracked and analyzed student achievement over 8 years, using TAAS results of more than 24,000 students. Lair also spent time in the field recording verbal and nonverbal data. To avoid bias, questions were asked before, during, and after data collection. The study resulted in findings that merit attention and support previous research that highlighted building age, overall building maintenance, and cleanliness as elements that help explain student achievement. Lair found that of the previously mentioned predictors building age had the most significant relationship with student achievement as measured by test scores. Stated as a limitation of this study was the observation that although the research could identify possible effects of facility condition on student achievement, it could not state that building conditions alone are the cause of or result in lack of student achievement. Specifically, building age accounted for 42.5% of variability. An important caveat for this study is the fact that the schools under study consisted of 88% Hispanic and 73% economically disadvantaged students. Nevertheless, the researcher asserted that, in this case, a relationship existed between school facilities and student achievement.

Research has shown that student achievement can be linked to the quality of air that students breathe (Schneider, 2003). Poor air quality, defined as the amount of ozone in the air, is a factor in more than 15,000 schools, which house more than 8 million students (USDOE, 2002). This phenomenon has been named “sick building syndrome” by the Environmental Protection Agency (EPA). One third of all schools in Massachusetts, Rhode Island, and Maine report unsatisfactory indoor air quality; one half

of the schools in Massachusetts and New Hampshire report inadequate ventilation (USDOE).

Teacher perception of a safe and orderly environment and its relationship to student achievement were studied in one southern California elementary school district (Marsden, 2005). The research conducted by Marsden focused on 10 better performing, high-poverty schools. The impetus of this study was less on the physical school plant and more on student behavior, cultural climate, and behavioral atmosphere of the schools investigated. Whereas school facility factors made up one third of the study's focus areas, the other two thirds consisted of school and classroom environment factors. Scores in English or language arts and math on the California Standards Test (CST), along with the school's Academic Performance Index (API), were used to measure student achievement. The survey instrument was administered to 256 teachers; survey results were correlated with the achievement data. The findings of this study included the following: (a) a significant positive correlation between classroom management scales and test scores in both mathematics and language arts, and (b) a significant negative correlation between school facility and student achievement scale scores. The unit of analysis for this study was represented by the 256 teachers. For the group of schools in this study, classroom management was a much larger indicator of student achievement than was school facility condition. This study limited its focus to the influence of the single correlate—safe and orderly environment.

In the New York State School Facilities and Student Health, Achievement, and Attendance Report of 2005 (Healthy Schools Network, 2005), it was found that students

who attended schools with environmental hazards that impact indoor air quality were more likely to miss class and, therefore, lose learning opportunities.

The purpose of the New York study was to initiate research that could lead to a full, large-scale study investigating the possible relationship between environmental health of a school facility and student achievement. This study claimed to be the most thorough of its kind ever performed in the State of New York. Building condition surveys (BCS) and annual visual inspections (AVI) were utilized to assess building conditions.

The results of the BCS and AVI were correlated with an existing data base consisting of data from a student health hotline, which could receive calls from students, parents, and school staff, about student health complaints, from a sample of 30 schools in New York. The researchers claimed this process to be a "fair" indicator of potential student environmental health problems.

The final measure utilized for this report was the New York State Education Department School Report Card, which served as the student achievement measure in this research. The report concluded that there was a correlation between student achievement and environmental hazards.

The New York report also noted that school environmental health and safety remained largely unregulated and that no federal or state agency existed that was responsible for protecting children's environmental health in schools. The researchers based recommendations on the conclusions of their report:

1. Replace the current system of annual school facilities reports with one using evidence based assessments actionable in a short (one year) time frame and link it

to state funding that is currently available under the minor maintenance and repair (MMR) program to mitigate identified hazards.

2. Create unified linking codes for each school and collect data via the Internet for better accuracy and public accessibility.

3. The New York State Education Department should make the facilities environmental quality data available to parents and the general public to facilitate improvement efforts.

4. The methods used for this study, in particular the linked building and performance data, should be replicated in other counties around the state for more precision of analysis and targeting priorities. (p. 4)

Healthy Schools Network admitted that this study was limited and served simply as groundwork from which to spearhead a much larger, more thorough study.

Design

The influence of school facilities on student achievement has received little attention by educational leaders (Ayers, 1999). Ayers explored the relationship between high school facilities and student achievement in Georgia; 27 high schools in two Regional Service Educational Area districts were selected for study. Of the schools surveyed 26 responded, resulting in a response rate of 96%. Of the 26 that responded, 24 agreed to participate in the study. Criterion variables in this study were English, mathematics, social studies, science, and writing. For the inferential analyses, data were analyzed using multiple regression statistical analysis. For each subject a full model regression analysis and a reduced model regression were completed. For each full regression model one criterion variable (English, mathematics, social studies, science and

writing), all correlative variables from the Design Appraisal Scale for High Schools (DASH-I), and demographic variables were utilized. For the reduced regression model, one criterion variable and all demographic variables, but not DASH-I, were utilized. The demographic variables included SES, educational background of the teachers, teachers' years of teaching experience, and population characteristics of the schools. The DASH-I was completed for participating high schools to determine the total score for the educational facilities variable. Ayers concluded that school design variables explained approximately 6% of the variance related to English and social studies achievement. No limitations were cited for this study by the author; however, it can be asserted that 27 is too small a sample for more than 1 variable.

Hughes (2005) conducted a similar study in a large urban Texas school district. The study focused on determining if a relationship exists between school facility design variables and student achievement. Design was assessed by using the Design Assessment Scale for Elementary Schools; the design variables included movement patterns, large group meeting places, architectural design, daylighting and views, psychological impact of color schemes, building on student's scale, location of the school, instructional neighborhoods, outside learning areas, and instructional laboratories. Hughes measured student achievement with fifth-grade reading, math, and science scores on the 2003 Texas Assessment of Knowledge and Skills (TAKS). *T*-tests were conducted to determine the relationship between school building design variables within the Texas Education Agency (TEA) rating categories of exemplary, recognized, and academically acceptable). An ANOVA was used to determine if a relationship existed between TEA categories and building design variables. There was a two-pronged finding from this study: (a) a

statistically significant relationship between building design and student achievement, and (b) no statistically significant relationship between building variables and school ratings.

Age and Condition

Smith (2008) identified five areas related to school facility condition that affect student performance in public high schools in South Carolina: science lab equipment; cosmetic condition of paint and furniture; ability to supervise and provide security (i.e., cameras, PA systems); adequacy of the heating, ventilation, and air-conditioning systems; and the availability, functionality, and size of athletic facilities. The assessment utilized by Smith to represent the student performance variable was the High School Assessment Program.

Smith (2008) utilized Analysis of Moment Structures (AMOS) to analyze the statistical data. According to the author, AMOS provides a higher level of complexity in terms of analysis. To gather information, Smith used the CAPE; the CAPE was first developed by Cash (1993) and then utilized by Hines (1996). Because the instrument asks local principals to be unbiased self-evaluators of their school facilities, there is a limitation to the objectivity of the data being collected. As was the case in this dissertation, Smith excluded specialized schools: those that housed students who were incarcerated or schools that had nontraditional formats. In addition, Smith excluded the school in which he had served as principal. Of the 195 schools invited to participate in the study, 123 of the schools returned surveys that were usable; incomplete data deemed 4 surveys to be unusable.

Although Smith (2008) focused on the principal's perspective in rating buildings to establish facility condition, Stallings (2008) utilized teacher opinions expressed through the North Carolina Teacher Working Conditions Survey to establish the condition of school facilities; more than 64,000 educators responded to the survey, representing 85% of North Carolina's public schools and 115 school districts. A response rate of over 40% from each school district was required to provide valid teacher responses.

The questions on the survey instrument were divided into four major sections; Stallings (2008) found only two sections to be applicable to this research. The first section was divided into five subsections: time, facilities and resources, teacher empowerment, leadership, and professional development. Teachers were requested to rate how the previous subsections impacted their satisfaction with their job and their ability to perform.

The second section utilized by Stallings (2008) consisted of six core questions regarding teachers' perceptions of working conditions in their buildings and their perceptions of how these affected various aspects of their ability to perform.

Facilities and resources were found to be the most important condition for 19% of the teachers who responded in Stallings' (2008) study. Their responses ranked facilities as the third most important factor noted in the survey. When asked which aspect of the work environment most affected their willingness to stay at their current school, teachers ranked the domain of facilities and resources third at 24.10%, behind professional development and time during the work day.

Teacher responses to survey questions about facilities and resources were compared to responses to other questions regarding work influences on their job satisfaction and future professional plans. Independent sample *t*-tests were performed after the respondents were divided into two groups: (a) those wishing to stay in their current schools (n = 41,488) and (b) those wishing to leave (n = 22,698). The results of the study implied that work environment and availability of resources do impact job satisfaction of teachers and may be associated with their decisions to remain in teaching. The researcher acknowledged obvious limitations in this study. In addition, the response requirements were different throughout the school districts in the state, thereby allowing significantly higher representation from teachers in some school systems (Stallings, 2008).

The results of poor school maintenance can include negative effects on several aspects of school learning, including teacher turnover, learning atmosphere, and quality of personnel (O'Tuel, 1972). Although the relationship between school facilities and behavior has not been well documented, researchers have found cases in which older, decrepit buildings produce a higher disruptive-incident ratio per student than do newer, well-kept buildings (Cramer, 1976). A study on vandalism found that neighborhoods and communities that viewed schools as aesthetically pleasing demonstrated an enhanced sense of pride. Poor maintenance created an environment that adversely affected students with regard to discipline, pride, and morale (White & Fallis, 1979).

Wicks (2005) studied the relationships among new school buildings and student academic performance and school climate in Mississippi. The study analyzed the grade point averages (GPAs) of 93 randomly sampled kindergarten through 12th-grade students,

who were moving into a new school facility. The students' GPAs were averaged for their last year in the old facility and then compared to their GPAs for the 1st year in the new facility. Although the student GPAs were slightly higher in the new facility, the researchers acknowledged the difference was not statistically significant.

The second part of Wicks' (2005) study entailed creating a building condition rating using the school principal's assessment. Ten principals were asked to assess whether or not their own buildings were conducive to learning, thereby creating the same limitation that Cash (1993), Hines (1996), Ruszala (2008), and Smith (2008) experienced in using the CAPE rating instrument: There is an inherent limitation of objectivity when a principal is asked to rate the building that he or she is responsible for maintaining.

The final phase of Wicks' (2005) study investigated school climate ratings provided by the students and faculty. The CFK Ltd. School Climate Profile was completed by a sample of 123 faculty and 72 students; these subjects rated their old school building and their new school building. ANOVA and *t*-tests were applied to the data. The overall group's mean differences were positive and statistically significant in favor of the new school building.

Edwards (2006) conducted a qualitative study with the purpose of examining the possible ways in which middle school and high school students in an urban school district in Ohio responded to being educated in facilities in a state of disrepair. The research questions that guided the research were the following:

- To what extent do students perceive their academic achievement, motivation and/or personal conduct is positively or negatively affected by the condition of the facility in which they are educated?

- In what ways does the condition of an educational facility affect students' perceptions of the overall quality of the teaching and administrative staffing within their building?
- In what ways does the condition of an educational facility affect students' perceptions of the degree to which their school district values their education and personal safety? (p. 12)

The researcher collected data for this qualitative survey using surveys, interviews, and observations, which were conducted during the school district's 2006 traditional summer school session. Information was collected from 14 middle school and 25 high school students. Each participant completed one 14-item survey and one interview with the researcher. In addition to the administered surveys, the researcher also conducted participant observations. Analysis revealed that students involved in the study perceived a connection between the condition of the school they attended and their own levels of motivation, conduct, and achievement.

In one of the most comprehensive analyses of the effect of school facilities on student achievement, Lemasters (1997) synthesized 53 studies from around the country. The analysis included numerous variables related to building condition and design, such as climate, density, classroom structure, and age, and their comparative effects on educational and behavioral outcomes.

Lemasters (1997) developed a matrix relevant to the research. This matrix identified researchers and the areas studied, as well as gaps in the research; the matrix also identified the variables in the studies. This synthesis was the first of its kind in more than 14 years.

A limitation of Lemasters' (1997) study and its use of the meta-matrix was that it did not address the total genre of facility planning and design. The scope was limited to the relationships among school facilities, student achievement, and student behavior.

Lemasters thoroughly reviewed documents and searched numerous databases, including ERIC and the Avery Index, as well as other available sources, in an effort to synthesize every significant study available. Some of Lemasters' reported findings were the following:

1. Maintenance and age: Studies were found involving student achievement as the dependent variable where a significant correlation existed between student achievement and physical environment, including Edwards (1991) and Bowers and Burkett (1989).

2. Classroom structure: Studies differed in their conclusions in investigating a relationship between student achievement and classroom structure. Javor (1986) found no relationship, whereas Mwamwenda and Mwamwenda (1987) did confirm a relationship.

3. Color and light: Bross and Jackson (1981) and Chan (1982) supported the hypothesis that the color of a room can affect student performance. Sydoriak (1984) found that white or blue walls had no effect on student performance.

Although the findings were not definitive, Lemasters (1997) concluded, "Although not conclusive, data from the studies indicated that all of the independent variables affected the dependent variables of student achievement and behavior" (p. ii).

In attempting to identify the independent effects of school quality in a Milwaukee study of 139 schools, Lewis (2000) found that "good" facilities exerted an impact on learning. In O'Neill's (2000) study of selected Texas middle schools, building condition

was determined using the Total Learning Environment Assessment (TLEA). This assessment tool was completed by middle school principals in Region XIII. Student data were obtained from the Public Education Information Management System (PEIMS). O'Neill designated student achievement, attendance, and teacher turnover rate as dependent variables. The school buildings rated in the top 25% of middle schools according to the TLEA were compared to the bottom 25% of school buildings. *T*-tests were conducted to compare the means of dependent variables across independent variable categories. O'Neill reported that student achievement scores were higher in the 17 middle schools with the highest total TLEA ratings compared to the 17 school facilities with the lowest TLEA ratings. *T*-test results for student behavior, student attendance, and teacher turnover rate were not significant at the .05 confidence level. O'Neill used the following research questions to guide his research:

1. To what extent do school facilities influence student achievement as reported by the PEIMS at Texas middle schools in Region XIII (ESC)?
2. To what extent do school facilities influence student behavior as reported by the PEIMS at Texas middle schools in Region XIII ESC?
3. To what extent do school facilities influence student attendance rate as reported by the PEIMS at Texas middle schools in Region XIII ESC?
4. To what extent do school facilities influence teacher turnover rate as reported by PEIMS at Texas middle schools in Region XIII ESC? (p. 17)

As O'Neill (2000) attempted to answer the stated research questions, the necessity to make assumptions was acknowledged. Those assumptions were that (a) administrators understood the purpose of the instrument and answered to the best of their ability, (b) the

researcher would be impartial in collecting and analyzing the questionnaire data, (c) the interpretation of the data would accurately reflect that which was intended, and (d) the individual to whom the survey was mailed would be the individual to complete the survey.

Just as O'Neill (2000) listed and acknowledged the assumptions of the research, limitations to the study also were listed, including the acknowledgment that (a) the findings from the study could not be generalized to any group other than the 76 middle schools in the study because of the size of the study in comparison to the size of the school system, (b) only the identified 1999-2000 school district administrators at Texas middle schools in Region XIII ESC were surveyed, and (c) the objectivity of the responses to the survey instrument might have been affected because of the possibility that a self-reported survey asking local in-school personnel to assess their own facility conditions might reflect personal bias. The impossibility of identifying all the variables that could affect student achievement, behavior, attendance, and teacher turnover rate was also noted.

Syverson (2005) studied the relationship between building condition and student scores in high school math and English in Indiana. Building conditions were determined by principals' ratings on the CAPE. Of the 244 possible principals that could have been surveyed, a sample size of 50 was randomly select to participate; of that 50, 32 responded. Due to incomplete data, 4 surveys were dropped, leaving a response set of 28 surveys, thereby constituting a response rate of approximately 64%. Depending upon the principals' rating survey results, the 28 schools were categorized as substandard (7), standard (15), or above standard (6).

The student achievement measure for Syverson's (2005) study was the Indiana Statewide Test for Educational Progress (ISTEP). The researcher found a significant relationship between building condition and student achievement utilizing the Spearman rho correlation coefficient, which is also a part of the methodology of the current study.

It is important to note that 75% of the schools in Syverson's (2005) study were perceived by the building principals to be of standard or above standard condition. That finding begs the question of whether or not surveying the person whose responsibility it is to maintain a clean and orderly building is the least biased way to rate a building's condition. It can be argued that most individuals responsible for a task will rate that task as either standard or above standard, based on the scale used in the study. Another point of curiosity lies in the fact that 50% or more of the students passed the ISTEP in 82% of the participating schools. This finding might lead readers to believe that the majority of these schools were at least moderately achieving places of learning. The 64% response rate further leads to the assumption that the most diligent principals responded. One can assume that if a principal is more diligent in responding to a survey, he or she has a successful school that allows time for such an endeavor; one can further assume that possibly the 36% who did not respond had more pressing issues, such as school management and increasing test scores.

Density and Size

When researchers in Kentucky examined students' scores on the Kentucky Core Content Test (KCCT), it was found that the scores of students enrolled at larger schools were generally as high or higher than the scores of their counterparts enrolled at smaller schools. Surprisingly, when the information was further disaggregated, scores for middle

and high school students were generally higher for the students who attended the larger schools, whereas the elementary school students had inverse results (Clark, Hager, & Nikolova, 2006). The results of this Legislative Research Commission study were not reported to be statistically significant.

The statistical analysis of the Kentucky report included the school years 2001-2005; the researchers analyzed additional years to report any potential useful trends. Researchers acknowledged that information for this project was gathered from different sources, thereby providing some inconsistencies in comparison of figures, tables, and charts but not threatening the substance of the analysis. Researchers compared the student KCCT results in all categories except writing; the results were compared between different schools based on size.

In 1995, the Citizens' Commission on Planning for Enrollment Growth study in New York City, entitled "Bursting at the Seams," reported that 75% of the teachers indicated that overcrowding affected classroom activities, and 70% of the teachers indicated that overcrowding affected their instructional practices. There was evidence that overcrowding can have a dire impact on learning, especially with high-poverty populations. Students in overcrowded schools involved in this study scored significantly lower on both mathematics and reading exams than did similar students in less crowded schools (Burnett, 1995). This report asserted that the board it represented was composed of educators and policymakers; however, no methodological evidence for the data collected was presented.

According to a 1998 report issued by EdSource, Inc., "the growth in California's student population . . . exceed[ed] the peak years of the baby boom generation by more

than one million students. This increase, combined with deferred maintenance, . . . created a strain on the state's educational facilities" (p. 2). Overcrowded schools deal with their crises in a number of ways. According to a document published by the U.S. Department of Education (2002), 36% of schools reported using portable classrooms, and 20% reported the creation of temporary instructional space. This finding translates into approximately 28,600 schools' using temporary classrooms and 15,700 creating temporary instructional space. Stevenson (2006) found that overcrowding, as well as overworked teachers, created stressful working conditions for teachers and led to higher teacher absenteeism.

Creative solutions used by some districts to combat overcrowded schools include the following: leasing buildings, using year-round schools with sliding schedules, collaborating with universities and businesses, and implementing extended-day programs (Burnett, 1995).

Eight doctoral students and graduate faculty members of the University of South Carolina conducted a series of studies over a 10-year period (Stevenson, 2006). These studies examined the relationship between school climate and student academic performance. The research explored this topic at all grade levels, including elementary, middle, and high. Each study used statewide data as measures. One researcher used SAT scores as the measure of academic achievement for high schools whereas others employed a study design that measured student success by analyzing Metropolitan Achievement Tests (MAT7) results. At the elementary level, another researcher used multiple years of MAT7 data in conducting research on size. One researcher in the group analyzed state designations of success (incentive award winners and dysfunctional school

classification) in 1996; another analyzed the state's Palmetto Achievement Challenge Tests (PACT) data for the 2001 academic year.

These variations raise concern about the comparability of results across studies and the generation of acceptable conclusions. There is evidence that the use of differing research models added to the body of knowledge regarding the effects of school size; however, comparison across these South Carolinian studies, much less across studies in multiple states or regions, should be interpreted cautiously. The results were varied, thereby providing credence to the idea that establishing an ideal school size is a complex issue not as easily determined as some researchers have surmised (Stevenson, 2006). The synthesized findings of these studies conducted by students and faculty over a 10-year period indicated no consistent relationship across the studies between school climate and student academic performance.

Density of schools, characterized as overcrowding, according to the previously cited research, appears to have a relationship with student achievement. Although this factor may not represent a direct correlation with a school's appearance and maintenance, it can be stated that the lack of adequate school buildings contributes to the lack of space, which contributes to overcrowded conditions.

Facility Equity

In the American political system, education is primarily a state responsibility. School facilities, however, are generally viewed as a part of the local district's responsibility. The federal government mandates for improved facilities are not accompanied by federal funds to assist in the endeavor. It is, therefore, up to each local district to depend on local taxpayer ability and willingness to provide funds toward such

an effort. This policy results, more times than not, in glaring inequities in school environments among districts in the same state (Frazier, 1993).

A comparison of the funding practices between urban and suburban school districts can reveal an inequity of resources. An example of this can be noted as far back as 1988, when the largest urban school district in the country, New York City, reported a per-pupil expense of $4,351; surrounding counties reported amounts $1,000 to $2,000 higher. Links between per-pupil expenditures and achievement were found when exact expenditure categories were isolated and students with the same per-pupil allocations were compared (Gaylord, 1988).

Variations in the quality of Ohio's public school facilities have been cited as key evidence for the violation of the Uniform Education Articles provided by the state's own constitution. The courts' interpretations of Uniform Education as it relates to facilities have extended beyond the right to have access to adequate facilities and materials, to the right to have equitable places of education for all constituents (Schneider, 2003).

Crampton and Whitney (1995) wrote, "Inequity in school facilities is emerging as a pivotal factor in court decisions that have ruled state school-funding systems unconstitutional" (p. 15). Arizona's school funding system was the first to be declared unconstitutional solely because of the condition of school facilities. In Ohio, a court decided that the entire school funding system was unconstitutional. Statewide facility condition assessment is needed in most states (Crampton & Whitney).

In recent decades states implemented school reforms in attempts to ensure equity, but in the rush to implement the policies, school facilities were ignored while the focus moved to textbooks, curriculum, and number of staff. The result in some states was an

even wider gap in the quality of facilities (Hunter & Howley, 1990). Hunter and Howley wrote, "The local property tax still strongly influences the quality of school buildings in many states" (p. 13). Geier (2007) reported key findings that included the following: "Michigan schools have buildings that are in definite need of repair and there are significant discrepancies in the quality of buildings among rural schools and its counterparts" (p. 111).

A study of school financing and facilities was conducted in the 10 American-affiliated Pacific entities of the United States. The study found a wide range in the financing of schools as well as in the availability and condition of school facilities in the region. With the exception of schools in Hawaii, schools throughout the Pacific entities of the United States were found to be in dire need of funding to make school equity a reality (Kawakami, 1993).

As indicated in the aforementioned research, there are inequities in educational funding in terms of school facilities. Researchers have agreed that a condition assessment tool is needed to ensure that these inequities are corrected (Frazier, 1993; Gaylord, 1988; Crampton & Whitney, 1995)

Attendance and Truancy

McGowen (2007) investigated the impact of school facilities on student achievement, attendance, behavior, completion rate, and teacher turnover rate at selected Texas high schools. This study expanded on the research of O'Neill (2000). Facility conditions were determined through the use of the TLEA, the same measure that O'Neill used; TLEA was divided into two sections and seven subsections. The first section was entitled Educational Adequacy and comprised the following subsections: Academic

Learning Space, Specialized Learning Space, Support Space and Community/Parent Space. Student achievement was based upon language arts, mathematics, science, and social studies performance on the TAKS. The TLEA was designed to be completed by the principal or principal's designee on high school campuses in Texas with enrollments between 1,000 and 2,000 students and an economically disadvantaged enrollment of less than 40%; 101 high schools in Texas met the criteria for the study. The response rate for the TLEA was 30%; this response rate prompted a change in the research. McGowen then decided to compare data for the survey responders to data for the nonresponders in an attempt to determine if the sample was indeed a representation of the population. Comparison of group statistics for the five dependent variables, which included a visual comparison of means, standard deviations, and standard error means, indicated that the two groups of schools, responders and nonresponders, were similar. McGowen, however, used *t*-test analysis to ensure that the two groups were statistically similar. Data for math and science resulted in variances that proved the two samples were significantly different in achievement. McGowen stated that the responders were representative of the study population across the state.

The data for the aforementioned variables in McGowen's (2007) study were derived from the Public Education Information Management System (PEIMS), which is maintained by the Texas Education Agency. The same data set was used by O'Neill.

McGowen (2007) used multiple regression models to compare sections and subsections of the TLEA with each of the five dependent variables: student achievement, attendance, behavior, completion rate, and teacher turnover. There was no statistically

significant relationship found at the .05 level between student achievement, attendance, or completion rate and school facility conditions rating.

Limitations for McGowen's (2007) study included the following:

1. The study included only identified 2003-2004 school administrators meeting the designated criteria.

2. Personal biases of the school personnel completing the instrument may have affected the objectivity of the responses to the survey instrument.

Based upon an exhaustive search of several databases, McGowen's (2007) study was the only one found, nationally, regionally, or locally, that used either attendance or truancy as a dependent variable with the condition of school facilities as an independent variable.

This review of research literature on the subject of school facilities and the possible effects on student achievement, attendances rates, and truancy also included studies at a regional level. The geographical focus was on findings in the mid-Atlantic region of the United States.

School Facilities – Regional Scope

Multiple studies over the past 26 years have produced evidence at varying levels of sophistication to assert that the building in which students spend the majority of their time learning may have a relationship with their achievement (McGuffey, 1982; Bullock, 2007); however, very few have been conducted in Washington, DC and even fewer have included attendance rates and truancy as variables in conjunction with student achievement. Cash (1993) and Hines (1996) concluded that secondary students in both rural and urban areas of Virginia performed better in educational facilities of superior

quality. Cash's study of the entire population of small, rural high schools in Virginia revealed that student achievement scores were higher in schools in better physical condition. In addition, science achievement scores were higher in facilities with better science labs. After controlling for SES, Cash found that standardized achievement test scores were as much as five percentage points lower in buildings with poorer building ratings.

Cash (1993) assessed building condition using the Commonwealth Assessment of Physical Environment (CAPE). This instrument was completed by 47 schools categorized as small and rural. Cash found that achievement was more affected by cosmetic factors. Cosmetic building items were defined on the CAPE as interior wall paint, interior paint cycle, exterior wall paint, exterior paint cycle, swept floors, mopped floors, graffiti, graffiti removal, classroom furniture, and upkeep of the school grounds. Student achievement was determined by the scale scores of 11^{th} graders on the Test of Academic Proficiency, and it was then compared to the ratio of the number of expulsions, suspensions, and violence and illegal drug abuse incidents to the enrollment for each school. The previously mentioned variables, building conditions, student achievement and behavior were analyzed using analysis of covariance, correlations, and regression analysis.

Cash's (1993) study was conducted with principals, who rated their school facilities. In addition to the cosmetic building items ranked through the CAPE, principals ranked the following environment or structural factors of the building: building age, windows, flooring, heating, air conditioning, roof leaks, adjacent facilities, locker

condition, ceiling covering, science labor equipment, science lab age, lighting, wall color, exterior noise, density, and site acreage.

Cash's (1993) study found that student achievement scores were better in schools with higher building ratings. Science achievement was better in schools with better science labs, and student discipline incidents were surprisingly higher in schools with better facility conditions. Of the 41 responding schools, 10 rated their schools as substandard, 21 as standard, and 10 as above standard.

In a study of urban schools in Virginia, Hines (1996) found that student achievement as measured by standardized test scores was as much as 11 percentage points lower in inferior school facilities than the achievement of students in well-maintained school plants. In fact, percentile rank scores in one large high school generated a 17-percentage point difference on one subtest. Hines chose the CAPE as the tool to assess building condition. Student achievement was defined using the scale scores of the Tests of Academic Proficiency (TAP) for Grade 11 during the 1992-1993 school year. The study involved 88 schools. As in similar studies, Hines controlled for SES by using the free and reduced-price lunch statistic for each school. Variables were analyzed using analysis of covariance and correlations.

Lanham (1999) found several links between school facility conditions and student achievement in a study of 300 randomly selected Virginia elementary schools. Data on building and classroom condition were collected from building principals through the CAPE survey. The 1998 standardized test scores of third- and fifth-grade students in the categories of English, mathematics, and technology (fifth grade only) were analyzed. Building surveys were completed by each school's principal. The variable of SES was

responsible for the major percentage of variance in English, math, and technology success. A large portion of the schools surveyed were more than 30 years old; many structural deficiencies were noted in classrooms, thereby lowering the buildings' CAPE scores. Other variables found to be significant in this study comparing student achievement of third- and fifth-grade students were frequency of floor sweeping and mopping and ceiling type. Some of the specific factors cited as problems by principals included lack of specialized instructional space and small classroom size. Although the principals cited those factors, no statistical significance was found with regard to the relationship of those variables to student achievement.

Crampton et al. (2001) reported that all states in the mid-Atlantic region of the United States lacked billions of dollars in meeting funding needs for school infrastructure. Those states included the following: Maryland ($3,891,926,876), North Carolina ($6,210,938,727), and Virginia ($5,701,313,528).

In 2007 Bullock studied the relationship between school building conditions and student achievement at the middle school level in Virginia. Student achievement was measured by performance on the Standards of Learning (SOL) examinations. Facility conditions were rated using the CAPE assessment instrument. As Cash (1993) and Hines (1996) established, utilizing the CAPE includes the expectation of principals to evaluate their facilities. The third component used in Bullock's study was the SES of the students attending the schools, as measured by the percentage of students participating in the free and reduced-price lunch program.

The response rate for Bullock's (2007) study was 58%, with 111 of the 191 eligible schools choosing to participate. Of the 111 participants, 29 school facilities were

rated as substandard and 27 school facilities as standard; the schools that were rated as standard were not utilized in this study. Unlike Cash (1993) and others, Bullock chose to use only the upper and lower quartile of CAPE responders.

Bullock's (2007) study found that building condition is related to student achievement. Students performed better in newer or recently renovated buildings than they did in older buildings. The percentages of students passing the Virginia SOL tests were higher in English, mathematics, and science for the students in buildings rated as standard by their principals compared to the passing percentages for students in substandard buildings. This difference was significant at the .05 level of significance. The results of Bullock's study were consistent with the earlier studies that examined high schools in the Commonwealth of Virginia.

Ruszala (2008) also utilized the CAPE to assess the condition of high school facilities in the Commonwealth of Virginia's metropolitan school divisions. The purpose of her study was to investigate whether or not there was a relationship between teacher satisfaction and school facility conditions. The Teacher Opinionaire of Physical Environment (TOPE) survey was used to measure teacher satisfaction with regard to specific structural and cosmetic school building conditions. The CAPE and TOPE surveys were mailed to 25 randomly selected metropolitan school divisions in Virginia, 15 divisions participated; there was a 60% participation rate for the CAPE (23 respondents) and a 79% return rate for teachers completing the TOPE (851 respondents).

The CAPE results indicated that about half (11) of the principals rated their respective high schools as standard, about half (11) of the principals rated their schools as above standard, and 1 principal rated his or her school below standard with regard to

school facility condition. The TOPE ratings were categorized by several factors, including paint, floor, light, density, thermal, acoustics, indoor air quality, and building age; each of the factors held the same weight during analysis. The mean was calculated. Schools building age was ranked by using the following scale: (a) schools 19 years of age or newer were identified as above standard, (b) schools between 20 and 49 years old were identified as standard, and (c) schools that were 50 years or older were identified as substandard. A Person correlation coefficient was calculated to measure the strength and linear relationship between the TOPE and CAPE variables. As noted in prior studies, CAPE produces one overall measure for building condition, with two subcategories: cosmetic and structural. The results indicated a moderately positive correlation between the overall building condition totals, as indicated by responses to the CAPE and the TOPE. Results of the Pearson motivated additional analysis; thus, an exploratory multiple regression analysis was undertaken, in which paint emerged as a significant predictor. It should be noted that these results involve teacher satisfaction and its relationship to facility condition. The satisfaction of teachers, however, may be directly connected to student achievement. It can be asserted that the more satisfied a teacher is with his or her work environment, the better the teacher will perform. That is, the fewer the distractions the more on task the teaching will be, and more teaching begets more learning (Ruszala, 2008).

The results of Ruszala's (2008) study are consistent with the results of the three previously reviewed studies using the CAPE. The indication is that building condition indeed has an effect on student achievement; however, the threat to validity remains. Only 1 of 23 principals' rating his or her building as less than standard points to the

possibility that asking a school building administrator to evaluate the building he or she is responsible for maintaining can create an obvious conflict of interest.

It should be noted that the CAPE has been used numerous times in research regarding this topic; there are several references to the CAPE in chapters 1 and 2 of this study. In fact, Cash, Hines, Ruszala, Bullock, O'Neill, McGowen, Schneider, and Edwards, among others, all measured the condition of school facilities with an instrument that had to be completed by a constituent of the school: either the CAPE or TLEA for principals or the TOPE for parents. Therefore, a bias inherent in this type of survey represents a threat to the validity of all of these studies.

An inherent weakness of the CAPE has been noted in that it allows personnel with whom the responsibility lies for school maintenance to rate their own schools in terms of facilities condition; consequently, bias can easily be viewed as a possibility. Furthermore, there are two other weaknesses in this design:

1. It is likely that a building rater who is sufficiently diligent and able to take time from the day-to-day operation of the school to respond to a survey is proficient at his or her job; conversely, a terrible principal would likely have neither the time nor the motivation to respond.

2. A principal responsible for a building's condition, who then receives a survey regarding the condition of that school, might be influenced by his or her pride or lack of pride in the building's condition and how it has been maintained: for example, the least proud principal would not be anxious to send in a survey including information indicating his or her incompetence.

Washington, DC was the focus of the local scope for the review of research literature on school facilities and the possible effect on student achievement. The public school system for Washington, the capital city of the United States, served 55,000 students in 146 schools at the time of this research. In addition, the city had 23 private schools and 52 charter schools that were educating more than 23,000 students.

School Facilities – Local Scope

On Monday, April 23, 2007, Mayor Adrian Fenty signed the District of Columbia Public Education Reform Amendment Act of 2007, the school governance bill that gave the mayor autonomous authority over DCPS. The act passed the city council with a vote of 9-2. This bill represented the biggest change in District government since Home Rule was instituted in 1974 (21st Century Fund, 2007). In one of the Mayor's first acts as school leader, an Office of Public Education Facilities Modernization was established to take control over all aspects of planning, design, and construction for new and modernized public school buildings; the office is overseen by the Department of Education and the Parents United for DCPS organization. According to a 2003 report of the Parents United organization, the average DC public school was 65 years old; further, in 1989 the school system was spending an average of $18 million annually on school facilities. That amount represented an average of $300 per pupil, one of the lowest rates in the country. In a 1992 court case, *Parents United v. Kelly*, Civil Action No. 92-3478, it was ruled that the Washington, DC public school system was in repeated violations of the DC Fire Code (Parents United for the DCPS, 2003). This ruling resulted in a month-long delay of the opening of school in 2000 and, eventually, a new DCPS Facilities Master Plan (C. Brown, personal communication, November 2, 2006). The original DCPS

Facilities Master Plan was written in 1996 and revisited in 2006 by Superintendent Dr. Clifford Janey. Mr. Cornell Brown, Executive Director of School Facilities and his team revised the DCPS Master Education Plan, which included the Master Facilities Plan. This plan included provisions for consolidating and rightsizing DCPS schools that were underenrolled, as well as schools with a history of institutional failure. At the time of this research, 12 schools either had been closed or consolidated. The purpose of closing the school facilities was to eliminate unnecessary spending and, in turn, to spend the funds where they could be better used throughout the school system (C. Brown, personal communication, January 2, 2007). The process for the rightsizing included several town hall meetings with communities as well as hearings with the city council and school board.

Schneider (2003) investigated DCPS facilities and student achievement and compared the results to similar research in Chicago Public Schools (CPS). The Center for Survey Research at SUNY Stony Brook conducted telephone interviews with 688 CPS teachers. Interviews were conducted using a Computer Assisted Telephone Interviewing (CATI) based system. The sample was drawn from a list provided by the Chicago Teachers Union that contained names of 24,319 teachers from 591 schools. A total of 1,796 teachers from 383 schools were randomly selected for this sample. Of that sample, 1,252 phone numbers were valid; 688 interviews were completed, resulting in a 55% response rate.

Simultaneously, teachers in DCPS were mailed a survey that was said to be the equivalent to the phone survey utilized for the teachers in CPS; 4821 surveys were mailed to DCPS teachers, and 1273 returned completed surveys, for a return rate of 26.41%.

Schneider's (2003) research was two pronged. The intention of the first portion of the study was to examine the extent to which school facilities, as evaluated by teachers, related to standardized test results from the 2001-2001 school years, while controlling for demographics and income. The purpose of the second portion of the study was to measure the extent to which three objective measures of school facilities affected how teachers assessed the design and condition of their schools.

One barrier to the first portion of Schneider's (2003) study was that each school system, DCPS and CPS, used different measures for student achievement: DCPS used the Stanford 9, whereas CPS utilized the ITBS. The percentage of students scoring at the top two tiers of Stanford 9 scoring indicators, proficient and advanced, served as the measure of student achievement for DCPS. The percentage of students scoring at the top two tiers of ITBS, at grade level and above grade level, served as the measure of student achievement for CPS.

Schneider (2003) reported that 64% of the variance in reading scores and 59% of the variance in math scores, controlling for demographics, represented an independent effect of facilities on reading and math performance in DCPS. The reported difference between students in the best and worst facilities in Washington, DC was 3% for both reading and math, both favoring the best facilities.

Schneider (2003) reported that 76% of variance in reading scores and 65% of the variance in math scores, controlling for demographics, represented an independent effect of facilities on reading and math performance in CPS. The reported difference between students in the best and worst facilities in Chicago was 3% in reading and 4% in math, both favoring the best facilities.

The second portion of Schneider's (2003) study used standard regression techniques to measure the extent to which teacher assessments of school building design and condition are affected by three measures of school facilities: total expenditures per square foot, building age, and square foot per student. Measures of student body demographics in each school were made available to control for the possible effect of those variables on teacher evaluations.

According to Schneider (2003), in DCPS neither capital expenditures per square foot nor building age are related to teacher evaluation of school design; however, results showed that space does matter. As the space available to students increased, teachers found fewer problems with the design of their schools. The most crowded schools generated a scale score of .42, which was significantly higher than the score for least crowded schools, which was .35.

Interestingly, CPS and DCPS had identical scale scores with regard to space. Test findings in Chicago showed that building age significantly affected teacher evaluations. The older schools had a scale score of .42, which was significantly higher than the scale score for newer schools, which was .37.

The sample of DC school teachers rated their school facilities at an average of 1.98 on a 4-point scale: 0 = *unacceptable*, 1 = *fair*, 2 = *good*, and 4 = *excellent* (Schneider, 2003). More than half of the DC teachers were dissatisfied with their facilities, and more than 40% thought their facilities were not suitable for teaching and learning; 40% specifically rated the music and art rooms in their buildings as not being adequate for teaching and learning. This study also revealed that more than 25% of the surveyed teachers had been forced to teach in nonclassroom space, such as closets and

hallways. Almost three fourths (70%) stated that the noise in either their classrooms or hallways hindered their teaching ability (Schneider).

In Schneider's (2003) study of public school facilities and teaching in Washington, DC, and Chicago, a relationship was shown to exist between the condition of school facilities and test scores. Schneider reported, "There is an independent effect of facilities on both math and reading test performance" (p. 2). Schneider further stated, "We can see that this shift from best facilities to the worst decreases the percentage of students performing in the two highest categories of the SAT-9 by three percent for both math and reading" (p. 17). Schneider reported that 28% of the students at schools with the best facilities scored above basic in reading and 24% above basic in math. Smaller percentages of students in the schools with the worst facilities attained above-basic scores (25% in reading and 21% in math). The low survey return rate (26.41%) for this study casts some doubt on the significance of the findings. Of the possible 24,319 teachers in the population, 688 participated in this study.

In comparison to Ruszala's (2008) study using the TOPE and CAPE in Virginia, in which very few principals (only 1 of 23) or teachers rated their schools as substandard, Schneider's (2003) survey revealed that 40% of teachers in DCPS thought their facilities were not suitable for teaching and learning. Some school districts in Ruszala's study were within 5 miles of Washington, DC, yet reports of constituents regarding facility conditions appeared to be much different, thereby producing many questions about educational inequities.

Edwards (1991) sampled 52 DCPS schools. It was concluded that the size of the Parent Teacher Association (PTA) budget was positively related to the condition of the

school facility. Students in school buildings in poor condition attained achievement levels 6% below the achievement of students housed in facilities rated as fair in condition and 11% below the achievement of students in schools rated as excellent. The relationship between the PTA budget per student and the condition of the school facilities was statistically significant at the .07 level of confidence, which is not generally accepted as significant; at most, this level is considered to be marginally significant. It was additionally concluded using regression analysis that the condition of the building was associated with improvement in standardized achievement test scores. The sample of 52 schools represented less than one third of all DC public schools.

Summary

Based upon a critical review of literature, there is support for the theory that school building condition is linked to student achievement; however, there is much less evidence that attendance and truancy rates have that same relationship. The research indicated that as school building condition improves, student achievement is likely to increase. Students in poorly maintained schools are likely not to do as well on standardized tests as their counterparts in well-maintained schools (Cash, 1993; Bullock, 2007). The research also indicated the existence of inequities among the nation's schools as well as court labeling of state systems of disseminating school funds as unconstitutional. Although the research was, indeed, fairly thorough on this topic, there is not a preponderance of research on DCPS facilities. Researchers who commented on DCPS facilities consistently referred to the research by Edwards (1991). At the time of this study, Edwards' research was more than 16 years old. In the intervening years, much had happened; consequently, updated research on this issue was needed. Schneider's

(2003) study involved a comparison of teachers' perspectives of facilities in CPS and DCPS. Building conditions were derived based on a small sample of teachers, relying solely on teachers' opinions in rating buildings.

The next chapter presents the methodology used in conducting the research for this study. The design for the study, participant information, and instrumentation are discussed, as well as the sampling plan, population, and sampling frame. The FCI is described in chapter 3. An example of a DCPS Adequate Yearly Progress (AYP) report card with mathematics proficiencies, reading proficiencies, and attendance rates also is presented in chapter 3, as is a truancy rate link from the DCPS AYP report card.

CHAPTER 3: METHODOLOGY

Introduction

The purpose of this quantitative study was to determine whether or not a relationship exists between school facility conditions and student achievement, attendance, and truancy rates in the public schools of Washington, DC. To achieve this goal the Stanford 9 achievement test results of spring 2005 for DCPS were used as a measure of student achievement. Specifically, mathematics and reading proficiency scores on the Stanford 9, as well as attendance and truancy rates recorded on DCPS AYP school report cards, were analyzed. Facility conditions were measured through the use of the DCPS FCI, also conducted during the 2005 school year.

Research Questions

The following research questions guided the study:

1. Is there a relationship between the math proficiency of students in DCPS and the FCI?
2. Is there a relationship between the reading proficiency of students in DCPS and the FCI?
3. Is there a relationship between the attendance rates of students in DCPS and the FCI?
4. Is there a relationship between the truancy rates of students in DCPS and the FCI?

Research Hypotheses

1. A negative correlation exists between the math proficiency of DCPS students and the FCI, wherein, as the facility conditions ratings improve so do the math proficiency scores of DCPS students on the Stanford 9 achievement test.

2. A negative correlation exists between the reading proficiency of DCPS students and the FCI, wherein, as the facility conditions ratings improve so do the reading proficiency scores of DCPS students on the Stanford 9 achievement test.

3. A negative correlation exists between the attendance rates of DCPS students and the FCI, wherein, as the facility conditions ratings improve so does the rate of student attendance in DCPS.

4. A positive correlation exists between the truancy rates of students in DCPS students and the FCI, wherein, as the facility conditions ratings improve so does the rate of student truancy in DCPS.

Limitations of the Study

This study was limited to the students and school facilities in the Washington, DC public school system during the 2004-2005 academic year. Private and charter schools were not included in this research. As part of compliance with No Child Left Behind (NCLB), DCPS was required to report academic results only for schools with a minimum population of at least 40 students taking the Stanford 9 achievement test. The high-stakes assessment results for students enrolled in a school whose testing population was fewer than 40 were reported in the overall school system report but not in an individual AYP school report card. Secondly, certain DCPS schools served the most mentally impaired populations. Although those students were in their least restrictive environments, their

disabilities and individual education plans called for them to have alternative portfolio assessments. These two groups of schools were not reported in this study. A list of these eight schools is presented in Appendix G.

The FCI instrument was first developed for use to rate military installations and government buildings; it has been used multiple times globally to rate facilities. An obvious limitation was that this tool was not designed specifically for school facilities. The raters of the school facilities were not educators but engineer contractors who were trained specifically on how to use the FCI. Although the evaluators might have been experts in buildings and structural condition, they were not experts in educational facilities. They had not taught or taken classes in educational processes and pedagogies; consequently, they may not have had specific proficiency in understanding how children learn and what elements are best for learning environments. Furthermore, the results of this study were valid only to the extent that the FCI raters were accurate with their evaluations of DCPS facilities.

The achievement data used in this study—Stanford 9 achievement test results, attendance data, and truancy reports—were collected and processed by third parties. The results of this study are valid only to the extent that the aforementioned evaluators recorded, processed, and reported the data with integrity and thoughtfulness.

Population

The targeted population included the majority of students in the defined high-stakes testing population who attended a DCPS school during the 2005 school year; there were 143 schools in DCPS at that time. The population of this study was limited in that students attending schools with testing populations of fewer than 40 or special education

centers that used alternative assessments were excluded because those schools do not report AYP data. Excluded from the 143 DCPS schools were 8 schools, thereby leaving a population of 131 schools for this study. A list of the excluded schools is included in Appendix G.

The population for this study was selected because past researchers had not included entire school systems in studying the effects of facilities on student achievement, attendance, and truancy. It was concluded that mathematics proficiency, reading proficiency, attendance rates, and truancy rates, in conjunction with FCI facility ratings, would provide adequate data to respond to the stated research questions.

Instrumentation

Facility Condition Index

The Facility Condition Index is a rating system that was utilized by DCPS in 2005. This process entailed disseminating Building Condition Assessment forms to contracted engineers for the purpose of creating an unbiased evaluation of the condition of DCPS buildings. An FCI was completed for each DCPS building; however, for purposes of this research, only buildings that housed schools during the 2005 school year were included. The Building Condition Assessment forms rate the following: (a) the building as a whole, (b) stairs, (c) corridor(s), (d) mechanical room(s), (e) fan room(s), (f) pipe tunnel(s), (g) toilet(s), (h) storage room(s), (i) resource room(s), (j) work area(s), (k) art room, (l) kindergarten room(s), (m) library, (n) office(s), (o) exam room(s), (p) closet(s), (q) waiting room(s), and (r) lobby. The spaces were rated for both function and cosmetic appearance. Interior finishes were judged as well as heavy machinery condition.

For this study, each space's condition was rated using a 4-point scale. The scale ratings included *unsatisfactory*, *poor*, *fair*, and *good*. In addition to the rating given by the evaluator, condition issues also were noted. If there was an ADA issue, it was documented. The building condition assessment required the evaluator to review individual systems within the school building: plumbing, heating, electrical, and roofing. These systems were each assigned a system condition index (SCI) that was embedded in the FCI. The number of square feet was documented. The final part of the assessment included notation for changing the room's designated usage (K. Engler, personal communication, November 12, 2007). To gain access to the 2005 DCPS FCI report, the researcher telephoned the DCPS Facilities Deputy Chief requesting such access to the FCI report for DCPS 2005. The Facilities Deputy Chief then sent an e-mail request to the Earth Tech Lead Contractor, requesting that the 2005 FCI data report for each school in DCPS be sent to the researcher.

The FCI produces one overall score per building; encompassed in this score can be several SCI scores. At the time of this research, the FCI had been conducted only once in DCPS, but the contractors had developed a tool for ongoing self-assessment: the DCPS Facility Management Tool (C. Brown, personal communication, November 2, 2006). Appendix A contains the summary of the FCI conducted by Earth Tech in 2005 for all DCPS facilities. The table includes the name of the facility; a designation of each facility's use; the overall FCI numerical designation; and a facility rating of *poor*, *unsatisfactory*, *fair*, or *good*. The designated use of each facility is notated by one of four designations: A-administration, E-elementary school, M-middle school, and H-high school. The FCI numerical ratings on this chart range from .0 to .89. The numerical rating

and the condition designation are related in that the numerical score generates the condition designation. A condition designation of *good* represents an FCI numerical score between .00 and .3). A condition designation of *fair* represents an FCI numerical score between .31 and .49. A condition designation of *poor* represents an FCI numerical score between .50 and .84. A condition designation of *unsatisfactory* represents an FCI numerical score between .85 and .99 (K. Engler, personal communication, November 16, 2007). Table 1 contains the FCI designations and their respective numerical score equivalents.

Table 1: *FCI Designation and Numerical Score*

FCI designation	FCI numerical equivalent
Good	.00-.30
Fair	.31-.49
Poor	.50-.84
Unsatisfactory	.85-.99

The FCI was originally developed for the U.S. Department of Defense. It has been used to evaluate facilities in all branches of the military. This approach is based on validated estimating and analysis tools that have been in use for over 20 years by public agencies throughout the United States and internationally. The developer of the FCI, Earth Tech, has established a cost-estimating facilities assessment database and a survey methodology that ensures review at a sufficient level of detail, justifying needs to outside reviewers and setting priorities for corrective actions. Once assessments are complete, the system calls for Parametric Cost Engineering Software (PACES) that is used by Earth

Tech clients to estimate costs for the construction of facilities. This process enables DCPS administration to be in control of establishing budgets for capital improvements and systemic upgrades. Using a parametric approach, Earth Tech claims to minimize repetitive estimating processes and increase the accuracy of project budgets during the planning, programming, and scope development phases of a project. (K. Engler, personal communication, November 16, 2007).

DCPS AYP Report Card

For the purpose of this research, data included on the DCPS AYP report card represent student achievement. Reports for the 2005 school year were utilized for two reasons:

1. The 2005 school year corresponded with the same year that the FCI was utilized.

2. In 2006 DCPS changed its high-stakes testing instrument from the Stanford 9 achievement test to the District of Columbia Comprehensive Assessment System (DCCAS); the DCCAS did not have a record of validity or reliability.

Mathematics proficiency, reading proficiency, attendance rate, and truancy rate were reported in an online school report card for each DCPS school in 2005. For the 2005 school year, DCPS defined the school-wide math proficiency standard as attainment of a math mean score at or above the 40th percentile on the spring 2005 Stanford 9 achievement test by approximately 50% (48.6%) of the students in a school. Similarly, DCPS defined the school-wide reading proficiency standard as attainment of a reading mean score at or above the 40th percentile on the spring 2005 Stanford 9 achievement test by approximately 40% (41.92%) of the students in a school. The grades that constituted

the testing population for DCPS in 2005 were Grade 3 through Grade 8 and Grade 10. The validity and reliability of the Stanford 9 are addressed under the corresponding heading in this chapter.

Attendance

During the 2005 school year, a school in DCPS needed to maintain a daily attendance rate of 90% to achieve AYP. If a school averaged more than a 10% absentee rate for its population, it was deemed a failing school, even if it achieved its academic targets. This information was captured on the DCPS AYP report card.

Each homeroom teacher records attendance daily. If the homeroom teacher is absent, a substitute or the school principal's designee records attendance. After attendance is taken and recorded on the teacher attendance sheets, it is additionally recorded by the teacher on attendance cards that are kept in the teacher's classroom for additional verification of student attendance. Attendance sheets are then sent to the main office and recorded into the DCSTARS student management system where it is maintained on the DCPS mainframe. Students are considered absent if they do not come to school. If a student reports to school for any portion of the day, he or she is considered tardy but present. Students are required to check in with the main office to receive a tardy pass to class. When the office gives this pass to the student, the attendance clerk updates the system with regard to the student's arrival at school.

Truancy

DCPS defines a student as a chronic truant when he or she accumulates at least 15 unexcused absences in a school year. An unexcused absence is defined by DCPS as a circumstance in which a student misses school and, upon return to school, is unable to

produce evidence of one of the following: a medical visit, a court date, or an immediate relative's funeral. The truancy rate is the percentage of all students enrolled in a school during the school year who are chronic truants. Students enrolled in more than one school during the year can be counted as truant at each school in which they accrue 15 or more unexcused absences; however, if a student is truant at more than one school he or she is counted only once in the citywide total. This means that the number of truants citywide does not equal the sum of the number of truants in all the schools.

The number of students enrolled in a school includes students enrolled at any time during the year who meet the following criteria:

1. The student is between 5 and 18 years old.
2. He or she was enrolled for at least 25 calendar days or accrued at least 15 total absences. Appendix B contains a list of the truancy rates for all DCPS schools for the culmination of the 2005 school year.

Percentage Tested

In concurrence with the No Child Left Behind law, 95% of the eligible testing population must have taken the Stanford 9 in 2005 for the school to make AYP. If a school in DCPS tested less than 95% of its population it was deemed a failing school regardless of its attainment of other targets. Although few schools tested less than 95% of the assessment-eligible population, the DCPS system-wide percentage of tested students was below the 95% threshold, with 90.87% of eligible students tested in reading and 90.41% of eligible students tested in mathematics. Although it is unclear why the overall percentage was lower than 95% whereas few schools were under that percentage, it can be inferred that the root of this inconsistency lies in the rule that defines "eligible"

students. It contains a clause indicating that students who enroll after the October enrollment deadline do not count toward a school's AYP results but do count toward the overall system numbers; therefore, these students are not eligible and do not count toward the schools' reported percentages. Consequently, it is possible that a student's not being tested in a school will not affect the school's tested percentage but can negatively impact the school system's reporting information.

Design

A quantitative research design was selected for this study. A nonexperimental design was selected because the study does not include any treatment or assignment to different conditions. There was no intent to experiment or treat; the purpose of this study was to report an already existing relationship. There was no comparison group, and there were no multiple waves of measurement because the entire population was being analyzed. By definition, the use of an entire population does not lend itself to statistical tests and analyses that are appropriate for sampling. Furthermore, there was no control group tested and no group upon which experiments were conducted. All schools in DCPS who participated in the Stanford 9 achievement testing in spring 2005 were evaluated for this study. In 2005 DCPS required that all students in Grades 3-8 and Grade 10 be evaluated with the Stanford 9 achievement test. Building ratings were ascertained using the FCI. All DCPS school facilities, both instructional and administrative, were rated using this index in 2005; rating categories included unsatisfactory, poor, fair, or good. For purposes of this research these four categories were combined to create two categories: acceptable and unacceptable. The FCI unsatisfactory and poor categories were combined to create the category of unacceptable. The FCI fair and good categories were

combined to create the category of acceptable. The only schools excluded were those lacking the information required for this analysis: for example, schools with no reported math or reading. In such cases, any applicable information that was available for the school was utilized. This study was inclusive of the entire testing population of DCPS in 2005 and therefore required no statistical tests.

Procedures

Data were collected through the Internet. All DCPS NCLB information for individual schools was available on the DCPS Web site, www.k12.dc.us. This information includes the percentage of students who scored at the proficient level in reading or math, as well as the attendance rates for all schools and a link to obtain specific truancy rates per school. The unit of analysis was each DCPS school for the 2005 school year. The DCPS AYP report card for each of the 143 schools was printed from the DCPS Web site. An example of this report card is presented in Table 2.

Table 2: *Example of a DCPS AYP Report Card*

REPORT CARD EMERY ES		Year : 2005 Group : DCPS Category : ELEMENTARY		IN NEED OF IMPROV.	MET AYP? Reading	MET AYP? Math	MET AYP? Attendance
					NO	NO	NO

GROUP	NUMBER IN GROUP	READING			MATH		
		Number Tested	% Tested	% Proficient	Number Tested	% Tested	% Proficient
ETHNICITY							
Asian/Pacific Islanders*	2	-	-	-	-	-	-
Black, non-Hispanic	58	53	91.38%	**44.83%**	53	91.38%	**53.45%**
Hispanic*	3	-	-	-	-	-	-
White, non-Hispanic*	1	-	-	-	-	-	-
GENDER (1)							
Female	33	32	96.97%	**39.39%**	32	96.97%	**57.58%**
Male	31	27	87.10%	**45.16%**	27	87.10%	**51.61%**
SPECIAL EDUCATION							
Disabled (2)	22	17	77.27%	**18.18%**	17	77.27%	**22.73%**
Non-disabled	42	42	100.00%	**54.76%**	42	100.00%	**71.43%**
ENGLISH PROFICIENCY							
Lep/Nep*	5	-	-	-	-	-	-
Non-Lep/Nep	59	54	91.53%	**44.07%**	54	91.53%	**54.24%**
ECONOMIC STATUS							
Econ. Disadvantaged	55	52	94.55%	**38.18%**	52	94.55%	**52.73%**
Non-Econ. Disadvantaged*	9	-	-	-	-	-	-
MIGRANT STATUS (1)							
Non-migrant	64	59	92.19%	**42.19%**	59	92.19%	**54.69%**
TOTAL	64	59	92.19%	**42.19%**	59	92.19%	**54.69%**

An Excel document was created with the following headings: School, Read %, Math %, Daily attendance, Truancy %, FCI #, FCI designation, and Accept/Unaccept. The reading proficiency percentage for each school, derived from the DCPS AYP report card, was recorded in the Excel document in the Read % column. The mathematics proficiency percentage for each school, from the DCPS AYP report card, was recorded in the Excel document in the Math % column. In a similar fashion, the daily attendance percentage for each school was recorded in the Attendance column; the truancy percentage for each school, derived from the DCPS AYP Truancy Report, linked through the www.k12.dc.us Web site, was recorded in the Truancy % column; the FCI numerical score from the FCI Report for DCPS 2005 for each school was recorded in the FCI # column; the true FCI designation (unsatisfactory, poor, fair, and good) from the FCI

Report for each DCPS school was recorded in the FCI designation column; and the FCI title for each DCPS school (acceptable or unacceptable) was recorded in the Accept/Unaccept column. The information in the Excel document was then verified twice to ensure accuracy by comparing the Excel document to the information in the DCPS Report Cards and the FCI Report for DCPS 2005. The actual Excel document is presented in Appendix C.

Data Analysis

To answer Research Question 1 (Is there a relationship between the math proficiency of students in DCPS and the FCI?), the previously mentioned Excel document was uploaded into SPSS, Version 14.0. The data were analyzed to create the descriptive parameters and to determine if there were differences between the math proficiency of schools designated as acceptable and schools designated as unacceptable. The mean, median, and standard deviation of both groups of schools were compared. To further analyze the data, the Spearman rho correlation was calculated to establish the magnitude and direction of the association between FCI and math proficiency.

To answer Research Question 2 (Is there a relationship between the reading proficiency of students in DCPS and the FCI?), the Excel document was uploaded into SPSS, Version 14.0. The data were analyzed to create the descriptive parameters and to determine if there were differences between the reading proficiency of schools designated as acceptable and schools designated as unacceptable. The mean, median, and standard deviation of both groups of schools were compared. To further analyze the data, the Spearman rho correlation was calculated to establish the magnitude and direction of the association between FCI and reading proficiency.

To answer Research Question 3 (Is there a relationship between the attendance rates of students in DCPS and the FCI?), the Excel document was uploaded into SPSS, Version 14.0. The data were analyzed to create the descriptive parameters and to determine if there were differences between the attendance rates of schools designated as acceptable and schools designated as unacceptable. The mean, median, and standard deviation of both groups of schools were compared. To further analyze the data, the Spearman rho correlation was calculated to establish the magnitude and direction of the association between FCI and attendance rates.

To answer Research Question 4 (Is there a relationship between the truancy rates of students in DCPS and the FCI?), the Excel document was uploaded into SPSS, Version 14.0. The data were analyzed to create the descriptive parameters and to determine if there were differences between the truancy rates of schools designated as acceptable and schools designated as unacceptable. The mean, median, and standard deviation of both groups of schools were compared. To further analyze the data, the Spearman rho correlation was calculated to establish the magnitude and direction of the association between FCI and truancy rates.

For analysis of mean, median, and standard deviation, the original four FCI categories (unacceptable, poor, fair, and good) were combined to create two designations (acceptable and unacceptable); however, for the Spearman rho correlation the entire spread of FCI numerical scores (.0-.99) was utilized. These results are presented in chapter 4.

Validity and Reliability

Cook and Campbell (1979) defined reliability as the consistency of the measurement or the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects. In short, it is the replicability of the measurement. A measure is considered reliable if a person's score on the same test given a second time is similar to the score on the first administration of the test. It is important to remember that reliability is not measured; it is estimated. Validity represents the strength of the conclusions, inferences, or propositions. Cook and Campbell defined validity as the best available approximation to the truth or falsity of a given inference, proposition, or conclusion.

The validity of this study, as is the case with all quantitative work, is dependent upon the accuracy of the data available, the precision with which the information was input into the SPSS software program, and the research design. The integrity of the Stanford 9 data and attendance data in association with the FCI determine the validity of the study. The validity of the information was ensured by the described data handling activities, including strategic handling, inputting, and storage of Stanford 9 and FCI data (Hinkle, Wiersma, & Jurs, 2003).

Stanford 9

Information about the official validity and reliability of the Stanford 9 achievement test is available only in a product that can be purchased from Pearson, that is, the norms packet, which is available to school systems when they purchase large test orders. An exhaustive search for this information was completed through multiple dissertation searches and journal studies; the search was unsuccessful. Nevertheless,

because of NCLB compliance requirements, many states that once used the Stanford 9 have found it necessary to create their own criterion-referenced exams; many of these states, in validating their own exams, compare these new exams to the Stanford 9.

The Stanford 9 is a norm-referenced test (NRT) that compares each student's performance on the test to the performance of a representative sample of public school students of the same age and grade. The administration of the Stanford 9 usually is mandated by the state legislature. The Stanford 9 indicates how students of a particular school division compare to a national sample of students taking the test. Norms for the Stanford 9 were established in 1995; therefore, test results are reported in comparison to nationwide student achievement in 1995. The content of NRTs is broad and is not limited to the local school district (E. McGoldrich, personal communication, December 13, 2008).

According to the Pearson Web site, pearsonassess.com, the Stanford Achievement Test Series is the standard of excellence for careful and accurate assessment. Millions of administrators and teachers have utilized this testing series. The Stanford 9 norms include scaled scores, national and local percentile ranks and stanines, grade equivalents, and normal curve equivalents. The Pearson Web site states further that the Stanford 9 is dedicated to fairness through several methods, for example, providing teachers or test administrators clear and simple directions and providing students complete directions at the beginning of the test to avoid stopping and starting.

FairTest (National Center for Fair and Open Testing, n.d.) has critiqued the use of standardized testing, indicating the following:

1. Questions may favor one kind of student or another for reasons that have nothing to do with the subject area being tested.

2. Nonschool knowledge that is more commonly learned by middle or upper class children is often included in tests.

3. To help generate the bell curve, test makers usually eliminate questions that are generally answered correctly by students with low overall scores but incorrectly by those with high overall scores.

4. Most questions that favor minority groups are eliminated.

5. Tests often cause teachers to overemphasize memorization and deemphasize thinking and application of knowledge. Because the tests are very limited, teaching to them narrows instruction and weakens curriculum.

6. Norm-referenced tests also can lower academic expectations and may support the idea that learning or intelligence fits a bell curve.

It should be noted that DCPS is a school system of primarily minority and poor students; therefore, if the previous observations are accurate, this factor could invalidate the Stanford 9 results.

Facility Conditions Index (FCI)

The FCI consultant was asked to respond to three concerns with respect to the validity and reliability of the 2005 DCPS building assessment project:

1. How do assessors deal with rating buildings that have attributes that others do not (elevators, sprinklers etc.)?

The FCI consultant responded as follows:

> The facility condition assessment reviewed the facilities as a snapshot and identified what elements of the facility required remediation at the time of review. Each facility had its list of deficiencies, and per your question a facility without an elevator was "worse" off than a facility with a run-down elevator because of the necessity for ADA compliance. To fix an elevator would be less expensive than install one from scratch. The same can be said for a fire suppression system (installed or nonfunctional versus absent). ADA, and Life or Safety compliance can negatively affect a facility if the current code requirements are not being met either because the systems are broken or nonexistent. Most times the nonabsent items required by code have a bigger cost than a facility with one requiring repair and as a result have a bigger impact to the facility condition index. (K. Engler, personal communication, February 2, 2009)

2. How were the FCI assessors trained?

The FCI consultant responded,

> Our facility assessors were trained in a 2-day training session held at DCPS facilities. The 1st day covered the software, safety, and requirements of the effort. The 2nd day, assessors walked through an example facility with area experts (mechanical, electrical, interiors, etc.) and were provided guidance on how to rate certain elements to ensure consistency. Additionally, each individual was provided condition assessment criteria for assessment of each asset component. The rating, as determined by each team member, is then used as the basis of determining the appropriate corrective action(s) required to correct the identified issue. Using a predefined, time-tested, condition assessment methodology

> translates into better, more consistent, reliable data that can serve as a solid foundation for future asset life-cycle tracking. (K. Engler, personal communication, February 2, 2009)

3. As these assessors were not educators, how was their lack of educational or instructional knowledge addressed?

The FCI consultant responded as follows:

> Our assessors had to review each space's compliance with respect to the master education plan. Thus, if a school was supposed to have a library per district requirements, then the assessor had to note whether or not the school had the appropriate function. We then came up with an educational adequacy figure that determined the cost of adding the library. This was done across the board for each school to ensure that students at school A had equal services and opportunities to students at school B. (K. Engler, personal communication, February 2, 2009)

The nonexperimental design used for this study reflected a weakness with regard to cause-and-effect relationships. This design does not (a) select groups (control and experimental), (b) randomly apply stimuli, or (c) monitor change in groups to analyze effect and label the cause. Therefore, a difference between groups or a relationship recognized by the researcher can by no means imply or conclude that a cause-and-effect relationship exists (Hinkle et al., 2003).

Stratification for Socioeconomic Status (SES) and Linguistically and Culturally Diverse (LCD) Populations

To ensure that the results of this study were accurate and to measure the relationship among identified variables to answer the research questions, the researcher stratified the data for SES and LCD based upon DCPS designations for schools with

populations that required assistance with regard to these factors. The data for SES and LCD populations were added to the aforementioned Excel file, and the same applicable directions were followed. This augmented Excel spreadsheet can be found in Appendix F.

As noted by researchers in chapter 1 and chapter 2 (Schneider, 2003; Lanham 1999), both SES and LCD are powerful variables with respect to student achievement. It is vital that they be stratified to eliminate the possibility of reporting a false relationship, which could ultimately result in incorrectly answering this study's research questions.

The DCPS Office of Grant Programs was contacted. An administrator explained how SES populations in schools were determined and assisted:

> A fiscal school-wide model (Title 1) employed in DCPS is defined as having 40% or higher student population participating in free or reduced-price meals. A school-wide Title 1 model plan embodying 10 required components must accompany this designation. A targeted assistance model in DCPS is defined as having 35%-39% students served by free or reduced-lunch meals. The targeted assistance model specifies that only students eligible based upon multiple educationally related criteria can participate in the program by a preselected group of Title I teachers. (T. Franklin, personal communication, December 10, 2008)

The provided list contained all DCPS schools that were classified as Title 1, Targeted Assistance, or Non-Title 1 in 2005; the list is presented in Appendix D. The total number of schools with the Title 1 designation was 118, the total number of schools with the Targeted Assistance designation was 2, and the total number of school with the Non-Title 1 designation was 15.

The Office of Bilingual Education for DCPS also was contacted. A representative explained that LCD populations in schools were determined and assisted according to parental submission of home language surveys at the time of school registration. Students with a home language designation other than English were assessed to determine additional assistance needed. These children were identified based upon LCD designation. A school with an LCD population of 40% or greater was assigned an English as a Second Language (ESL) teacher to partner with each regular education teacher. Such schools were designated as Collaborative Team Teaching or Dual Language Schools (E. Garcia, personal communication, December 13, 2008). The list provided by the Office of Bilingual Education for DCPS is included in Appendix E. There were 14 schools with LCD populations of 40% or more identified by the Office of Bilingual Education. The details of these findings are presented in chapter 4.

Human Subjects and Ethics Precautions

Throughout the data collection process, professional ethics were maintained. Potential risks related to this study were very limited. Prior to the start of data collection, this study was granted an exemption (#020829) from The George Washington University's Office of Human Research Institutional Review Board; therefore, permission and approval were secured before any information was obtained, released, or published. The IRB document is located in Appendix H.

Summary

This quantitative nonexperimental study was designed for the purpose of collecting data regarding the condition of public schools in Washington, DC, and determining the relationship between school building conditions, student achievement,

attendance, and truancy. The results from the data collection were used to answer the proposed research questions. The FCI was utilized to provide an accurate representation of the school facilities. The Stanford 9 achievement test results were analyzed to ascertain student achievement in the categories of reading and mathematics proficiency. The DCPS AYP report card and online links were used to establish attendance and truancy rates.

CHAPTER 4: RESULTS

The purpose of this study was to investigate and report the condition of school facilities of DCPS and the relationship between facility conditions and student achievement defined as reading proficiency, math proficiency, attendance rate, and truancy rate. The results of the 2005 FCI Report designed by Earth Tech were utilized to provide an accurate representation of the condition of DCPS facilities. The FCI measures the following: (a) the building as a whole, (b) stairs, (c) corridor(s), (d) mechanical room(s), (e) fan room(s), (f) pipe tunnel(s), (g) toilet(s), (h) storage room(s), (i) resource room(s), (j) work area(s), (k) art room, (l) kindergarten room(s), (m) library, (n) office(s), (o) exam room(s), (p) closet(s), (q) waiting room(s), and (r) lobby. The spaces were rated for both function and cosmetic appearance. Interior finishes were judged as well as heavy machinery condition. This tool was designed by Earth Tech for the evaluation of government and military buildings.

The DCPS Adequate Yearly Progress report card was utilized to represent achievement of DCPS students in the areas of reading, mathematics, attendance, and truancy. The DCPS AYP report card was created as part of the compliance efforts related to the No Child Left Behind (NCLB) Act of 2001. Four research questions were proposed to investigate the research problem:

1. Is there a relationship between the math proficiency of students in DCPS and the FCI?

2. Is there a relationship between the reading proficiency of students in DCPS and the FCI?

3. Is there a relationship between the attendance rates of students in DCPS and the FCI?

4. Is there a relationship between the truancy rates of students in DCPS and the FCI?

The population of this study consisted of students in Grades 3, 5, 8, and 10 enrolled in DCPS during the 2005 school year. The Stanford 9 achievement test was administered to these students during the spring of 2005. The DCPS results were made available on the DCPS Web site for public review during the fall of 2005 and have remained online in DCPS AYP report cards. Along with academic standardized test results data, DCPS AYP report cards contain attendance rates and links to truancy rates for all DCPS schools.

This chapter presents data obtained from DCPS 2005 FCI reports and 2005 DCPS AYP report cards to answer the four research questions. The presentation of data is divided into three main sections: (a) the first section presents the data utilized to answer the four proposed research questions followed by a brief summary; (b) the second section presents the data from the Spearman rho correlation, which was calculated to add to the rigor of this study; (c) the third section presents the stratified data for the SES and LCD populations. Chapter 5 includes a review of the study findings, conclusions, and applications, as well as recommendations for further study.

Washington, DC Public Schools (DCPS) in 2005 was an urban school system of mostly minority, poor students. This school system carried many of the same challenges that urban school systems across the country endured including high percentages of students living in poverty, a rising special education population, the question of how to

best teach a growing population of linguistically and culturally diverse students, an ever-widening achievement gap between White students and students of color, and many dilapidated school buildings. Specific demographics related to these challenges, gathered from the DCPS 2004-2005 NCLB Report, August 5, 2005, are noted below.

The total reported enrollment of DCPS in 2005 was 62,306 students. Of these students, the following numbers were enrolled in the grades that took the Stanford 9 achievement test: third grade, 4,486; fifth grade, 4,670; eighth grade, 3,941; and tenth grade, 3,638 (See Table 3) (DCPS 2004-2005 NCLB Report, August 5, 2005).

Table 3: *2004-2005 Student Enrollment by Grade*

Grade	Enrollment	Enrollment (%)
Preschool	1,385	2%
Prekindergarten	2,988	5%
Kindergarten	4,494	7%
1st Grade	4,725	8%
2nd Grade	4,429	7%
3rd Grade	4,486	7%
4th Grade	4,461	7%
5th Grade	4,670	7%
6th Grade	4,519	7%
7th Grade	3,989	6%
8th Grade	3,941	6%
9th Grade	4,570	7%
10th Grade	3,638	6%
11th Grade	2,973	5%
12th Grade	2,349	4%
Nongraded	4,689	8%
Total	62,306	100%

The racial demographics of the student population in 2005 were as follows: 83.61% Black, 9.75% Hispanic, 4.86% White, 1.73% Asian, and .05% Native American (See Figure 2) (DCPS 2004-2005 NCLB Report, August 5, 2005).

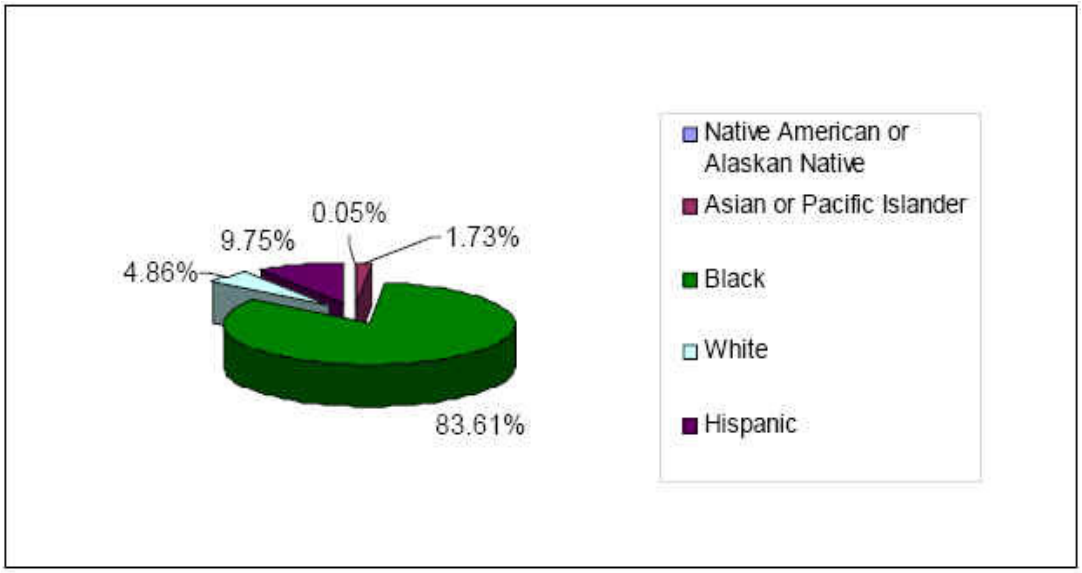

Figure 2: District of Columbia Public Schools (DCPS) racial demographics.

The majority of students attending school in DCPS in 2005 were eligible for free or reduced-price lunch. The array of percentage eligible by grade varied from almost 50% of preschool students to almost 80% of 5th graders (See Figure 3) (DCPS 2004-2005 NCLB Report, August 5, 2005).

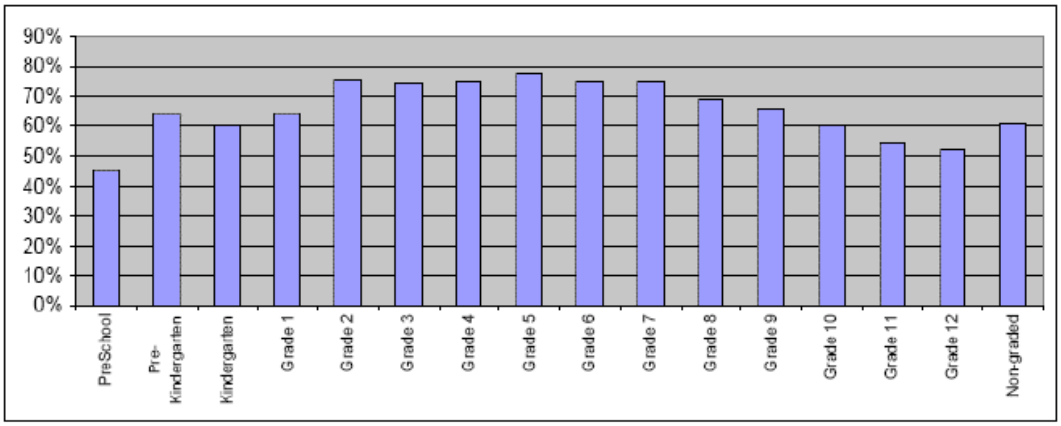

Figure 3: DCPS students eligible for free or reduced-price lunch - 2005.

In 2005 the number of students receiving special education services increased for the third consecutive year. The number of DCPS students receiving special education services in 2005 reached almost 14,000. This number represented almost a quarter of the total school system enrollment (DCPS 2004-2005 NCLB Report, August 5, 2005). This trend is depicted in Figure 4.

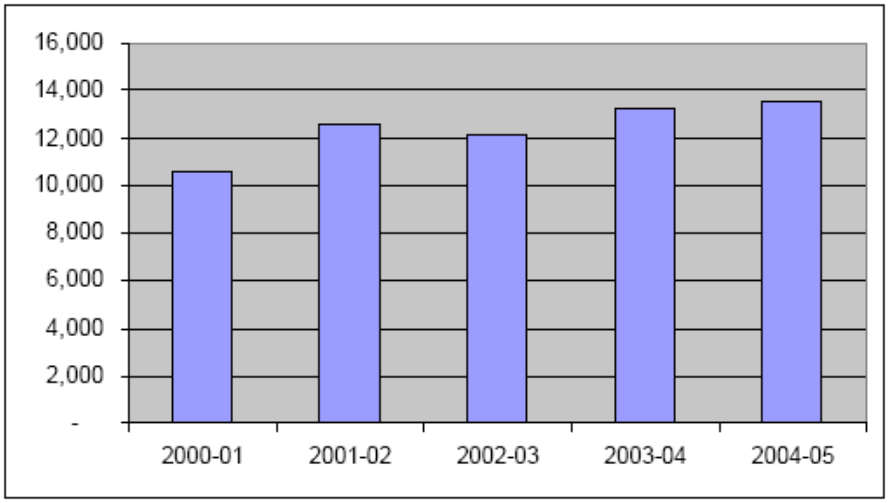

Figure 4: DCPS special education student enrollment from 2001 to 2005.

Lastly, depicted in Figure 5 are the demographic data representing that which can be perceived as one of the greatest challenges in both DCPS and the nation's schools: The achievement gap between White students and Black students in DCPS in reading was 42.6% in 2005 (DCPS 2004-2005 NCLB Report, August 5, 2005).

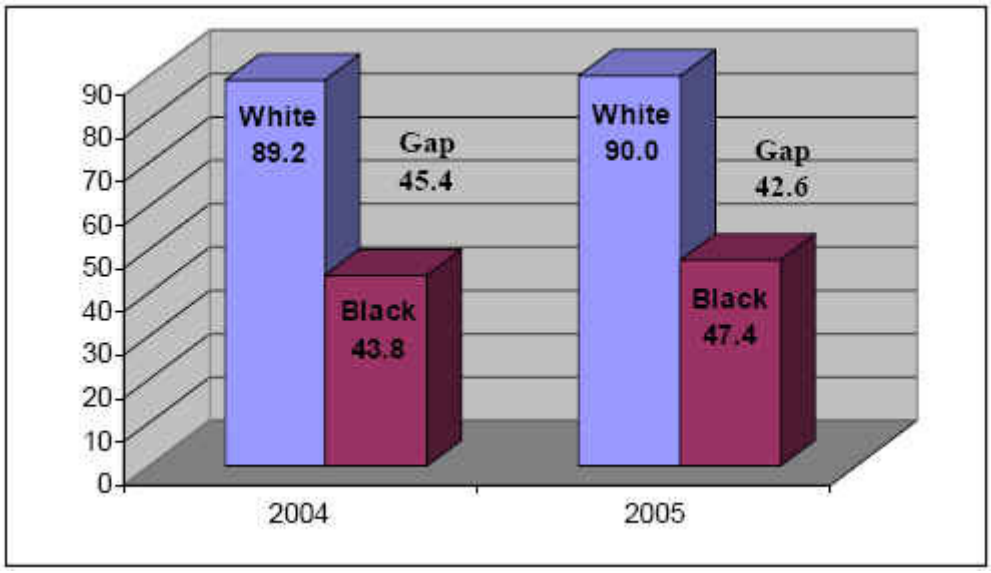

Figure 5: Achievement gap, DCPS 2005.

Although the demographic data of DCPS exemplify the various needs of the students, only an analysis of the data can determine whether or not relationships exist among the specific variables.

Previously cited as a limitation of this study was the fact that the initial analysis prompted the need to remove eight schools from the study for one or both of the following reasons: (a) the school lacked student achievement data because of NCLB reporting limitations or (b) the school served only special education students with severe disabilities, thereby excluding them from the Stanford 9 assessment. The remaining data set included 2 schools with an original FCI designation of unsatisfactory, 102 schools

with an original FCI designation of poor, 18 schools with an original FCI designation of fair, and 13 schools with an original FCI designation of good. This information is summarized in Table 4.

Table 4: *Original FCI Designation*

Designation	Number of schools
Unsatisfactory	102
Poor	2
Fair	18
Good	13

When the schools under study were further divided into the two groupings—acceptable and unacceptable condition—the group totals included 104 schools designated as unacceptable and 31 schools designated as acceptable (See Table 5). The two created groups were different in size. In fact, the total number of schools designated as unacceptable (104) was more than three times the size of the group of schools that were designated as acceptable (31). The assumptions associated with the rules of variability indicate that as the size of a group grows, the amount of variability is likely to grow as well. Therefore, the standard deviation, that is, the square root of the variance, was analyzed to determine whether or not the data indicated that outliers, schools with results far outside the results for the majority of the group, were skewing the results.

Table 5: *New Consolidated FCI Designation*

Designation	Number of Schools
Acceptable	31
Unacceptable	104

Comparison of Achievement, Attendance, and Truancy Rates for Schools with Acceptable Condition Ratings and Schools with Unacceptable Condition Ratings

The initial findings from the mean comparison of unacceptable versus acceptable school facilities conditions included the following: reading proficiency scores were 6.52% higher in acceptable schools than in schools designated as unacceptable, with a standard deviation of 23.78 for acceptable schools and a standard deviation of 22.13 for unacceptable schools; mathematics proficiency scores were 10.3% higher in acceptable schools than in schools designated as unacceptable, with a standard deviation of 22.67 for acceptable schools and a standard deviation of 22.58 for unacceptable schools; daily attendance rates were .68% higher in acceptable schools than in schools designated as unacceptable, with a standard deviation of 2.68 for acceptable schools and a standard deviation of 3.23 for unacceptable schools; and the level of truancy was 2.89% lower in acceptable schools than in schools designated as unacceptable, with a standard deviation of 15.44 for acceptable schools and a standard deviation of 14.99 for unacceptable schools. (See Table 6)

Table 6: *Results of Initial Mean Comparison*

	Unacceptable			Acceptable		
	μ	σ	*Median*	μ	σ	*Median*
Reading	45.52	22.13	44.25	52.04	23.78	45.95
Math	51.42	22.58	51.73	61.75	22.67	63.46
Daily Attendance	92.39	3.23	92.65	93.07	2.68	92.70
Truancy	18.55	14.99	16.09	15.66	15.44	11.15

In addition to comparing the means of unacceptable schools to those of acceptable schools, additional analysis of the standard deviations and medians of both groups of schools was conducted. The median level of reading proficiency of acceptable schools was 45.95%, whereas the median level of reading proficiency for unacceptable schools was 44.25%. Although the reading proficiency means and medians were higher for acceptable schools, the difference between medians was only 1.70 percentage points and between means 6.52 percentage points.

The median level of mathematics proficiency for acceptable schools was 63.46%, whereas the median level of mathematics proficiency for unacceptable schools was 51.73%. Both the mean and the median percentages for mathematics proficiency were higher for acceptable schools than for unacceptable schools. The difference in medians for mathematics proficiency between the two categories was 11.73 percentage points and in means 10.3 percentage points.

The median percentage for daily attendance of acceptable schools was 92.70%, whereas the median attendance rate for unacceptable schools was 92.65%. Both the mean and the median daily attendance percentages for acceptable schools were higher than

those for unacceptable schools; the difference in median daily attendance between the two categories was .05% and the difference between means was .68%.

The median truancy rate for acceptable schools was 11.15%; whereas the median truancy rate for unacceptable schools was 16.09%. The truancy rate for acceptable schools was better than the rate for unacceptable schools as indicated by both the mean and the median. The difference in median truancy rate between the two categories was 4.94% and in mean truancy rate 2.89%.

To establish the direction and strength of possible relationships between the variables of this study, it was determined that a Spearman rho correlation was necessary. The Spearman rho correlation also helped determine if there were consistencies or trends across the study's variables in the strength of any relationships found.

Spearman Rho Correlations

Spearman rho correlations between FCI, reading proficiencies, math proficiencies, attendance rates, and truancy rates were calculated. Results are presented in Table 7. There was a negative relationship between FCI scores and math proficiency scores. A correlation coefficient of -.179 was established between the mathematics proficiency and FCI scores; that is, as math scores increased (improved), FCI scores decreased (improved). There was a negative relationship between FCI scores and reading scores. A correlation coefficient of -.081 was established between the reading proficiency and FCI scores; that is, as reading scores increased (improved), FCI scores decreased (improved). There was a negative relationship between FCI scores and attendance percentage. A correlation coefficient of -.094 was established between attendance percentage and FCI scores; that is, as attendance rates increased (improved), FCI scores

decreased (improved). There was a positive relationship between FCI scores and truancy rates. A correlation coefficient of .135 was established between truancy rates and FCI scores; that is, as truancy rates decreased (improved), FCI scores decreased (improved).

Although the Spearman rho results show that all of the tested dependent variables had a consistent relationship with FCI, the mathematics proficiency percentage reflected the strongest association with the condition of school facilities, followed in order by truancy rate, daily attendance rate, and reading proficiency percentage.

The assumption of the Spearman rho correlation is that both variables do not have to be normally distributed. In the case that normal distribution is assumed, the Pearson R Correlation is the tool recommended because it identifies linear relationships, whereas the Spearman rho is adept at ordinal relationships. In this case the data lent themselves to the Spearman rho assumptions, because the data did not represent a normal distribution and the researcher was in search of ordinal analysis to rank the strength of the identified relationships (Hinkle et al., 2003).

Table 7: *Spearman Rho Correlations Between FCI, Reading, Math, Daily Attendance, and Truancy*

		ϱ
Spearman rho	Reading	-.081
	Math	-.179
	Daily attendance	-.094
	Truancy	.135

Stratified Data for Socioeconomic Status (SES)

Socioeconomic status (SES) was examined by sorting the schools by subgroup within each designation of SES and then analyzing the means of each variable: reading proficiency, math proficiency, attendance rate, and truancy rate. The means of acceptable and unacceptable schools were compared under the SES categories of Title 1 schools, Non-Title 1 schools, and Targeted Assistance schools. Results are presented in Table 8 and Table 9.

Table 8: *Means and Standard Deviations for Reading, Math, Daily Attendance, and Truancy for Schools Whose Facilities Were Rated as Acceptable, Sorted by SES Designation*

	Acceptable					
	Non-Title 1 (n = 6)		Title 1 (n = 32)		Targeted Assistance (n = 0)	
	μ	σ	μ	σ	μ	σ
Reading	89.23	5.72	48.33	21.06	--	--
Math	92.01	6.77	59.71	20.46	--	--
Daily attendance	96.18	0.81	92.68	2.54	--	--
Truancy	0.62	0.59	17.85	14.83	--	--

Table 9: Means and Standard Deviations for Reading, Math, Daily Attendance, and Truancy for Schools Whose Facilities Were Rated as Unacceptable, Sorted by SES Designation

	Unacceptable					
	Non-Title 1 (n = 9)		Title 1 (n = 86)		Targeted assistance (n = 2)	
	μ	σ	μ	σ	μ	σ
Reading	70.75	27.23	41.73	18.88	84.11	3.78
Math	75.89	29.02	47.77	19.49	88.25	11.94
Daily attendance	94.77	1.98	92.04	3.19	96.85	2.62
Truancy	9.12	11.91	20.21	15.02	3.49	4.93

When stratified by SES, the overall results were consistent with the results of the study. Acceptable schools reflected higher means for the variables of reading proficiency, mathematics proficiency, and daily attendance rate, and a lower mean for truancy rate, when compared with their unacceptable counterparts in the applicable SES category. Some of the details, however, were interesting with respect to variability and achievement levels.

With respect to variability, the SES results differed from those of the initial analysis. Major differences in standard deviation were found when comparing non-Title I acceptable schools to non-Title I unacceptable schools. In the category of reading proficiency, the standard deviation for the group of unacceptable non-Title I schools was 27.23, compared to 5.72 for the group of acceptable counterparts. There was even more of a discrepancy in the math standard deviation of these groups: The standard deviation for the group of unacceptable non-Title I schools was 29.02, compared to 6.77 for the

group of acceptable counterparts. The final discrepancy of note was found in standard deviations related to truancy rates: the standard deviation for the group of unacceptable non-Title I schools was 11.91, compared to .59 for the group of acceptable counterparts. These findings are examples of the aforementioned property of distribution. There were twice as many non-Title I unacceptable schools (10) as there were non-Title I acceptable schools (5); hence the larger group reflected much greater variability in this instance, a result that was the opposite of the result for the whole-group analysis.

Finally, the largest disparity related to student academic achievement in this study also was found when stratifying for SES. When comparing non-Title 1 acceptable schools to non-Title 1 unacceptable schools, reading scores were 18.48% higher in buildings with acceptable FCI ratings than in buildings with unacceptable FCI ratings; similarly, math scores were 16.12% higher in buildings with acceptable FCI ratings.

Stratified Data for Linguistically and Culturally Diverse (LCD)

The LCD variable was examined by sorting the schools according to subgroup within each designation of LCD and then analyzing the means of each variable: reading proficiency, math proficiency, attendance rate, and truancy rate. The means of acceptable and unacceptable schools were compared under the following categories: LCD greater than 40% (Dual Language or Collaborative Team Teaching Schools) and LCD lower than 40% (Non-Dual Language or Non-Collaborative Team Teaching Schools). Results are presented in Table 10.

Table 10: *Means and Standard Deviations for Reading, Math, Daily Attendance, and Truancy by Linguistically and Culturally Diverse Designation*

	Acceptable				Unacceptable			
	LCD ≥ 40% $n = 7$		LCD < 40% $n = 24$		LCD ≥ 40% $n = 7$		LCD < 40% $n = 97$	
	μ	σ	μ	σ	μ	σ	μ	σ
Reading	54.39	24.97	49.22	21.07	45.49	22.15	37.17	10.87
Math	60.86	23.93	74.05	8.12	50.93	22.54	52.77	19.10
Daily attendance	92.96	2.87	93.66	1.71	92.34	3.29	92.96	2.13
Truancy	17.30	15.75	7.67	8.79	19.14	15.35	14.23	9.16

When stratified for the LCD population of DCPS, the results were consistent with the results of the overall study. For acceptable schools, higher means were generated for the variables of reading proficiency, mathematics proficiency, and daily attendance rate, and a lower mean was generated for truancy rate, when compared with means of the unacceptable counterparts. As was the case with SES, however, some details were interesting with respect to variability and achievement levels.

With respect to variability, the LCD results differed from those of the initial analysis. Major differences in standard deviation were found when comparing schools with populations of less than 40% LCD that were designated as acceptable schools to their unacceptable school counterparts. In the category of math proficiency, the standard deviation for the group of unacceptable schools was 19.10, compared to a standard deviation of 8.12 for their acceptable counterparts. There was even more of a discrepancy between the reading proficiency standard deviations of these groups. The standard deviation for the group of acceptable schools was 21.07, compared to 10.87 for their

unacceptable counterparts. These results are interesting because both groups exhibited a high rate of variability. The acceptable group of schools exhibited the higher variability (10.20 higher) in reading proficiency scores, and the unacceptable schools exhibited the higher variability (10.98 higher) in math proficiency, the interesting caveat being that these schools had less than 40% LCD population and did not encompass the schools considered to be in need of serious support because of their LCD population.

Lastly, academic performance in the acceptable schools with at least a 40% LCD population was higher than the performance of students in the unacceptable schools, as was the case in the whole-group analysis. Students in acceptable schools in this category scored 8.9% higher in reading proficiency and 9.93% higher in mathematics proficiency than their counterparts in schools with unacceptable ratings.

The implications of these results are further discussed in chapter 5. Chapter 5 presents interpretations of the findings, as well as conclusions and recommendations for further study.

CHAPTER 5: INTERPRETATIONS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose underlying this study was based upon two areas of inquiry:

1. What is the relationship between the condition of school facilities in the DCPS and student achievement using the FCI as the assessment tool for facility conditions and the spring 2005 administration of the Stanford 9 achievement test as the assessment tool for students' proficiencies in mathematics and reading?

2. What is the relationship between the condition of school facilities in the DCPS and student achievement using the FCI as the assessment tool for facility conditions and the DCPS AYP report card as the assessment tool for students' attendance and truancy rates?

Theorists have established how it is possible for educational inequities (such as variations in school facility conditions) in societal institutions (school systems) to be fueled by and at times sustained by the circumstances created by social paradigms (e.g., poverty and neglect beget more poverty and neglect). This phenomenon can possibly lead one to the conclusion that both psychological and cognitive growth can be stunted by lack of fulfillment of what Maslow identified as lower level needs (Freier**,** 1970; Maslow & Lowery, 1998). As was noted in the conceptual framework and the literature review, multiple studies have investigated the effects of school facilities on student achievement (e.g., Lemasters, 1997; Earthman, 2004).

The purpose of this study was to investigate whether or not a relationship existed between the condition of school facilities in Washington, DC Public Schools and reading proficiency, mathematics proficiency, daily attendance rate, and truancy rate. Examining

the population of students in DCPS and the facilities of the schools they were attending was essential to fill a specific void in research regarding the relationship between student achievement, attendance, truancy, and facility condition. The data obtained through this study will be useful to many leaders and stakeholders in education, including state politicians, the Office of State Superintendent of Education for Washington, DC (OSSE), and the Office of the Chancellor of DCPS. Based on the results of this study, policymakers may initiate further growth or rehabilitation of local schools. The motivation for this study was derived from the experiences of teaching in schools that were geographically close but radically different with regard to both facility conditions and educational opportunities for students.

Summary of the Results

A quantitative nonexperimental design analysis and Spearman rho correlation were used to answer the four research questions for this study. To respond to research questions, the FCI and DCPS AYP report card data were collected for all schools in DCPS for the 2005 school year, with the exception of 8 of the 143 schools due to incomplete student achievement data or majority special needs populations. To quantify the strength and direction of the relationship between the variables, the Spearman rho correlation coefficient was calculated.

Research Question 1. Is there a relationship between the math proficiency of students in DCPS and FCI?

The schools of DCPS were divided into two groups for this study. The acceptable group of schools contained 104 schools, whereas the unacceptable group contained 31 schools. Based on the data presented in Table 6 (the means for both groups of schools),

students who attended schools with facility conditions rated as acceptable, according to the FCI, scored 10.3% higher in math proficiency, according to the 2005 Stanford 9 achievement test, than did their counterparts attending school in facilities with FCI ratings of unacceptable. The difference in medians was greater (11.7%) between the two groups. In addition, the analysis produced a standard deviation of 22.58 for unacceptable schools and 22.67 for acceptable schools, revealing similar variability for the two groups of schools despite the substantial difference in size of the two groups. The Spearman rho analysis, however, provided a correlation coefficient of -.179 (See Table 7), establishing a negative relationship between mathematics proficiency percentages and FCI, meaning that as building conditions improved, so did mathematics proficiency scores. In fact, mathematics proficiency generated the strongest association of all examined variables with FCI. These data imply that the difference in numbers representing the middle value for mathematics proficiency scores of acceptable and unacceptable schools indicates more of a discrepancy between the two groups than indicated by simple analysis of the means of both groups. The standard deviation of the acceptable schools was higher (.09 higher) than that for unacceptable schools; the difference in mathematics proficiency between the two schools was larger in analysis of the median rather than the mean. This result suggests that the acceptable schools had slightly higher rates of variability among their measured means for math proficiency, as compared to unacceptable schools, even though, as previously noted, the number of acceptable schools was less than a third of the number of unacceptable schools. The fact that the standard deviations were similar is notable because the property of distribution indicates that as the number of observations increases so does the likelihood that the standard deviation will increase. Not only were

the standard deviations similar, however, but the smaller group also had a slightly higher rate of variability.

Mathematics generated the strongest correlation of all variables in the study; however, the correlation coefficient of -.179 was relatively small. The closer this number is to 1 or -1 the stronger the perceived relationship or correlation is believed to be (Hinkle et al., 2003). The lack of strength of the correlation does not, however, detract from the consistency of the findings for Research Question 1. With reference to math proficiency means, medians, and correlations the findings are persistent. The hypothesized relationship between math achievement test proficiencies and building facility conditions continued to be confirmed even when SES and LCD, two notoriously strong variables, were stratified by comparing the mathematics proficiencies of similar populations, with the exception of building facility rankings.

Research Question 2. Is there a relationship between the reading proficiency of students in DCPS and FCI?

Based on the data presented in Table 6 (the means for both groups of schools), students who attended schools with facility conditions rated as acceptable, according to the FCI, scored 6.5% higher in reading proficiency, according to the 2005 Stanford 9 achievement test, than did their counterparts attending school in facilities with FCI ratings of unacceptable. The difference in medians was smaller (1.7%) between the two groups. In addition, the analysis produced a standard deviation of 22.13for unacceptable schools and 23.78 for acceptable schools, revealing similar variability for the two groups of schools despite the substantial difference in size of the two groups. The Spearman rho analysis provided a correlation coefficient of -.081 (See Table 7), establishing a negative

relationship between reading proficiency percentages and FCI, meaning that, as building conditions improved, so did reading proficiency scores. Reading proficiency generated the weakest association with FCI of all examined variables. The data imply that the numbers representing the middle value for reading proficiency scores of both acceptable and unacceptable schools were very similar and that possibly just a few anomalies pushed the acceptable schools to higher rates of achievement. The standard deviation of the acceptable schools was higher (1.65 higher) than that for unacceptable schools. This result suggests that the acceptable schools had slightly higher rates of variability among their measured means for reading proficiency, as compared to unacceptable schools, even though, as previously noted, the number of acceptable schools was less than a third of the number of unacceptable schools. The standard deviations were similar; that fact is notable because the property of distribution indicates that as the number of observations increases so does the likelihood that the standard deviation will increase. In this case, the numbers of observations were much different, yet not only were the standard deviations similar but the smaller group also had a slightly higher rate of variability.

Reading proficiency generated the weakest correlational coefficient of all variables in the study, however, the correlation coefficient of -.081 was consistent with all findings in this study. These results support the theory that indeed a relationship, even an immediately minuscule relationship, exists between the variables of student achievement and building facility condition rating. The closer this number is to 1 or -1 the stronger the perceived relationship or correlation is believed to be. The lack of strength of the correlation does not, however, detract from the consistency of the findings for Research Question 2. With reference to reading proficiency means, medians, and

correlations the findings are persistent. The hypothesized relationship between reading achievement test proficiencies and building facilities condition continued to be confirmed even when SES and LCD, two notoriously strong variables, were stratified by comparing the reading proficiencies of similar populations, with the exception of building facility rankings.

Research Question 3. Is there a relationship between the attendance rates of students in DCPS and FCI?

Based on the data presented in Table 6 (the means for both groups of schools), students who attended schools with facility conditions rated as acceptable, according to the FCI, attained an attendance rate .68% higher, according to the 2005 DCPS AYP report card, than did their counterparts attending school in facilities with FCI ratings of unacceptable. The difference in medians was smaller (.05%) between the two groups. In addition, the analysis produced a standard deviation of 3.23 for unacceptable schools and 2.68 for acceptable schools, thereby revealing similar variability for the two groups of schools despite the substantial difference in size of the two groups. The Spearman rho analysis provided a correlation coefficient of -.094 (See Table 7), establishing a negative relationship between attendance rates and FCI, meaning that, as building conditions improved, so did daily attendance rates. Attendance rates generated the third ranked correlational coefficient of the four variables. These data imply that the numbers representing the middle value for daily attendance percentages were very similar and that just a few anomalies were pushing the acceptable schools to higher rates of achievement. The standard deviation for the unacceptable schools was .55 higher than the standard deviation for acceptable schools with respect to attendance rates. This result suggests that

the acceptable schools had slightly lower rates of variability among their measured means with respect to daily attendance, as compared to unacceptable schools; attendance is the only variable in this study for which the standard deviation of unacceptable schools was higher than that for acceptable schools. As previously noted, the number of acceptable schools was less than a third of unacceptable schools. The standard deviations were similar, which is notable because the property of distribution indicates that as the number of observations increase so does the likelihood that the standard deviation will increase. As expected, the smaller group had a admittedly lower rate of variability. In addition, it should be noted that the mean and median differences between acceptable and unacceptable schools were less than 1%, both favoring acceptable schools. This finding implies that there was a very small variation between the attendance rates of acceptable schools and the attendance rates of their unacceptable counterparts.

Although attendance rate was the third ranked correlational coefficient of the four variables in the study, the correlation coefficient of -.094 was consistent with all findings in this study. In addition to the strength of this correlation (ranked third of four variables), attendance rates also generated the smallest difference between the schools categorized as acceptable and the schools categorized as unacceptable with reference to mean and median. The difference in mean was .68% and the difference in median was .05%.

These results do support the theory that indeed a relationship exists between the variables of attendance and building facility condition rating; however, the lack of strength of the correlation in conjunction with the slight differences in mean and median bring into question the significance of the relationship. In this study, however, that factor does not detract from the consistency of the findings for Research Question 3. With

reference to attendance rate means, medians, and correlations, the findings are persistent. The hypothesized relationship between attendance rates and building facilities condition continued to be confirmed even when SES and LCD, two notoriously strong variables, were stratified in the comparison of attendance rates of similar populations, with the exception of building facility rankings.

Research Question 4. Is there a relationship between the truancy rates of students in DCPS and FCI?

Based on the data presented in Table 6 (the means for both groups of schools), students who attended schools with facility conditions rated as acceptable, according to the FCI, were 2.89% less truant, according to the DCPS AYP report card, than their counterparts attending school in facilities with FCI ratings of unacceptable. The difference in medians was larger (4.94%) between the two groups. In addition, the analysis produced a standard deviation of 14.99 for unacceptable schools and 15.44 for acceptable schools, revealing similar variability for the two groups of schools despite the substantial difference in size of the two groups. The Spearman rho analysis provided a correlation coefficient of .135 (See Table 7), establishing a positive relationship between truancy percentages and FCI, meaning that, as building conditions improved, so did truancy rates. In fact, truancy rates generated the second strongest association with FCI of all examined variables. These data imply that the numbers representing the middle value for truancy rate for acceptable schools indicated more of a difference between the two groups than did simple analysis of the means. The standard deviation for the acceptable schools was .45 lower than that for the unacceptable schools, thereby implying variability in the findings between the truancy rates for acceptable schools and unacceptable

schools. This result suggests that the acceptable schools had slightly higher rates of variability among their measured means with respect to truancy rates, as compared to unacceptable schools, even though, as previously noted, the number of acceptable schools was less than a third of unacceptable schools. The standard deviations were similar, which is notable because the property of distribution indicates that as the number of observations increase so does the likelihood that the standard deviation will increase. In this case, the numbers of observations were much different, yet not only were the standard deviations similar but the smaller group also had a slightly higher rate of variability.

Truancy was the second strongest correlation of all variables in the study; however, as was the case with mathematics proficiency, the correlation coefficient of .135 was relatively small. The closer this number is to 1 or -1 the stronger the perceived relationship or correlation is believed to be. Truancy rate generated a positive correlation. The lack of strength of the correlation does not, however, detract from the consistency of the findings for Research Question 4. With reference to truancy rate means, medians, and correlations, the findings are persistent. The hypothesized relationship between truancy rate and building facilities condition continued to be confirmed even when SES and LCD, two notoriously strong variables, were stratified in comparing the truancy rates of similar populations, with the exception of building facility rankings.

The Spearman rho correlation coefficients were calculated for comparison to the initial mean and median analysis with regard to establishing either a positive or negative ordinal relationship between the school facilities FCI rating and the other variables. In addition, the Spearman rho generated a ranking of the strength of any existing

relationship. The correlation resulted in confirmation of the following research hypotheses:

1. A negative correlation relationship exists between the math proficiency of DCPS students and the FCI, wherein, as the facility conditions ratings improve so do the math proficiency scores of DCPS students on the Stanford 9 achievement test.

2. A negative correlation relationship exists between the reading proficiency of DCPS students and the FCI, wherein, as the facility conditions ratings improve so do the reading proficiency scores of DCPS students on the Stanford 9 achievement test.

3. A negative correlation relationship exists between the attendance rates of DCPS students and the FCI, wherein, as the facility conditions ratings improve so does the rate of student attendance in DCPS.

4. A positive correlation relationship exists between the truancy rates of DCPS students and the FCI, wherein, as the facility conditions ratings improve so does the rate of student truancy in DCPS.

Interpretation of Findings

Based on the findings of this research, students attending DCPS schools that were rated as acceptable according to the FCI analysis performed better in every category measured than did students attending schools categorized as unacceptable. The students at acceptable schools were higher achievers in reading and mathematics; they also were attending school at a higher rate and were truant less often than their counterparts who attended unacceptable schools.

Furthermore, the correlational data confirm the findings: that a relationship exists between DCPS FCI numerical rating and reading proficiency, math proficiency,

attendance rate, and truancy rate. The size of the differences in mean and median were as low as .05%, and the strengths of the correlations were as weak as -.081. It can be argued that these results are not meaningful; however, given the persistence of these results (every analysis favored schools with acceptable building ratings) and the consistency of the direction of the correlations (every correlational coefficient indicated the existence of a relationship: where FCI improved so did each variable), even when SES and LCD were stratified, the four hypotheses were correct.

Comparison to Similar Studies

This study was compared to studies conducted by Edwards (1991) and Schneider (2003). It should be noted that their studies, as well as the current research, all used DCPS for part or all of the data collected. It also should be noted that the Edwards and Schneider studies used stakeholders as a linking variable with regard to the study topic; Edwards linked parental involvement and student achievement whereas Schneider linked student achievement and teacher satisfaction to building condition. Even with much different methodologies, all three studies found a relationship between facility conditions and student achievement. Nevertheless, the similarities of the studies cease at that point. Edwards' thesis was limited to a sampling and did not address attendance or truancy; Schneider compared teachers' satisfaction without including attendance rate or truancy rate. As noted in chapter 2, many studies, Schneider's and Edwards' included, relied on stakeholders to rank their building facility conditions. The conditions of school facilities in this study were ranked by a third party, a trained professional assessor, using an established building assessment instrument; therefore, it is assumed less bias occurred.

In comparing this study with previous scholarly work, several major considerations should be kept in mind:

1. This study made direct comparisons between facility condition and achievement, truancy, and attendance. Edwards and Schneider included the variables of parental involvement and teacher attitudes, respectively.

2. The FCI rankings were calculated in 2005. There was no centralized systematic rating system to which Edwards (1991) or Schneider (2003) could refer in their work. The FCI was created by nonpartial professionals.

3. The researcher included the population of DCPS.

In Edwards' (1991) study parental surveys were used to rate school facilities at 52 schools. Final ratings designated the condition of schools as poor, fair, or excellent. The California Test of Basic Skills was the measure of student achievement. Schneider (2003) utilized teacher surveys to establish facility ratings. With a return rate of less than 27% for surveys issued, the external validity of this study is highly threatened. For this comparison of Chicago and Washington, DC schools, the Stanford 9 achievement test was the measure of student achievement.

Edwards (1991), Schneider (2003), and the current researcher all concluded that regardless of the building rating system or the student achievement measure, DCPS students in the higher rated buildings outperformed their counterparts in the lower rated facilities

Recommendations for Further Research

The following recommendations were drawn from the results of this study as well as the review of literature. This study was limited to Washington, DC public schools in

2005. Findings from this study revealed other areas that need further exploration. The following are recommendations for future research:

1. This study should be replicated using the new District of Columbia Comprehensive Assessment System (DCCAS) as the standard for student achievement in DCPS. When this study was initiated, the DCCAS had been implemented too recently and was still under development; it would not have been a reliable indicator. The DCCAS has now been in place as the measure of student achievement in DCPS for 3 years, thereby enhancing the likelihood of its being a reliable indication of student achievement.

2. A study could be conducted in a similar metropolitan area replicating the use of reading proficiency, math proficiency, attendance rate, and truancy rate. Although schools rated as acceptable exhibited a better rate of attendance than did schools rated as unacceptable, the difference in the attendance rate was very small in this study. It would be interesting to investigate whether or not attendance rates reflect as consistent a relationship with building facilities condition as have mathematics and reading proficiency in the past.

3. A worthwhile study would involve the selection of a metropolitan area similar to Washington, DC, comparing the school facility condition ratings generated by the CAPE to another, more independent rating system, completed by a third party, without the threat of conflict of interest.

4. All of the above suggestions have merit; conducting this study as qualitative research would provide a deeper investigation of this topic. The richness of a qualitative study would add to the body of knowledge.

5. Finally, to call this topic to the attention of central administration, adding their perceptions as a variable to facility research may add a necessary political component. Although research on this topic has great value, without the attention of the administrators and politicians who control the funding, the effort is moot.

Implications for the Field of Education

The theories of Paulo Freire and Abraham Maslow that were cited in chapter 2 are consistent with the results of this study. Although this research falls far from concluding that school facilities condition, student achievement, attendance, and truancy have a cause-and-effect relationship, examination of these data for DCPS in 2005, using the available measures as variables, did indicate that a consistent relationship exists.

Just as Maslow's hierarchy of needs theory espoused that, only as lower level needs are met, can an individual begin to fulfill higher level needs, Freire theorized that societal constructs can be the restrictive force that stops the lower classes from achieving their potential. These modes of thought appear to be consistent with the results of this study.

The Spearman rho correlation indicated that indeed a relationship existed in 2005 between the building conditions to which students were exposed on a daily basis and their achievement levels in mathematics and reading, as well as their attendance and truancy rates. The results of this study are consistent. Every measure confirmed that a relationship existed between school facility condition and student achievement as indicated by reading proficiency, mathematics proficiency, rate of attendance, and rate of truancy. The challenges in interpreting these results reside in the strength of those relationships. The correlations of the variables' relationships with facility condition ranged from .081 to

.179. These correlational coefficients, although establishing relationship, are weak. These results appear to be consistent with previous research cited in chapter 1 and chapter 2. In establishing the conceptual framework with respect to the relationship between facility condition and student achievement, researchers consistently noted that a relationship could be established but a cause-and-effect relationship could not be verified.

One might conclude, as Maslow theorized, that the poor building conditions were consistent with students' lower level needs' not being met, and therefore, the presence of lower levels of achievement. Students at schools categorized as unacceptable due to their facility condition rating did not perform as well with respect to academics as well as attendance and truancy. Some of the differences in both mean and median between the two groups were small; however, the results were consistent for every measure. This trend continued when the SES and LCD were stratified and similar school populations were compared based on their facility condition. As Freire theorized, the students were performing at a lower rate in buildings in which, as some might surmise, they had not been provided with adequate conditions by the societal construct, in this case, DCPS. If one ascribes to the theoretical framework of Freire's concepts, the conditions of a school facility become a moral cause.

Stratifying for SES and LCD populations, yet having the results mirror the overall results, suggests a consistency of these results among fringe populations within this study's analysis. Just as Schneider (2003) and Lanham (1999) found, analysis of various demographic data confirmed the existence of a relationship in this study. In fact, when SES and LCD were stratified, the relationships of this study's variables appeared stronger. There was a larger disparity in achievement levels when schools with similar demographics were

compared. There was, however, also an increase in the variability of the results as shown by the much higher discrepancy in standard deviations when these demographics were stratified. This finding could lead to the conclusion that when DCPS schools are stratified by these demographic areas, other larger disparities may be revealed.

Washington, DC needs to spend $120 million to make emergency repairs to schools to address heating and air conditioning problems, a backlog of work orders, and fire code violations (Nakamura & Haynes, 2007). Most experts and educators connected with DCPS schools have agreed that many buildings are in dire need of renovation and repair. The results of this study not only confirm the need for repairs that have been requested but also add urgency to the appeal for the aforementioned spending on DCPS facilities. The mayor of Washington, DC has apparently agreed with this summation in theory, as more than $1 billion has been promised to DCPS for facility upgrades over the next 10 years (21st Century School Fund, 2005). The interpretation of this study's results, that there is a relationship between school facility condition, student achievement, attendance, and truancy, lends support to the beliefs of Washington, DC stakeholders, including the mayor.

The results of this study can be summarized in the expressed belief of two researchers in the field of education. Tanner (2000) agreed with the philosophy of Dewey when he stated, "The first line of reasoning [is] that the school environment influences behavior and attitude. Next, behavior and attitude influence learning; therefore, the physical environment must affect learning" (p. 312). When asked of her opinion regarding the possible effects of school facilities on the achievement of the children in her charge, the words of DCPS Chancellor Michelle Rhee loomed large as she stated, "We send a message

to children about how much we value them and how important education is through the learning environments we create for them. The current state of our school facilities sends exactly the wrong message to students. We must work to correct this reality immediately" (M. Rhee, personal communication, February 10, 2009).

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APPENDIX A: FCI REPORT FOR DCPS 2005

Name of Facility	Facility Use	FCI	Facility Condition
5th Street Transportation Lot	**A**	**0.47**	**Fair**
Douglass Swing Space	**A**	**0.51**	**Poor**
Harbor Garage Administrative	**A**	**0.80**	**Poor**
Logan Administrative	**A**	**0.76**	**Poor**
Logan Demountable Administrative	**A**	**0.76**	**Poor**
Penn Center Administrative	**A**	**0.68**	**Poor**
Adams Elementary School	**E**	**0.72**	**Poor**
Aiton Elementary School	**E**	**0.73**	**Poor**
Amidon Elementary School	**E**	**0.61**	**Poor**
Bancroft Elementary School	**E**	**0.46**	**Fair**
Barnard Elementary School	**E**	**0.02**	**Good**
Beers Elementary School	**E**	**0.62**	**Poor**
Benning Elementary School	**E**	**0.53**	**Poor**
Birney Elementary School	**E**	**0.58**	**Poor**
Bowen Elementary School	**E**	**0.79**	**Poor**
Brent Elementary School	**E**	**0.66**	**Poor**
Brookland Elementary School	**E**	**0.58**	**Poor**
Bruce-Monroe Elementary School	**E**	**0.44**	**Fair**
Bunker Hill Elementary School	**E**	**0.63**	**Poor**
Burroughs Elementary School	**E**	**0.64**	**Poor**
Burrville Elementary School	**E**	**0.39**	**Fair**
Clark Elementary School	**E**	**0.54**	**Poor**
Cleveland Elementary School	**E**	**0.03**	**Good**
Cook, J.F. Elementary School	**E**	**0.58**	**Poor**
Davis Elementary School	**E**	**0.75**	**Poor**

Draper Elementary School	**E**	**0.80**	**Poor**
Drew Elementary School	**E**	**0.69**	**Poor**
Eaton Elementary School	**E**	**0.49**	**Fair**
Emery Elementary School	**E**	**0.49**	**Fair**
Ferebee-Hope Elementary School	**E**	**0.63**	**Poor**
Gage-Eckington Elementary School	**E**	**0.54**	**Poor**
Garfield Elementary School	**E**	**0.70**	**Poor**
Garnet-Patterson Middle School	**M**	**0.63**	**Poor**
Garrison Elementary School	**E**	**0.44**	**Fair**
Gibbs Elementary School	**E**	**0.74**	**Poor**
Green Elementary School	**E**	**0.77**	**Poor**
Harris, C.W. Elementary School	**E**	**0.48**	**Fair**
Harrison Elementary School	**E**	**0.77**	**Poor**
Hearst Elementary School	**E**	**0.56**	**Poor**
Hendley Elementary School	**E**	**0.77**	**Poor**
Houston Elementary School	**E**	**0.71**	**Poor**
Hyde Elementary School	**E**	**0.63**	**Poor**
Janney Elementary School	**E**	**0.50**	**Poor**
Kenilworth Elementary School	**E**	**0.69**	**Poor**
Ketcham Elementary School	**E**	**0.84**	**Poor**
Key Elementary School	**E**	**0.05**	**Good**
Kimball Elementary School	**E**	**0.58**	**Poor**
King Jr., Martin Luther Elementary School	**E**	**0.84**	**Poor**
Kramer Annex Elementary School	**E**	**0.63**	**Poor**
Lafayette Elementary School	**E**	**0.39**	**Fair**
Langdon Elementary School	**E**	**0.61**	**Poor**
LaSalle Elementary School	**E**	**0.66**	**Poor**

Leckie Elementary School	**E**	**0.74**	**Poor**
Lewis Swing Space	**A**	**0.54**	**Poor**
Ludlow-Taylor Elementary School	**E**	**0.60**	**Poor**
Malcolm X Elementary School	**E**	**0.57**	**Poor**
Mann Elementary School	**E**	**0.61**	**Poor**
Marshall Elementary School	**E**	**0.89**	**Unsatisfactory**
Maury Elementary School	**E**	**0.77**	**Poor**
McGogney Elementary School	**E**	**0.41**	**Fair**
Merritt Elementary School	**E**	**0.47**	**Fair**
Meyer Elementary School	**E**	**0.54**	**Poor**
Miner Elementary School	**E**	**0.07**	**Good**
Montgomery Elementary School	**E**	**0.74**	**Poor**
Moten Elementary School	**E**	**0.72**	**Poor**
Murch Elementary School	**E**	**0.56**	**Poor**
Nalle Elementary School	**E**	**0.66**	**Poor**
Noyes Elementary School	**E**	**0.02**	**Good**
Orr Elementary School	**E**	**0.59**	**Poor**
Oyster Elementary School	**E**	**0.21**	**Good**
Park View Elementary School	**E**	**0.54**	**Poor**
Patterson Elementary School	**E**	**0.02**	**Good**
Payne Elementary School	**E**	**0.67**	**Poor**
Peabody Elementary School	**E**	**0.40**	**Fair**
Plummer Elementary School	**E**	**0.61**	**Poor**
Powell Elementary School	**E**	**0.64**	**Poor**
Prospect (formerly Goding) Special Needs	**A**	**0.50**	**Poor**
Randle Highlands Elementary School	**E**	**0.25**	**Good**
Raymond Elementary School	**E**	**0.59**	**Poor**

Reed, Marie Elementary School	**E**	**0.40**	**Fair**
River-Terrace Elementary School	**E**	**0.67**	**Poor**
Ross Elementary School	**E**	**0.62**	**Poor**
Rudolph Elementary School	**E**	**0.65**	**Poor**
Savoy Elementary School	**E**	**0.57**	**Poor**
Seaton Elementary School	**E**	**0.45**	**Fair**
Shadd Elementary School	**E**	**0.39**	**Fair**
Shaed Elementary School	**E**	**0.56**	**Poor**
Sharpe Health Annex Special Needs	**A**	**0.65**	**Poor**
Sharpe Health Special School	**E**	**0.52**	**Poor**
Shepherd Elementary School	**E**	**0.67**	**Poor**
Simon Elementary School	**E**	**0.74**	**Poor**
Slowe Elementary School	**E**	**0.42**	**Fair**
Smothers Elementary School	**E**	**0.74**	**Poor**
Stanton Elementary School	**E**	**0.70**	**Poor**
Stevens Elementary School	**E**	**0.67**	**Poor**
Stoddert Elementary School	**E**	**0.50**	**Fair**
Takoma Elementary School	**E**	**0.66**	**Poor**
Terrell, M. C. Elementary School	**E**	**0.59**	**Poor**
Thomas Elementary School	**E**	**0.53**	**Poor**
Thomson Elementary School	**E**	**0.00**	**Good**
Truesdell Elementary School	**E**	**0.66**	**Poor**
Tubman Elementary School	**E**	**0.51**	**Poor**
Turner Elementary School	**E**	**0.70**	**Poor**
Tyler Elementary School	**E**	**0.39**	**Fair**
Van Ness Elementary School	**E**	**0.53**	**Poor**
Walker Jones Elementary School	**E**	**0.40**	**Fair**

Watkins Elementary School	**E**	**0.70**	**Poor**
Webb Elementary School	**E**	**0.48**	**Fair**
West Elementary School	**E**	**0.49**	**Fair**
Whittier Elementary School	**E**	**0.67**	**Poor**
Wilkinson Elementary School	**E**	**0.64**	**Poor**
Wilson, J.O. Elementary School	**E**	**0.63**	**Poor**
Winston Elementary School	**E**	**0.66**	**Poor**
Young Elementary School	**E**	**0.59**	**Poor**
Anacostia Senior High School	**H**	**0.81**	**Poor**
Ballou Senior High School	**H**	**0.64**	**Poor**
Banneker Senior High School	**H**	**0.56**	**Poor**
Cardozo Senior High School	**H**	**0.55**	**Poor**
Coolidge Senior High School	**H**	**0.57**	**Poor**
Dunbar Senior High School	**H**	**0.57**	**Poor**
Eastern Senior High School	**H**	**0.80**	**Poor**
Ellington Senior High School	**H**	**0.55**	**Poor**
McKinley Senior High School	**H**	**0.04**	**Good**
Phelps Career High School	**H**	**0.89**	**Unsatisfactory**
Roosevelt Senior High School	**H**	**0.53**	**Poor**
School Without Walls Senior High School	**H**	**0.70**	**Poor**
Spingarn Senior High School	**H**	**0.61**	**Poor**
Washington, M.M. Career High School	**H**	**0.76**	**Poor**
Wilson Senior High School	**H**	**0.56**	**Poor**
Woodson, H.D. Senior High School	**H**	**0.87**	**Unsatisfactory**
Backus Middle School	**M**	**0.55**	**Poor**
Bell - Lincoln Middle School	**M**	**0.00**	**Good**
Brown, Ronald Middle School	**M**	**0.70**	**Poor**

Browne Junior High School	**M**	**0.70**	**Poor**
Deal Junior High School	**M**	**0.70**	**Poor**
Eliot Junior High School	**M**	**0.71**	**Poor**
Evans Middle School	**M**	**0.75**	**Poor**
Fletcher-Johnson Education Center	**M**	**0.52**	**Poor**
Francis Junior High School	**M**	**0.64**	**Poor**
Hamilton Swing Space	**A**	**0.51**	**Poor**
Harris, P.R. Education Center	**M**	**0.69**	**Poor**
Hart Middle School	**M**	**0.85**	**Poor**
Hine Junior High School	**M**	**0.67**	**Poor**
Jefferson Junior High School	**M**	**0.81**	**Poor**
Johnson Junior High School	**M**	**0.81**	**Poor**
Kramer Middle School	**M**	**0.58**	**Poor**
Langley Junior High School	**M**	**0.64**	**Poor**
Lee, Mamie D. Special School	**A**	**0.34**	**Fair**
MacFarland Middle School	**M**	**0.53**	**Poor**
Miller, Kelly Middle School	**M**	**0.10**	**Good**
Paul Junior High School	**M**	**0.63**	**Poor**
Rabaut Junior High School	**M**	**0.89**	**Unsatisfactory**
Shaw Junior High School	**M**	**0.57**	**Poor**
Stuart Hobson Middle School	**M**	**0.63**	**Poor**
Taft Swing Space	**A**	**0.56**	**Poor**
Terrell, R.H. Junior High School	**M**	**0.61**	**Poor**

APPENDIX B: TRUANCY RATE DCPS 2005

reportcards.asp | STATE Reports | E | 2005 | SCHOOL	SCHOOL GROUP	SCHOOL CODE	TRUANT STUDENTS	TRUANCY RATE
3. HYDE	BOE Charter	161	287	39.37%
9. ADAMS ES	DCPS	201	10	4.42%
10. AITON ES	DCPS	202	153	38.35%
11. AMIDON ES	DCPS	203	126	35.69%
12. BANCROFT ES	DCPS	204	0	0.00%
13. BARNARD ES	DCPS	205	30	11.15%
14. BEERS ES	DCPS	206	49	12.89%
15. BENNING ES	DCPS	207	34	17.17%
16. BIRNEY ES	DCPS	208	49	12.31%
17. BOWEN ES	DCPS	211	66	24.63%
18. BRENT ES	DCPS	212	49	23.90%
19. BRIGHTWOOD ES	DCPS	213	7	1.62%
20. BROOKLAND ES	DCPS	346	34	12.64%
21. BRUCE-MONROE ES	DCPS	296	15	5.60%

22. BUNKER HILL ES	DCPS	219	6	2.35%
23. BURROUGHS ES	DCPS	220	37	14.68%
24. BURRVILLE ES	DCPS	221	0	0.00%
25. CLARK ES	DCPS	223	60	26.09%
26. CLEVELAND ES	DCPS	224	48	25.40%
27. COOK JF ES	DCPS	226	76	40.00%
28. COOKE HD ES	DCPS	227	62	20.95%
29. DAVIS ES	DCPS	229	99	40.41%
30. DRAPER ES	DCPS	230	0	0.00%
31. DREW ES	DCPS	231	4	1.27%
32. EATON ES	DCPS	232	3	0.79%
33. EMERY ES	DCPS	235	111	42.86%
35. FEREBEE-HOPE ES	DCPS	343	88	34.92%
36. GAGE-ECKINGTON ES	DCPS	281	22	7.64%
37. GARFIELD ES	DCPS	238	58	13.06%
38. GARRISON ES	DCPS	239	23	8.04%
39. GIBBS ES	DCPS	240	131	34.47%
40. GREEN ES	DCPS	244	20	5.83%

41. HARRIS, C.W. ES	DCPS	247	132	32.75%
42. HEARST ES	DCPS	258	26	20.31%
43. HENDLEY ES	DCPS	249	61	16.40%
44. HOUSTON ES	DCPS	251	95	35.58%
45. HYDE ES	DCPS	252	0	0.00%
46. JANNEY ES	DCPS	254	2	0.43%
47. KENILWORTH ES	DCPS	256	8	2.53%
48. KETCHAM ES	DCPS	257	59	16.67%
49. KEY ES	DCPS	272	0	0.00%
50. KIMBALL ES	DCPS	259	18	4.77%
51. KING M L ES	DCPS	344	1	0.31%
52. LAFAYETTE ES	DCPS	261	0	0.00%
53. LANGDON ES	DCPS	262	39	11.64%
54. LASALLE ES	DCPS	264	58	18.53%
55. LECKIE ES	DCPS	266	46	14.60%
56. LUDLOW-TAYLOR ES	DCPS	271	29	10.94%
57. MALCOLM X ES	DCPS	308	26	6.30%
58. MANN ES	DCPS	273	1	0.48%
59. MAURY ES	DCPS	274	28	13.15%

60. MCGOGNEY ES	DCPS	275	3	1.06%
61. MEYER ES	DCPS	278	20	7.49%
62. MINER ES	DCPS	280	178	36.55%
63. MONTGOMERY ES	DCPS	282	21	8.71%
64. MOTEN ES	DCPS	285	81	27.18%
65. MURCH ES	DCPS	287	0	0.00%
66. NALLE ES	DCPS	288	12	4.00%
67. NOYES ES	DCPS	290	104	43.70%
68. ORR ES	DCPS	291	3	0.87%
69. OYSTER ES	DCPS	292	5	1.25%
70. PARK VIEW ES	DCPS	293	5	1.75%
71. PATTERSON ES	DCPS	294	0	0.00%
72. PAYNE ES	DCPS	295	86	33.08%
73. PEABODY ES	DCPS	301	10	12.20%
74. PLUMMER ES	DCPS	299	5	1.62%
75. POWELL ES	DCPS	300	47	15.88%
76. RANDLE-HIGHLANDS ES	DCPS	316	71	14.82%
77. RAYMOND ES	DCPS	302	92	26.29%
78. REED LC	DCPS	284	1	0.30%

79. RIVER TERRACE ES	DCPS	304	55	25.58%
80. ROSS ES	DCPS	305	5	3.52%
81. RUDOLPH ES	DCPS	306	114	28.57%
82. SAVOY ES	DCPS	307	128	37.87%
83. SEATON ES	DCPS	309	46	12.99%
84. SHADD ES	DCPS	310	56	39.16%
85. SHAED ES	DCPS	311	49	19.68%
86. SHEPHERD ES	DCPS	313	2	0.66%
87. SIMON ES	DCPS	315	47	15.26%
88. SLOWE ES	DCPS	342	68	23.05%
89. SMOTHERS ES	DCPS	322	65	32.83%
90. STANTON ES	DCPS	319	3	0.60%
91. STEVENS ES	DCPS	320	2	0.84%
92. STODDERT ES	DCPS	321	2	1.05%
93. TERRELL MC ES	DCPS	353	48	22.75%
94. THOMAS ES	DCPS	325	61	19.12%
95. THOMSON ES	DCPS	326	62	24.22%
96. TRUESDELL ES	DCPS	327	76	19.95%
97. TUBMAN ES	DCPS	328	65	13.68%

98. TURNER ES	DCPS	329	28	6.75%
99. TYLER ES	DCPS	330	126	52.94%
100. VAN NESS ES	DCPS	331	6	5.26%
101. WALKER-JONES ES	DCPS	332	82	19.25%
102. WATKINS ES	DCPS	333	93	19.91%
103. WEBB ES	DCPS	335	25	5.91%
104. WEST ES	DCPS	336	9	4.05%
105. WHEATLEY ES	DCPS	337	37	20.33%
106. WHITTIER ES	DCPS	338	18	4.60%
107. WILKINSON ES	DCPS	354	220	50.00%
108. WILSON JO ES	DCPS	339	19	5.49%
109. YOUNG ES	DCPS	341	112	27.52%

APPENDIX C: RAW DATA COLLECTED FOR EACH DCPS SCHOOL

School	Reading %	Math %	Daily attendance	Truancy %	FCI #	FCI desig-nation	Accept/ Unaccept
Adams	53.57	58.93	96.7	4.42	0.72	Poor	unacc
Aiton	62.37	75.27	88.1	38.35	0.73	Poor	unacc
Amidon	50.62	43.21	90.8	35.69	0.61	Poor	unacc
Bancroft	44.21	81.05	95	0	0.46	Fair	accep
Barnard	63.16	64.47	93.6	11.15	0.02	Good	accep
Beers	43.69	64.08	93.4	12.89	0.62	Poor	unacc
Benning	40	44.44	91.7	17.17	0.53	Poor	Unacc
Birney	50.98	52.94	93.4	12.31	0.58	Poor	Unacc
Bowen	33.78	36.49	91.3	24.63	0.79	Poor	Unacc
Brent	73.47	81.63	93	23.9	0.66	Poor	Unacc
Brookland	58.21	70.15	92.6	12.64	0.58	Poor	Unacc
Bruce-Monroe	40.54	70.27	90.9	5.6	0.44	Fair	Accep
Bunker Hill	60.29	67.65	94.6	2.35	0.63	Poor	Unacc
Burroughs	60	65.45	93.2	14.68	0.64	Poor	Unacc
Burrville	86.21	85.06	96.5	0	0.39	Fair	Accep
Clark	60.32	65.08	92.6	26.09	0.54	Poor	Unacc
Cleveland	64.29	94.64	91.9	25.4	0.03	Good	Accep
Cook JF	19.61	43.14	93	40	0.58	Poor	Unacc
Cooke HD	35.71	67.14	91.5	20.95	0.54	Poor	Unacc
Davis	66.22	71.62	89.5	40.41	0.75	Poor	Unacc
Drew	77.78	68.52	88.9	1.27	0.69	Poor	Unacc
Eaton	88.78	86.92	97.3	0.79	0.49	Fair	Accep
Emery	43.33	55	89.6	42.86	0.49	Fair	Accep
Ferebee-Hope	33.71	46.07	88.9	34.92	0.63	Poor	Unacc
Fletcher-Johnson	21.57	50.98	94.1	0	0.52	Poor	Unacc
Gage-Eckington	41.27	66.67	91.2	7.64	0.54	Poor	Unacc
Garfield	30.71	38.58	94.1	13.06	0.7	Poor	Unacc
Garrison	45.24	48.81	92.2	8.04	0.44	Fair	Accep
Gibbs	44.23	49.04	90.6	34.47	0.74	Poor	Unacc
Green	37.65	41.18	87	5.83	0.77	Poor	Unacc
Harris PR	36	58	87.8	NR	0.69	Poor	Unacc
Harris CW	51.04	57.29	92.5	32.75	0.48	Fair	Accep
Hendley	25.93	27.16	93.5	16.4	0.77	Poor	Unacc
Houston	35.48	48.39	89.9	35.58	0.71	Poor	Unacc
Hyde	80.95	100	95.6	0	0.63	Poor	Unacc
Janney	91.43	93.33	95.1	0.43	0.5	Poor	Unacc
Kenilworth	33.71	43.82	98	2.53	0.69	Poor	Unacc

Ketcham	34.52	50	90.7	16.67	0.84	Poor	Unacc
Key	89.58	97.92	95.7	0	0.05	Good	Accep
Kimball	39.64	58.56	94.3	4.77	0.58	Poor	Unacc
King	41.94	63.44	97.6	0.31	0.84	Poor	Unacc
Lafayette	96.27	97.76	96.2	0	0.39	Fair	Accep
Langdon	90.36	92.77	94.6	11.64	0.61	Poor	Unacc
Lasalle	45.45	51.14	92.5	18.53	0.66	Poor	Unacc
Leckie	52.31	52.31	94.7	14.6	0.74	Poor	Unacc
Ludlow-Taylor	48.28	56.25	93	10.94	0.6	Poor	Unacc
Malcolm X	54.95	60.36	94.1	6.3	0.57	Poor	Unacc
Mann	95.45	100	96.1	0.48	0.61	Poor	Unacc
Maury	54.1	65.57	94	13.15	0.77	Poor	Unacc
Mcgogney	33.82	51.47	92.4	1.06	0.41	Fair	Accep
Merritt	35.9	44.87	96.8	8.12	0.47	Fair	Accep
Meyer	34.57	46.91	94.1	7.49	0.54	Poor	Unacc
Miner	42.62	53.28	90.7	36.55	0.07	Good	Accep
Montgomery	44.26	59.02	95.2	8.71	0.74	Poor	Unacc
Moten	29.67	29.67	92	27.18	0.72	Poor	Unacc
Murch	86.72	90.63	95.6	0	0.56	Poor	Unacc
Nalle	60.67	44.94	93.8	4	0.66	Poor	Unacc
Noyes	76.92	63.46	88.7	43.7	0.02	Good	Accep
Orr	49.06	60.38	91.1	0.87	0.59	Poor	Unacc
Oyster	82.29	85.42	95.5	1.25	0.21	Good	Accep
Park View	59.04	61.45	91.2	1.75	0.54	Poor	Unacc
Patterson	50	65.63	96.5	0	0.02	Good	Accep
Payne	51.28	50	90.1	33.08	0.67	Poor	Unacc
Plummer	28.13	34.38	97.9	1.62	0.61	Poor	Unacc
Powell	27.06	20	91.9	15.88	0.64	Poor	Unacc
Randel Highlands	77.52	70.54	92.7	14.82	0.25	Good	Accep
Raymond	41.38	64.66	92	26.9	0.59	Poor	Unacc
Reed LC	60.98	78.05	95.3	0.3	0.4	Fair	Accep
River Terrace	47.27	60	90.8	25.58	0.67	Poor	Unacc
Rudolph	57.14	66.33	91.5	28.57	0.65	Poor	Unacc
Savoy	60.56	64.79	90.6	37.87	0.57	Poor	Unacc
Seaton	47.62	72.62	92.8	12.99	0.45	Fair	Accep
Shadd	38.1	52.38	87.8	39.16	0.39	Fair	Accep
Shaed	47.83	42.03	92.5	19.62	0.56	Poor	Unacc
Shepherd	85.71	82.14	95.5	0.66	0.67	Poor	Unacc
Simon	44.44	43.43	94.1	15.26	0.74	Poor	Unacc
Slowe	45.95	45.95	91.5	23.05	0.42	Fair	Accep
Smothers	60.71	53.57	89.5	32.83	0.74	Poor	Unacc

Stanton	31.75	44.44	91.9	0.6	0.7	Poor	Unacc
Stevens	77.19	77.19	97.7	0.84	0.67	Poor	Unacc
Takoma	84.81	93.67	96.3	0.25	0.66	Poor	Unacc
Terrell MC	45.45	36.36	90.8	22.75	0.59	Poor	Unacc
Thomas	21.1	36.7	92.5	19.12	0.53	Poor	Unacc
Thomson	55.56	69.84	92.5	24.22	0	Good	Accep
Truesdell	46.67	70	92.7	19.95	0.66	Poor	Unacc
Tubman	28.13	53.13	92.7	13.68	0.51	Poor	Unacc
Turner	59.13	61.74	95.4	6.75	0.7	Poor	Unacc
Tyler	13.51	20.27	87.1	52.94	0.39	Fair	Accep
Walker-Jones	19.01	27.61	94.7	19.25	0.4	Fair	Accep
Watkins	61.62	67.68	93.5	19.91	0.7	Poor	Unacc
Webb	32	47	96	5.91	0.48	Fair	Accep
West	85.71	87.14	93.8	4.05	0.49	Fair	Accep
Whittier	78.79	89.9	94.5	4.6	0.67	Poor	Unacc
Wilkinson	31.18	54.84	86.9	50	0.64	Poor	Unacc
Wilson JO	43.02	46.51	92.9	5.49	0.63	Poor	Unacc
Winston	56	57.33	95.5	13.04	0.66	Poor	Unacc
Young	51.46	59.22	88.8	27.52	0.59	Poor	Unacc
Anacostia	6.51	11.24	84.4	56.45	0.81	Poor	Unacc
Backus	36.31	33.93	96.8	6.4	0.55	Poor	Unacc
Ballou	3.16	9.88	86	46.83	0.64	Poor	Unacc
Banneker	86.78	96.69	98.7	0	0.56	Poor	Unacc
Bell	13.33	61.11	93.6	9.33	0	Good	Accep
Browne JHS	33.64	23.64	91.7	30.35	0.7	Poor	Unacc
Cardozo	10.58	30.77	85.9	46.64	0.55	Poor	Unacc
Coolidge	7.18	17.13	91.5	30.91	0.57	Poor	Unacc
Deal	81.43	79.8	95	6.97	0.7	Poor	Unacc
Dunbar	12.3	30.74	93.7	16.68	0.57	Poor	Unacc
Eastern	6.76	13.51	88.2	47.6	0.8	Poor	Unacc
Eliot	37.84	45.95	93.1	8.93	0.71	Poor	Unacc
Ellington	45.36	43.3	94.1	16.09	0.55	Poor	Unacc
Fletcher-John JHS	18.07	16.87	94.1	20.08	0.52	Poor	Unacc
Francis	50.35	48.94	90	34.89	0.64	Poor	Unacc
Harris PR JHS	38.17	13.74	87.8	32.22	0.69	Poor	Unacc
Hart	20.97	18.28	91.8	32.23	0.85	Poor	Unacc
Hine	40.11	46.7	96.3	2.81	0.67	Poor	Unacc
Jefferson	43.62	48.56	93.9	15.57	0.81	Poor	Unacc
Johnson	14.55	15.96	88.2	51.64	0.81	Poor	Unacc
Kelly Miller	19.85	11.76	92.7	22.95	0.1	Good	Accep
Kramer	19.53	16.57	88.8	41.19	0.58	Poor	Unacc

Lincoln	29.81	25.96	91.2	22.64	0	Good	Accep
Macfarland	30.41	24.23	94.1	22.81	0.53	Poor	Unacc
Mckinley Tech	40.12	40.72	91.4	16.59	0.04	Good	Accep
MM Washington	7.23	10.84	91.7	16.88	0.76	Poor	Unacc
Ron Brown	29.49	21.15	97.8	1.75	0.7	Poor	Unacc
Roosevelt	11.36	15.34	90.3	32.25	0.53	Poor	Unacc
School WW	78.13	90.63	97.1	1.11	0.7	Poor	Unacc
Shaw	39.14	27.17	90.3	40.31	0.57	Poor	Unacc
Spingarn HS	7.04	18.31	84.6	53.75	0.61	Poor	Unacc
Stuart-Hobson	72.97	62.7	93.8	21.08	0.63	Poor	Unacc
Takoma JHS	86.05	79.07	96.3	0.25	0.66	Poor	Unacc
Terrell RH	37.5	31.25	92	22.18	0.61	Poor	Unacc
Wilson SHS	45.23	54.55	81	6.79	0.56	Poor	Unacc
Winston EC	58.93	53.57	95.5	13.04	0.66	Poor	Unacc
Woodson Busi	62.5	69.64	91.2	22.6	0.87	Unsat	Unacc
Woodson SHS	7.14	14.29	89.6	42.74	0.87	Unsat	Unacc

APPENDIX D: SOCIAL ECONOMIC STATUS OF DCPS SCHOOLS 2005

Sorted by Title designation

District of Columbia
Local Educational Agency Office of Grant Programs
FY 2006 FINAL Public School Allocations

		Free	Reduced	Total FRLP	Paid	Total	% Free & Reduced as of 2/15/05
5120	Aiton ES	422	10	432	18	450	96.00%
5650	McGogney ES	265	20	285	15	300	95.00%
5370	Fletcher-Johnson EC	395	12	407	23	430	94.65%
5460	Hendley ES	340	14	354	25	379	93.40%
6560	Hamilton Center @ Hamilton School	59	5	64	5	69	92.75%
5860	Reed, Marie	343	33	376	31	407	92.38%
6440	Lincoln JHS	245	14	259	22	281	92.17%
5300	Cooke, H.D. ES at K.C. Lewis	285	19	304	26	330	92.12%
7390	Taft Center	67	0	67	6	73	91.78%
5690	Miner ES	437	41	478	43	521	91.75%
5850	Raymond ES	313	18	331	30	361	91.69%
6090	Tyler ES	231	8	239	23	262	91.22%
6550	Browne Center @ Browne JHS	70	2	72	7	79	91.14%
5330	Drew ES	217	7	224	22	246	91.06%
6490	Sousa JHS	334	12	346	35	381	90.81%
5710	Moten ES	299	7	306	31	337	90.80%
5210	Brightwood ES	356	29	385	40	425	90.59%
6370	Garnet-Patterson JHS	257	20	277	30	307	90.23%
5280	Cleveland ES	193	27	220	24	244	90.16%
7380	Prospect LC	72	7	79	9	88	89.77%
5550	King, M.L ES.	334	22	356	41	397	89.67%
6130	Webb ES	398	16	414	48	462	89.61%
7120	Ballou SHS	821	65	886	103	989	89.59%
5190	Bowen ES	245	4	249	29	278	89.57%
5830	Powell ES	236	37	273	32	305	89.51%
7890	Choice Alternative @Taft	31	3	34	4	38	89.47%
6340	Eliot JHS	226	12	238	28	266	89.47%
5680	Meyer ES	236	21	257	31	288	89.24%
5920	Shadd ES	126	4	130	16	146	89.04%
6100	Van Ness ES	123	7	130	16	146	89.04%
5180	Birney ES	372	9	381	47	428	89.02%
5310	Davis ES	228	12	240	30	270	88.89%
5360	Ferebee-Hope ES	239	6	245	31	276	88.77%
6240	Moten Center	96	5	101	13	114	88.60%

7430	Spingarn Center	22	1	23	3	26	88.46%
6470	Ron Brown JHS	251	15	266	36	302	88.08%
5290	Cook, J. F. ES	170	13	183	25	208	87.98%
6190	Wilson, J.O. ES	322	20	342	47	389	87.92%
5820	Plummer ES	259	17	276	38	314	87.90%
6110	Walker-Jones ES	397	9	406	57	463	87.69%
6510	Terrell, R.H JHS	194	12	206	29	235	87.66%
6180	Wilkinson ES	410	9	419	59	478	87.66%
5420	Green ES	293	25	318	45	363	87.60%
5700	Montgomery, Scott ES	204	19	223	32	255	87.45%
5320	Draper ES	145	4	149	22	171	87.13%
6060	Turner ES	365	7	372	55	427	87.12%
5520	Ketchum ES	331	24	355	53	408	87.01%
7360	Mamie D Lee Spec Ed	109	10	119	18	137	86.86%
6070	Truesdell ES	313	22	335	51	386	86.79%
6450	MacFarland JHS	386	41	427	66	493	86.61%
5380	Gage-Eckington ES	263	17	280	44	324	86.42%
5350	Emery ES	218	17	235	37	272	86.40%
6430	Kramer JHS	323	26	349	55	404	86.39%
6160	Wheatley ES at Shadd	147	7	154	25	179	86.03%
6420	Johnson JHS	497	26	523	85	608	86.02%
5930	Shaed ES	220	16	236	40	276	85.51%
6210	Young ES	342	20	362	62	424	85.38%
6040	Thomson ES at Logan	192	33	225	39	264	85.23%
5960	Slowe ES	265	10	275	49	324	84.88%
5600	Ludlow-Taylor ES	212	21	233	42	275	84.73%
5410	Gibbs ES	308	30	338	61	399	84.71%
5890	Rudolph ES	336	24	360	65	425	84.71%
5910	Seaton ES	320	27	347	63	410	84.63%
5140	Bancroft ES	334	55	389	71	460	84.57%
5730	Nalle ES	287	13	300	56	356	84.27%
5230	Bruce-Monroe ES	266	12	278	52	330	84.24%
5430	Harris, C.W. ES	356	21	377	71	448	84.15%
5870	River Terrace ES	188	14	202	39	241	83.82%
5540	Kimball ES	286	26	312	61	373	83.65%
6390	Hart JHS	405	29	434	85	519	83.62%
5980	Stanton ES	439	10	449	90	539	83.30%
7370	Sharpe Health Spec Ed	141	17	158	32	190	83.16%
5770	Parkview ES	255	6	261	53	314	83.12%
5950	Simon ES	245	13	258	55	313	82.43%
5390	Garfield ES	331	29	360	77	437	82.38%
6320	Browne JHS	330	20	350	75	425	82.35%
5400	Garrison ES	241	19	260	56	316	82.28%
5440	Harris, P.R. EC	601	29	630	139	769	81.92%
5780	Patterson ES at Harris, P.R.	216	15	231	54	285	81.05%
5480	Houston ES	218	29	247	58	305	80.98%
5150	Barnard ES	236	26	262	63	325	80.62%
7150	Bell Multicultural SHS	503	73	576	139	715	80.56%
6580	Kelly Miller JHS	352	38	390	97	487	80.08%
7260	Spingarn SHS	433	26	459	120	579	79.27%

5970	Smothers ES	159	18	177	47	224	79.02%
5790	Payne ES	210	11	221	59	280	78.93%
6200	Winston ES	334	17	351	99	450	78.00%
6310	Backus MS	224	24	248	71	319	77.74%
5260	Burrville ES	228	29	257	74	331	77.64%
6020	Terrell, M.C. ES	172	5	177	52	229	77.29%
6360	Francis JHS	216	43	259	77	336	77.08%
7890	Choice Secondary @Douglas JHS	52	5	57	17	74	77.03%
5510	Kenilworth ES	254	11	265	81	346	76.59%
5110	Adams ES	159	25	184	57	241	76.35%
6170	Whittier ES	258	55	313	98	411	76.16%
5270	Clark ES	173	22	195	64	259	75.29%
5840	Randle Highland ES	322	51	373	123	496	75.20%
5750	Orr ES	269	25	294	97	391	75.19%
5130	Amidon ES	258	27	285	96	381	74.80%
6400	Hine JHS	382	26	408	142	550	74.18%
5630	Thurgood Marshall ES	197	32	229	81	310	73.87%
6050	Tubman ES	344	23	367	130	497	73.84%
5900	Savoy ES	247	21	268	96	364	73.63%
5170	Benning ES	139	11	150	57	207	72.46%
6030	Thomas ES	253	18	271	104	375	72.27%
5610	Malcolm X ES	292	10	302	121	423	71.39%
5660	Merritt ES	260	32	292	119	411	71.05%
5740	Noyes ES	176	15	191	80	271	70.48%
5880	Ross ES	86	23	109	46	155	70.32%
5640	Maury ES	133	19	152	67	219	69.41%
7110	Anacostia SHS	420	45	465	214	679	68.48%
6150	West ES	125	35	160	77	237	67.51%
7270	M.M. Washington SHS	171	20	191	94	285	67.02%
5580	LaSalle ES	182	32	214	106	320	66.88%
5250	Burroughs ES	143	42	185	93	278	66.55%
7160	Cardozo SHS	528	40	568	297	865	65.66%
5590	Leckie ES	171	23	194	102	296	65.54%
5160	Beers ES	244	21	265	141	406	65.27%
5570	Langdon ES	243	34	277	152	429	64.57%
6410	Jefferson JHS	440	45	485	273	758	63.98%
6480	Shaw JHS	308	17	325	190	515	63.11%
7200	Eastern SHS	618	50	668	392	1,060	63.02%
7280	Woodson SHS	342	29	371	225	596	62.25%
7400	Washington Center	44	2	46	29	75	61.33%
6010	Takoma ES	193	41	234	170	404	57.92%
7170	Coolidge SHS	314	59	373	305	678	55.01%
6500	Stuart-Hobson JHS	163	45	208	179	387	53.75%
7240	Roosevelt SHS	408	33	441	380	821	53.71%
7290	Woodson Business & Finance	89	20	109	94	203	53.69%
7180	Dunbar SHS	456	22	478	414	892	53.59%
5990	Stevens ES	92	50	142	124	266	53.38%
7870	McKinley SHS	187	20	207	187	394	52.54%
5220	Brookland ES	128	12	140	133	273	51.28%

7220	Luke C. Moore SHS	131	9	140	134	274	51.09%
5240	Bunker Hill ES	114	21	135	134	269	50.19%
7190	Dunbar Pre-Engineering	49	14	63	63	126	50.00%
5200	Brent ES	68	40	108	114	222	48.65%
7300	Wilson SHS	492	91	583	792	1,375	42.40%
5800	Peabody ES	49	11	60	85	145	41.38%
	Total Title I Schools	**36,097**	**3,091**	**39,188**	**11,628**	**50,816**	**77.12%**
7140	Banneker SHS	114	40	154	241	395	38.99%
6330	Deal JHS	251	72	323	552	875	36.91%
7900	Oak Hill Youth Center AE	55	2	57	106	163	34.97%
	Total Targeted Assistance Schools	**420**	**114**	**534**	**899**	**1,433**	**37.26%**
6380	Hardy ES	101	34	135	275	410	32.93%
7210	Ellington SHS	104	30	134	285	419	31.98%
5760	Oyster ES	91	38	129	281	410	31.46%
6120	Watkins ES	137	20	157	348	505	31.09%
6000	Stoddert ES	34	17	51	162	213	23.94%
5490	Hyde ES	20	21	41	133	174	23.56%
5450	Hearst ES	25	11	36	120	156	23.08%
5940	Shepherd ES	68	7	75	253	328	22.87%
5720	Murch ES	58	12	70	406	476	14.71%
7320	Springarn Stay	16	0	16	93	109	14.68%
7250	School W/O Walls SHS	26	9	35	228	263	13.31%
5340	Eaton ES	38	2	40	361	401	9.98%
5530	Key ES	10	5	15	236	251	5.98%
7450	Roosevelt Stay School	20	0	20	353	373	5.36%
5500	Janney ES	20	5	25	444	469	5.33%
7310	Ballou Stay SHS	28	0	28	515	543	5.16%
5620	Mann ES	7	4	11	211	222	4.95%
5560	Lafayette ES	7	2	9	540	549	1.64%
5810	Reggio Emillia	0	1	1	87	88	1.14%
	Total Non-Title I Schools	**810**	**218**	**1,028**	**5,331**	**6,359**	**16.17%**
	DCPS Total	**37,327**	**3,423**	**40,750**	**17,858**	**58,608**	**69.53%**

APPENDIX E: LINGUISTICALLY AND CULTURALLY DIVERSE STUDENT ENROLLMENT

By School and English Language Proficiency Status

SCHOOL YEAR 2004-2005 Data current as of 10/08/04

School Code	School Name	Total Students	LCD	FEP	NEP	LEP	NEP/LEP	Under age	Pending	Parental Exemption	1/4 NEP/LEP of TOTAL	1/4 LCD of TOTAL
201	Adams ES	244	151	34	49	61	110	0	4	3	45.1%	61.9%
203	Amidon ES	381	42	11	7	17	24	0	1	6	6.3%	11.0%
204	Bancroft ES	454	400	82	123	151	274	17	27	0	60.4%	88.1%
205	Barnard ES	324	108	11	42	35	77	6	13	1	23.8%	33.3%
207	Benning ES	205	1	0	0	1	1	0	0	0	0.5%	0.5%
211	Bowen ES	278	2	0	0	2	2	0	0	0	0.7%	0.7%
212	Brent ES	227	3	1	2	0	2	0	0	0	0.9%	1.3%
213	Brightwood ES	427	321	55	146	97	243	16	4	3	56.9%	75.2%
346	Brookland ES	276	39	6	10	17	27	0	6	0	9.8%	14.1%
296	Bruce-Monroe ES	332	179	19	83	65	148	6	6	0	44.6%	53.9%
219	Bunker Hill ES	265	10	2	1	2	3	0	2	3	1.1%	3.8%
220	Burroughs ES	270	14	1	3	8	11	1	1	0	4.1%	5.2%
221	Burrville ES	340	2	0	2	0	2	0	0	0	0.6%	0.6%
223	Clark ES	253	75	15	29	22	51	6	3	0	20.2%	29.6%
224	Cleveland ES	238	59	7	21	24	45	7	0	0	18.9%	24.8%
226	Cook, J. F. ES	211	7	3	3	1	4	0	0	0	1.9%	3.3%
227	Cooke, H. D. ES	331	267	63	96	90	186	10	7	1	56.2%	80.7%
232	Eaton ES	401	134	48	26	43	69	0	7	10	17.2%	33.4%
235	Emery ES	275	16	4	5	5	10	0	2	0	3.6%	5.8%
348	Fletcher-Johnson EC	417	1	1	0	0	0	0	0	0	0.0%	0.2%
281	Gage-Eckington ES	326	4	0	1	2	3	0	0	1	0.9%	1.2%
238	Garfield ES	443	1	0	0	1	1	0	0	0	0.2%	0.2%
239	Garrison ES	316	58	15	15	18	33	6	3	1	10.4%	18.4%
240	Gibbs ES	405	3	2	0	1	1	0	0	0	0.2%	0.7%
244	Green ES	353	3	2	0	1	1	0	0	0	0.3%	0.8%
258	Hearst ES	155	32	4	8	15	23	0	2	3	14.8%	20.6%
251	Houston ES	303	4	0	2	1	3	0	1	0	1.0%	1.3%
252	Hyde ES	173	68	19	17	28	45	0	2	2	26.0%	39.3%
254	Janney ES	471	44	17	1	21	22	0	1	4	4.7%	9.3%
257	Ketcham ES	408	5	1	0	3	3	1	0	0	0.7%	1.2%
272	Key ES	249	54	17	17	19	36	0	1	0	14.5%	21.7%
259	Kimball ES	368	1	1	0	0	0	0	0	0	0.0%	0.3%
261	Lafayette ES	548	35	8	5	11	16	0	0	11	2.9%	6.4%
262	Langdon ES	421	13	7	3	3	6	0	0	0	1.4%	3.1%
264	Lasalle ES	315	12	3	2	6	8	0	1	0	2.5%	3.8%

266	Leckie ES	296	8	0	0	4	4	0	1	3	1.4%	2.7%
271	Ludlow-Taylor ES	265	20	9	6	1	7	0	0	4	2.6%	7.5%
273	Mann ES	223	73	24	11	28	39	0	1	9	17.5%	32.7%
351	Marshall EC	317	9	4	1	3	4	0	0	1	1.3%	2.8%
274	Maury ES	220	2	0	1	1	2	0	0	0	0.9%	0.9%
275	McGogney ES	305	4	1	1	2	3	0	0	0	1.0%	1.3%
277	Merritt ES	414	5	0	0	3	3	0	2	0	0.7%	1.2%
278	Meyer ES	282	94	15	35	41	76	0	3	0	27.0%	33.3%
280	Miner ES	510	9	1	3	3	6	0	2	0	1.2%	1.8%
282	Montgomery ES	254	8	4	3	1	4	0	0	0	1.6%	3.1%
285	Moten ES	340	2	1	0	1	1	0	0	0	0.3%	0.6%
287	Murch ES	480	127	60	23	34	57	0	4	6	11.9%	26.5%
290	Noyes ES	269	18	3	2	8	10	2	2	1	3.7%	6.7%
292	Oyster ES	410	262	109	24	124	148	0	1	4	36.1%	63.9%
293	Park View ES	311	47	8	13	14	27	1	1	10	8.7%	15.1%
301	Peabody ES	144	5	2	1	2	3	0	0	0	2.1%	3.5%
299	Plummer ES	316	20	1	14	5	19	0	0	0	6.0%	6.3%
300	Powell ES	301	228	30	90	93	183	0	12	3	60.8%	75.7%
316	Randle-Highlands ES	508	4	0	2	2	4	0	0	0	0.8%	0.8%
302	Raymond ES	362	162	18	73	67	140	0	4	0	38.7%	44.8%
305	Ross ES	150	107	40	23	41	64	0	3	0	42.7%	71.3%
306	Rudolph ES	423	141	18	54	49	103	0	1	19	24.3%	33.3%
307	Savoy ES	375	1	0	1	0	1	0	0	0	0.3%	0.3%
309	Seaton ES	407	173	28	75	51	126	13	6	0	31.0%	42.5%
311	Shaed ES	278	32	4	7	14	21	2	2	3	7.6%	11.5%
313	Shepherd ES	330	26	5	12	8	20	0	1	0	6.1%	7.9%
315	Simon ES	305	1	1	0	0	0	0	0	0	0.0%	0.3%
342	Slowe ES	332	3	1	0	2	2	0	0	0	0.6%	0.9%
322	Smothers ES	228	2	1	0	1	1	0	0	0	0.4%	0.9%
320	Stevens ES	267	50	10	17	20	37	0	3	0	13.9%	18.7%
321	Stoddert ES	213	79	29	22	27	49	0	1	0	23.0%	37.1%
324	Takoma EC	400	76	18	23	30	53	0	3	2	13.3%	19.0%
326	Thomson ES	265	156	43	57	48	105	0	2	6	39.6%	58.9%
327	Truesdell ES	380	151	27	67	55	122	0	1	1	32.1%	39.7%
328	Tubman ES	483	272	51	108	101	209	1	9	2	43.3%	56.3%
331	Van Ness ES	151	3	0	3	0	3	0	0	0	2.0%	2.0%
332	Walker-Jones ES	463	11	2	4	4	8	0	1	0	1.7%	2.4%
333	Watkins ES	498	21	12	1	3	4	0	0	5	0.8%	4.2%
336	West ES	238	68	27	16	23	39	0	2	0	16.4%	28.6%
337	Wheatley ES	179	3	1	1	1	2	0	0	0	1.1%	1.7%
338	Whittier ES	409	54	26	12	11	23	0	4	1	5.6%	13.2%
354	Wilkinson ES	471	3	0	2	0	2	0	1	0	0.4%	0.6%
339	Wilson, J. O. ES	385	5	1	0	1	1	3	0	0	0.3%	1.3%
355	Winston EC	465	1	0	0	1	1	0	0	0	0.2%	0.2%
341	Young ES	422	1	0	0	1	1	0	0	0	0.2%	0.2%
401	Backus MS	342	5	0	2	3	5	0	0	0	1.5%	1.5%
425	Brown, Ronald H. MS	331	2	0	0	2	2	0	0	0	0.6%	0.6%
405	Deal JHS	874	122	65	15	35	50	0	1	6	5.7%	14.0%
409	Francis JHS	381	111	70	16	20	36	0	1	4	9.4%	29.1%
410	Garnet-Patterson MS	322	53	26	12	15	27	0	0	0	8.4%	16.5%
246	Hardy MS	412	54	38	5	11	16	0	0	0	3.9%	13.1%
413	Hart MS	501	1	1	0	0	0	0	0	0	0.0%	0.2%

414	Hine JHS	560	2	0	0	1	1	0	0	1	0.2%	0.4%
415	Jefferson JHS	763	73	27	28	17	45	0	1	0	5.9%	9.6%
416	Johnson JHS	631	3	2	1	0	1	0	0	0	0.2%	0.5%
419	Lincoln MS	288	105	26	32	44	76	0	3	0	26.4%	36.5%
420	MacFarland MS	485	129	41	48	32	80	0	1	7	16.5%	26.6%
421	Miller, Kelly MS	484	2	0	1	1	2	0	0	0	0.4%	0.4%
432	Shaw JHS	524	36	21	6	5	11	0	3	1	2.1%	6.9%
427	Sousa MS	379	3	1	2	0	2	0	0	0	0.5%	0.8%
428	Stuart-Hobson MS	385	7	4	2	1	3	0	0	0	0.8%	1.8%
430	Terrell JHS	235	6	4	2	0	2	0	0	0	0.9%	2.6%
265	Lee, M. D. LC	137	3	0	3	0	3	0	0	0	2.2%	2.2%
486	Prospect LC	83	6	0	3	3	6	0	0	0	7.2%	7.2%
284	Reed LC	407	291	65	93	114	207	13	6	0	50.9%	71.5%
312	Sharpe Health LC	192	14	0	9	2	11	0	3	0	5.7%	7.3%
473	Taft Diagnostic LC	75	5	0	3	1	4	0	1	0	5.3%	6.7%
450	Anacostia SHS	622	1	1	0	0	0	0	0	0	0.0%	0.2%
452	Ballou SHS	959	6	4	0	2	2	0	0	0	0.2%	0.6%
402	Banneker SHS	405	9	8	0	1	1	0	0	0	0.2%	2.2%
475	Bell MC SHS	726	568	137	169	254	423	0	6	2	58.3%	78.2%
454	Cardozo SHS	839	232	90	56	80	136	0	6	0	16.2%	27.7%
455	Coolidge SHS	674	67	17	24	24	48	0	2	0	7.1%	9.9%
467	Dunbar SHS	889	19	12	3	3	6	0	0	1	0.7%	2.1%
457	Eastern SHS	1063	6	2	1	3	4	0	0	0	0.4%	0.6%
471	Ellington SHS	417	18	17	0	1	1	0	0	0	0.2%	4.3%
884	Luke C. Moore AC	255	1	0	0	1	1	0	0	0	0.4%	0.4%
458	McKinley Tech SHS	397	21	13	1	2	3	0	4	1	0.8%	5.3%
860	Oak Hill AC	196	6	1	4	1	5	0	0	0	2.6%	3.1%
459	Roosevelt SHS	807	213	65	65	75	140	0	8	0	17.3%	26.4%
466	School W/O Walls SHS	338	37	27	7	2	9	0	0	1	2.7%	10.9%
463	Wilson SHS	1410	393	229	35	105	140	0	5	19	9.9%	27.9%
940	Pre-Eng(Dunbar) SW	129	6	5	0	0	0	0	0	1	0.0%	4.7%
943	Reggio Emilia SW	88	12	4	1	2	3	0	4	1	3.4%	13.6%
SCHOOLS WITH LCD		**45,452**	**7,363**	**2,117**	**2,176**	**2,563**	**4,739**	**111**	**222**	**174**	**10.4%**	**16.2%**
ALL DCPS SCHOOLS		**62,306**	**7,363**	**2,117**	**2,176**	**2,563**	**4,739**	**111**	**222**	**174**	**7.6%**	**11.8%**

^ The source of this information is the DCPS Student Accounting Office.

APPENDIX F: EXCEL SPREADSHEET WITH LCD AND SES INFORMATION

School	Reading %	Math %	Daily attend-ance	Truancy %	FCI #	FCI Designation	Accept/ Unaccept	LCD %	SES/ Title 1
Adams	53.57	58.93	96.7	4.42	0.72	poor	unacc	45.1	Title 1
Aiton	62.37	75.27	88.1	38.35	0.73	poor	unacc	0	Title 1
Amidon	50.62	43.21	90.8	35.69	0.61	poor	unacc	11	Title 1
Bancroft	44.21	81.05	95	0	0.46	fair	accep	88.1	Title 1
Barnard	63.16	64.47	93.6	11.15	0.02	good	accep	33.3	Title 1
Beers	43.69	64.08	93.4	12.89	0.62	poor	unacc	0	Title 1
Benning	40	44.44	91.7	17.17	0.53	poor	unacc	0.05	Title 1
Birney	50.98	52.94	93.4	12.31	0.58	poor	unacc	0	Title 1
Bowen	33.78	36.49	91.3	24.63	0.79	poor	unacc	0.7	Title 1
Brent	73.47	81.63	93	23.9	0.66	poor	unacc	1.3	Title 1
Bright-wood	61.86	67.01	93.3	1.62				75.2	Title 1
Brook-land	58.21	70.15	92.6	12.64	0.58	poor	unacc	14.1	Title 1
Bruce-Monroe	40.54	70.27	90.9	5.6	0.44	fair	accep	53.9	Title 1
Bunker Hill	60.29	67.65	94.6	2.35	0.63	poor	unacc	3.8	Title 1
Burroughs	60	65.45	93.2	14.68	0.64	poor	unacc	5.2	Title 1
Burrville	86.21	85.06	96.5	0	0.39	fair	accep	0.6	Title 1
Clark	60.32	65.08	92.6	26.09	0.54	poor	unacc	29.6	Title 1
Cleveland	64.29	94.64	91.9	25.4	0.03	good	accep	24.8	Title 1
Cook JF	19.61	43.14	93	40	0.58	poor	unacc	3.3	Title 1
Cooke HD	35.71	67.14	91.5	20.95	0.54	poor	unacc	80.7	Title 1
Davis	66.22	71.62	89.5	40.41	0.75	poor	unacc	0	Title 1
Draper	NR	NR	NR	0	0.8	poor	unacc	0	Title 1
Drew	77.78	68.52	88.9	1.27	0.69	poor	unacc	0	Title 1
Eaton	88.78	86.92	97.3	0.79	0.49	fair	accep	33.4	Non Title 1
Emery	43.33	55	89.6	42.86	0.49	fair	accep	5.8	Title 1
Ferebee-Hope	33.71	46.07	88.9	34.92	0.63	poor	unacc	0	Title 1
Fletcher-Johnson	21.57	50.98	94.1	0	0.52	poor	unacc	0.2	Title 1
Gage-Eckington	41.27	66.67	91.2	7.64	0.54	poor	unacc	1.2	Title 1
Garfield	30.71	38.58	94.1	13.06	0.7	poor	unacc	0.2	Title 1
Garrison	45.24	48.81	92.2	8.04	0.44	fair	accep	18.4	Title 1
Gibbs	44.23	49.04	90.6	34.47	0.74	poor	unacc	0.7	Title 1
Green	37.65	41.18	87	5.83	0.77	poor	unacc	0.8	Title 1

Hamilton Center	NR	NR	NR	NR	0.51	poor	unacc	0	Title 1
Harris PR	36	58	87.8	NR	0.69	poor	unacc	0	Title 1
Harris CW	51.04	57.29	92.5	32.75	0.48	fair	accep	0	Title 1
Hearst	NR	NR	NR	20.31	0.56	poor	unacc	20.6	Non Title 1
Hendley	25.93	27.16	93.5	16.4	0.77	poor	unacc	0	Title 1
Houston	35.48	48.39	89.9	35.58	0.71	poor	unacc	1.3	Title 1
Hyde	80.95	100	95.6	0	0.63	poor	unacc	39.3	Non Title 1
Janney	91.43	93.33	95.1	0.43	0.5	poor	unacc	9.3	Non Title 1
Kenilworth	33.71	43.82	98	2.53	0.69	poor	unacc	0	Title 1
Ketcham	34.52	50	90.7	16.67	0.84	poor	unacc	1.2	Title 1
Key	89.58	97.92	95.7	0	0.05	good	accep	21.7	Non Title 1
Kimball	39.64	58.56	94.3	4.77	0.58	poor	unacc	0.3	Title 1
King	41.94	63.44	97.6	0.31	0.84	poor	unacc	0	Title 1
Lafayette	96.27	97.76	96.2	0	0.39	fair	accep	6.4	Non Title 1
Langdon	90.36	92.77	94.6	11.64	0.61	poor	accep	3.1	Title 1
Lasalle	45.45	51.14	92.5	18.53	0.66	poor	unacc	3.8	Title 1
lashawn	NR	NR	NR					0	Title 1
Leckie	52.31	52.31	94.7	14.6	0.74	poor	unacc	2.7	Title 1
Ludlow-Taylor	48.28	56.25	93	10.94	0.6	poor	unacc	7.5	Title 1
Malcom X	54.95	60.36	94.1	6.3	0.57	poor	unacc	0	Title 1
Mamie D. Lee	54.95	60.36	NR	NR	0.34	fair	accep	0	Title 1
Mann	95.45	100	96.1	0.48	0.61	poor	unacc	32.7	Non Title 1
Maury	54.1	65.57	94	13.15	0.77	poor	unacc	0.9	Title 1
Mcgogney	33.82	51.47	92.4	1.06	0.41	fair	accep	1.3	Title 1
Merritt	35.9	44.87	96.8		0.47	fair	accep	1.2	Title 1
Meyer	34.57	46.91	94.1	7.49	0.54	poor	unacc	33.3	Title 1
Miner	42.62	53.28	90.7	36.55	0.07	good	accep	1.8	Title 1
Mont-gomery	44.26	59.02	95.2	8.71	0.74	poor	unacc	3.1	Title 1
Moten Center	10.71	7.14	85.9					0	Title 1
Moten	29.67	29.67	92	27.18	0.72	poor	unacc	0.6	Title 1
Murch	86.72	90.63	95.6	0	0.56	poor	unacc	26.5	Non Title 1
Nalle	60.67	44.94	93.8	4	0.66	poor	unacc	0	Title 1

Noyes	76.92	63.46	88.7	43.7	0.02	good	accep	6.7	Title 1
Orr	49.06	60.38	91.1	0.87	0.59	poor	unacc	0	Title 1
Oyster	82.29	85.42	95.5	1.25	0.21	good	accep	63.9	Non Title 1
Park View	59.04	61.45	91.2	1.75	0.54	poor	unacc	15.1	Title 1
Patterson	50	65.63	96.5	0	0.02	good	accep	0	Title 1
Paul Robeson	NR	NR	NR					0	Title 1
Payne	51.28	50	90.1	33.08	0.67	poor	unacc	0	Title 1
Plummer	28.13	34.38	97.9	1.62	0.61	poor	unacc	6.3	Title 1
Powell	27.06	20	91.9	15.88	0.64	poor	unacc	75.7	Title 1
Prospect	NR	NR	NR		0.5	poor	unacc	0	Title 1
Randel Highlands	77.52	70.54	92.7	14.82	0.25	good	accep	0.8	Title 1
Raymond	41.38	64.66	92	26.9	0.59	poor	unacc	44.8	Title 1
Reed LC	60.98	78.05	95.3	0.3	0.4	fair	accep	71.5	Title 1
River Terrace	47.27	60	90.8	25.58	0.67	poor	unacc	0	Title 1
Rose	NR	NR	NR					0	Title 1
Ross	NR	NR	NR	3.52	0.62	poor	unacc	71.3	Title 1
Rudolph	57.14	66.33	91.5	28.57	0.65	poor	unacc	33.3	Title 1
Savoy	60.56	64.79	90.6	37.87	0.57	poor	unacc	0.3	Title 1
Seaton	47.62	72.62	92.8	12.99	0.45	fair	accep	42.5	Title 1
Shadd	38.1	52.38	87.8	39.16	0.39	fair	accep	0	Title 1
Shaed	47.83	42.03	92.5	19.62	0.56	poor	unacc	11.5	Title 1
Shepherd	85.71	82.14	95.5	0.66	0.67	poor	unacc	7.9	Non Title 1
Simon	44.44	43.43	94.1	15.26	0.74	poor	unacc	0.3	Title 1
Slowe	45.95	45.95	91.5	23.05	0.42	fair	accep	0.9	Title 1
Smothers	60.71	53.57	89.5	32.83	0.74	poor	unacc	0.9	Title 1
Stanton	31.75	44.44	91.9	0.6	0.7	poor	unacc	0	Title 1
Stevens	77.19	77.19	97.7	0.84	0.67	poor	unacc	18.7	Title 1
Stoddert	NR	NR	NR	1.05	0.5	fair	accep	37.1	Non Title 1
Taft Ed Prog	NR	NR	NR		0.56	poor	unacc	0	Title 1
Takoma	84.81	93.67	96.3		0.66	poor	unacc	19	Title 1
Terrell Mc	45.45	36.36	90.8	22.75	0.59	poor	unacc	0	Title 1
Thomas	21.1	36.7	92.5	19.12	0.53	poor	unacc	0	Title 1
Thomson	55.56	69.84	92.5	24.22	0	good	accep	58.9	Title 1
Thurgood Marshall	NR	NR	NR		0.89	unsat	unacc	0	Title 1
Truesdell	46.67	70	92.7	19.95	0.66	poor	unacc	39.7	Title 1

Tubman	28.13	53.13	92.7	13.68	0.51	poor	unacc	56.3	Title 1
Tuition Grants	11.71	9.91	NR	NR				0	Title 1
Turner	59.13	61.74	95.4	6.75	0.7	poor	unacc	0	Title 1
Tyler	13.51	20.27	87.1	52.94	0.39	fair	accep	0	Title 1
Van Ness	NR	NR	NR	5.26	0.53	poor	unacc	2	Title 1
Walker-Jones	19.01		94.7	19.25	0.4	fair	accep	2.4	Title 1
Watkins	61.62	67.68	93.5	19.91	0.7	poor	unacc	4.2	Non Title 1
Webb	32	47	96	5.91	0.48	fair	accep	0	Title 1
West	85.71	87.14	93.8	4.05	0.49	fair	accep	28.6	Title 1
Wheatley	63.04	52.17	91.9	20.33				1.7	Title 1
Whittier	78.79	89.9	94.5	4.6	0.67	poor	unacc	13.2	Title 1
Wilkinson	31.18	54.84	86.9	50	0.64	poor	unacc	0.6	Title 1
Wilson Jo	43.02	46.51	92.9	5.49	0.63	poor	unacc	1.3	Title 1
Winston	56	57.33	95.5		0.66	poor	unacc	0.2	Title 1
Young	51.46	59.22	88.8	27.52	0.59	poor	unacc	0.2	Title 1
Anacostia	6.51	11.24	84.4	56.45	0.81	poor	unacc	0.2	Title 1
Backus	36.31	33.93	96.8	6.4	0.55	poor	unacc	1.5	Title 1
Ballou	3.16	9.88	86	46.83	0.64	poor	unacc	0.6	Title 1
Ballou Stay	NR	NR	NR	8.37				0	Non Title 1
Banneker	86.78	96.69	98.7	0	0.56	poor	unacc	2.2	Tar Asst
Bell	13.33	61.11	93.6	9.33	0	good	accep	78.2	Title 1
Browne Center	NR	NR	NR	68.89				0	Title 1
Browne JHS	33.64	23.64	91.7	30.35	0.7	poor	unacc	0	Title 1
Cardozo	10.58	30.77	85.9	46.64	0.55	poor	unacc	27.7	Title 1
Child And Family	NR	NR	NR	NR				0	Title 1
Choice Alter P	NR	NR	NR	33.16				0	Title 1
Choice Secon Pr	NR	NR	NR	50.19				0	Title 1
Coolidge	7.18	17.13	91.5	30.91	0.57	poor	unacc	9.9	Title 1
Dcala East	NR	NR	NR	57.81				0	Title 1
Dcala Freshm	NR	NR	NR	NR				0	Title 1
Dcala Se	NR	NR	NR	52.63				0	Title 1
Dcala West	NR	NR	NR	50.79				0	Title 1

Deal	81.43	79.8	95	6.97	0.7	poor	unacc	14	Tar Asst
Dunbar	12.3	30.74	93.7	16.68	0.57	poor	unacc	0	Title 1
Dunbar Pre Engi	NR	NR	NR	24.03				4.7	Title 1
Eastern	6.76	13.51	88.2	47.6	0.8	poor	unacc	0.6	Title 1
Eliot	37.84	45.95	93.1	8.93	0.71	poor	unacc	0	Title 1
Ellington	45.36	43.3	94.1	16.09	0.55	poor	unacc	0	Non Title 1
Fletcher-John Jhs	18.07	16.87	94.1	20.08	0.52	poor	unacc	0	Title 1
Francis	50.35	48.94	90	34.89	0.64	poor	unacc	29.1	Title 1
Garnet-Patterson	49.58	30.25	91.8	20.39				16.5	Title 1
Hamilton Center	NR	NR	NR	33.33	0.51	poor	unacc	0	Title 1
Hardy	80.14	82.27	96.6	0.23				13.1	Non Title 1
Harris Pr Jhs	38.17	13.74	87.8	32.22	0.69	poor	unacc	0	Title 1
Hart	20.97	18.28	91.8	32.23	0.85	poor	unacc	0.2	Title 1
Hine	40.11	46.7	96.3	2.81	0.67	poor	unacc	0.4	Title 1
Jackie Robinson	NR	NR	NR	0				0	Title 1
Jefferson	43.62	48.56	93.9	15.57	0.81	poor	unacc	9.6	Title 1
Johnson	14.55	15.96	88.2	51.64	0.81	poor	unacc	0.5	Title 1
Kelly Miller	19.85	11.76	92.7	22.95	0.1	good	accep	0.4	Title 1
Kramer	19.53	16.57	88.8	41.19	0.58	poor	unacc	0	Title 1
Lashawn	NR	NR	NR	NR				0	Title 1
Lincoln	29.81	25.96	91.2	22.64	0	good	accep	36.5	Title 1
Luke C Moore	NR	NR	NR	81.25				0.4	Title 1
Macfar-land	30.41	24.23	94.1	22.81	0.53	poor	unacc	26.6	Title 1
Mamie D. Lee Jhs	NR	NR	NR	22.64	0.34	fair	accep	2.2	Title 1
Mckinley Tech	40.12	40.72	91.4	16.59	0.04	good	accep	5.3	Title 1
Merritt Jhs	NR	NR	NR	8.12	0.47	fair	accep	0	Title 1
MM Washing-ton	7.23	10.84	91.7	16.88	0.76	poor	unacc	0	Title 1
Oak Hill You Cen	NR	NR	NR	0				3.1	Tar Asst

Prospect	NR	NR	NR	42.16	0.5	poor	unacc	7.2	Title 1
Residence									
Schools	2.22	1.11	NR	NR				0	Title 1
Ron									
Brown	29.49	21.15	97.8	1.75	0.7	poor	unacc	0.6	Title 1
									Non
Roosevelt	11.36	15.34	90.3	32.25	0.53	poor	unacc	26.4	Title 1
Rose	NR	NR	NR	0				0	Title 1
School									Non
WW	78.13	90.63	97.1	1.11	0.7	poor	unacc	10.9	Title 1
Sharpe									
Health	NR	NR	NR	0.6				7.3	Title 1
Shaw	39.14	27.17	90.3	40.31	0.57	poor	unacc	6.9	Title 1
Souse	20	12	93.4	21.26				0.8	Title 1
Spingarn									
Center	NR	NR	NR	65.63				0	Title 1
Spingarn									
HS	7.04	18.31	84.6	53.75	0.61	poor	unacc	0	Title 1
Spingarn									Non
Stay	NR	NR	NR	25.14				0	Title 1
Stuart-									
Hobson	72.97	62.7	93.8	21.08	0.63	poor	unacc	1.8	Title 1
Taft Ed									
JHS	NR	NR	NR	28.07	0.56	poor	unacc	6.7	Title 1
Takoma									
JHS	86.05	79.07	96.3	0.25	0.66	poor	unacc	0	Title 1
Terrell Rh	37.5	31.25	92	22.18	0.61	poor	unacc	2.6	Title 1
Thurgood									
Marshall									
JHS	37.93	39.66	96.4	1.3				0	Title 1
Tuition									
Grants									
JHS	10.52	9.92	NR	NR				0	Title 1
Washing-									
ton									
Center	NR	NR	NR	69.05				0	Title 1
Wilson									
SHS	45.23	54.55	81	6.79	0.56	poor	unacc	27.9	Title 1
Winston									
EC	58.93	53.57	95.5	13.04	0.66	poor	unacc	0	Title 1
Woodson									
Busi	62.5	69.64	91.2	22.6	0.87	unsat	unacc	0	Title 1
Woodson									
SHS	7.14	14.29	89.6	42.74	0.87	unsat	unacc	0	Title 1
Youth									
Serv	NR	NR	NR	NR				0	Title 1

APPENDIX G: EIGHT SCHOOLS EXCLUDED FROM STUDY POPULATION AND REASON FOR EXCLUSION

School Name	Reason for Exclusion
Draper Elementary	Majority SPED population and fewer than students tested, no AYP reporting required
Hearst Elementary	Majority SPED population and fewer than 40 students tested, no AYP reporting required
Ross Elementary	Fewer than 40 students tested , no AYP reporting required
Prospect Learning Center	Majority SPED population and fewer than 40 students tested, no AYP reporting required
Sharpe Health School	Majority SPED population and fewer than 40 students tested, no AYP reporting required
Stoddert Elementary	Fewer than 40 students tested , no AYP reporting required
Van Ness Elementary	Fewer than 40 students tested , no AYP reporting required
Mamie D. Lee Special School	Majority SPED population and fewer than 40 students tested, no AYP reporting required

APPENDIX H: IRB APPROVAL FROM THE GEORGE WASHINGTON UNIVERSITY

THE GEORGE WASHINGTON UNIVERSITY & MEDICAL CENTER
OFFICE OF HUMAN RESEARCH
INSTITUTIONAL REVIEW BOARD

EXEMPT FROM IRB REVIEW REQUEST FORM

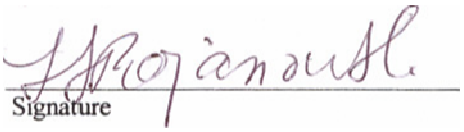
OHR OFFICE USE ONLY! OHR Trans: #
Recommendations:

❑Study Registered as Exempt. Category:

❑This research does NOT meet the regulatory/institutional requirements for exemption from IRB review. To conduct this research you must complete an IRB submission package for IRB review. For more information on completing a research
submission, contact OHR at 202-994-2715.
*This activity is **NOT human subject research,** and does **not require exempt registration or IRB approval.***

r--JP11 /10tALC /C/

IRB Chair/Designee


Signature

-/1/
Date
This Exempt Registration does not expire nor does it require renewal.

Reporting Proposed Changes in Research
determining whether the proposed changes result in the study requiring IRB review and approval, or new exemption
determination.

Section IL Investigator and Team Contact Information		
IRB#	— New #oclonci	**VERSION** DATE: December 12, 2007 Full Waiver
TYPE OF HIPAA AUTHORIZATION REQUESTED:		
PROTOCOL TITLE AND SPONSOR: '1.-ii — 7 Iii·1·!!1: . ••• .. •		
The effects of school facilities on mathematics and reading proficiencies and student achievement rates: a quantitative study.		

PRINCIPAL INVESTIGATOR INFORMATION *(MUST BE FACULTY OR STAFF) ' '*				
LAST NAME:	Lemasters	**FIRST NAME:**	Linda	De gree: Ed. D
DEPARTMENT	EDUCATIONAL LEADERSHIP	SCHOOL:	Graduate School Of Education and Human Development	
CAMPUS ADDRESS:	None 1 old oyster point road suite 200 Newport News, VA 23603			
PHONE:	Xxxx	EMAIL: linal@gwu.edu		

PRINCIPAL CONTACT IF OTHER THAN PI: *(THIS MAY BE THE STUDENT/TRAINEE)*	
LAST NAME:	Taylor FIRST NAME: Ronald
CAMPUS ADDRESS:	1720 First Street NE Washington, DC 20002
PHONE:	xxxxxx I EMAIL: ronaldtayloremery@yahoo.com

APPENDIX I: DCPS APPROVAL FOR RESEARCH

DISTRICT OF COLUMBIA PUBLIC SCHOOLS

OFFICE OF DATA AND ACCOUNTABILITY
825 North Capitol Street, NE, 8TH Floor
Washington, D.C., 20002-1994
(202) 719-6637 – fax: (202) 442-5303

January 6, 2009

To Whom It May Concern:

The District of Columbia Public Schools (DCPS) Office of Data and Accountability (ODA) authorizes Ronald Taylor's quantitative study to determine whether or not a relationship exists between school facility conditions and student achievement, attendance, and truancy rates in the public schools of Washington, DC.

The study must follow the outline submitted to the ODA on January 6, 2009. If applicable, any data collection window of students cannot happen during the weeks leading up to and including testing.

Lastly, Mr. Taylor must share research results with ODA before finalizing the results.
ODA approves the study but gives the principal of any participating school the right to determine if participating in the study makes sense for his or her school to participate if applicable.

Best regards,

Erin McGoldrick

APPENDIX J: RESEARCH RELATIONSHIP

At the time of the research, the researcher was a building administrator for DCPS and, therefore, had access to the FCI ratings and the Stanford 9 achievement test information needed for the study. Although the achievement data were public knowledge, the facility ratings were not. Anyone could file a Freedom of Information Act request to eventually gain access to the FCI information; however, it is reasonable to assume that as an administrator for DCPS, the researcher had greater access to the information by knowing whom to ask, and as a principal the information may have been received more expeditiously.

As stated, the student achievement information (reading proficiency, mathematics proficiency, attendance rate, and truancy rate) was available on the Internet at www.k12.dc.us; however, the FCI data were considered to be in-house information and were obtained by request from a member of the DCPS central administration. It can be inferred that other individuals also could have received FCI information through the provisions of the Freedom of Information Act; however, the researcher's requests may have been processed more quickly because of his position as a DCPS administrator.