

School Facility Conditions and Student Achievement, Attendance, and  
Behavior in an Urban Elementary School in Southeastern Virginia

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ABSTRACT

The purpose of this study was to investigate relationships between facility conditions and student achievement, attendance, and behavior in an urban elementary school in southeastern Virginia. Most United States schools were constructed prior to 1960 (Phillips, 1997). As public school buildings aged and deteriorated, researchers became interested in determining links between facilities and student achievement (Lewis, 1983; Cash, 1993; Phillips, 1997; NCES, 1999).

Research suggests links between specific facility conditions and student achievement, attendance, and behavior. This study examined student achievement, attendance, and the behavior of students in an eighty year-old facility and compared the same students as they transitioned into a new facility. The literature review examined existing literature and discussed major concepts relating to specific building conditions, and findings of empirical studies from across the United States and abroad. Few of these studies looked at schools that transitioned from an old building to a new building.

This study employed a mixed-methods approach allowing the researcher to examine effects of facility conditions on attendance, behavior, and achievement in reading and mathematics as evidenced by standardized test scores using Virginia Standards of Learning Tests. The researcher used focus groups with students, parents, and teachers to qualitatively

document the relationship between facility condition and behavior of urban students who transitioned from an eighty year-old facility to a new facility in southeastern Virginia.

The findings of this study were varied. Paired t-tests were run to determine whether there were differences in achievement, attendance, and behavior when students transitioned from an old facility to a newly-constructed facility. When student cohorts were combined, students performed significantly better in reading and mathematics. However, when students were separated by cohort, results varied.

Paired t-tests were conducted to examine gender differences for each cohort. Gender did play a role in the improvement of female students. Three themes emerged from focus groups: (1) the significance of technology in enhancing student achievement and instructional quality, (2) the feeling of pride as a catalyst for positive behavior; and (3) the impact of space, cleanliness, and lighting on behavior and achievement.

## DEDICATION

I begin by giving all honor and praise to God for giving me the strength to complete this process. I dedicate this dissertation to my father, the late Bishop Callie Richardson, and my mother, Lillian Richardson, for their guidance, leadership, and support. Throughout my years in education, you have been a beacon of inspiration for me to succeed in all my endeavors. Thank you to my brothers and sisters, each of whom in their own unique way, provided encouragement.

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Last but not least, I acknowledge the memory of my father, the late Bishop Callie M. Richardson, my mother, Lillian P. Richardson, my brothers and sisters, family members, and the numerous colleagues, and friends who lent a helping hand or provided a word of encouragement.

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## CHAPTER ONE

### Context of Problem

The condition of America's aging public schools was brought to the forefront during the Clinton administration when then President Bill Clinton urged Congress to appropriate funds to repair and revitalize America's schools. This came in the footsteps of *A Nation At-Risk*, a national report that discussed the decline of achievement in the public schools of America when compared to other countries around the world. The impact of this report coupled with President Clinton's focus on deteriorating facilities sparked renewed interest in research on the relationship between school building facilities and student achievement.

This national initiative trickled down to states and localities and gave rise to comprehensive school reform efforts. Many localities, especially in urban areas found it difficult to fund reform efforts. These reform efforts included costly building upgrades and new construction that were exacerbated by "the higher cost of living . . . and increased student needs related to poverty . . ." (Krantzler and Terman, 1997, p.133). For example, the urban elementary school discussed in this study was visited by President Clinton in 1996, when he called for federal legislation to fund school repairs and construction and toured deteriorating schools around the country. Even with the attention brought to the deteriorating conditions of this school, it took ten years to raise the funds for a new school. Ground for the new school was broken in August of 2006.

The School Planning and Management magazine collects data on and publishes school construction reports annually. The report details construction costs across the nation by region. To conduct their annual survey, they make calls to every school district across the United States to gather statistics on completed projects, projected completion dates, and future projects.

According to their 2007 report, school construction projects have totaled \$145 billion, or an estimated \$20 billion per year since 2000 (Abramson, 2007). This translates into \$12.3 billion (61%) for new schools, \$4 billion (20%) for additions to existing schools, and \$3.7 billion (18.5%) for modernizing existing buildings each year for the past seven years (Abramson, 2007). Construction of new elementary schools in the United States accounted for over \$4.7 billion of the total new construction expenditures. The median cost of an elementary school was \$11 million; the school that is the subject of this study is reported to have cost \$20 million.

According to a 2007 report, when looking at Region 3 of the United States, which includes Virginia, West Virginia, Maryland, Delaware, and the District of Columbia, public schools in these areas completed new building projects totaling in excess of \$663 million. They invested almost \$133 million on additions to existing facilities, and just over \$270 million on renovations, for a grand total of \$1.7 billion on school construction in 2006. This region accounts for 5% of all school construction expenditures in the US (Abramson, 2007).

Studies (Cash, 1993; Hines, 1996; Lemasters, 1997; Phillips, 1997; Lair, 2003; Earthman, 2004) suggest a link between specific facility conditions and student achievement, attendance, and behavior. If school building conditions can be linked to improving student achievement, attendance, and behavior, then it is critical to determine those physical conditions that impact student achievement, attendance, and behavior.

### *Statement of the Problem*

Poor urban students are more likely to be educated in facilities that are substandard and in deteriorating condition (Earthman, 2004). In fact, Filardo (2006) asserted that, “despite record spending on school construction, low-income and minority students, who already experience disadvantages, have had far less investment in their school facilities than their more affluent. . . counterparts, and the conditions for these students continue to be substandard” (p. 3). School districts with the highest minority student population and lowest socio-economic status spend the least on facility improvement and spend money on repairs rather than “educational enhancements” (Filardo, 2006, p. 5). This is a national problem that “historically has received little attention by educational leaders” (Anderson, 1999, p.ii). The problem explored by the proposed study is whether there is a relationship between facility condition and achievement, attendance, and behavior when moving from an old school facility to a new school facility.

### *Purpose of the Study*

The purpose of this mixed-methods study was to investigate and determine possible relationships between facility conditions and student achievement, attendance, and behavior when students at an urban elementary school in southeastern Virginia transitioned from an old facility to a new facility. Achievement scores in reading and mathematics were measured using the Virginia Standards of Learning reading and mathematics tests in grades three, four, and five. Attendance was measured by the total number of absences according to the end-of-year attendance report. Behavior was measured by the number of discipline referrals indicated on the STARBASE discipline report and from student, parent, and teacher perceptions shared in separate teacher, parent, and student focus groups with the researcher.

### *Overarching Research Question*

What is the relationship between the condition of the facility and student achievement, attendance, and behavior when students in an urban elementary school in southeastern Virginia transition from an old facility to a new facility?

### *Sub-Research Questions*

1. What is the relationship between reading scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
2. What is the relationship between mathematics scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
3. What is the relationship between attendance and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
4. What is the relationship between behavior and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
5. What is the relationship between building condition and student achievement, attendance, and behavior as it relates to gender for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one southeastern Virginia elementary school?

6. What do students in one urban, southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility they attend?
7. What do teachers in one urban, southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility where they work?
8. What do parents of students in one urban southeastern Virginia elementary school perceive as the relationship between achievement, behavior, and the condition of the school facility that their children attend?

#### *Significance of the Study*

In 1998, the average US school was forty-two years old (Cutshall, 2003). Fifty-eight percent of them were characterized as inadequate, while only 42% were deemed adequate mainly because the condition of the buildings reflects the communities' ability to pay. (Lewis, et. al, 1989). As a result, public school students are being forced to attend schools that are deteriorating, unhealthy, and unsafe. Poor children and children who attend urban or rural schools are even more likely to attend aging facilities in poor condition, characterized by less than satisfactory environmental and building features (Lewis, et al., 1999; US NCES, 2000).

Consequently, national attention has been drawn to the sub-par conditions of US schools. Studies have cited the existence of poor ventilation, broken plumbing, overcrowding, and sagging roofs and questioned the effects of these poor conditions on achievement, safety, and teaching (Lewis, et. al. 1999). School facility factors like age and condition, quality of maintenance, temperature, lighting, noise, color, and air quality were shown to have a negative impact on the health and emotional well-being of children (Young, 2003). For example, the

Syracuse City Schools used case study research to examine mathematics and reading achievement of third- and sixth-grade students before, during, and after construction projects. Results indicated the existence of a statistically significant relationship between improved facilities and mathematics scores, especially among sixth graders (Moore and Warner, 1998). The researchers recommended further research in urban, suburban, and rural schools to document this relationship in other settings.

This study provided a unique opportunity to further facilities research by examining student achievement, attendance, and behavior in an eighty-year old building and comparing the achievement, attendance, and behavior of those same students as they transitioned into a new state-of-the art, \$20 million facility. This study also extended the body of knowledge on the relationships between facility condition and student achievement, attendance, and behavior. *A Nation at Risk* highlighted the decline in achievement in the US. In addition to the decline in achievement, there was also a decline in the infrastructure of school buildings. Most US schools were constructed prior to 1960 and were designed to last for an average of 35 years (Phillips, 1997). President Clinton urged Congress to appropriate funding to repair and revitalize America's public schools due to their age and deterioration. The link between facilities and achievement became a major focus of research studies.

### *Theoretical Framework*

The existence of a relationship between facility age and condition and student achievement continues to be of research interest. Lemasters (1997) noted that facility conditions are the subject of frequent investigation because of concerns surrounding the deteriorating conditions of America's public schools, while O'Sullivan (2006) attributed the continued

momentum of facility studies to the focus on increased accountability and achievement created by No Child Left Behind in addition to concerns about deteriorating facilities.

This study sought to examine the relationship between facility age and condition and student achievement, attendance, and behavior. Achievement was measured in reading and mathematics using the scaled scores on the Virginia Standards of Learning Tests; attendance was determined based on the number of absences on the end-of-the year attendance report, and behavior was measured by the number of discipline infractions entered in the STARBASE discipline report and based on focus group responses provided by students, parents, and teachers. Only reading and mathematics were measured because those subjects are tested across grades three, four, and five. The test content is leveled according to grade-specific standards. Social studies and science are not currently tested at the fourth grade level so longitudinal information could not be obtained in these subject areas.

Cash (1993) found higher test scores were noted in better facilities. She also noted that achievement was higher in schools with air conditioning, less graffiti, better locker conditions, better science equipment, better classroom furniture, pastel paints, and less noisy external environments. Phillips (1997) determined that moving from an old facility to a new facility increased attendance by an average of two days. Further, as reading and math achievement increased, the number of absences decreased. Reading achievement scores increased by as much as two percentage points, while math achievement increased by an average of six percentage points.

While these studies revealed that good facility conditions support achievement, others showed that poor facility conditions impede achievement. For example, Al-Enazi (2002) noted that poor structural facility conditions impact science achievement adversely and that poor

cosmetic classroom conditions have an adverse affect on achievement in the liberal arts. A host of other researchers, including Hines (1996), Lemasters (1997), Lanham (1999) O'Sullivan (2006), and Crook (2006) have investigated the topic, generated theoretical models, and also ascertained a relationship between school facility condition and student achievement.

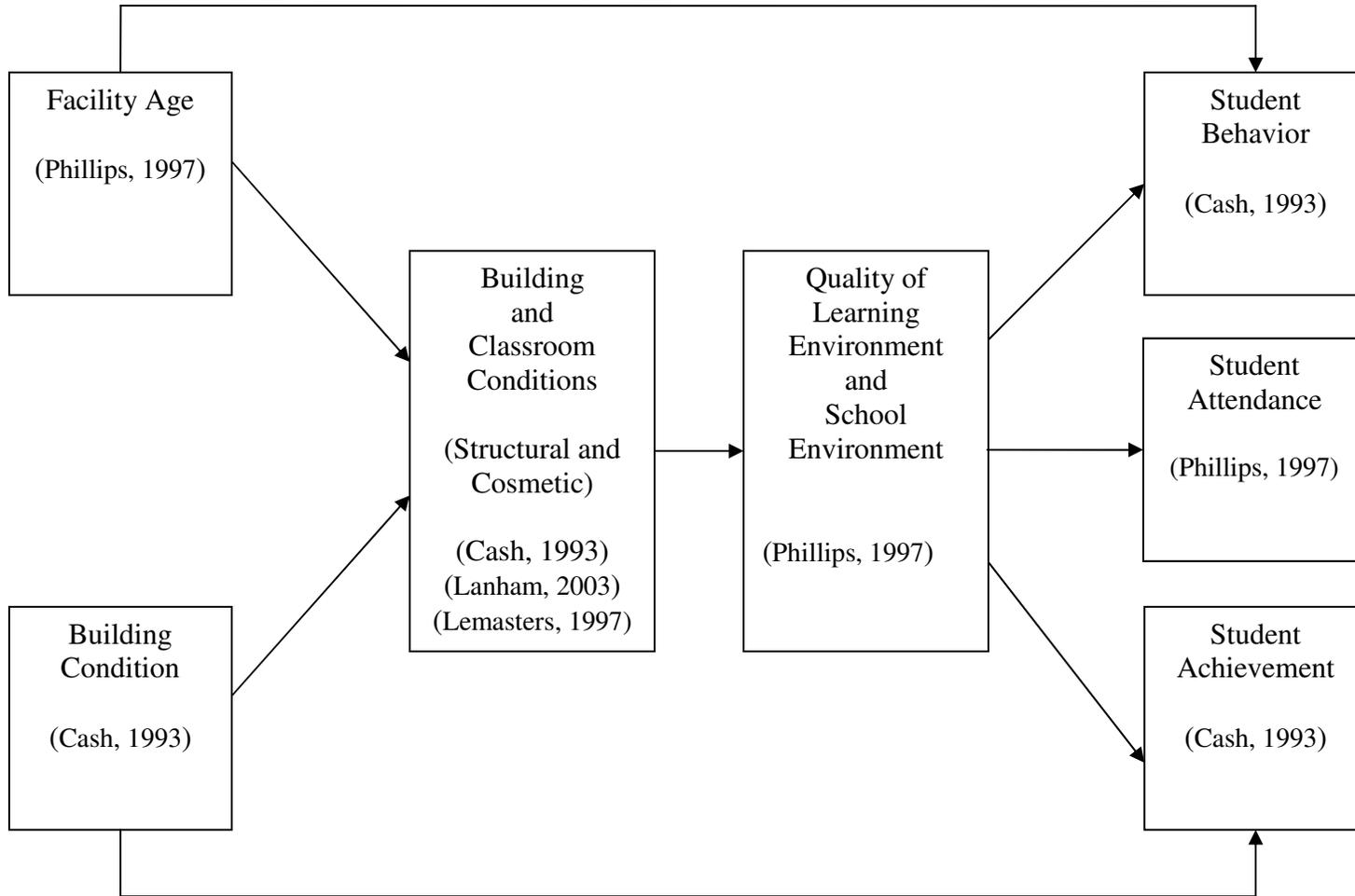
In his theoretical model, Phillips (1997, p.5) asserted four tenets: 1) Learning environments directly influence students; 2) Quality of school environment affects student attitudes; 3) Students prefer new facilities to old ones; 4) Achievement, as measured by productivity, is affected by student comfort. Cash's (1993) model shows a link between building conditions and achievement by examining the role of leadership and financial ability to the maintenance and resulting building conditions. She then links building conditions to parent, faculty, and student attitudes and shows their roles in student achievement and behavior.

Lanham's (1999) model identifies deferred maintenance, funding priorities, and administrative decisions as contributing factors to building and classroom conditions, which in turn influence attitudes and behaviors of parents, teachers, and students. As such, Lanham (1999) asserts that when viewed in totality, these factors influence student achievement directly and indirectly.

This study investigated whether the age of a facility contributes to the building and classroom conditions, which then impact the quality of the learning environment. Ultimately, the researcher sought to determine the extent to which quality learning and school environments lead to improvements in student attendance, behavior, and student achievement. Armed with this knowledge, school leaders will be able to make decisions that positively impact student achievement, attendance, and behavior.

### Conceptual Model

The conceptual model (figure 1) that served as the basis for this study was derived from the work of Phillips (1997), Cash (1993), and Lanham (1999) and was modified to account for the differences in an urban Virginia elementary school.



## *Definition of Terms*

For the purposes of this study, the following definitions were applied:

Academic Achievement was measured by scaled scores of students in grades three, four, and five in reading and mathematics on the Virginia Standards of Learning Tests (SOLs) for the purposes of this study.

Attendance referred to the number of days absent for each student in the sample population during the 2006-2007 school year and the 2007-2008 school year for the purposes of this study.

Behavior referred to the number of discipline infractions committed by students in the sample population during the 2006-2007 school year and the 2007-2008 school year for the purposes of this study.

New School Facility referred to a newly constructed school building with state-of-the-art features. For the purposes of this study, the new facility opened in the fall of the 2007-08 school year replacing the eighty-year old facility bearing the same name.

Old School Facility referred to an eighty-year old school facility with severely deteriorated conditions and 13 portable classrooms that were replaced by a newly constructed school facility.

Title I Schoolwide Programs According to Section 1114 of Title I of the No Child Left Behind Act of 2001 (NCLB), schoolwide programs serve children viewed at-risk of school failure because of a 40% or greater poverty concentration. Funding is provided to enhance the overall educational program in the school to improve student achievement, particularly the lowest-achieving students (United States Department of Education, 2004).

Urban schools were defined for the purposes of this study by the Council of Great City Schools definition for its member school districts. The school district where the research study occurred is a member of the Council of Great City Schools. According to its fact sheet, the Council of Great City Schools defines urban schools “as schools located in cities with a population over 250,000 and with student enrollments over 35,000.” Generally, these schools are comprised of students from ethnic minorities and low-income homes (Council of Great City Schools).

Virginia Standards of Learning Tests, known as SOLs, were developed by Pearson Learning in conjunction with the Virginia Department of Education to measure the level of attainment of state standards. According to the 2000 Virginia Standards of Learning Technical Report, the *Virginia Standards of Learning* “set reasonable targets and expectations for what teachers were expected to teach and what students were expected to learn . . .” in the areas of English, mathematics, history and social science, and science (p. 6). SOL scores are reported as raw scores and then converted to scaled scores. Students must earn 400 out of a possible 600 to pass. Students are assigned a proficiency rating of fail (below 375), fail basic (375-399), proficient (400-499), or advanced proficient (500-600). The test content is leveled according to grade-specific standards.

### *Limitations*

1. The research site was not selected randomly. It was selected based on the fact that it is a replacement facility for an eighty-year old deteriorating school facility.
2. One urban southeastern Virginia elementary school served as the research site, and results may not be generalized to schools in other geographic locations.
3. Student achievement, attendance, and behavior could not be attributed solely to the condition of the facility.

### *Organization of the Study*

This study explored school facility conditions and student achievement, attendance, and behavior in an urban elementary school in southeastern Virginia. Chapter 1 contains an introduction, significance of the study, purpose of the study, research questions, theoretical framework, conceptual model, definition of terms, and organization of the study.

Chapter 2 includes a review of related literature. This review critically examined existing literature as it relates to the focus of this study. These selected studies provided a springboard for continuing investigations. This section begins with an introduction that provides a context of the national plight of school facility condition and concludes with a summary synthesizing the studies. Chapter 3 contains the methodology, research design, and information about the sample, setting, instrumentation, focus group protocol, data collection and data analysis. Chapter 4 provides detailed analyses of the quantitative and qualitative findings as they relate to the research questions. Chapter 5 provides a summary of findings, discussion, conclusion, implications, and recommendations for further study.

## CHAPTER TWO

### Review of the Literature

#### *Introduction*

The literature review provides a synthesis of data about the types of studies conducted on facilities and achievement, discusses the condition of public school facilities in the US, and identifies major concepts and factors relating to specific building conditions (visual, acoustical, thermal, aesthetic, building age factors), student achievement, attendance, and behavior, and facility age. In addition, it summarizes, describes, and critically reviews the findings of empirical studies relating to the impact facilities have on student achievement, attendance, and behavior. The literature review is organized around individual research studies and addresses the effects of specific facility factors on student attendance, behavior, and achievement.

In 1998, the average US school was 42 years old (Cutshall, 2003). Fifty-eight percent of them were characterized as inadequate, while only 42% were deemed adequate mainly because the condition of the buildings reflects the communities' ability to pay (Lewis, Snow & Farris, 1999). In fact, the National Center for Educational Statistics (1999) collected data on nine building features and found that half of US schools were inadequate on at least one feature. Based on these data, the researchers established a calculation for determining school condition that combined school age and year of renovation into what was termed "functional age". Researchers found that urban schools were in the "oldest condition"—built before 1970 and renovated before 1980 or not at all. Approximately 29% of all schools fell into the "oldest condition" category (NCES, 1999).

As a result, public school students are being forced to learn in schools that are deteriorating, unhealthy, and unsafe. Poor children and children who attend urban or rural

schools are more likely to attend aging facilities in poor condition. Earthman (2004) stated that “when low-income students attend school in a building that does not have the basic elements . . . that have been proven to relate directly to student performance, they are doubly disadvantaged” when compared to students from affluent families (p. 19).

Consequently, national attention has been drawn to the sub-par conditions in US schools, and studies have cited the existence of poor ventilation, broken plumbing, overcrowding, and sagging roofs and questioned the effects of these poor conditions on achievement, safety, and teaching (Lewis, et. al. 1999). School facility factors like age and condition, quality of maintenance, temperature, lighting, noise, color, and air quality were shown to have a negative impact on the health and emotional well-being of children (Young, 2003).

Lyons manages the National Clearinghouse for Educational Facilities and has worked with the US Department of Education for several decades. He investigated the relationship between the condition of the facility and a child’s educational experience and found that aging US schools are plagued by overcrowding, lack of technology, poor ventilation, and unsafe conditions. Lyons (2001) stated that to children, “the difference . . . between receiving an education in a really well-designed, modern new school and in a typical 42-year-old school can be like the difference between writing in the sand and surfing the Internet” (p. 1).

Lyons then discussed building features that were essential for learning and those that hindered learning. Portable classrooms were seen as a hindrance because of their poor quality and indication of overcrowding within the building. Acoustics and natural lighting were viewed as essential for learning. For example, Lyons (2001) highlighted research in New York City where students in schools with noisy planes constantly flying overhead scored twenty points lower in word recognition than students in more quiet schools. Similarly, lighting and small schools were found to positively impact achievement.

Lyons (2002) pointed to numerous studies that confirm the existence of a relationship between facility condition and educational factors, namely a Milwaukee study commissioned by the Council of Educational Facility Planners International that found that “ ‘facility condition may have a stronger effect on student performance than the combined influences of family background, socio-economic status, school attendance, and behavior’ ” (p. 7).

An estimated 20 billion dollars was spent by school districts to upgrade existing facilities, build additions to existing facilities, and construct new schools in 2008 (Abramson, 2008). Though the need to improve school facilities is well-established, fiscal constraints of localities, rising costs of maintenance and construction, and reluctance of citizens to fund bond referendums for school construction serve as barriers that exacerbate the problem. As such, many feel that the federal government must subsidize school facility improvement projects if school districts are to meet the demands of technological advances, overcrowding, deteriorating conditions, and resulting declines in achievement. The studies that follow demonstrate the relationship that building conditions have on student achievement, attendance, and behavior.

### *Analysis of Research Studies*

#### *Facility Conditions and High Schools*

Five recent studies have investigated the relationship between facility condition and student achievement and behavior in high schools. All of the studies employed the Commonwealth Assessment of Physical Environment (CAPE) as the common instrument to rate facility condition. Cash, Hines, and Crook studied schools in Virginia, while Al-Enazi and O’Sullivan conducted studies in Kuwait and Pennsylvania respectively.

When examining student achievement and behavior in small, rural public high schools, Cash (1993) found that test scores increased in all subjects as building conditions improved from

substandard, to standard, to above standard facility conditions; however, the mean science scores remained the same. When Hines (1996) replicated Cash's study in 88 urban Virginia high schools, findings revealed that as overall building condition improved, the students' achievement scores and behavior improved. Specifically, reading comprehension, math, written expression, science, and social studies scores increased anywhere from 7 to 11 percentile points as facility quality increased from substandard to standard to above standard. Crook (2006) examined the relationship between the percentage of students passing the Standards of Learning end-of-course tests and the condition of the educational facilities in 142 urban, suburban, and rural high schools across the Commonwealth of Virginia and made several noteworthy findings. The percentage of students passing the SOLs was higher in standard school buildings than in substandard school buildings with the exception of Algebra 1. In fact, SOL pass rate differences in standard and substandard buildings ranged between 6.6 and 17.2 percentile points.

In terms of discipline, Cash's results showed that students in better quality facilities had more disciplinary incidents relating to violence, substance abuse, suspensions, and expulsions. Hines' (1996) results from data analyses showed greater disciplinary incidents in better maintained buildings. Hines noted that suspensions increased from substandard to standard buildings but, unlike the Cash study, decreased in above standard buildings. In addition, urban schools in better condition showed greater achievement gains than rural schools that were also rated above standard.

Overall, Cash (1993) noted that achievement was higher in schools with air conditioning, less graffiti, better locker conditions, better science equipment, better classroom furniture, pastel paints, and less noisy external environments. Hines (1996) concluded that higher achievement scores were deemed to be associated with newer buildings and buildings with more windows, carpeting, air conditioning, better grounds, and better furniture. Crook also

noted a statistically significant difference in the pass rates of students in standard and substandard buildings on the reading and writing SOLs when the building conditions were categorized into structural and cosmetic conditions, but was surprised to discover that the pass rates in Algebra I and Geometry were higher in substandard buildings. Science pass rates, however, were greater in buildings that had greater than three science functions and in buildings that had been updated within the past ten years. Building age was also found to be a distinguishing factor in achievement (Crook, 2006).

While Hines, Crook, and Cash conducted studies in Virginia, O'Sullivan and Al-Enazi conducted similar studies in Pennsylvania and abroad. O'Sullivan (2006) examined the relationship between building conditions and student academic achievement in 205 Pennsylvania high schools. O'Sullivan (2006) ascertained that the PSSA writing test scores declined by .08 points and that reading and math test scores showed a .14 point and .17 point decline respectively for every 1% increase in free and reduced lunch participation (O'Sullivan, 2006). O'Sullivan (2006) also found a positive relationship between achievement and cosmetic and structural building conditions, such as the presence of adjacent facilities, absence of graffiti, frequent interior painting, positive overall cosmetic classroom rating, and recent renovations and additions.

Al-Enazi (2002) had a similar finding in his study examining the relationship between school building conditions and academic achievement of twelfth grade students in fifty-six Kuwaiti public high schools. Al-Enazi reported that the most reliable predictors of structural building conditions found to impact achievement were the presence of graffiti and roof leaks. Specifically, Al-Enazi (2002) noted a varying effect of building condition on achievement depending on gender and academic major. Al-Enazi's study supports what the Cash, Hines,

Crook, and O’Sullivan studies also found—the existence of a relationship between facility condition and student achievement.

#### *Facility Conditions and Elementary Schools*

James Lanham (1999) conducted a study relating building and classroom conditions to achievement in Virginia’s public elementary schools. Lanham revised Cash’s CAPE to tailor the survey for use with elementary schools and to account for advances in technology. This modified instrument was called the Assessment of Building and Classroom Conditions in Elementary Schools in Virginia. Findings revealed that free-and-reduced lunch status and air conditioning were found to be significant factors in achievement, with free-and-reduced lunch status accounting for greater variance in English than in math. Other significant factors relating to building condition that impacted student achievement included ceiling type, site size, connection to a wide-area network, room structure, overall maintenance, floor type, and sweeping and mopping frequency. Overall, Lanham (1999) found that Virginia schools were rated better when compared to other schools in the nation.

#### *Mixed-Methods Study of Facility Conditions*

Lair (2003) conducted a mixed-methods study on the effect of school facility conditions on student achievement in the Ysleta Independent School District in Texas. Lair found that building age emerged as the most significant predictor of TAAS scores. Other significant variables were maintenance, cleanliness, and school size. Further, the results indicated that building age is positively related to the achievement of disadvantaged students and that school size influences student achievement. Ultimately, Lair (2003) asserted that the renovation of facilities may “enhance the learning process” and “send positive messages to students that. . . contribute to their academic performance” (Edwards, 1991; Lair, 2003).

### *Qualitative Study of Facility Conditions*

Edwards (2006) employed phenomenology to explore the point of view of urban students educated in deteriorating facilities. The researcher conducted the study in a large urban district in Columbus, Ohio with middle and high school students. According to the researcher, participants perceived the condition of the facility as having a connection to their behavior, achievement, and motivation, and thus, made them less inclined to take care of a school that was already in deteriorating condition. Many actually felt that the best teachers were sent to better schools than theirs and felt hindered from achieving because of the “depressed environment” (Edwards, 2006, p.137).

### *Facility Age and Student Achievement and Attendance*

Phillips study, which was conducted between 1993 and 1996, explored the relationship between building age and student achievement in three rural elementary schools in northeastern Georgia. What distinguishes Phillips’ study from many of the other facility studies is the fact that it examines achievement in three older schools where the same students transitioned into new facilities.

The sample was comprised of third, fourth, and fifth-grade students in three elementary schools over 30 years old, with very similar demographics. The facilities were constructed in 1929, 1936, and 1945. There were two cohorts of approximately 150 students from intact groups, as random selection was not plausible.

According to Phillips (1997), the results did in fact indicate a relationship between facility age and student achievement and attendance. Specifically, there was an overall improvement in attendance in all groups; moving from an old facility to a new facility increased attendance by an average of two days per year. This marked a one percent decrease in absenteeism. A slight inverse relationship was noted between attendance and reading and math

achievement. Reading achievement scores increased by as much as two percentage points, while math achievement increased by an average of six percentage points.

### *Meta-Analyses of Facility Studies*

Meta-analyses by Lemasters (1997) and Earthman (2002) have examined school facility conditions and student academic achievement by reviewing previously conducted research. In doing so, these researchers identified gaps in the research and those facility features that were found to contribute most to student achievement. LeMasters (1997) reviewed studies conducted since 1980 and extended the previous synthesis studies of Weinstein and McGuffey. After exploring the impact of specific facility conditions, LeMasters (1997) presented five main findings stressing the importance of physical environment: 1) Well-maintained facilities impact student achievement positively. 2) Well-maintained facilities have a positive influence on student behavior. 3) Student stress and anxiety are reduced by the presence of areas of privacy within the classroom. 4) Student health is positively affected by fluorescent lighting with traces of ultraviolet content. 5) Noise not related to instruction impacts student learning negatively. Lemasters (1997) concluded that as facilities improved, so did student behavior. Similarly, when the facility was adequate for the instructional needs, student behavior as well as student attitudes improved (Lemasters, 1997).

Earthman (2002) researched the condition of America's school buildings and highlighted the relationship between certain building conditions and their relationship to student performance. Earthman also investigated research on overall building conditions as they relate to student performance and teacher effectiveness. Finally, he addressed the impact of overcrowding on student achievement and presented a summary of findings.

These findings, like those of LeMasters, confirm the impact of facility conditions such as temperature, lighting, acoustics, overcrowding, and facility age on student achievement and teacher effectiveness (Earthman, 2002). In addition, Earthman (2002) reported that when socioeconomic status is controlled, student achievement in deteriorating facilities is 5 to 17 points lower than in schools in good condition. These conditions are more prevalent in urban schools and in schools in poor neighborhoods.

Earthman cited research on thermal quality, acoustic quality, and building age as building components likely to impact achievement. Findings showed that as temperature increased, productivity decreased. He also noted declines in reading achievement with temperatures above 74 degrees; therefore, the ability to control temperature is essential (2002). In terms of acoustic quality, Earthman recounted the findings of two landmark studies that measured achievement based on the level of external noise. In both the landmark California and New York studies that Earthman reviewed, classroom noise was found to decrease achievement in reading (Bronzaft & McCarthy, 1975; California Department of Health Services, 1981; Earthman, 2002). When discussing facility age, Earthman (2002) asserts that older school facilities impact achievement negatively because they lack components that are critical to a productive learning environment—good lighting, climate control, and ability to control acoustics.

When looking at overall building condition and student performance, Earthman looked at four distinctive studies that all found a significant difference in achievement based on condition of the facility. Berner's 1993 study looked at achievement on standardized tests in DC elementary schools; Cash (1993), Earthman (1996), and Hines (1996) all used the Commonwealth Assessment of Physical Environment (CAPE) to determine building condition.

When examining building condition and teacher effectiveness, Lowe (1998) and Dawson and Parker (1998) had similar findings—schools in poor condition reduce teacher effectiveness

and have a “negative influence on student’s ability to learn” (Earthman, 2002, p. 10). Finally, in addressing overcrowding, Earthman (2002) ascertained that absences, frustration, and stress can be attributed to overcrowded classrooms and facilities and recommends that class sizes be capped at 20.

### *Facility Design Features*

Broome (2003) and Hughes (2005) both examined the impact of facility design features. Broome focused on how these features impacted student achievement and behavior in middle schools in Mississippi, while Hughes concentrated on the achievement of elementary school students in Texas. Both researchers focused on features such as learning environment, adequacy of social areas, quality of transition spaces, visual appearance, and safety and security (Broome, 2003; Hughes 2005).

Broome (2003) found that even though there was a strong relationship between these five elements of school design and student achievement, the relationship between free and reduced lunch status had a stronger relationship with school building design than did academic achievement. In fact, in this study, socioeconomic status accounted for 67% of the variance in student achievement and was dramatically higher than the variances noted in similar studies (Earthman, 1995; Ayers, 1999; Anderson, 1999; Yarborough, 2001; Broome, 2003).

Based on the results from Tanner’s Design Assessment Scale for Elementary Schools (DASE), Hughes (2005) found that the design variables in this study correlated to a statistically significant degree to student achievement in reading, science, and math. Schools with greater square footage were also ranked higher by the state. Of the 11 variables on the DASE, color was found to correlate most highly with reading, math, and science achievement. Hughes’ findings, like Broome’s, differed from some previous studies. For example, Hughes found day lighting to have an adverse affect, while other studies found that it increased achievement. Hughes and

Broome both noted the importance of visual appearance and adequacy of space on achievement in their findings.

### *Summary*

Thirteen studies were synthesized reflecting both urban and rural United States settings across Georgia, Mississippi, Ohio, Pennsylvania, Tennessee, Texas, and Virginia, as well as in Kuwait. Lanham, Phillips, and Hughes conducted their research with upper elementary students in grades three through five, while Cash, Hines, O'Sullivan, Crook and Al-Enazi used high schools as the subjects of their research. Broome used schools with eighth-grade students, and Lair's study included all three levels—elementary, middle, and high. Lemasters conducted a meta-analysis of studies conducted since 1980, and Earthman reviewed research relating to school components and student achievement. Edwards conducted a qualitative study exploring the point of view of urban secondary students educated in deteriorating facilities.

A variety of independent variables were included in these studies, including noise, facility age, color, lighting, appearance, temperature and school design variables such as movement patterns and day lighting. The primary instruments for gathering data on facility condition were the Commonwealth Assessment of Physical Environment (CAPE), which was administered to principals as a survey, and the Design Assessment Scale for Elementary Schools (DASE). Dependent variables included achievement, based on standardized test data, and behavior data collected at the school level or from state department of education archives. Analysis of covariance (ANCOVA) was the most frequently used statistical analysis for these primarily quantitative and mixed-methods studies, even though some used correlations and descriptive statistics. One qualitative study employed phenomenology as the primary technique.

The findings from these studies and Lemasters' and Earthman's meta-analyses showed a strong link between school facility condition and student achievement and behavior.

Specifically, Lair, Phillips, and Crook found a relationship between building age and student achievement. Cash and Hines noted that as building conditions improved, student achievement increased, but discipline infractions increased as well. Lanham and Broome found that socioeconomic status accounted for much of the variance in student achievement, while O'Sullivan determined that the percentage of students participating in the free and reduced price lunch program was the most significant predictor of academic achievement. Hughes found that color correlated strongly to student achievement in reading, science, and mathematics and those schools with greater square footage were also ranked higher by the state. Al-Enazi noted a varying effect of building condition on achievement depending on gender and academic major. Other factors found to impact achievement in the studies summarized in this review included non-instructional noise, classroom privacy, and connection to a wide area network. Earthman addressed many of these factors and also discussed the impact that poor facilities have on teachers' effectiveness, which also impacts student achievement. Edwards found that students educated in deteriorating facilities feel that these conditions impact their motivation, conduct, and achievement.

This study, like the studies in the review, was suited for both a quantitative and qualitative approach. Therefore, a mixed-methods approach allowed the researcher to examine the effects of facility condition attendance, achievement, and behavior. Achievement in reading and mathematics was measured by standardized test scores, while attendance was measured based on the number of student absences and behavior on the number of discipline infractions committed. In addition, the researcher used focus groups with students, parents, and teachers to qualitatively document the relationship between achievement and behavior of urban students who transitioned from an old facility to a new facility in a southeastern Virginia elementary school.

## CHAPTER THREE

### Methodology

This chapter outlines the research design, setting of the study, sample characteristics, data collection methods, instrumentation, focus group protocol, and data analysis. The purpose of this mixed-methods study was to investigate and determine possible relationships between facility conditions and student achievement, attendance, and behavior when students at an urban elementary school in southeastern Virginia transitioned from an older facility to a new facility. Reading and mathematics achievement of students in grades three, four, and five was measured using the Virginia Standards of Learning Tests. Attendance was measured by the number of student absences. Behavior was measured by the number of discipline infractions committed as well as by changes in behavior gleaned from student, parent, and teacher perceptions shared in separate focus groups with the researcher.

#### *Research Design and Research Design Justification*

The study employed a mixed-methods approach that allowed the researcher to quantitatively examine the effects of facility condition on student achievement in reading and mathematics as evidenced by standardized test scores and to examine facility condition effects on attendance and behavior from attendance and behavior data and reports. The researcher utilized focus groups to qualitatively document the relationship between the facility condition and the behavior of urban students who transitioned from an older facility to a new facility in a southeastern Virginia elementary school. This design was appropriate for the current study because the subjects are in-tact groups that the researcher did not manipulate. The primary weaknesses of this type of design included no randomization and no possibility for manipulation (McMillan, 2006).

Focus groups were used to facilitate discussion and to document the changes in behavior of urban students who transition from an old facility to a new facility in a southeastern Virginia elementary based on students', parents', and teachers' perceptions. Focus groups were well-suited for this mixed-methods research. They allowed the researcher to capture attitudes or perceptions to better understand an experience or situation (Rezabek, 2000). In the current study, the researcher used the information gleaned from focus groups to examine the differences in student behavior when students transition from an old building to a new building.

### *Research Questions*

#### *Overarching Research Question*

What is the relationship between the condition of the facility and student achievement, attendance, and behavior when students in an urban elementary school in southeastern Virginia transition from an old facility to a new facility?

#### *Sub-Research Questions*

1. What is the relationship between reading scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
2. What is the relationship between mathematics scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
3. What is the relationship between attendance and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
4. What is the relationship between behavior and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) students in one urban southeastern Virginia elementary school?

5. What is the relationship between building condition and student achievement, attendance, and behavior as it relates to gender for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one southeastern Virginia elementary school?
6. What do students in one urban, southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility they attend?
7. What do teachers in one urban, southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility they attend or work?
8. What do parents of students in one urban southeastern Virginia elementary school perceive as the relationship between achievement, attendance, and behavior, and the condition of the school facility that their children attend?

#### *Research Site*

The research was conducted with students and teachers that were housed in the eighty-year old facility during the 2006-2007 school year, and then in the newly constructed state-of-the-art facility during the 2007-2008 school year. The school is located in an urban southeastern Virginia school district with a student enrollment of 36,745. The district has five high schools, nine middle schools, and thirty-five elementary schools, eighteen of which have school-wide Title I programs. The student population of the district is approximately 29% Caucasian, 66% African American, and 5% other.

The research site was a Title I school that served approximately 860 students in pre-kindergarten through fifth-grade from a low socioeconomic background. Approximately 76% of

the students qualified for free or reduced lunch. The student population is 80% African-American, 11% Caucasian, 2.5% Hispanic, and 1% Asian.

### *Population Sample*

Upper elementary students attending an urban, Title I elementary school in southeastern Virginia in 2006-2007 and 2007-2008 served as the target population. Cohort one included third-graders during the 2006-2007 school year who were fourth-graders for the 2007-2008 school year. Cohort two included fourth-grade students who were enrolled in the school during the 2006-2007 school year and also enrolled for the 2007-2008 school year as fifth graders. According to the established criteria, students must have been enrolled in the old facility for the 2006-2007 school year, must have been enrolled in the new facility for the 2007-2008 school year, and must have participated in state testing in reading and mathematics both school years. Retained students, transfer students from other schools within the district, and new enrollees from other districts and states were not included in the sample population.

### *Data Collection and Data Management*

Prior to conducting this study, written permission from the Institutional Review Board at Virginia Polytechnic Institute was sought and obtained. A written request describing the purpose and procedures of the study was sent to the Department of Strategic Evaluation and Statistics (SEAS) in the selected school division for approval to conduct research in the school. Both approvals were granted (See Appendices A and B).

Reading and mathematics scores on the Virginia Standards of Learning Tests (SOLs) of the students who met the criteria were gathered at the school level to determine the overall impact of facility condition on student achievement. Two separate focus groups were conducted with students randomly selected from the sample population. One group consisted of eight students who were third-graders in the old facility and fourth-graders in the new facility. The

second group was comprised of eight students who were fourth-graders in the old facility and fifth-graders in the new facility. Once the randomly selected students from the sample population were identified, the researcher met with the students to invite them to participate, ascertain their willingness to participate, explain the logistics, disseminate the parent letter, and follow-up once parental consent was granted. Eight participants were selected for each of the groups because focus group research by Krueger and Casey (2000) has shown that having six to eight participants is an optimal size for focus groups that are not designed for market research. According to Krueger and Casey (2000), this number allows for participants to have ample time for conversation. Two parent focus groups were conducted with parents of the randomly selected students. Parent focus groups were designed to explore perceptions of parents regarding student transition to the new facility. Randomly selected teachers from the sample population who taught in the school both years also participated in two separate focus groups with eight participants in each of the two groups in an informal setting to explore the relationship between student attitude/behavior and facility condition and to provide rich descriptions to the study. The sessions were audio taped and transcribed, and the data were stored in both hard copy and electronic form in a locked cabinet that only the researcher has access to. Other data collection included demographic data from the school and anecdotal evidence.

Table 1. Comparisons Between Older Facility and New Facility

	Older Facility 2006-2007	New Facility 2007-2008
Percentage of students receiving free/reduced lunch	76%	76%
Average Daily Attendance Percentages	96%	96.2%
Number of Portables	4 mobile units due to overcrowding	No mobile units
Technology Specifications	Televisions in each class 4 Computers per class 8 computers in media center	SMART Boards with LCD projectors in each class 2 Computer Labs (25 each) 6 Computers per class 15 Computers in media center Teachers w/laptops
Conditions	Deteriorating ventilation and infrastructure	Excellent Conditions/All New systems

\*Percentages are approximate.

Table 2. Population Sample Characteristics

	Population Size	Gender	Ethnicity
<b>Cohort 1</b> (3 <sup>rd</sup> Graders in 2007) (4 <sup>th</sup> Graders in 2008)	N=70	37 males 33 females	80% African-American 9% Other 7% Caucasian 1% Hispanic 3% Asian
<b>Cohort 2</b> (4 <sup>th</sup> Graders in 2007) (5 <sup>th</sup> Graders in 2008)	N=83	46 males 37 females	85% African-American 6% Other 5% Caucasian 2% Hispanic 2% Asian

### *Focus Group Protocol*

The researcher randomly selected eight students who were third graders in the old building and eight students who were fourth graders in the old building and fifth graders in the new building from the sample population to participate in the student focus groups. The researcher sent out permission slips that parents were required to sign and assent forms that students were required to sign in order for students to participate in the focus group. These parental consent notices described the purpose of the focus group session, detailed logistics, and explained the way in which results would be reported. The notice specified the scheduled date the child was being requested to stay after school. Once students returned their parental consent, the researcher proceeded with conducting the focus group sessions. Two student focus groups were held on two separate days after school in the media center. Transportation was provided by parents.

The researcher used a discussion guide and prepared script to give directions, describe the focus group process, direct the conversation, and explain how information would be gathered (Ward and Atkins, 2002). Students were asked to share information about their experiences in the new school compared to their experiences in the old school. Students were asked if their grades are different, if their attendance is different, if their behavior is different, and what features of the new building, if any, made their experience different. For the student group, the time was modified to account for differences in attention span and to ensure developmental appropriateness. Light refreshments were served at the end of the session as an incentive for participation.

Two teacher focus groups were held on two separate days after school once the eligible teachers were randomly selected from the sample population. Before the focus groups ensued, all participants met to get pertinent logistical details, such as purpose and timeline and to

complete the informed consent agreeing to participate. Teachers were assured that their participation had no relationship to their job and would have no ramifications or consequences at their work place. A co-researcher was selected to conduct the teacher focus groups to ensure that teachers were not interviewed by someone in a supervisory capacity. The researcher used a discussion guide and prepared script to give directions, describe the focus group process, direct the conversation, and explain how information would be gathered (Ward and Atkins, 2002). The sessions were audio taped and lasted approximately 60 minutes. Refreshments were served at the conclusion of the session. In order to protect confidentiality and anonymity for all focus group participants, the subjects were not identified by name in the results; they were only identified as teacher, student, or parent participant in focus group one or focus group two.

Two parent focus groups were held on two separate days after school once the parents of eligible students had been randomly selected from the sample population. The researcher mailed informed consent letters to the randomly selected parents requesting their participation in the focus group and followed up with a phone invitation. As an incentive for participation, child care was offered for up to two school-age children only. These parental consent notices also described the purpose of the focus group session, detailed logistics, and explained the way in which results will be reported. Once the informed consent was received, the researcher conducted two sixty-minute audio taped parent focus groups to determine what changes if any parents had noticed in their children's achievement, attendance, and behavior since moving from the old facility to the newly constructed facility. Parents were assured of the anonymity of their responses to the researcher's questions. At the conclusion of the session, refreshments were served.

Data from the two teacher focus groups, two parent focus groups, and two student focus groups were stored electronically and as hard copies in a secure locked cabinet that could only be accessed by the researcher. At the completion of the study, data was shredded.

### *Instrument Design*

The Standards of Learning tests (SOLs) are un-timed, multiple choice assessments that measure achievement in reading and mathematics in grades three, four, and five at the elementary level. The reading test assesses knowledge of word analysis and comprehension of printed materials—strands that are reported by category and combined yielding an overall reading achievement score. Similarly, the mathematics tests contain questions from strands on measurement, probability and statistics, number sense, problem solving, and geometry and are scored in the same fashion as the reading tests. The SOL tests were created as an accountability system to measure student proficiency on state standards and to establish similar expectations for performance across the state.

Field testing of the SOL tests occurred in the spring 1997 with all students in grades 3, 5, 8, and 11 participating in field testing of specific content areas. The group was sufficiently large to ensure adequate data analysis and represented Virginia's student demographics accurately. Experts from Michigan State University, the University of Virginia, and Virginia Commonwealth University found the field testing process to be both valid and reliable (Virginia Department of Education, 2000).

### *Instrument Validation and Verification*

The October 2000 *Technical Report* indicates that the 1998 SOL tests were originally administered in grades 3, 5, 8, and 11. Validity was ascertained by examining whether schools that performed well on the Literacy Passport and Stanford 9 tests performed as well on similar SOL tests. Results showed that school standing and student scores remained consistent.

The SOLs were developed by Harcourt Brace in conjunction with the Virginia Department of Education, with field testing occurring in spring 1997. The standards were revised in 2001, and the test was recently updated by Pearson Learning. SOL scores are reported as raw scores and then converted to scaled scores. Students must earn 400 out of a possible 600 to pass. Students are assigned a proficiency rating of fail (below 375), fail basic (375-399), proficient (400-499), or advanced proficient (500-600). Tests are scored by Pearson Learning, and summary score reports are provided to the schools reflecting the scaled scores and disaggregated data. The test content is leveled according to grade-specific standards.

Six separate focus groups were conducted—two with students according to grade level, two with parents according to their child’s grade level, and two with teachers to determine their perceptions of differences in student achievement, attendance, and behavior when they transitioned from an eighty year-old facility to a new school facility. The responses were coded and analyzed for emerging themes. There were 25 teachers that met the established criteria for participation in the focus group; sixteen were randomly selected and invited to participate. Classroom teachers and instructional resource teachers who taught in the old facility in 2006-2007, taught in the new facility in 2007-2008, worked with the student population, and currently teach at the school. The researcher field tested the questions with elementary teachers who recently moved into a newly constructed facility in a neighboring school district. Focus group questions were refined based on the guidelines set forth by Krueger and Casey (2000) for enhancing quality of questions. To ensure accurate representations and interpretation of the data, the researcher presented detailed descriptions of participants and their perceptions.

#### *Data Treatment*

The researcher took steps to protect subject confidentiality and maintain ethical standards. All subjects’ names were kept confidential using numbers; groups took place in a

private meeting area, subjects were given the opportunity to opt out, and no sensitive information was collected or disclosed. Written permission was secured from the school district's Department of Strategic Evaluation and Statistics (SEAS) for approval to conduct research in the school district (See Appendix B). The researcher sought and received approval from the Virginia Polytechnic Institute and State University Institutional Review Board for exemption. Once the exemption and permission to proceed were granted, the researcher conducted the study. Students and teachers involved in the study received a description of the research study itself, the procedures governing their participation, and an explanation of how the results would be used. The researcher explained to participants that their participation was voluntary, that their names would remain confidential, that their responses would be included in summary form only, that individual responses would be identified as parent, teacher, or student participant, and that they could choose to withdraw from the study at any point. The adult subjects signed an informed consent form; parents of student subjects signed a permission form granting permission for their child to participate in the focus group, and students signed an assent form indicating their willingness to voluntarily participate in the study. Subjects did not face any risks and were not exposed to unsafe conditions. Once the study was conducted, the subjects were not identified by name in the results in order to protect confidentiality.

#### *Data Analysis*

SOL test data in reading and mathematics as well as attendance and behavior data were analyzed using paired samples t-tests for each cohort individually and as a combined group. Paired samples t-tests were also conducted for each cohort separately and as a combined group to determine the relationship between building condition and student achievement, attendance, and behavior as it related to gender. Data were input into the statistical software program, Statistical Package for the Social Sciences (SPSS). Descriptive data from focus group

discussions was transcribed, coded, interpreted, and analyzed for emerging themes using focus group methodology.

#### *Time Line*

Once permission to conduct the study was granted, individual SOL test data for grades three, four, and five was gathered from the spring 2007 and 2008 administrations. The information was available electronically and was downloaded. Data were cross-checked to determine which participants were eligible and which did not meet the criteria. During focus group preparation and implementation, participant consent was obtained and focus groups were conducted. After the data collection phase was completed, data analysis, coding, and interpretation ensued. Specifically, data were reviewed for themes, placed in categories, and transcribed. Participant responses were summarized and sorted according to theme. Conclusions about the research questions were made based on the analyses of the data. This time line spanned approximately two months.

#### *Methodology Summary*

This chapter detailed the methodology of this study. It provided a description of the research site, sample size and characteristics, research design and methodology, quantitative and qualitative instrumentation, data collection and analysis, and time line for conducting the study.

## CHAPTER FOUR

### Analysis of Data

This chapter begins with a brief overview of the study and reports the quantitative and qualitative results of the study. The analyses are organized according to research question. The quantitative research analyses detail descriptive statistics as well as results of paired t-tests, followed by a summary. Qualitative research analyses highlight focus group descriptions, narrative responses from each of the six focus groups, and emerging themes. These qualitative analyses are also followed by an overview of the findings.

The purpose of this mixed-methods study was to investigate and determine possible relationships between facility condition, achievement, attendance, and behavior when students at an urban elementary school in southeastern Virginia transitioned from an older school facility to a newly constructed school facility. Scores from the May 2007 and May 2008 administrations of the Virginia Standards of Learning (SOL) third-grade, fourth-grade, and fifth-grade reading and mathematics tests as well as attendance data and discipline data were subjected to paired-samples t-tests. T-tests were run for each cohort individually and for the cohorts combined as one group. Cohort one included third-graders during the 2006-2007 school year who were fourth-graders for the 2007-2008 school year. Cohort two included fourth-grade students who were enrolled during the 2006-2007 school year and also enrolled for the 2007-2008 school year as fifth-graders. The study also examined gender differences in achievement, attendance, and behavior using paired t-tests. Finally, the study explored qualitative focus group data to add voice to the quantitative findings. Opinions about the impact of the new facility on student achievement and behavior were shared by parents, students, and teachers through a series of six focus groups—two parent

groups, two student groups, and two teacher groups. The data were coded and analyzed for themes.

### *Overarching Research Question*

What is the relationship between the condition of the facility and student achievement, attendance, and behavior when students in an urban elementary school in southeastern Virginia transition from an old facility to a new facility?

Due to the complexity of the overarching research question, several sub-research questions were generated. The quantitative and qualitative research questions are as follows:

### *Quantitative Research Questions*

1. What is the relationship between reading scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
2. What is the relationship between mathematics scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
3. What is the relationship between attendance and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
4. What is the relationship between behavior and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?
5. What is the relationship between building condition and student achievement, attendance, and behavior as it relates to gender for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one southeastern Virginia elementary school?

### *Qualitative Research Questions*

6. What do students in one urban southeastern Virginia Elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school they attend?
7. What do teachers in one urban southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility where they work?
8. What do parents in one urban southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school their children attend?

The quantitative data are reported via descriptive statistics and tables detailing the results of paired t-tests. The qualitative data are reported in narrative form based on focus group transcripts.

#### *Research Question #1*

What is the relationship between reading scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?

For all students (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL reading test ( $M=475.92$ ,  $SD=71.77$ ) was over 16 points higher than the mean score of the 2007 SOL reading test ( $M= 459.42$ ,  $SD=70.25$ ). Descriptive statistics, including the mean and standard deviation are reported in Table 3.

Table 3. Descriptive Statistics for Reading Scores for Student Population Sample

Score Comparisons	MEAN	N	Std. Dev.
Cohorts 1 and 2 Combined 2007	459.42	153	70.25
2008	475.92	153	71.77

A paired t-test is appropriate to use when the same group has been tested twice, yielding two sets of scores. The difference between each pair of scores is calculated. The assumptions of the t-test include normal distribution of scores.

A paired t-test was run to determine whether there was a difference between the reading scores of third- and fourth-grade students in the older facility who transitioned to the newer facility as fourth- and fifth-grade students. A significance level of .05 was used for all statistical tests. T values greater than +2 and minus -2 yield greater confidence in the results, and the significance indicates the existence and strength of the relationship between the means. The results follow.

The results for the paired t-test indicate that there is a statistically significant difference in the reading means of third- and fourth-grade students in the older facility and the same students as fourth- and fifth-grade students in the newer facility on the SOL reading test,  $t = -3.68$ ,  $p < .05$ .

The summary of the paired t-test is shown in Table 4.

Table 4. Summary of Paired Samples t-test for Reading

	MEAN Difference	T	Df	Sig (2-tailed)
Cohorts 1 and 2 combined	-16.50	-3.68**	152	.00
SOL Reading Scores 2008- SOL Reading Scores 2007				

\*\* $p < .05$

When separated by cohort, students in cohort one (students who were third graders in 2007-2008) had a mean scaled score on the 2008 SOL reading test (M=473.31, SD=79.49) that was over 29 points higher than the mean score of the 2007 SOL reading test (M=444.19, SD=67.99). Descriptive statistics for cohort one, including the mean and standard deviation, are reported in Table 5.

Table 5. Descriptive Statistics for Reading Scores for Cohort 1

Score Comparisons	MEAN	N	Std. Dev.
Cohort 1 2007	444.19	70	67.99
Cohort 1 2008	473.31	70	79.49

A paired t-test was run to determine whether there was a difference between the reading scores of cohort one in the old building versus the new building. A paired t-test was also run to determine whether there was a difference between the reading scores of cohort two in the old building versus the new building. A significance level of .05 was used for all statistical tests. The results follow.

The results for the paired t-test for cohort one indicate that there is a statistically significant difference in the reading means of third-grade students in the old facility and the same students as fourth-graders in the new building on the SOL reading test,  $t=3.95$ ,  $p<.05$ . The summary of the paired t-test for cohort one is shown in Table 6.

Table 6. Summary of Paired Samples t-test for Reading for Cohort 1

Paired Differences	MEAN	T	Df	Sig.
	Difference			(2-tailed)
Cohort 1 SOL Reading Scores 2008-SOL Reading Scores 2007	29.13	3.95**	69	.00

\*\*p<.05

For students in cohort two (students who were fourth-graders in 2007-2008) , the mean scaled score on the 2008 SOL reading test (M=478.12, SD=64.96) was 6 points higher than the mean score of the 2007 SOL reading test (M=472.27, SD=69.96). Descriptive statistics for cohort two, including the mean and standard deviation, are reported in Table 7.

Table 7. Descriptive Statistics for Reading Scores for Cohort 2

Score Comparisons	MEAN	N	Std. Dev.
Cohort 2 2007	472.27	83	69.96
Cohort 2 2008	478.12	83	64.96

The results for the paired t-test for cohort two indicate that although scores improved, there is not a statistically significant difference in the reading means of fourth-grade students in the old facility and the same students as fifth-graders in the new building on the SOL reading test,  $t=1.13$ ,  $p>.05$ . The summary of the paired t-test for cohort two is shown in Table 8.

Table 8. Summary of Paired Samples t-test for Reading for Cohort 2

Paired Differences	MEAN	T	Df	Sig.
	Difference			(2-tailed)
Cohort 2 SOL Reading Scores 2008-SOL Reading Scores 2007	5.86	1.13	82	.26

*Findings for Research Question #2*

What is the relationship between mathematics scores on the Virginia Standards of Learning Test (SOL) and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?

For all students (cohorts one and two combined) who transitioned from the older facility to the newer facility, the mean score on the 2008 SOL mathematics test (M=470.31, SD=72.68) was over 19 points higher than the mean score of the 2007 SOL mathematics test (M=450.67, SD=63.87). Descriptive statistics, including the mean and standard deviation are reported are reported in Table 9.

Table 9. Descriptive Statistics or Mathematics Scores

Cohorts 1 and 2 Combined	MEAN	N	Std. Dev.
2007	450.67	153	63.87
2008	470.31	153	72.68

A paired t-test was run to determine whether there was a statistically significant difference between the mathematics scores of third- and fourth-grade students who transitioned

from the older facility to the newer facility. A significance level of .05 was used for all statistical tests. The results follow.

The results for the paired t-test indicate that there was a statistically significant difference in the mathematics means of third- and fourth-grade students in the old facility and the same students as fourth- and fifth-grade students in the newer facility on the SOL mathematics test ( $t = -3.97, p < .05$ ). The summary of the paired t-test is shown in Table 10.

Table 10. Summary of Paired t-tests for Mathematics

	MEAN	T	Df	Sig.
Cohorts 1 and 2 Combined 2007-2008	-19.63	-3.968**	152	.00

\*\* $p < .05$

When separated by cohort, students in cohort one had a mean score on the 2008 SOL mathematics test ( $M = 441.17, SD = 7.89$ ) that was 21 points lower than the mean score of the 2007 SOL mathematics test ( $M = 462.40, SD = 63.37$ ). Descriptive statistics for cohort one, including the mean and standard deviation, are reported in Table 11.

Table 11. Descriptive Statistics for Mathematics Scores for Cohort 1

Score Comparisons	MEAN	N	Std. Dev.
Cohort 1 2007	462.40	70	63.37
Cohort 1 2008	441.17	70	7.89

A paired t-test was run to determine whether there was a statistically significant difference between the mathematics scores of cohort one in the old building versus the new building. A paired t-test was also run to determine whether there was a statistically significant

difference between the mathematics scores of cohort two in the old building versus the new building. A significance level of .05 was used for all statistical tests. The results follow.

The results for the paired t-test for cohort one indicate that there is a statistically significant negative difference in the mathematics means of third-grade students in the old facility and the same students as fourth-graders in the new building on the SOL mathematics test,  $t=-3.75$ ,  $p<.05$ . The summary of the paired t-test for cohort one is shown in Table 12.

Table 12. Summary of Paired Samples t-test for Mathematics for Cohort 1

Paired Differences	MEAN	T	Df	Sig.
Cohort 1 SOL Mathematics Scores 2008-SOL Mathematics Scores 2007	Difference -21.22	-3.75**	69	(2-tailed) .00

\*\* $p<.05$

For students in cohort two, the mean score on the 2008 SOL mathematics test (M=494.88, SD=69.22) was 54 points higher than the mean score of the 2007 SOL mathematics test (M=440.78, SD=62.99). Descriptive statistics for cohort two, including the mean and standard deviation, are reported in Table 13.

Table 13. Descriptive Statistics for Mathematics Scores for Cohort 2

Score Comparisons	MEAN	N	Std. Dev.
Cohort 2 2007	440.78	83	62.99
Cohort 2 2008	494.88	83	69.22

The results for the paired t-test for cohort two indicate that there was a statistically significant difference in the mathematics means of fourth-grade students in the old facility and

the same students as fifth-graders in the new building on the SOL mathematics test,  $t=10.00$ ,  $p<.05$ . The summary of the paired t-test for cohort two is shown in Table 14.

Table 14. Summary of Paired Samples t-test for Mathematics for Cohort 2

Paired Differences	MEAN	T	Df	Sig.
	Difference			(2-tailed)
Cohort 2 SOL Mathematics Scores 2008-SOL Mathematics Scores 2007	54.10	10.00**	82	.00

\*\* $p<.05$

### *Findings for Research Question #3*

What is the relationship between attendance and the condition of the school facility for two cohorts of students (grade 3 to 4 and grade 4 to 5) in one urban southeastern Virginia elementary school?

For all students (cohorts one and two combined) who transitioned from the older facility to the newer facility, the mean number of absences for the 2007-2008 school year ( $M=5.35$ ,  $SD=4.59$ ) and the mean number of absences for the 2006-2007 school year ( $M=4.72$ ,  $SD=4.15$ ) were almost identical. Descriptive statistics, including the mean and standard deviation are reported in Table 15.

Table 15. Descriptive Statistics for Mean Number of Days Absent

Cohorts 1 and 2 Combined	MEAN	N	Std. Dev.
2007	4.72	153	4.15
2008	5.35	153	4.59

A paired t-test was run to determine whether there was a difference in the attendance of third- and fourth-grade students who transition from the older building to the newer building. A significance level of .05 was used for all statistical tests. The results follow.

The results for the paired t-test indicate that there was not a statistically significant difference in the attendance means of third- and fourth-grade students in the older facility and the same students as fourth- and fifth-grade students in the newer facility, ( $t=-1.79$ ,  $P>.05$ ). The summary of the paired t-test is shown in Table 16.

Table 16. Summary of Paired t-test for Attendance (Number of Days Absent)

	MEAN Difference	T	Df	Sig.
Attendance 2008-2007	-.63	-1.79	152	.08

For students in cohort one, the mean number of absences for the 2007-2008 school year ( $M=4.67$ ,  $SD=3.81$ ) and the mean attendance for the 2006-2007 school year ( $M=4.43$ ,  $SD=3.88$ ) were almost identical. Descriptive statistics for cohort one, including the mean and standard deviation, are reported in Table 17.

Table 17. Descriptive Statistics for Mean Number of Days Absent for Cohort 1

Absence Comparisons	MEAN	Std. Dev.	N
Cohort 1 2007	4.43	3.88	70
Cohort 1 2008	4.67	3.81	70

A paired t-test was run to determine whether there was a difference in the attendance of cohort one students in the old building versus the new building. A significance level of .05 was used for all statistical tests. The results follow.

The results for the paired t-test for cohort one indicate that there was not a statistically significant difference in the attendance means of third-grade students in the old facility and the same students as fourth-graders in the new building,  $t=.50$ ,  $p>.05$ . The summary of the paired t-test for cohort one is shown in Table 18.

Table 18. Summary of Paired Samples t-test for Number of Days Absent for Cohort 1

Paired Differences	MEAN Difference	T	Df	Sig. (2-tailed)
Cohort1 Attendance 2008 Attendance 2007	.24	.50	69	.62

For students in cohort two, the mean attendance for the 2007-2008 school year ( $M=5.93$ ,  $SD=5.10$ ) and the mean attendance for the 2006-2007 school year ( $M=4.96$ ,  $SD=4.37$ ) had a difference of one day. Descriptive statistics for cohort two, including the mean and standard deviation, are reported in Table 19.

Table 19. Descriptive Statistics for Mean Number of Days Absent for Cohort 2

Absence Comparisons	MEAN	Std. Dev.	N
Cohort 2 2007	4.96	4.37	83
Cohort 2 2008	5.93	5.10	83

A paired t-test was run to determine whether there was a difference in the attendance of cohort two students in the old building versus the new building. The results for the paired t-test for cohort two indicate that there was not a statistically significant difference in the attendance means of fourth-grade students in the old facility and the same students as fifth-graders in the new building,  $t=1.88$ ,  $p>.05$ . It is important to note that though the difference is not statistically

significant, it was very close to being significant at the  $p = .05$  level and should be carefully considered. The summary of the paired t-test for cohort two are shown in Table 20.

Table 20. Summary of Paired Samples t-test for Number of Absences for Cohort 2

Paired Differences	MEAN	T	Df	Sig.
	Difference			(2-tailed)
Cohort 2 Attendance 2008 Attendance 2007	.96	1.88	82	.06

#### *Findings for Research Question #4*

What is the relationship between behavior of urban elementary students in two cohorts (grade 3 to 4 and grade 4 to 5 )in Virginia and the condition of the school facility they attend?

For all students (cohorts one and two combined) who transitioned from the older facility to the newer facility, the mean number of behavior infractions committed for the 2007-2008 school year ( $M=.14$ ,  $SD=.58$ ) was almost half the mean number of behavior infractions committed for the 2006-2007 school year ( $M=.26$ ,  $SD=.92$ ). The means represent the average number of discipline infractions committed per student. Descriptive statistics, including the mean and standard deviation are reported in Table 21.

Table 21. Descriptive Statistics for Behavior Infractions Committed by Students

Cohorts 1 and 2 combined	MEAN	N	Std. Dev.
2007	.26	153	.92
2008	.14	153	.58

A paired t-test was run to determine whether there was a statistically significant difference between the number of behavior infractions committed by students who transitioned

from the older facility to the newer facility. A significance level of .05 was used for all statistical tests. The results follow.

The results for the paired t-test indicate that there appears to be a statistically significant difference in the number of behavior infractions committed by third- and fourth-grade students in the older facility and those same students as fourth- and fifth-grade students in the newer facility, ( $t=2.178$ ,  $p<.05$ ). However, it is not reasonable to make a conclusion because there were too many cases with zeros and the distribution was skewed. The summary of the paired t-test is shown in Table 22.

Table 22. Summary of Paired t-test for Behavior Infractions Committed by Students

	MEAN	T	Df	Sig.
Cohorts 1 and 2 Combined 2007-2008	.12	2.18**	152	.03

\*\* $p<.05$

When separated by cohort, the mean for the number of behavior infractions for the 2007-2008 school year ( $M=.06$ ,  $SD=.23$ ), and the mean for the number of behavior infractions during the 2006-2007 school year ( $M=.14$ ,  $SD=.46$ ) were similar for students in cohort one. The means represent the average number of discipline infractions committed per student. The number of discipline referrals decreased by half from 2007 to 2008. Descriptive statistics for cohort one, including the mean and standard deviation, are reported in Table 23.

Table 23. Descriptive Statistics for Mean Number of Discipline Infractions for Cohort 1

Behavior Infraction Comparisons	MEAN	N	Std. Dev.
Cohort 1 2007	0.14	70	0.46
Cohort 1 2008	0.06	70	0.23

A paired t-test was run to determine whether there was a statistically significant difference in the behavior of cohort one students in the old building versus the same students in the new building. A significance level of .05 was used for all statistical tests. The results follow.

The results of the paired t-test for cohort one indicate that there was not a statistically significant difference in the behavior means of third-grade students in the old facility and the same students as fourth-graders in the new building,  $t=-1.76$ ,  $p>.05$ . It is important to note that though the difference was not significant, it was very close to being significant at the  $p = .05$  level; however, it is not reasonable to make a conclusion because there were too few cases and too many cases with zero. The summary of the paired t-test for cohort one is shown in Table 24.

Table 24. Summary of Paired Samples t-test for Behavior of Cohort 1

Paired Differences	MEAN	T	Df	Sig.
	Difference			(2-tailed)
Cohort 1 Behavior 2008 Behavior 2007	-.09	-1.76	69	.08

A paired t-test was run to determine whether there was a difference in the behavior of cohort two students in the old building versus the new building. For students in cohort two, the mean of the number of behavior infractions for the 2007-2008 school year ( $M=.22$ ,  $SD=.75$ ), and the mean for the number of behavior infractions during the 2006-2007 school year ( $M=.36$ ,  $SD=1.17$ ) were similar. The means represent the average number of discipline infractions committed per student. The number of discipline referrals decreased from 2007 to 2008. Descriptive statistics for cohort two, including the mean and standard deviation, are reported in Table 25.

Table 25. Descriptive Statistics for Mean Number of Discipline Infractions for Cohort 2

Behavior Infraction Comparisons	MEAN	N	Std. Dev.
Cohort 2 2007	0.36	83	1.17
Cohort 2 2008	0.22	83	0.75

The results for the paired t-test for cohort two indicate that there was not a statistically significant difference in the behavior means of fourth-grade students in the old facility and the same students as fifth-graders in the new building,  $t=-1.59$ ,  $p>.05$ . The summary of the paired t-test for cohort two is shown in Table 26.

Table 26. Summary of Paired Samples t-test for Behavior of Cohort 2

Paired Differences	MEAN Difference	T	Df	Sig. (2-tailed)
Cohort 2 Behavior 2008 Behavior 2007	-.14	-1.59	82	.15

*Findings for Research-Question #5*

What is the relationship between building condition and student achievement, attendance, and behavior as it relates to gender?

A series of paired samples t-tests were conducted to determine if there were any differences between boys and girls in reading, mathematics, attendance, and behavior for students who transitioned from the older facility as third and fourth-grade students and those same students as fourth and fifth-graders in the newer facility. The difference between scores was used as the dependent variable, and gender was used as the independent variable.

The data tables show the descriptive statistics as well as summaries of the paired t-tests. The T value represents the statistical test used to determine whether there is a relationship

between the mean differences of boys and girls. For all girls (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL reading test (M=486.88, SD=70.09) was over 20 points higher than the mean score of the 2007 SOL reading test (M= 466.07, SD=74.44). For all boys (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL reading test (M=466.92., SD=72.28) was over 12 points higher than the mean score of the 2007 SOL reading test (M= 453.95, SD=72.28). When student cohorts were combined, the mean difference in reading scores for girls was 20.81, while the mean for boys was 12.97. Descriptive statistics, including the mean and standard deviation are reported in Table 27.

Table 27. Descriptive Statistics for Mean Gender Differences in Reading

Mean Gender Differences From 2007 to 2008 Cohorts 1 and 2 Combined	Actual Mean Scores		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Girls	466.07	486.88	20.81	70	74.44	70.09
Boys	453.95	466.92	12.97	83	66.56	72.28

When conducting a paired t-test on the difference of reading versus gender, gender had no significant effect on the difference of reading scores,  $t=.05$ ,  $p>.05$ . The boys and girls performed similarly with regard to difference of reading scores. The summary of the paired t-test is shown in Table 28.

Table 28. Summary of Paired t-test for Reading versus Gender

Paired Differences	MEAN Difference	T	Df	Sig.
Cohorts 1 and 2 Combined Difference in Reading Scores From 2007 to 2008				(2-tailed)
Girls	20.81	3.38	68	0.00**
Boys	12.96	2.02	83	0.05**
Boys vs. Girls	0.76	0.05	151	0.95

\*\*p<.05

A series of paired t-tests were also conducted for each cohort separately using the difference of scores as the dependent variable and gender as the independent variable to determine if there were any differences between boys and girls in reading, mathematics, attendance, and behavior. The purpose of conducting the paired t-tests was to determine the relationship between building condition and student achievement, attendance, and behavior as it relates to gender.

For girls in cohort one who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL reading test (M=479.06, SD=67.52) was over 28 points higher than the mean score of the 2007 SOL reading test (M= 450.34, SD=76.87). For all boys in cohort one who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL reading test (M=468.47, SD=88.94) was over 29 points higher than the mean score of the 2007 SOL reading test (M= 439.08, SD=60.07). For students in cohort one, the mean difference in reading scores for girls was 28.72, while the mean for boys was 29.46. Descriptive statistics for cohort one are reported in Table 29.

Table 29. Descriptive Statistics for Mean Gender Differences in Reading for Cohort 1

Mean Gender Differences from 2007 to 2008	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Girls	450.34	479.06	28.72	33	76.87	67.52
Boys	439.08	468.47	29.46	37	60.07	88.94

When conducting a paired t-test on the difference of reading versus gender in cohort one, gender had no significant effect on the difference of reading scores for cohort one ( $t=.05$ ,  $p>.05$ ). Though both groups improved, the boys and girls performed similarly with regard to difference of reading scores. The summary of the paired t-test for cohort one is shown in Table 30.

Table 30. Summary of Paired t-test for Reading versus Gender of Cohort 1

Paired t-test for Cohort 1				
Dependent Variable	MEAN Difference	T	Df	Sig
Difference in Reading Scores from 2007 to 2008				
Girls	28.72	3.09	31	0.00**
Boys	29.47	2.63	37	0.01**
Boys vs. Girls	0.76	0.05	68	0.96

\*\* $P<.05$

For girls in cohort two who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL reading test ( $M=493.65$ ,  $SD=72.48$ ) was over 13 points higher than the mean score of the 2007 SOL reading test ( $M= 479.68$ ,  $SD=70.49$ ). For all boys

in cohort two who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL reading test (M=465.63, SD=55.94) was almost identical to the mean score of the 2007 SOL reading test (M= 466.30, SD=69.72). For students in cohort two, the mean difference in reading scores for girls was 13.97, while the mean for boys was -.67. Descriptive statistics for cohort two are reported in Table 31.

Table 31. Descriptive Statistics for Mean Gender Differences in Reading for Cohort 2

Mean Gender Differences From 2007 to 2008	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Girls	479.68	493.65	13.97	37	70.49	72.48
Boys	466.30	465.63	-.67	46	69.72	55.94

When conducting a paired t-test on the difference of reading versus gender, gender had no effect on the difference of reading scores for cohort two ( $t=-1.41$ ,  $p>.05$ ). Although girls showed more improvement than boys, the difference was not significant. The summary of the paired t-test for cohort two is shown in Table 32.

Table 32. Summary of Paired t-test for Reading versus Gender of Cohort 2

Paired t-test for Cohort 2				
Dependent Variable	MEAN Differences	T	Df	Sig
Difference in Reading Scores From 2007 to 2008				
Girls	13.97	1.72	37	0.09
Boys	-0.67	-0.10	46	0.92

	-14.65	-1.41	81	0.16
Boys vs. Girls				

For all girls (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL mathematics test (M=472.45, SD=77.45) was over 28 points higher than the mean score of the 2007 SOL mathematics test (M= 444.13, SD=67.08). For all boys (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL mathematics test (M=468.55, SD=68.93) was over 12 points higher than the mean score of the 2007 SOL mathematics test (M= 456.05, SD=60.99). When student cohorts were combined, the mean difference in mathematics scores for girls was 28.32, while the mean for boys was 12.50. Descriptive statistics, including the mean and standard deviation are reported in Table 33.

Table 33. Descriptive Statistics for Mean Gender Differences in Mathematics

Mean Gender Differences From 2007 to 2008 Cohorts 1 and 2 Combined	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Girls	444.13	472.45	28.32	69	67.08	77.45
Boys	456.05	468.55	12.50	84	60.99	68.93

When conducting a paired t-test on the difference of mathematics versus gender, gender had no significant effect on the difference of mathematics scores,  $t=-1.60$ ,  $p>.05$ . The boys and girls performed similarly with regard to difference of mathematics scores. The summary of the paired t-test is shown in Table 34.

Table 34. Summary of Paired t-test for Mathematics versus Gender

Dependent Variable	MEAN Difference	T	Df	Sig
Cohorts 1 and 2 Combined Difference in Mathematics Scores From 2007 to 2008				
Girls	28.32	3.85	68	0.00**
Boys	12.50	1.89	83	0.06
Boys vs. Girls	-15.82	-1.60	151	0.11

For girls in cohort one who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL mathematics test (M=437.22, SD=69.85) was 16 points less than the mean score of the 2007 SOL mathematics test (M= 454.09, SD=66.62). For all boys in cohort one who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL mathematics test (M=444.50, SD=63.31) was over 24 points less than the mean score of the 2007 SOL mathematics test (M= 469.39, SD=60.49). For students in cohort one, the mean difference in mathematics scores for girls was -16.88, while the mean for boys was -24.90. Descriptive statistics for cohort one are reported in Table 35.

Table 35. Descriptive Statistics for Mean Gender Differences in Mathematics for Cohort 1

Mean Gender Differences	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
From 2007 to 2008						
Girls	454.09	437.22	-16.88	32	66.62	69.85
Boys	469.39	444.50	-24.90	38	60.49	63.31

When conducting a paired t-test on the difference of mathematics versus gender in cohort one, gender had no significant effect on the difference of mathematics scores for cohort one ( $t=-0.72, p>.05$ ). Though both groups improved, the boys and girls performed similarly with regard to difference of mathematics scores. The summary of the paired t-test for cohort one is shown in Table 36.

Table 36. Summary of Paired t-test for Mathematics versus Gender of Cohort 1

Paired t-test for Cohort 1				
Dependent Variable	MEAN Differences	T	Df	Sig
Difference in Mathematics Scores from 2007 to 2008				
Girls	-16.88	-2.38	31	0.02**
Boys	-24.89	-2.89	37	0.01**
Girls vs. Boys	-8.02	-0.72	68	0.47

\*\*P<.05

For girls in cohort two who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL mathematics test ( $M=502.92, SD=71.22$ ) was over 67 points higher than the mean score of the 2007 SOL mathematics test ( $M= 435.51, SD=67.18$ ). For all boys in cohort two who transitioned from the older facility to the new facility, the mean scaled score on the 2008 SOL mathematics test ( $M=488.41, SD=67.65$ ) was over 43 points higher than the mean score of the 2007 SOL mathematics test ( $M= 445.02, SD=59.82$ ). For students in cohort two, the mean difference in mathematics scores for girls was 67.41, while the mean for boys was 43.39. Descriptive statistics for cohort two are reported in Table 37.

Table 37. Descriptive Statistics for Mean Gender Differences in Mathematics for Cohort 2

Mean Gender Differences From 2007 to 2008	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Girls	435.51	502.92	67.41	37	67.18	71.22
Boys	445.02	488.41	43.39	46	59.82	67.65

When conducting a paired t-test on the difference of mathematics versus gender, gender made a significant difference on the effect on the difference of mathematics scores for cohort two ( $t=-2.26$ ,  $p>.05$ ). Though boys and girls both made statistically significant increases, for girls, the change in mathematics scores was greater than for males. The summary of the paired t-test for cohort two is shown in Table 38.

Table 38. Summary of Paired t-test for Mathematics versus Gender of Cohort 2

Paired t-test for Cohort 2

Dependent Variable	MEAN Difference	T	Df	Sig
Difference in Mathematics Scores From 2007 to 2008				
Girls	67.41	8.58	36	0.00**
Boys	43.39	6.09	45	0.00**
Boys vs. Girls	-24.01	-2.26	81	0.03**

\*\* $p<.05$

For all girls (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean number of days absent in 2008 ( $M=4.94$ ,  $SD=3.90$ ) was a third less than the mean number of days absent in 2007 ( $M= 4.62$   $SD=3.61$ ). For all boys (cohorts one and

two combined) who transitioned from the older facility to the new facility, the mean number of days absent in 2008 SOL (M=5.69, SD=5.08) was almost a day more than the mean number of days absent in 2007 (M= 4.80, SD=4.56). When student cohorts were combined, the mean difference in the number of absences for girls was .32, while the mean for boys was .89.

Descriptive statistics, including the mean and standard deviation are reported in Table 39.

Table 39. Descriptive Statistics for Mean Gender Differences in Absences

Mean Gender Differences From 2007 to 2008	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Cohorts 1 and 2 Combined						
Girls	4.62	4.94	.32	69	3.61	3.90
Boys	4.80	5.69	.89	84	4.56	5.08

When conducting a paired t-test on the difference of absences versus gender, gender had no significant effect on the difference of absences,  $t=0.83$ ,  $p>.05$ . The boys and girls performed similarly with regard to difference of absences. The summary of the paired t-test is shown in Table 40.

Table 40. Summary of Paired t-test for Number of Absences versus Gender

Dependent Variable	MEAN Difference	T	Df	Sig
Cohorts 1 and 2 Combined Difference in Number of Absences From 2007 to 2008				
Girls	0.32	0.73	68	0.47
Boys	0.89	1.65	83	0.10
Boys v. Girls	0.57	0.83	151	0.41

For girls in cohort one who transitioned from the older facility to the new facility, the mean number of absences in 2008 (M=4.31, SD=3.52) was similar to the mean number of absences in 2007 (M= 4.28, SD=3.06). For all boys in cohort one who transitioned from the older facility to the new facility, the mean number of absences in 2008 (M=4.97, SD=4.06) was only slightly higher than mean number of absences in 2007 (M= 4.55, SD=4.49). For students in cohort one, the mean difference in number of absences for girls was .03, while the mean for boys was .42. Descriptive statistics for cohort one are reported in Table 41.

Table 41. Descriptive Statistics for Mean Gender Differences in Attendance for Cohort 1

Mean Gender Differences	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
From 2007 to 2008						
Girls	4.28	4.31	.03	32	3.06	3.52
Boys	4.55	4.97	.42	38	4.49	4.06

When conducting a paired t-test on the difference of absences versus gender in cohort one, gender had no significant effect on the difference of absences for cohort one ( $t=0.40$ ,  $p>.05$ ). The summary of the paired t-test for cohort one is shown in Table 42.

Table 42. Summary of Paired t-test for Attendance versus Gender of Cohort 1

Paired t-test for Cohort 1				
Dependent Variable	MEAN Difference	T	Df	Sig
Difference in Attendance From 2007 to 2008				
Girls	0.03	0.05	31	0.96
Boys	0.42	0.59	37	0.56
Boys v. Girls	0.39	0.40	68	0.69

For girls in cohort two who transitioned from the older facility to the new facility, the mean number of absences in 2008 (M=5.49, SD=4.16) increased slightly over the mean number of absences in 2007 SOL (M= 4.92, SD=4.04). For all boys in cohort two who transitioned from the older facility to the new facility, the mean number of absences in 2008 (M=6.28, SD=5.77) increased about one day when compared to the mean number of absences in 2007 (M= 5.00, SD=4.66). For students in cohort two, the mean difference in number of absences for girls was .57, while the mean for boys was 1.28. Descriptive statistics for cohort two are reported in Table 43.

Table 43. Descriptive Statistics for Mean Gender Differences in Attendance for Cohort 2

Mean Gender Differences From 2007 to 2008	Actual Means		MEAN	N	Std. Dev.	
	2007	2008			2007	2008
Girls	4.92	5.49	.57	37	4.04	4.16
Boys	5.00	6.28	1.28	46	4.66	5.77

When conducting a paired t-test on the difference of absences versus gender, gender had no effect on the difference of absences for cohort two ( $t=-0.72$ ,  $p>.05$ ). The summary of the paired t-test for cohort two is shown in Table 44.

Table 44. Summary of Paired t-test for Attendance versus Gender of Cohort 2

Paired t-test for Cohort 2				
Dependent Variable	MEAN Difference	T	Df	Sig
Difference in Attendance From 2007 to 2008				
Girls	0.57	0.97	36	0.34
Boys	1.28	1.61	45	0.11
Boys vs. Girls	0.72	0.72	81	0.47

For all girls (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean number of behavior infractions committed in 2008 ( $M=0.04$ ,  $SD=0.27$ ) was very close to the mean number of behavior infractions committed in 2007

(M= 0.07, SD=0.26). For all boys (cohorts one and two combined) who transitioned from the older facility to the new facility, the mean number of behavior infractions committed in 2008 SOL (M=0.23, SD=0.73) was twenty percent higher than the mean number of behavior infractions committed in 2007 (M= 0.42, SD=1.20). When student cohorts were combined, the mean difference in the number of behavior infractions committed by girls was -.03, while the mean for boys was -.19. Descriptive statistics, including the mean and standard deviation are reported in Table 45.

Table 45. Descriptive Statistics for Mean Gender Differences in Behavior Infractions

Mean Gender Differences From 2007 to 2008	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Cohorts 1 and 2 Combined						
Girls	0.07	0.04	-.03	69	0.26	0.27
Boys	0.42	0.23	-.19	84	1.20	0.73

When conducting a paired t-test on the difference of behavior infractions versus gender, gender had no significant effect on the difference of behavior infractions committed,  $t=-1.49$ ,  $p>.05$ . The boys and girls performed similarly with regard to difference of behavior infractions committed. The summary of the paired t-test is shown in Table 46.

Table 46. Summary of Paired t-tests for Behavior Infractions versus Gender

Dependent Variable	Mean Difference	T	Df	Sig.
Cohorts 1 and 2 Combined Difference in Reading Scores From 2007 to 2008				
Girls	-0.03	-0.63	68	0.53
Boys	-0.19	-2.11	83	0.03
Combined	-0.16	-1.49	151	0.14

For girls in cohort one who transitioned from the older facility to the new facility, the mean number of behavior infractions committed in 2008 (M=0.00, SD=0.00) decreased slightly when compared to the mean number of behavior infractions committed in 2007 (M= 0.03, SD=0.18). For all boys in cohort one who transitioned from the older facility to the new facility, the mean number of behavior infractions committed in 2008 (M=0.11, SD=0.31) was 13% lower than the mean number of behavior infractions committed in 2007 (M= 0.24, SD=0.59). For students in cohort one, the mean difference in reading scores for girls was -.03, while the mean for boys was -.13. Descriptive statistics for cohort one are reported in Table 47.

Table 47. Descriptive Statistics for Mean Gender Differences in Discipline for Cohort 1

Mean Gender Differences From 2007 to 2008	Actual Means		MEAN Differences	N	Std. Dev.	
	2007	2008			2007	2008
Girls	0.03	0.00	-.03	32	0.18	0.00
Boys	0.24	0.11	-.13	38	0.59	0.31

When conducting a paired t-test on the difference of behavior infractions committed versus gender in cohort one, gender had no significant effect on the difference of behavior

infractions committed for cohort one ( $t=-1.11$ ,  $p>.05$ ). Though both groups showed slight decreases, the decreases were not statistically significant. Therefore, boys and girls performed similarly with regard to the number of behavior infractions committed. It is important to note that the distribution was not normal because there were many cases in which students had zero discipline infractions. The summary of the paired t-test for cohort one is shown in Table 48.

Table 48. Summary of Paired t-test for Behavior versus Gender of Cohort 1

Paired t-test for Cohort 1				
Dependent Variable	MEAN Difference	T	Df	Sig
Difference in Behavior				
Girls	-0.03	-1.00	31	0.33
Boys	-0.13	-1.53	37	0.13
Boys v. Girls	-0.10	-1.11	68	0.28

For girls in cohort two who transitioned from the older facility to the new facility, the mean number of behavior infractions committed in 2008 ( $M=0.08$ ,  $SD=0.36$ ) was 3% lower than the mean number of behavior infractions committed in 2007 ( $M= 0.11$ ,  $SD=0.31$ ). For all boys in cohort two who transitioned from the older facility to the new facility, the mean number of behavior infractions committed in 2008 SOL ( $M=0.33$ ,  $SD=0.94$ ) was 24% lower than the mean number of behavior infractions committed in 2007 ( $M= 0.57$ ,  $SD=1.53$ ). For students in cohort two, the mean number of behavior infractions committed by girls was  $-.03$ , while the mean for boys was  $-.24$ . Descriptive statistics for cohort two are reported in Table 49

Table 49. Descriptive Statistics for Mean Gender Differences in Discipline for Cohort 2

Mean Gender	Actual Means		MEAN	N	Std. Dev.	
	2007	2008			2007	2008
Differences						
Girls	0.11	0.08	-.03	37	0.31	0.36
Boys	0.57	0.33	-.24	46	1.53	0.94

When conducting a paired t-test on the difference of behavior infractions committed versus gender, gender had no effect on the difference of behavior infractions committed for cohort two ( $t=-1.24$ ,  $p>.05$ ). It is important to note that the distribution was not normal because there were many instances in which students had zero discipline infractions. The summary of the paired t-test for cohort two is shown in Table 50.

Table 50. Summary of Paired t-test for Behavior versus Gender of Cohort 2

Paired t-test for Cohort 2

Dependent Variable	MEAN Difference	T	Df	Sig
Difference in Behavior				
Girls	-0.03	-0.33	36	0.74
Boys	-0.24	-1.60	45	0.12
Boys vs. Girls	-0.21	-1.24	81	0.22

*Summary of Quantitative Results*

Paired t-tests were run to determine whether there were differences in achievement, attendance, and behavior when students transitioned from an old facility to a newly constructed facility. When cohorts one and two were combined, there was a statistically significant

difference in the reading, mathematics, and behavior means of third- and fourth- grade students in the older facility and the same students as fourth- and fifth-grade students in the newer facility. There was not a significant difference in their attendance. Students in cohort one performed significantly better in reading after the transition, but they showed no statistically significant differences in attendance and behavior. The students in cohort two performed significantly better in mathematics, but showed no statistically significant differences in reading achievement, attendance, and behavior.

A series of paired t-tests were conducted for each cohort separately and combined using the difference of scores as the dependent variable and gender as the independent variable. The paired t-test for gender versus reading achievement was not significant for either cohort separately or combined. There was not a statistically significant difference for cohort one or for the combined cohorts with regard to gender and mathematics. However, the paired t-test for gender versus mathematics achievement was significant for cohort two. There was a greater change in the scores of female students. The paired t-test for attendance and behavior were not statistically significant for either cohort separately or combined. Significance levels for quantitative results are summarized in Table 51.

Table 51. Summary of Significance of Paired t-tests from Quantitative Results

*Paired t-test*

	Reading	Mathematics	Attendance	Behavior
Cohort 1 3 <sup>rd</sup> to 4 <sup>th</sup>	Significant	Significant	Not Significant	Not Significant
Cohort 2 4 <sup>th</sup> to 5 <sup>th</sup>	Not Significant	Significant	Not Significant	Not Significant
Combined	Significant	Significant	Not Significant	Not Significant

*Paired t-test for Gender*

	Reading	Mathematics	Attendance	Behavior
Cohort 1	Not Significant	Not Significant	Not Significant	Not Significant
Cohort 2	Not Significant	Significant(Girls)	Not Significant	Not Significant
Combined	Not Significant	Not Significant	Not Significant	Not Significant

*Qualitative Data for Focus Groups*

The qualitative data in this study were collected through teacher, parent, and student focus groups. The researcher listened to the tape of each group and created abridged transcripts containing only the most essential dialogue to capture essential and germane discussions from the focus groups. Based on a review of the abridged transcripts, the researcher was able to code and categorize similar responses, thus allowing the emergence of themes. The transcripts of student, teacher, and parent focus groups are included in Appendix L.

*Summary for Research Question #6*

What do students in one urban southeastern Virginia Elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school they attend?

### *Student Focus Groups*

The researcher conducted two student focus groups. All student participants returned the parental consent form, which also included student assent (see Appendix D). Each of the two focus groups included eight randomly-selected participants from cohort one and cohort two. Group one was comprised of seven female students and one male student from cohort one who attended the older facility as third-graders during the 2006-2007 school year and the newly constructed facility as fourth-graders during the 2007-2008 school year. The second group was comprised of six female and two male students from cohort two who attended the older facility as fourth-graders during the 2006-2007 school year and the newly constructed facility as fifth-graders during the 2007-2008 school year. The focus groups were held after school for approximately one hour, during which the students were asked 11 questions (see Appendix F). An overview of focus group responses is presented as follows.

#### *Question 1.*

Tell me the differences between your former school and your current school?

The majority of the students identified increased space, cleanliness, and the abundance of technology as major differences between the former school and the current school. Students also made several comments regarding the elimination of mobile units for classrooms, the existence of more spacious resource areas, and the increase in technology within the building as differences between the two facilities.

In focus group one, a student shared, “The new school has an elevator and a larger media center (S1C1, Page 136, Line 5). Another student remarked, “The new school has SMART Boards and cameras and new computers. It has a track and a playground” (S3C1, Page 136, Line 6). A third participant commented, “The old school was dirty and unsafe; the roof was falling

off, and there were bugs. The new school has more activities for the kids like the playground (S7C1, Page 136, Line 23).

According to one participant in focus group two, “There are no trailers, and you don’t have to worry about getting carried away with the tornadoes” (S8C2, Page 143, Line 3). Another student exclaimed, “The art room was in a mobile. The music room was in a mobile. The PE room was small. Now they are inside and bigger! The gym is a gym and auditorium. The music room has space for more instruments, and the classrooms have lots of cabinets (S1C2, Page 143, Line 8). Another student stated, “The old building didn’t have math and science labs” (S4C2, Page 143, Line 16). One student added, “The new building has more technology than the old building. At first we didn’t have a computer lab, but now we do (S2C2, Page 143, Line 13).

*Question 2.*

Has being in your new school made a difference in your reading and mathematics grades? Explain.

Students in both groups felt that being in the current school made a difference in their reading and mathematics grades. These students cited reasons such as feeling more confident, having more resources, and using advanced technology as reasons for improvement in their grades.

In fact, a student in focus group one stated, “I feel smarter and more confident” (S2C1, Page 136, Line 34). Another chimed, “What I learned this year was awesome. I made B honor roll and learned the circumference of a circle (S1C1, Page 136, Line 36). Another student concluded, “We have new materials and Smart Boards to help us learn better” (S8C1, Page 136, Line 45).

In focus group two, students expressed similar sentiments and provided examples. One student answered frankly, “Yes, because I was doing bad but the Smart Board helps me in math”

(S2C2, Page 143, Line 29). Another student said proudly, “At the beginning of the year, my math grade was an E, and it went up to an A. And my reading grade was D, and it went to a B” (S5C2, Page 143, Line 33). Yet another student surmised, “In the new school, using new boards and textbooks, I brought my C in reading to an A, and my D in math to a B. So I say yes to the question” (S1C2, Page 143, Line 36). Despite the fact that one student’s grades “...stayed the same all year long” (S6C2, Page 144, Line 31), the majority of the students noted improvements.

*Question 3.*

Has the move to the current school had any influence on your study habits?

Students who believed that the current school had influenced their study habits, attributed the influence to a more conducive learning environment. Some students were influenced by the improvements in the instructional areas.

For example, a student in focus group one replied, “I concentrated more. Now since we have a new school, I am an honor student” (S2C1, Page 137, Line 48). Another student commented, “Last year the air was loud; now I hear better” (S3C1, Page 137, Line 50). Other students also shared that their study habits had been influenced “because of the new books and technology” (S8C1, Page 137, Line 58) and “because I’m in better surroundings” (S5C1, Page 137, Line 62).

In focus group two, participants made comments like, “There’s more space to study and read in the new school” (S2C2, Page 144, Line 53), and “It helped me understand reading more because I can go to the computer lab and do reading and math” (S5C2, Page 144, Line 57). One student also responded, “Yes, I’m more focused on my work than worrying about rats and roaches eating my work papers” (S8C2, Page 144, Line 60).

*Question 4.*

Has the way your teachers teach their classes changed from the former school to the current school?

Students overwhelmingly expressed that teaching performance had not only changed, but improved. They discussed the use of the SMART Boards and expressed that the ability to incorporate a variety of technology resources and computers had changed the way teachers taught.

In focus group one, one student stated, “They teach better” (S2C1, Page 137, Line 83). Another student replied, “We have SMART Boards and our teachers create Power Points” (S6C1, Page 137, Line 77). A third student commented, “Because we have the same teachers, they act the same way, but they’re using new stuff, and they have more space to put stuff” (S8C1, Page 137, Line 72).

In focus group two, one student commented that teachers “have more space to move around and they get to use the whiteboards instead of chalkboards” (S1C2, Page 144, Line 74). Similarly, another student described the change in teaching by stating, “The old school had an old board. Every time she wrote, it was like a fire drill. Now the SMART Board is computer technology” (S2C2, Page 145, Line 92). When noting the use of technology as a change in the way teachers taught, one student also said, “Now they do activities on the SMART Board and Turning Point to make learning more interesting” (S3C2, Page 144, Line 82).

*Question 5.*

Have you noticed any changes in the behavior of your classmates since moving to the current building? If so, how?

Students were very specific in describing behavior changes. Changes in behavior noted by students were the decrease in the number of fights and an improvement in attitudes towards classmates and towards learning in the current facility.

In focus group one, students reported a number of changes in the behavior of classmates. One student noticed, “There have been less fights” (S1C1, Page 137, Line 88). According to another student, “People don’t get picked on anymore” (S5C1, 138, Line 93). In addition, a student also commented, “In the girls bathroom, they would wet the toilet paper and throw it on the ceiling (in the older facility)” (S3C1, Page 138, Line 95).

In focus group two, one student noticed that classmates were “More relaxed and not irritated, more eager to learn than in the old school” (S4C2, Page 145, Line 90). One student stated, “They show more respect” (S6C2, Page 145, Line 98). Another student felt, “Kids care more because they know they are getting a better education” (S1C2, Page 145, Line 109).

#### *Question 6.*

Do you feel your behavior has changed since moving into the current building?

Students were evenly split about changes in their own behavior since moving into the current building. In both groups, behavior either stayed the same or got better.

In focus group one, a student replied, “I was always getting in trouble, but all that changed when I came to this school” (S8C1, Page 138, Line 104). Another student also said, “My behavior is really picking up. I finally changed from a bad way to a good way” (S3C1, Page 138, Line 113). In contrast, one student responded, “My behavior didn’t change at all. I am still a good student” (S4C1, Page 138, Line 116).

In focus group two, one student answered, “Yes, because when I was in the old school I used to have a bad attitude, but since I’ve been in the new school, my attitude to learn is growing

day-by-day” (S1C2, Page 145, Line 117). Another student also replied, “My behavior is different because I see the new school as a start over for me” (S8C2, Page 145, Line 123). One student responded, “No because I always have been nice to everyone and respected myself and my teachers. The only thing that changed about me is not to have fear of bugs” (S7C2, Page 145, Line 126).

*Question 7.*

Do you see any difference in the instructional areas of your current building from those of the former school building?

Students mentioned differences in technology, space, and lighting. They also discussed the new and improved media center.

In focus group one, a student said, “Our math and science labs are great” (S7C1, Page 138, Line 125). Another student described the differences by saying, “There’s more space to move around. The library is big, and we have a reading room” (S8C1, Page 138, Line 127). Yet another student replied, “They have more books, technology, computers, and more space” (S6C1, Page 138, Line 130). Another difference noted was the presence of “cubbies, TVs, SMART Boards” (S1C1, Page 139, Line 140).

In focus group two, students also described several differences. One student said, “Classrooms have SMART Boards” (S2C2, Page 146, Line 142). Another student said, “Now we have science labs” (S6C2, Page 146, Line 144). In addition, a student commented, “We have enough classrooms for everyone, and they’re bigger” (S7C2, Page 146, Line 151). One student described classrooms as “brighter” with “more room” (S8C2, Page 146, Line 157). This student also said, “Their wasn’t much space in the old building (S8C2, Page 146, Line 157).

*Question 8.*

Do you miss any features of your former building? If so, what are they?

Both groups one and two had varied responses. The responses included both features and non-features that the students missed.

In focus group one, one student missed “playing hide-and-seek around the mobiles” (S8C1, Page 139, Line 151), and another explained, “The mobiles were like a maze where you could play hide and seek” (S5C1, Page 139, Line 153). Another student missed “having a teacher table in the cafeteria” (S6C1, Page 139, Line 155).

In focus group two, one student remembered, “The upstairs classrooms in the old building didn’t have windows where people could look in and see you (S7C2, Page 146, Line 165). Another student stated, “The gym was a different room than the auditorium in the old building” (S5C2, Page 146, Line 168) . Another student commented, “The gym was actually larger in the old building, and we had basketball courts outside” (S6C2, Page 146, Line 171).

*Question 9.*

What features of your current building do you like most? Why do you like them?

Students cited the bright and colorful interior as features they like most. Recreational space and new technology were also favorite features. The students explained that these features made them proud of their new building.

In focus group one, students explained why they liked a number of features in the current building. One student said, “It has more space, and it is more modern” (S2C1, Page 139, Line 161). Another student said, “I like the mural on the wall. I like the flooring” (S5C1, Page 139, Line 170). Other students made comments like, “It has a computer room” (S1C1, Page 139, Line 174), and “Now we use SMART Boards and not chalk” (S7C1, Page 139, Line 176).

When describing favorite features, a student in focus group two exclaimed, “ It has an elevator. No mobiles! Now we don’t have to go outside to go to art or music” (S3C2, Page 147, Line 182). Another student commented, “ I like the sinks in the bathroom because

they turn on and off by themselves” (S5C2, Page 147, Line 194). According to one student, “I like the design of the building—the walls , floors and the roof. They are all unique” (S7C2, Page 147, Line 202).

*Question 10.*

What is different about the current building and the former building when you think about temperature, windows (natural light), lights, colors, noise, and safety?

Both groups stated that the temperature in the former building was usually very hot. They also agreed that temperature in the new building was cooler. In group one, a student said, “The old building was really hot” (S1C1, Page 140, Line 182). Another reiterated, “It’s not so hot in the new building,” (S3C1, Page 140, Line 192). In group two, a student said, “In the old building, the ac/heat used to break down” (S7C2, Page 147, Line 209), while another affirmed, “I think it stays comfortable (in the new building)” (S1C2, Page 147, Line 217).

With regard to windows, students felt that the current building had more windows and therefore, got more sunlight. They also stated that unlike the windows in the former building, the windows in the current building could actually be opened. In focus group one, one student elaborated, “There’s a lot of windows to see out of” (S3C1, Page 140, Line 199). Another participant also commented, “We have more sunlight and oxygen” (S1C1, Page 140, Line 201). According to one student in focus group two, “Windows get opened now” (S8C2, Page 148, Line 235). “We get more light,” remarked another student (S6C2, Page 148, Line 237).

When discussing lights, students expressed that the lighting in the former building was dim. They also recounted having lights that would blink off and on. According to one student, “You can see better” (S1C1, Page 140, Line 219). Another student recalled having “more lights” (S2C1, Page 140, Line 221). One student also described lights in the new building as “much brighter” (S3C1, Page 140, Line 223). A final student commented, “Lights have improved.

There are two light switches instead of one, so when we use the SMART Board, we can turn half the room off” (S8C1, Page 141, Line 233). A student in cohort two recalled, “The lights used to hang from the ceiling in the old building” (S3C2, Page 148, Line 252). In fact, one student said, “They used to flicker like a dead zone” (S5C2, Page 148, Line 254). Another student confirmed, “It was dim and dark and hard to see assignments” (S8C2, Page 148, Line 260).

Students described the former building as very noisy and described the new building as much quieter. Students also remembered being interrupted by noise in the former building. Specifically, one student said, “the old lunch room was very loud” (S2C1, Page 141, Line 243). . By comparison, however, when describing the new building, another student said, “Everything is quieter in the new building” (S6C1, Page 141, Line 247). Another student followed, “There’s barely any noise or interruptions” (S1C1, Page 141, Line 249). In focus group two, one student mentioned, “It’s quieter, and we can hear much better now” (S8C2, Page 149, Line 274). Another student described the new building as “more sound proof” and said, “Before, you could feel vibrations” (S2C2, Page 149, Line 277).

Colors in the former building were described as faded, dull, and bleak. The current building was described as colorful and eye-catching. In focus group one, one participant stated, “Our cafeteria has a nice mural on the wall. It brings out lots of color into the room” (S1C1, Page 141, Line 258). Another student described the colors as “eye-catching” (S3C1, Page 141, Line 266). One student went on to say, “The colors are bright and surprising” (S8C1, Page 141, Line 272). In group two, one student remarked, “No more dull gray” (S8C2, Page 149, Line 287). Another student stated, “More colors than before—turquoise, burgundy, yellow, beige, and blue” (S1C2, Page 149, Line 291). The last student comment on this topic was that, the colors were, but are no longer “dull and bleak” (S7C2, Page 149, Line 302).

Both groups agreed that the current building was safer. They felt the playground and wider stairs made the current school safer and attributed the safer environment to the cameras all over the school. A participant from focus group one shared, “It (the former building) didn’t have cameras” (S3C1, Page 142, Line 280). Another student also said, “Stairs are much stronger and not so rusty” (S1C1, Page 142, Line 282). Also, “The doors lock behind you”, interjected another student (S6C1, Page 142, Line 288). In focus group two, one participant two stated emphatically, “Cameras! Everywhere!” (S2C2, Page 149, Line 307). Another, sounding relieved, said, “There are no mobiles” (S7C2, Page 150, Line 319).

*Question 11.*

Is there anything else that you would like to say that you didn’t get a chance to say about your experience in the former building and the current building?

Both groups expressed positive feelings about the transition from the former building to the current building. In focus group one, a student shared, “I have a better environment to work in” (S8C1, Page 142, Line 295). Another student reflected, “I always wanted a school like this. This school changed my life. My whole family loves this school because of the track” (S1C1, Page 142, Line 304). A third student expressed, “I like my new school. It makes the neighborhood look better” (S5C1, Page 142, Line 312). In focus group two, one student said, “It’s fun with a new park. Everything is new. A lot of people are happy about the new school” (S3C2, Page 150, Line 327). Another student commented, “I like the colorful walls. They make me think harder. I used to be a bad student, but I’m not now” (S5C2, Page 150, Line 333). Another student shared, “I like the new school because I’ve been in the old school since pre-k and there are new things in the new school” (S2C2, Page 150, Line 346).

### *Findings for Research Question #7*

What do teachers in one urban southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility where they work?

#### *Teacher Focus Groups*

Two teacher focus groups, each with eight randomly-selected participants, were moderated by an assistant researcher to avoid conflict of interest with direct reports. All participants signed consent forms. Groups one and two were both comprised of teachers who taught third, fourth, or fifth-grades in the older facility during the 2006-2007 school year and in the newly constructed facility during the 2007-2008 school year. The years of teaching experience varied from 5-20 years for both groups. Group one averaged 11 years of teaching experience, and group two averaged 15 years of teaching experience. Group one included seven females and one male; six of the eight participants had master's degrees. Group two was comprised of eight females, four of whom had master's degrees. Demographic data is summarized in Table 52. The focus groups were held after school for approximately one hour, during which teachers were asked six questions (see Appendix G). The transcripts can be viewed in Appendix L.

Table 52. Summary of Teacher Focus Group Demographics

	Average Years of Teaching Experience	Highest Degree Received	Gender
Focus Group 1	11	6 master's 2 bachelor's	7 females 1 male
Focus Group 2	15	4 master's 4 bachelor's	8 females

*Question 1.*

Was there anything in the former building that hindered your teaching? Please describe and explain.

Teachers stated that technology and lighting hindered their teaching. They also named mobile units and lack of space as a hindrance to their teaching in the former building. For example, in focus group one, a teacher expressed, “Limited technology and lights that were low or didn’t work made the room dreary. There was only one copier for all the teachers to share” (T2C1, Page 151, Line 9). Another teacher remarked, “Limited storage space and outdated equipment were a hindrance” (T3C1, Page 151, Line 17). Another teacher commented at length, “I was housed in one of the mobiles, and I constantly feared for the safety of the students and other teachers. We had limited space and limited access to supplies, necessary facilities, media center, and cafeteria. It also contributed to more falls and asthma-related problems” (T6C1, Page 151, Line 21).

In focus group two, one teacher believed that some of the hindrances were “size of the classroom and (having) few computers” (T3C2, Page 157, Line 6). Another teacher said, “Being in the mobile and having horrible lighting” were also hindrances to teaching. Another teacher identified the “inadequacy of the media center and technology...” as being a hindrance to teaching (T1C2, Page 157, Line 20).

*Question 2.*

Are there features/factors of the current school facility that have enhanced your teaching? Please describe and explain.

Teachers believed that having instant access to technology resources and having enhancements in technology enhanced their teaching. Teachers also felt that the teacher-friendly design of the building enhanced their teaching. In focus group one, one teacher

commented, “The new building has brought life into my lessons. It helped to bring my lessons into the 21<sup>st</sup> century (T3C1, Page 151, Line 31). Another teacher stated, SMART Board activities allowed me to differentiate instruction and give learning a chance to compete against the graphics and excitement of video games that kids play at home” (T4C1, Page 151, Line 34). One teacher also asserted, “SMART Boards are good for teaching and practice. There are lots of computers for practice and differentiation. Teaching is interactive and (is) enhanced by technology” (T2C1, Page 152, Line 50).

According to a participant in teacher focus group two, “The design of the current school affords less transitioning time in movement from one activity to another such as going to lunch and resources. Classrooms are spacious and well-equipped with sinks, SMART Boards and restrooms. Students have less need to leave their classrooms. The media center and computer lab can accommodate more students, which allows more students an opportunity to utilize technology in their studies (T1C2, Page 157, Line 33). A second teacher in the group surmised, “SMART Board makes writing on a chalkboard obsolete. I was able to be more creative” (T7C2, Page 157, Line 44). Another teacher identified several features as having enhanced teaching, including, “using the Internet as a teaching tool- better technology, better lighting, better equipment, more storage” (T6C2, Page 158, Line 47).

*Question 3.*

Are there features/factors of the current school facility that have impacted student achievement? If so, what are they?

Teachers felt that using SMART Boards and computers impacted student achievement. They also felt that mathematics and science labs equipped with interactive technology also impacted student achievement. A participant in teacher focus group one indicated, “Technology in the building has exposed them to the newest equipment and software and higher level

thinking” (T3C1, Page 152, Line 63). Another teacher suggested, “The computer lab and the media center are the two main features that have had positive influence on student achievement because the students were able to receive additional remediation through the use of technology integration. There was also more space available for remediation (T6C1, Page 152, Line 70).

One participant in focus group two replied, “Students have access to more technology and spend more time-on-task” (T1C2, Page 158, Line 58). Another teacher indicated that among the factors of the current facility impacting student achievement were, “Having dedicated math and science labs where students could get hands-on lessons with manipulatives” (T5C2, Page 158, Line 60). In addition, one participant attributed the impact on student achievement to “computers, SMART Boards, safe building” and went on to say that “Students are academically challenged (T6C2, Page 158, Line 68).

#### *Question 4.*

Are there features/factors of the current school facility that have impacted student behavior? If so, what are they?

Both focus groups one and two stated that the newness and cleanliness of the current facility increased the pride and respect that students had for their school. In teacher focus group one, one teacher stated, “Pride in the new building impacted student behavior and performance” (T1C1, Page 152, Line 86). Another teacher shared, “I believe the children took [*sic*] better care of the building. The children didn’t write on the nice clean walls or on the bathroom stall” (T7C1, Page 152, Line 92). According to another participant, “The newness and cleanliness of the building has made students respect the school more. Plus constant interaction and hands-on activities like computers, SMART Boards, document readers, etc., keep students motivated” (T2C1, Page 153, Line 95). Another teacher indicated that among the features and factors that impacted student achievement in the newer facility were simply “being in a more modern

building with adequate space and know that the building is equipped with lots of safety features inside and outside like cameras...” (T6C1, page 153, Line 109).

A participant in focus group two believed that “the air quality, lighting and condition of the new facility” (T8C2, Page 158, Line 78) impacted student behavior. Another teacher explained, “Students were more willing to do work because they felt safe and had [*sic*] pride in the learning environment” (T5C2, Page 158, Line 84). Yet another teacher participant replied, “Students feel more a part of the community and less alienated like when they were in the mobiles. Every time they used to leave the classroom, their behavior used to fall apart because there was no way to monitor them” (T4C2, Page 159, Line 97).

*Question 5.*

Please describe the differences in your teaching, in student achievement, and in student behavior in the former building versus the current building in the following categories: lighting, thermal climate/temperature, outside areas, exterior noise, and technology.

Teacher responses for groups one and two were similar. Teachers believed that the lighting in the current facility was brighter and less dreary than in the former building. One participant in focus group one described the lighting in the older facility as “dreary” and felt that “it may have impacted the mood of students” (T7C1, Page 153, Line 131). Another teacher reiterated, “Lights constantly went out. It was somewhat disruptive. “Now lighting is good and evenly distributed” (T3C1, Page 153, Line 137). A participant in group one recalled, “Lights blew out frequently” in the older facility; however, this participant spoke of the lights in the new facility as “bright and easy to see” and described them as “great assets to teaching and learning” (T2C1, Page 154, Line 143).

Participants in group two expressed similar sentiments. One teacher shared, “Mobiles were dark and dreary. It was hard to see” (T2C2, Page 159, Line 109). Another teacher said,

“There were high ceilings with dim, faulty lighting. Now there are well-lit rooms and bright lights” (T7C2, Page 159, Line 113). Another participant believed that this improvement in lighting made a difference in teaching and learning and said, “Brightly lit rooms provide a more positive, happy atmosphere” (T1C2, Page 159, Line 125).

When discussing air conditioning, teachers expressed that the current facility’s air conditioning system provided a more comfortable climate than the outdated air conditioning window units. Teachers believed that the changes in temperature made a difference in student behavior and tension levels.

In group one, a participant noted that in the newer facility, “...Temperature is more controlled and has cleaner output, so the students are more capable of focusing on learning” (T4C1, Page 154, Line 158). Another teacher remembered having “no heat in winter (and) no air conditioning in spring...” in the older facility but described the temperature in the newer facility as “suitable for instruction to take place” (T7C1, Page 154, Line 162). A third participant believed that the old building was “unbearably hot ...” making students “cranky” (T3C1, Page 154, Line 166).

In group two, a teacher stated, “There were weeks with no heat in winter and no air on hot days. Now that the temperature is regulated, the climate is fine” (T7C2, Page 159, Line 136). Another teacher commented, “Improper air conditioning units irritated students” (T1C2, Page 159, Line 139). A third teacher also expressed, “Temperature is more at a comfortable level since we don’t have to go in and out of the mobiles” (T8C2, Page 160, Line 145).

Teachers commented that outside areas at the current facility have better landscaping and more spaces for students to play. According to one participant, the outside areas of the older facility were “unsafe and minimal for recreation” (T4C1, Page 154, Line 176). This teacher also indicated, “Time was lost traveling inside from mobile area. Being inside instead of outside in

mobiles has made achievement and teaching much better” (T4C1, Page 154, Line 176).

According to another participant, there are “...lots more playgrounds for the students to let off some steam” (T1C1, Page 154, Line 180), as opposed to the outside areas at former facility that one teacher described as “spacious but not really usable”(T6C1, Page 155, Line 194). A final participant said, “Landscaping and better designed areas are very beneficial to students” (T8C1, Page 155, Line 199).

In group two, a participant described the outside areas of the older facility as “restricted, decrepit, dangerous” (T6C2, Page 160, Line 155). Another teacher recalled, “Before there was not enough playground equipment. Very modern play equipment is good for students” (T5C2, Page 160, Line 157). One teacher stated, “We went from having no playground to having three playgrounds with a track. Kids can run off energy!” (T2C2, Page 160, Line 166). A final participant replied, “All resources and classes are inside, which is better” (T3C2, Page 160, Line 171).

With regard to noise, teachers heard very little in the newer facility, which they say minimized the number of distractions and interruptions during instructional time. In the former facility, they were frequently distracted by outside noise.

One participant in group one reflected, “Loud noise from lawn cutter and traffic was distracting. Being inside has eliminated all outside noise elements, and there are no distractions to hinder learning” (T4C1, Page 155, Line 205). Another said, “Having a two-story building has cut down on a lot of the outside noises from the neighborhood” (T8C1, Page 155, Line 208). In fact, one teacher replied, “Street sounds were sometimes distracting. No street sounds now” (T5C1, Page 155, Line 211).

This reduction in noise was echoed by a participant in group two who stated, “My class faced the road, and it used to be noisy right outside my window. My class still faces the road,

and there is no noise that distracts the classroom ( T7C2, Page 160, Line 175) Another teacher indicated that because the exterior noise in the newer facility is “muted”, it “doesn’t hinder instruction” (T6C2, Page 160, Line 184). In addition, another teacher commented, “We don’t hear as much playground noise as we did last year.” (T1C2, Page 161, Line 186).

Teachers noted that access to state-of-the-art technology in the current building had improved teaching and learning. They described technology in the former building as outdated and limited. A participant in group one conveyed, “Multimedia projector offers easy use of United Streaming and other educational sources” (T5C1, Page 155, Line 226). Another teacher said, “...SMART Board, computer lab, and at least six computers in class have been a great asset to teaching.” (T4C1, Page 155, Line 229). Another described the technology as “fabulous” and stated, “...I mean it has added extra to my lessons and increased student achievement” (T2C1, Page 156, Line 241).

In group two, a participant commented, “The new and improved technology truly impacts student learning” (T8C2, Page 161, Line 196). Another teacher said, “Because it’s wireless, we can use laptops in the rooms. Multiple computers in the media center and computer labs allow for (entire) classrooms to attend at one time” (T7C2, Page 161, Line 200). A third teacher indicated, “Technology was hard to access. Lessons are more hands on and interactive. Student achievement increases because their interest levels increase” (T6C2, Page 161, Line 206). A final participant concluded, “New technology keeps kids on task. We used to have three computers; now we have six, a document camera, SMART Board, and DVD/VCR combo.” (T2C2, Page 161, Line 209).

#### *Question 6.*

Please share any other experiences or information relating to the current building, its impact on teaching and learning, student achievement, and student behavior.

Teachers offered personal anecdotes about their experiences that included changes in school culture and improvements in their personal health as a result of the current facility. When asked to share reflections, a participant in focus group one gave the following response, “Overall, I am very pleased with the new facility; it’s like a giant Christmas present that you never out grow! (T4C1, Page 156, Line 259). Another said, “The new building seems to have increased student pride and achievement” (T3C1, Page 156, Line 264). In addition, another commented, “The new school creates a desire to come to school and a greater interest in learning” (T8C1, Page 156, Line 268).

A participant in focus group two gave the following response, “Everyone has a better attitude. The changes in the environment allow us to collaborate more. This is good for student achievement” (T8C2, Page 161, Line 219). Another commented, “This building instills a sense of pride in our students. They feel good about their school and they enjoy the new facilities and hands-on technology” (T4C2, Page 161, 222). One other teacher shared, “Our school is bright and inviting. Everything about our building encourages learning and acceptance” (T7C2, Page 161, Line 228). Another participant said, “Faculty, staff, students overall felt [*sic*] a sense of belonging, pride and safety during the instructional day. It’s a place to want to go to work. We see smiles on parents’ faces as they talk about the new school. We are glad the city cares about our urban population, which represents some of the poorest students” (T3C2, Page 162, Line 237).

#### *Findings for Research Question # 8*

What do parents in one urban southeastern Virginia Elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school their children attend?

### *Parent Focus Groups*

The researcher conducted two parent focus groups. All participants signed consent forms. Each focus group contained eight randomly-selected participants. Group one was comprised of parents whose children attended the older facility as third-graders during the 2006-2007 school year and the newly constructed facility as fourth-graders during the 2007-2008 school year. There were five females and three males. The second group was comprised of parents whose children attended the older facility as fourth-graders during the 2006-2007 school year and the newly constructed facility as fifth-graders during the 2007-2008 school year. The group consisted of six females and two males. The focus groups were held after school for approximately one hour, during which the parents were asked five questions (see Appendix F). The transcripts can be viewed in Appendix L.

#### *Question 1.*

What were the features/factors of the former school facility that hindered your child's achievement in reading and mathematics? Please describe and explain.

Parents believed that lighting and mobile units hindered achievement. They also expressed concern about temperature, air quality, and poor structural conditions.

A participant in focus group one believed that the former school facility was "in dire need of upgrading" (P3C1, Page 163, Line 10). Another parent commented, "Classrooms were too small" (P6C1, Page 163, Line 14). One parent also said, "The old building was very small and dark. It was very difficult attending school functions due to overcrowding in the gym" (P8C1, Page 163, Line 16). In addition, a parent stated, "The outside of the building had a lot of cosmetics done, but inside of the building, the air circulation or quality was not clean, and rodents!" (P1C1, Page 163, Line 19).

Participants in focus group two gave similar responses. One parent indicated, “The old school building was dark and unwelcoming. The bathrooms were not inviting, and my son and daughter chose not to use them.” (P2C2, Page 166, Line 12). Another parent shared, “The old building was in need of serious repairs and upgrades.” (P7C2, Page 166, Line 19). A third parent reiterated, “It needed to be torn down 12 years ago. It was in bad condition.” (P6C2, Page 166, Line 23).

*Question 2.*

Are there features/factors of the newly constructed school facility that have impacted your child’s achievement? If so, what are they?

Parents believed that the new technology and overall floor plan impacted achievement. They also felt that the modernization of the building was a factor that impacted achievement. One participant in focus group one felt that “better air quality” (P1C1, Page 163, Line 27) impacted achievement, while another believed it was the “new technology and overall floor plan” (P8C1, Page 163, Line 33). One parent commented, “I especially like the wide hallways. It seemed [*sic*] more conducive to a better learning environment” (P7C1, Page 163, Line 35).

A parent in focus group two stated, “The new building is more modern, spacious, and bigger.” (P5C2, Page 166, Line 28). In addition, another parent shared, “It is clean, spacious, and feels like the walls are not closing in.” (P1C2, Page 166, Line 34). According to one parent, “The resources, like the computer lab, is (*sic*) beneficial in helping students advance in this technological era.” (P7C2, Page 166, Line 19).

*Question 3.*

Have you noticed any difference in your child’s behavior in the current building?

Parents noticed that their children had more school pride, were more motivated, and were more excited about attending school. Parents also commented that their children’s attitudes

toward learning had improved and that students seemed eager to attend school regularly after moving to the current facility.

In focus group one, a parent shared, “My child is more excited to go to school. She used to complain about the old building being too cold and having bugs” (P7C1, Page 164, Line 53). Another parent revealed, “She has developed a sense of pride and school spirit” (P3C1, Page 164, Line 63). A third parent reflected, “It turned very positive this year. She was more focused. She wanted to become involved in more school activities. She was hoping there would have been a track team this school year.” (P8C1, Page 164, Line 65).

A participant in focus group two deduced, “My child was always a good student, but being in a new building really made him more excited and eager to be at school. (P1C2, Page 167, Line 50). Another disclosed, “I’ve noticed pride and a sense of belonging to something great.” (P5C2, Page 167, Line 53). One parent also stated, “He wanted to go to school everyday because he liked to go the computer room and the library. He would come home and tell me, “Mom, you have to see my school.” (P6C2, Page 167, Line 66).

#### *Question 4.*

What difference have you seen in the lighting, temperature, space, and safety in the current building?

Parents did notice differences in these features. They felt that there was an abundance of brighter lighting in the current building and that the temperature was more comfortable and less extreme. Parents also indicated that there was more space for students to move around and more space to park and agreed that the buzzer system and self-locking doors were added security features.

A participant in focus group one expressed, “Once the monitor was established at the front door, I saw more security. I believe the space allows more of the children to be

comfortable” (P2C1, Page 164, Line 74). According to one parent, “The old building was too hot in the summer, and too cold in the winter.” (P5C1, Page 164, Line 77). Another parent commented, “The building is huge!! I love the library. Lots of space.” (P3C1, Page 164, Line 87). One parent also agreed, “The new building is brighter. The temperature is comfortable, and it seems to be safer because they are no hanging ceilings.” (P7C1, Page 164, Line 89).

In focus group two, one parent explained, “The lighting makes it safe for our kids. There’s good temperature.” (P6C2, Page 167, Line 75). Another parent reported, “The space and lighting is definitely improved, especially the temperature! I do believe the gym should be larger or there should be a separate gym and auditorium. During programs, all of the parents do not fit.” (P8C2, Page 167, Line 83). A third parent concluded, “The new school is much brighter than the previous. My son has not complained about the temperature in the current school. Each season, winter and spring, the temperature has been adequately set. The classes are much larger and it appears that the school technology has greatly improved.” (P2C2, Page 168, Line 93).

#### *Question 5.*

Please share anything else you would like to tell me about any differences you have noticed in your child’s achievement in reading and mathematics and your child’s behavior as a result of moving to a new school facility?

Parent responses to this question were mixed in both focus groups. Parents who felt that the new building was responsible for differences in achievement, attributed the differences to technology and increased excitement about learning in the new facility. Parents who felt that achievement was due to factors other than new building, like good teaching, did acknowledge the benefits of the space and new learning resources afforded in the new facility.

In focus group one, a parent asserted, “My child improved. She went from making C’s to making A’s and B’s.” (P7C1, Page 165, Line 97). Another parent concurred and indicated that

the child was “more focused and enthused about work and projects” (P2C1, Page 165, Line 107). In contrast, however, one parent remarked, “I feel that my child’s achievement is a result of good parenting and encouragement and a good teacher, not a result of a new building. The new building does offer more resources and learning tools. The classes are bigger and more organized, offering room for more learning stations.” (P8C1, Page 165, Line 109).

A participant in focus group two implied that the “new school spiked an increase in achievement and interest” and allowed students to “perform research in more depth” (P5C2, Page 168, Line 109). Another participant commented, “I really know the new building and equipment made a great difference in children’s learning.” (P7C2, Page 168, Line 119). One parent concluded, “I look at it like moving into a new house. It makes you feel good inside and excited about the new change. My son has been here since pre-k, and I have seen a lot of changes between then and now, and as a parent, I’m very pleased with the changes and improvements” (P1C2, Page 168, Line 122).

#### *Summary of Qualitative Responses from Focus Groups*

Through focus group discussions, the researcher explored students’, parents’, and teachers’ perceptions of differences in achievement and behavior when students transitioned from an older school facility to a newly constructed school facility. All participants contributed to the discussion and gave heartfelt feedback about their experiences. These focus groups allowed the researcher to capture and document their valuable experiences and to understand the impact of a newly constructed facility. Three themes emerged in the focus groups: (1) the significance of technology in enhancing student achievement and instructional quality, (2) the feeling of pride as a catalyst for positive behavior, and (3) the impact of space, cleanliness, and lighting on behavior and achievement. The transcripts can be viewed in Appendix L. An overview of focus group responses is detailed in Table 53.

Table 53. An Overview of Focus Group Responses

	Student Cohort 1	Student Cohort 2	Teacher Cohort 1	Teacher Cohort 2	Parent Cohort 1	Parent Cohort 2
Temperature	X	X	X	X	X	X
Windows	X	X		X	X	X
Lighting	X	X	X	X	X	X
Acoustics	X	X	X	X		
Outside Areas	X	X	X	X	X	X
Technology	X	X	X	X	X	X
Safety	X	X	X	X	X	X
Colors	X	X		X	X	X
Exterior Noise			X	X		

## CHAPTER FIVE

### Summary of Findings, Discussion, Conclusions, Implications, Recommendations for Further Study

This mixed-methods study examined the relationship between facility condition and student achievement, attendance, and behavior. The researcher sought to determine whether a significant difference existed in the reading and mathematics achievement of students in grades three and four who transitioned from an older facility to a newly constructed facility as fourth and fifth graders. Scores from the Virginia Standards of Learning Tests in reading and mathematics were used to measure achievement. In addition to measuring achievement, the researcher also sought to determine whether there were differences in the number of absences, the number of discipline referrals, and the achievement of boys and girls.

Focus groups were held with students, parents, and teachers to explore their perceptions of the impact of a new facility on student achievement and behavior. Attendance was not directly addressed in focus group questions; it was examined through quantitative measures. However, some responses from teacher and parent participants addressed attendance indirectly. Students did not mention attendance directly or indirectly. These focus groups were conducted to provide rich description and to give voice to the quantitative findings. The findings of this study are limited to the sample population and do not assume generalization to other populations. This chapter will report these findings, discuss conclusions, compare findings to those of previous studies, give implications for practice, and make recommendations for further study.

## *Summary of Findings, Conclusions, and Comparisons to Previous Research*

### *Overarching Research Question*

What is the relationship between the condition of the facility and student achievement, attendance, and behavior when students in an urban elementary school in southeastern Virginia transition from an old facility to a new facility?

### *Summary of Findings for Research Question #1*

1. What is the relationship between reading scores on the Virginia Standards of Learning Test (SOL) of urban elementary students in two cohorts of students (grade 3 to 4 and grade 4 to 5) in Virginia and the condition of the school facility they attend?

When cohorts were combined the findings were significant, but when cohorts were separated, results varied. Results from cohort one were significant, but results from cohort two were not significant. The findings indicated that there is a statistically significant difference in the reading means of third- and fourth-grade students combined in the older facility and the same students as fourth- and fifth-grade students in the newer facility on the SOL reading test,  $t = -3.68, p < .05$

However, the findings also revealed that when separated by cohort, students who transitioned from the old school to the new school (grade 3 to grade 4) showed significant improvement in their SOL reading scores according to a paired t-test,  $t = 3.95, p < .05$ . The average score on the 2008 SOL reading test ( $M = 473.31, SD = 79.49$ ) was over 29 points higher than the mean score of the 2007 SOL reading test ( $M = 444.19, SD = 67.99$ ).

Previous facility studies were conducted by Cash (1993), Hines (1996), Lanham (1999), Lair (2003), and O'Sullivan (2007). These studies found that as building conditions improved, test scores improved. While the current study also noted reading improvement when the

condition of the facility improved, the increase indicates the existence of a relationship but does not assume that the facility alone caused the increase.

*Summary of Findings for Research Question #2*

2. What is the relationship between mathematics scores on the Virginia Standards of Learning Test (SOL) of urban elementary students in two cohorts of students (grade 3 to 4 and grade 4 to 5) in Virginia and the condition of the school facility they attend?

The findings indicated that there is a statistically significant difference in the mathematics means of third- and fourth-grade students combined in the older facility and the same students as fourth- and fifth-grade students in the newer facility on the SOL reading test,  $t=-3.75$ ,  $p<.05$ . However, the findings also revealed that when separated by cohort, one cohort of students who transitioned from the old school to the new school (grade 4 to grade 5) showed significant improvement in their SOL mathematics scores according to a paired t-test,  $t=10.00$ ,  $p<.05$  (grade 4 to grade 5). For students who transitioned from grade 4 to grade 5, the mean scaled score on the 2008 SOL mathematics test ( $M=494.88$ ,  $SD=69.22$ ) was 54 points higher than the mean score of the 2007 SOL mathematics test ( $M=440.78$ ,  $SD=62.99$ ).

Cash (1993), Hines (1996), Lanham (1999), and O'Sullivan (2007) found that as building conditions improved, test scores improved. While the current study also showed improved test scores when students transitioned to a newer facility, the increase indicates the existence of a relationship but does not assume that the facility alone caused the increase.

*Summary of Findings for Research Question #3*

3. What is the relationship between attendance of urban elementary students in two cohorts of students (grade 3 to 4 and grade 4 to 5) in Virginia and the condition of the school facility they attend?

The findings indicated that there is not a statistically significant difference in the number of absences of third and fourth-grade students in the older facility and the same students as fourth and fifth-grade students in the newer facility on the SOL reading test,  $t=-1.79$ ,  $P>.05$ .

Also, when separated by cohort, no statistically significant relationship was found to exist between facility condition and student absences according to paired t-tests,  $t=.50$ ,  $p>.05$  (grade 3 to grade 4) and  $t=1.88$ ,  $p>.05$  (grade 4 to grade 5). Therefore, the facility was not found to significantly impact attendance. For students who transitioned from grade 3 to grade 4, the mean number of absences for the 2007-2008 school year ( $M=4.67$ ,  $SD=3.81$ ) and the mean number of absences for the 2006-2007 school year ( $M=4.43$ ,  $SD=3.88$ ) were almost identical. For students who transitioned from grade 4 to grade 5, the mean number of absences for the 2007-2008 school year ( $M=5.93$ ,  $SD=5.10$ ) and the mean attendance for the 2006-2007 school year ( $M=4.96$ ,  $SD=4.37$ ) had a difference of one day.

Phillips (1997) found that there were statistically significant differences in the attendance of cohorts of elementary students. Unlike Phillips' study, the current study did not find attendance differences between cohorts to be significant.

#### *Summary of Findings for Research Question #4*

4. What is the relationship between the behavior of urban elementary students in two cohorts of students (grade 3 to 4 and grade 4 to 5) in Virginia and the condition of the school facility they attend?

The findings indicated that there appears to be a difference in the number of behavior infractions committed by third and fourth-grade students in the older facility and the same students as fourth and fifth-grade students in the newer facility,  $t=2.178$ ,  $p<.05$ . This finding shows that there were fewer behavior infractions committed by these same students when they

transitioned into a new facility. However, a conclusion can not be drawn because there were too many cases with zeros.

When separated by cohort, no statistically significant relationship was found between facility condition and student behavior according to paired t-tests,  $t=-1.76$ ,  $p>.05$  (grade 3 to grade 4) and  $t=1.88$ ,  $p>.05$  (grade 4 to grade 5). Therefore, the facility was not found to significantly influence behavior. For students who transitioned from grade 3 to grade 4, the mean for the number of behavior infractions for the 2007-2008 school year ( $M=.06$ ,  $SD=.23$ ), and the mean for the number of behavior infractions during the 2006-2007 school year ( $M=.14$ ,  $SD=.46$ ) were similar. For students who transitioned from grade 4 to grade 5, the mean of the number of behavior infractions for the 2007-2008 school year ( $M=.25$ ,  $SD=.75$ ), and the mean for the number of behavior infractions during the 2006-2007 school year ( $M=.36$ ,  $SD=1.17$ ) were similar.

Cash (1993) and Hines (1996) noted that the number of discipline infractions increased in better facilities. Unlike these previous studies, however; discipline was not found to have a relationship to facility condition in the current study.

#### *Summary of Findings for Research Question #5*

5. What is the relationship between building condition and student achievement as it relates to gender?

According to the findings, girls showed greater gains in reading, which suggests that gender played a role in the improvement. Though there was a difference in the gains of boys and girls, this difference did not reach statistical significance.

When student cohorts were combined, gender had no significant effect on the difference of reading scores ( $B=-7.87$ ,  $p>.05$ ) of third- and fourth-grade students in the older facility and the

same students as fourth- and fifth-grade students in the newer facility. The mean difference in reading scores for girls was 20.81, while the mean for boys was 12.97.

Even when students were separated by cohort, facility condition had no significant effect on the gender differences in reading scores for students who transitioned from the old school to the new school (grade 3 to grade 4 and grade 4 to grade 5). The boys and girls behaved in much the same way in the difference of reading scores. Therefore, the facility did have a positive influence on the achievement of girls in reading.

According to the findings of a second paired t-test that was run for both cohorts combined, gender had no significant effect on the difference of mathematics scores ( $B=-.15.8$ ,  $p>.05$ ) of third- and fourth-grade students in the older facility and the same students as fourth- and fifth-grade students in the newer facility. The mean difference in mathematics scores for girls was 28.32. However, when paired t-tests were also run for each cohort, another finding from this second paired t-test did reveal the existence of a statistically significant relationship between facility condition and the mathematics achievement of girls who transitioned from the old school to the new school (grade 4 to grade 5). The change in mathematics scores for female students was greater than the change in scores for male students.

An additional finding from the third paired t-test analyses indicated that gender had no significant effect on the difference of number of absences ( $B=-.57$ ,  $p>.05$ ). The mean difference in the number of absences for girls was .32, while the mean for boys was .89. When students were separated by cohort, no statistically significant relationship was found between facility condition and attendance with regard to gender. Facility condition had no effect on gender differences in attendance for students who transitioned from the old school to the new school (grade 3 to 4 and grade 4 to grade 5).

A final finding from the fourth paired t-test revealed that gender had no significant effect on the difference of number of behavior infractions ( $B=-.16$ ,  $p>.05$ ) for third- and fourth-grade students in the older facility and the same students as fourth- and fifth-grade students in the newer facility. The mean difference in behavior infractions for girls was  $-.03$ , while the mean for boys was  $-.19$ . In addition, no statistically significant relationship was found between facility condition and behavior with regard to gender when paired t-tests were run for each cohort separately. Facility condition had no effect on gender differences in behavior for students who transitioned from the old school to the new school (grade 3 to 4 and grade 4 to grade 5).

Following the initial paired t-tests, another series of paired t-tests were conducted with the cohorts combined and for each cohort separately using the difference in scores as the dependent variable and gender as the independent variable to determine if there were any differences between boys and girls in reading, mathematics, attendance, and behavior.

Al-Enzi (2002) found that a statistically significant relationship existed between building condition and student achievement for boys. The current study noted a difference in the mathematics achievement of girls, but there was no difference in the achievement of boys. The difference in achievement indicates the existence of a relationship but does not assume that the facility alone caused the difference.

#### *Summary of Findings for Research Question #6*

6. What do students in one urban, southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility they attend?

One finding was that students expressed that being in the newer facility made them feel more confident and gave them additional tools for learning. They perceived a difference in their reading and mathematics grades though statistical findings were mixed. In a study with findings

similar to those of the current study, Edwards (2006) discovered a connection between facility condition and student conduct, motivation, and achievement.

A second finding revealed that there was overwhelming student agreement that SMART Boards and new computer technology had changed the way their teachers taught. Edwards (2006) study, which found that participants felt hindered from achieving because of their “depressed” environment in an older facility, supports the findings of the current study, where participants felt that the resources available in a new facility actually improved teaching. This suggests that access to technology increased student interest even though it did not increase their achievement level.

A third finding was that students attributed their ability to concentrate and their organizational skills to improvements in the learning environment in the newer facility. In fact, students identified space, technology, lighting, and the elimination of mobile units as differences between the two facilities. Lemasters (1997) found that well-maintained facilities impact student achievement positively. However in this study, results showed that though the improvements made students more comfortable, it did not enhance their achievement levels conclusively.

A fourth finding indicated that the new facility improved school climate even though it did not improve achievement levels significantly. Changes in behavior revealed that students mentioned the decrease in the number of fights as the most noticeable change in behavior, followed by better attitudes toward learning. Though this finding was not statistically significant, the results were almost significant, which could explain why students held this perception. Overall, students expressed positive feelings about their transition to the new school. Lemasters (2007) had similar findings to the current study and noted that when the facility was adequate for the instructional needs, student behavior as well as student attitudes improved.

*Summary of Findings for Research Question #7*

7. What do teachers in one urban, southeastern Virginia elementary school perceive as the relationship between achievement, attendance, behavior, and the condition of the school facility they attend or work?

Findings revealed that teachers believed that the design of the building and having instant access to technology resources enhanced both their teaching and student learning. Teachers cited poor lighting, noise, limited technology, lack of space, and mobile units as features that hindered their teaching. Lemasters (1997) also found that noise not related to instruction impacts student learning negatively. Hughes (2005) found that the design variables in this study correlated to a statistically significant degree to student achievement in reading, science, and math. These findings are consistent with the perceptions by focus group participants in the current study.

In describing differences in teaching, achievement, and behavior, as a result of lighting, temperature, outside areas, exterior noise, and technology, teachers commented that lighting is better; temperature is comfortable; play areas are safer; noise is diminished, and technology is state-of-the-art. They also believed that mathematics and science labs impacted student learning.

Findings revealed that in terms of behavior, teachers believed that the newness and cleanliness of the facility instilled pride in the students, which emerged as one of the focus group themes. These findings are consistent with Lemasters (1997) findings that well-maintained facilities have an impact on student behavior.

Another finding revealed that teachers believed that the new facility contributed to changes in school culture. Lemasters (2007) had a similar finding in that certain types of lighting, which are generally associated with newer facilities, impact student health positively.

*Summary of Findings for Research Question #8*

8. What do parents of students in one urban southeastern Virginia elementary school

perceive as the relationship between achievement, attendance, and behavior, and the condition of the school facility that their children attend?

Findings revealed that parents felt that new technology, modernization, and an improved floor plan impacted achievement in the new facility. However, this perception was not supported by the findings. Parents stated that lighting, mobile units, temperature, air quality, and poor structural conditions hindered student achievement in the old facility. Lair found that cleanliness and school size had impacted achievement. Similarly, Hughes (2005) found that visual appearance and adequacy of space were important factors in achievement. In the current study, the impact of space, cleanliness, and lighting on behavior and achievement emerged as a theme.

Parents also perceived that improvements in behavior and attendance in the new facility as a result of increased school pride, greater motivation, better attitudes toward learning, and eagerness to attend school, which emerged as a focus group theme. This perceived improvement is not supported by the findings because although these attributes were present, they did not impact achievement. Participants perceived the condition of the facility as having a connection to their behavior, achievement, and motivation, and thus made students less inclined to take care of a school that was already in deteriorating condition. In the current study, the feeling of pride as catalyst for positive behavior emerged as a theme.

Some parents felt that differences in technology and increased excitement about learning definitely impacted achievement. This perception was not supported by the results. Other parents felt that achievement may not necessarily be a result of the new building; however, they did acknowledge the opportunities that space and learning resources afforded students. Edwards (2006) discovered a connection between facility condition and student conduct, motivation, and

achievement. In the current study, the feeling of pride as catalyst for positive behavior emerged as a theme.

A third finding revealed that parents felt improvements in safety and lighting impacted behavior and achievement in the new facility. Parents also made comparisons about lighting, temperature, space, and safety in both facilities. Overall, they noted that in the new building lighting was brighter; there were fewer temperature extremes; there was ample parking, and safety was enhanced.

There was a perception by student, teacher, and parent focus group participants that a relationship exists between the facility condition and student achievement and behavior. The qualitative analyses presented here are based on teacher, parent, and student focus groups. Three themes emerged in the focus groups. The significance of technology in enhancing student achievement and instructional quality emerged as a theme across student, teacher, and parent focus groups. The feeling of pride as a catalyst for positive behavior also emerged as a theme across focus groups. A third theme—the impact of space and lighting on behavior and achievement—emerged across focus groups. Previous meta-analyses, mixed-methods, and qualitative studies conducted by Lemasters (1997), Lair (2003), Hughes (2005), and Edwards (2006) also had findings that were similar in nature to the findings and themes that emerged from focus groups in the current study.

### *Implications for Practice*

This study has important implications for school districts and local governments with aging schools. The findings from this study will support and inform decision-makers with regard to school construction and renovation, as well as school restructuring. This study also has particular implications for the district in which this study was conducted. The district is currently involved in facilities planning. As such, leaders are now armed with the knowledge

that facility conditions have a relationship to reading achievement and mathematics achievement of elementary students.

Specifically, an important implication derived from the findings is the need to improve facility condition to improve student achievement and improve the quality of teaching. Such an implication is useful to the US Department of Education, governors, state boards of education, mayors and local governing bodies, superintendents, local school boards, and community stakeholders. This study and previous studies have shown that access to technology, lighting, space and cleanliness increase student performance in reading and mathematics. As such, schools need laptops for teachers, numerous computers per classroom, SMART Boards, a technology lab, access to wireless high-speed internet, spacious classrooms with adequate room for storage, well-lit classrooms, and bright open spaces. Spaces for additional resources like math and science labs also contribute to achievement.

Some studies have suggested the need to improve facilities to impact student behavior. These studies have noted improvements to student behavior and attitudes in facilities that are clean, well-maintained and adequate in space. Though this study did not show a statistically significant improvement in the number of discipline referrals, parents did perceive an improvement. Their perceptions and findings from previous studies seem to suggest that schools need to have comfortable temperature, clean windows and floors, clean restrooms, spaces for students to play and engage in recreational activities, and various safety measures, like security cameras, self-locking doors, and entry buzzers. These features have been shown to increase motivation, instill pride, limit conflict, increase feelings of security, and improve health. Some studies have also linked these factors to improving attendance because as participants in this study noted, students were eager and willing to attend school regularly in a newer facility. However, the data in this study did not show attendance differences to be significant.

An additional implication derived from the findings is that enhancing facility conditions improves parent perceptions regarding 1) the quality of education their children receive, 2) the safety and welfare of their children at school, and 3) the ability of the school facility to accommodate parents at school functions. Consequently, schools need to have sufficient recreation areas and be spacious, well-lit, and safe. All of these features instill pride, enhance parent perceptions of schools, and add value to the community.

Reading and mathematics achievement are the cornerstones of the No Child Left Behind Act of 2001 and are used to measure the progress of schools, school districts, and states annually. With these reading and mathematics benchmarks increasing each year, it is imperative that educational leaders find ways to increase student achievement. Improving facility conditions is a concrete step toward improving student achievement. This notion holds especially true for Title I schools like the research site, whose federal funding is tied to student achievement benchmarks for adequate yearly progress. For an urban district with a large number of Title I schools that are aging and deteriorating, improving facility conditions is a necessary step towards improving student achievement. The gains in student achievement that result from improvements in facility conditions bolster the argument for on-going school construction funding and future funding requests for school construction projects. Even in light of current economic uncertainties these findings provide legislators and tax payers the justification to expend funds to improve the facility conditions in urban schools.

#### *Recommendations for Further Study*

1. It would be important to conduct a qualitative case study over a two-year period documenting the transition from an older, deteriorating facility to newly constructed facility including focus groups and interviews. This would allow the transition process and perceptions to be documented as they occur. A case study would give insight into the reasons certain findings

occurred.

2. The current study could be replicated in lower elementary grades—kindergarten, first-grade, and second grade—using Phonological Awareness Literacy Screening (PALS), Developmental Reading Assessment (DRA), and/or Stanford Achievement Test (SAT 10) data in conjunction with videotaped focus groups. Conducting such a study, would provide insight into the impact of the facility on early literacy skills. Most previous studies have examined achievement of upper elementary and secondary students, but few studies have examined the impact of facility condition on the acquisition of early literacy skills. With the current federal and state initiatives in favor of early education, such a study would be relevant and timely.
3. Additionally, the current study could be replicated in middle and high schools to examine achievement, behavior, and attendance. It would also allow for exploration of perceptions of middle and high school teachers, parents, and students. Most studies to date have been either quantitative or qualitative. Few mixed-methods studies have been done with this population.
4. Replicating the current study in other geographic areas, in rural and suburban areas, and in schools with varying demographics could increase the generalizability of the findings. Similarly, replicating the study using multiple facility sites would increase sample size.
5. This study could be replicated by comparing students who transition from an old facility to a newer facility to students who remain in an older facility.

#### *Researcher Reflections*

This study allowed the researcher to examine the relationship between facility condition and student achievement, attendance, and behavior of elementary students who transitioned from an older facility to a newly constructed facility. The student participants in this study showed improvements in reading and mathematics achievement after transitioning to the new facility.

Students, parents, and teachers also shared their perceptions about the impact of the new facility, which added voice to the quantitative findings of the study. These participants gave their sincere responses during focus group discussions regarding facility features that either hindered or enhanced teaching and achievement. Overall, their perceptions regarding the impact of the new facility were very positive.

The findings from this study will add to the body of existing knowledge with regard to facility studies and provide support for the need to improve school facilities, which have been attributed to improving student achievement, behavior, and attendance. This study provides empirical data that must be considered when establishing the best learning environment for students. Students who are afforded quality educational experiences within a well-designed and well-maintained facility have increased achievement, behavior, and attendance. Certainly, the academic and social well-being of our children is worth the investment needed to improve school facility conditions. As previously stated, these findings are limited by the fact that the research was conducted in one school and one school division with a limited number of cohorts during a one-year period.

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## APPENDICES

APPENDIX A  
APPROVAL FROM INSTITUTIONAL REVIEW BOARD



Office of Research Compliance  
Institutional Review Board  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, Virginia 24061  
540/231-4991 Fax 540/231-0959  
e-mail moored@vt.edu  
www.irb.vt.edu

FWA00000572 (expires 1/20/2010)  
IRB # 16 IRB00000667

DATE: January 21, 2009

MEMORANDUM

TO: Travis W. Twiford  
Callie Richardson

Approval date: 1/20/2009  
Continuing Review Due Date: 1/5/2010  
Expiration Date: 1/19/2010

FROM: David M. Moore 

SUBJECT: **IRB Expedited Approval:** "School Facility Conditions, Student Achievement, and Attitude/Behavior in an Urban Elementary School in Southeastern Virginia", IRB # 09-018

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective January 20, 2009.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

**Important:**

If you are conducting **federally funded non-exempt research**, please send the applicable OSP/grant proposal to the IRB office, once available. OSP funds may not be released until the IRB has compared and found consistent the proposal and related IRB application.

cc: File

*Invent the Future*

VIRGINIA POLYTECHNIC INSTITUTE UNIVERSITY AND STATE UNIVERSITY

*An equal opportunity, affirmative action institution*

APPENDIX B  
APPROVAL FROM SCHOOL DISTRICT



**Norfolk Public Schools**  
NATIONALLY RECOGNIZED. GLOBALLY COMPETITIVE.

May 4, 2009

Mr. Callie M. Richardson  
Principal, Coleman Place Elementary School, Norfolk Public Schools  
Doctoral Candidate, Virginia Polytechnic Institute and State University (Virginia Tech)

Dear Mr. Richardson,

Your proposed educational doctoral research, “School Facility Conditions and Student Achievement, Attendance, and Behavior in an Urban Elementary School in Southeastern Virginia,” is approved for Coleman Place Elementary School in Norfolk Public Schools.

The research proposal meets NPS Research & Survey Policy ([www.nps.k12.va.us](http://www.nps.k12.va.us)) criteria, including:

- Voluntary participation allows each administrator, teacher, staff, student or parent to individually decide whether to participate, and may withdraw at any time without question or consequence.
- Participant names will remain anonymous and confidential in data collection. Aggregated results will be reported. Identifiable characteristics or linkage to the identity of any individual is prohibited.
- Approval does not constitute commitment of resources, endorsement of the study, or its findings by the school district or the School Board.
- Data collected and results will not become part of any student, teacher, principal, school, or district record. All research records must be locked in a secured location.
- Copy of the final report will be provided for the school district and sent to Dr. Flanagan (SEAS).

We look forward to your findings and contribution to instructional practice, program services, and achievement for *ALL* students.

Sincerely,  
Dr. Gail Flanagan, Ph.D.  
Senior Coordinator, Research & Evaluation  
Dept. Strategic Evaluation, Assessment & Support (SEAS)  
Norfolk City Public Schools  
[gflanagan@nps.k12.va.us](mailto:gflanagan@nps.k12.va.us) Office # 757-628-3852 Fax # 757-628-3925

cc: Karren Bailey, Executive Director, Strategic Evaluation, Assessment & Support (SEAS)

APPENDIX C  
PROCEDURES/PROTOCOL FOR FOCUS GROUPS

*Procedures/Protocol for Student Focus Groups*

Sent out parental consent notices describing the purpose of the focus group session, detailing logistics, and explaining the way in which results will be reported. The notice specified the scheduled date the child was requested to stay after school. Once students returned their parental consent, the researcher proceeded with conducting focus groups. Two focus groups were held after school in the media center.

*Script for Students*

Students, today as part of a research study, you will be asked to share information about your experiences in the new school compared to your experiences in the old school. You will be asked about any differences in your grades and your behavior and attendance and what features of the new building made your experience different. Before we begin, please write your age and gender on the index card that is placed in front of you. You are being asked to give this information, so that I will have identifying information about each person who participated in the group.

*Procedures/Protocol for Teacher Focus Groups*

The researcher scheduled teacher focus groups on two days after school. There were 25 teachers meeting the established criteria for participation in the focus group; sixteen were randomly selected and invited to participate.

### *Script for Teachers*

Teachers, today as part of a research study, you will be asked to share information about your experiences in the old school compared to your experiences in the new school. You will be asked if students' academic achievement in reading and mathematics is different, if their behavior and attendance are different, what features of the old building, if any, hindered your teaching, and what features of the new building impacted your teaching experience. Before we begin, please complete the data sheet.

### *Procedures/Protocol for Parent Focus Groups*

The researcher mailed recruitment letters, informed consent notices, and assent forms to parents describing the purpose of the focus group session, detailing logistics, and explaining the way in which results will be reported. The researcher followed up with a phone invitation. The notice specified the scheduled date for the after school focus group. Once informed consent notices were returned, the researcher proceeded with conducting focus groups. Two focus groups were held after school in the media center.

### *Script for Parents*

Parents, thank you for your time. Today as part of a research study, you will be asked to share information about your child's experiences in the new school compared to your child's experiences in the old school. You will be asked if your child's academic achievement in reading and mathematics is different, if your child's behavior and attendance are different, and what features of the new building, if any, impacted your child's experience.

APPENDIX D  
RECRUITMENT LETTER FOR CHILD'S PARTICIPATION IN RESEARCH

Date

Dear Parents:

My name is Callie M. Richardson. I am a doctoral student in the Educational Leadership and Policy Studies Department at Virginia Polytechnic Institute and State University. I am conducting a research study. The study will see if school building condition and student achievement, attendance, and behavior are linked. The study will use students in an urban elementary school in Virginia.

The purpose of this study is to learn if moving from an old school to a new school makes a difference. Does it make a difference in boys' and girls' reading and mathematics test scores, attendance, and behavior? The study will also look at if moving to a new school makes a difference in students' attitudes.

I would like your permission for your child to be in this research study. ***Participation in the study is voluntary.*** Students will participate in an informal focus group. They will talk about their attitudes, grades, and behavior in the old building and the new building.

This small-group conversation will take place after school for about 60 minutes. The session will be taped so that important ideas from the conversation can be written down by the researcher to share as a part of the study results. Your child's name will not be used when the researcher writes down important details from the tape. Only the researcher will have a copy of the tape. The tape will be destroyed at the end of the study. ***Comments made by students will be written mostly in summary form.*** Student responses will be given numbers so that students will not be identified by name. Transportation from school must be provided by parents.

A consent form is included with this letter. Please review it. If you give your permission for your child to participate, and your child wishes to participate, please sign the permission form. Have your child also sign the student form. Please return the permission form in the self-addressed stamped envelope. You can also send it to school with your child. If you have questions about this study, you may call me at (757) 852-4641. Thank you for your help in this research study.

Sincerely,

Callie M. Richardson

Attachments

APPENDIX E  
PARENTAL PERMISSION AND STUDENT ASSENT

**VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY**  
**Parental Permission for Minor Students**  
**in Research Projects Involving Human Subjects**

**Title of Project:** School Facility Conditions and Student Achievement, Attendance, Behavior, and Attitude in an Urban Elementary School in Southeastern Virginia

**Investigator(s)** Mr. Callie Richardson, Doctoral Student  
Dr. Travis Twiford, Faculty Advisor

**I. Purpose of this Research/Project**

The purpose of this study is to learn whether moving from an old school to a new school makes a difference in boys' and girls' reading and mathematics test scores, attendance, and behavior. It will also focus on whether moving to a new school makes a difference in students' attitudes. The researcher will hold six focus group conversations. Two focus groups will be for students. Two focus groups will be for parents. Two focus groups will be for teachers. Each group will have eight participants. The participants were selected because they were students who moved from the old building to the new building in third and fourth grades. The other participants were chosen because they are parents and teachers of those students.

**II. Procedures**

Once parents give permission and students agree to participate, students will stay after school on a specific date to participate in a focus group. Students will be asked to share information with the researcher about their experiences in the new school compared to their experiences in the old school. Students will be asked if their grades are different, if their behavior and attitudes are different, and what features of the new building, if any, made their experience different. At the beginning of each focus group session, students will be asked to write their age and gender on an index card. This small-group conversation will take place at the school in the media center after the students have been dismissed. It will last for about 60 minutes. Transportation from school must be provided by parents.

**III. Risks**

Participants are not at risk by their participation in the study. The researcher and university may not be held liable for any risks. The focus groups will be held at school in a safe, supervised setting. Also, students will be picked up from the session directly by their parents.

**IV. Benefits**

The study provides an opportunity to examine student achievement, attendance, and behavior in an eighty-year old school and compare the achievement of those same students as they moved into a new school. The city and the school district will consider the results as they discuss the benefits of replacing older schools.

**V. Extent of Anonymity and Confidentiality**

All subjects' names will be kept confidential. Each participant will be given a number; groups will take place in a private meeting area, and no sensitive information will be collected or disclosed. The session will be tape-recorded so that important ideas from the conversation can be written down by the researcher to share as a part of the study results. Your name will be kept anonymous and will not be used when the researcher writes down important ideas from the tape, and only the researcher will have a copy of the tape. This tape will be destroyed at the end of the study. Responses will be summarized by the researcher in a final research report.

**VI. Compensation**

No compensation will be provided for participants in the research study. No promise of benefits has been made to you.

**VII. Freedom to Withdraw**

Subjects are free to withdraw from a study at any time without penalty. Subjects are free not to answer any questions that they choose without penalty.

**VIII. Subject's Responsibilities**

I voluntarily agree to participate in this study. I have the following responsibilities: return signed consent form and participate in focus group conversation

**IX. Subject's Permission**

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent.

\_\_\_\_\_ Date \_\_\_\_\_  
Parent/Subject signature

**Student Assent Form**

I was selected for a research project because I went to an old school and then to a brand new school. I would like to talk about moving from my old school to my new school with seven other students and an adult. We will meet after school in the media center for sixty minutes, and my parent(s) will pick me up. In the small group, we will talk about our grades, our behavior, and what we liked and didn't like about the old building and the new building. I can ask questions, and I won't get in trouble if I don't want to answer questions or if I don't want to participate in the group with the other students. I can tell my parents that I want to participate in the group or that I don't want to participate.

- Yes, I want to participate. My parents said I can too.
- No, I do not want to participate.

\_\_\_\_\_ Date \_\_\_\_\_  
Student Name (in student's own handwriting)

Should I have any pertinent questions about this research or its conduct, and research subjects' rights, and whom to contact in the event of a research-related injury to the subject, I may contact:

Mr. Callie Richardson (757) 852-4641/[crichard2@nps.k12.va.us](mailto:crichard2@nps.k12.va.us)  
Investigator(s) Telephone/e-mail

Dr. Travis Twiford (757) 363 3930 ext. 306/[ttwiford@vt.edu](mailto:ttwiford@vt.edu)  
Faculty Advisor Telephone/e-mail

Dr. David Alexander (540) 231-5642/[mdavid@vt.edu](mailto:mdavid@vt.edu)  
Departmental Reviewer/Department Head Telephone/e-mail

David M. Moore 540-231-4991/[moored@vt.edu](mailto:moored@vt.edu)  
Telephone/e-mail  
Chair, Virginia Tech Institutional Review  
Board for the Protection of Human Subjects  
Office of Research Compliance  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, VA 24060

**NOTE:**

1) Please sign and return the original of the signed Permission Form.  
Parent and student should sign.  
(A self-addressed stamp envelope is included.)

2) Please sign the second copy, and keep it for your records.

APPENDIX F  
STUDENT FOCUS GROUP QUESTIONS

Student Focus Group Questions  
(Asked by researcher to facilitate discussion)

Tell me the differences between your former school and your current school?

Has being in your new school made a difference in your reading and your math grades? Explain.

Has the move to the current school had any influence on your study habits?

Has the way your teachers teach their classes changed from the former school to the current school?

Have you noticed any changes in the behavior of your classmates since moving to the current building? If so, how?

Do you feel your behavior has changed since moving into the current building? In what ways?

Do you see any difference in the instructional areas of your current building from those of the former school building. How have they changed?

Do you miss any features of your former building? If so what are they?

What features of your current building do you like the most? Why do you like them?

What is different about the former building and the current building when you think about?:

<b>Temperature</b>	<b>Windows (Natural Light)</b>
<b>Lights</b>	<b>Noise (Acoustics)</b>
<b>Colors</b>	<b>Safety</b>

Is there anything else that you would like to say that you didn't get a chance to say about your experience in the former building and in the current building?

APPENDIX G  
RECRUITMENT LETTER FOR EDUCATOR PARTICIPATION IN A RESEARCH STUDY

Date

Dear Teachers:

My name is Callie M. Richardson. I am a doctoral student in the Educational Leadership and Policy Studies Department at Virginia Polytechnic Institute and State University. My research study will look at whether school building condition and student achievement and behavior are linked. The study will take place in an urban elementary school in Virginia.

The purpose of this study is to see if moving from an old school building to a new school building makes a difference in boys' and girls' reading and mathematics test scores, attendance, and behavior. The study will also look at if moving to a new school makes a difference in student attitudes.

I am asking that you participate in a focus group. The session will last about 60 minutes. It will be tape-recorded so that important ideas from the conversation can be written down by the researcher to share as a part of the study results. Your name will not be used when the researcher writes down important ideas from the tape. Only the researcher will have a copy of the tape. The tape will be destroyed at the end of the study. ***Participation in the study is voluntary.*** ***Responses will be used mostly in summary form.*** Your responses will be identified by number only. The study has no relationship to your job performance. There will be no consequences at your work place.

If you have questions about this study you may call me at (757) 852-4641. A consent form is included with this letter. Please review it. If you agree to participate, please sign the form. Return the consent form in the self-addressed stamped envelope. Thank you for your help in this research study.

Sincerely,

Callie M. Richardson

Attachments

## APPENDIX H INFORMED CONSENT

09-018

### VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY Informed Consent for Participants in Research Projects Involving Human Subjects

**Title of Project:** School Facility Conditions and Student Achievement, Attendance, Behavior, and Attitude in an Urban Elementary School in Southeastern Virginia

**Investigator(s)** Mr. Callie Richardson, Doctoral Student  
Dr. Travis Twiford, Faculty Advisor

#### **I. Purpose of this Research/Project**

The purpose of this study is to learn whether moving from an old school to a new school makes a difference in boys' and girls' reading and mathematics test scores, attendance, and behavior. It will also focus on whether moving to a new school makes a difference in students' attitudes. The researcher will hold six focus group conversations. Two focus groups will be for students. Two focus groups will be for parents. Two focus groups will be for teachers. Each group will have eight participants. The participants were selected because they were students who moved from the old building to the new building in third and fourth grades. The other participants were chosen because they are parents and teachers of those students.

#### **II. Procedures**

Teachers will stay after school on a specific date to participate in a focus group. Teachers will be asked to share information with the researcher about their students' achievement, attitude, and behavior in the new school. They will also be asked to compare to their experiences in the old school and the new school. Teachers will be asked if achievement and behavior are different. They will share what features of the new building, if any, influenced their teaching. At the beginning of each focus group, teachers will complete a data sheet. The data sheet asks for their years of teaching, gender, and highest degree earned. Participants will include classroom teachers and instructional resource teachers. These are teachers who taught in the old school in 2006-2007, taught in the new school in 2007-2008, and worked with the student population. This small-group conversation will take place at the school in the media center after dismissal. It will last for about 60 minutes. Teachers will be assured that their participation has no relationship to their job. The focus group will have no consequences at their work place.

#### **III. Risks**

Participants are not at risk by their participation in the study. The researcher and university may not be held liable for any risks. The focus groups will be held at school in a safe, supervised setting. Also, students will be picked up from the session directly by their parents.

#### **IV. Benefits**

Virginia Tech Institutional Review Board: Project No. 09-018  
Approved January 20, 2009 to January 19, 2010

The study provides an opportunity to look at student achievement, attendance, and behavior in an eighty-year old school. It will also allow the researcher to compare the achievement of those same students as they moved into a new school. The city and the school district will consider the results as they discuss the benefits of replacing older schools.

#### **V. Extent of Anonymity and Confidentiality**

All subjects' names will be kept confidential. Each participant will be given a number. Groups will take place in a private meeting area. No sensitive information will be collected or shared. The session will be tape-recorded so that important ideas from the conversation can be written down by the researcher to share as a part of the study results. Your name will be kept anonymous. It will not be used when the researcher writes down important ideas from the tape. Only the researcher will have a copy of the tape. This tape will be destroyed at the end of the study. Responses will be summarized by the researcher in a final research report.

#### **VI. Compensation**

No compensation will be provided for participants in the research study. No promise of benefits has been made to you.

#### **VII. Freedom to Withdraw**

Subjects are free to withdraw from a study at any time without penalty. Subjects are free not to answer any questions that they choose without penalty.

#### **VIII. Subject's Responsibilities**

I voluntarily agree to participate in this study. I have the following responsibilities: return signed consent form and participate in focus group conversation

#### **IX. Subject's Permission**

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

\_\_\_\_\_ Date \_\_\_\_\_

Subject signature

Should I have any pertinent questions about this research or its conduct, and research subjects' rights, and whom to contact in the event of a research-related injury to the subject, I may contact:

Mr. Callie Richardson (757) 852-4641/crichard2@nps.k12.va.us  
Investigator(s) Telephone/e-mail

Dr. Travis Twiford (757) 363 3930 ext. 306/ttwiford@vt.edu  
Faculty Advisor Telephone/e-mail

Dr. David Alexander (540) 231-5642/mdavid@vt.edu  
Reviewer/Department Head Telephone/e-mail

David M. Moore 540-231-4991/moored@vt.edu  
Telephone/e-mail  
Chair, Virginia Tech Institutional Review  
Board for the Protection of Human Subjects  
Office of Research Compliance  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, VA 24060

- NOTE: 1)Please sign and return the original of the signed Informed Consent.  
(A self-addressed stamp envelope is included.)**
- 2)Please sign the second copy, and keep it for your records.**

APPENDIX I  
TEACHER FOCUS GROUP QUESTIONS AND DATA SHEET

Teacher Data Sheet

# of years teaching:

Highest degree earned:

Gender:

Teacher Focus Group Questions  
(Asked by researcher to facilitate discussion)

Was there anything in the former building that hindered your teaching? Please describe and explain.

Are there features/factors of the current school facility that have enhanced your teaching? Please describe and explain.

Are there features/factors of the current school facility that have impacted student achievement? If so, what are they?

Are there features/factors of the current school facility that have impacted student behavior? If so, what are they?

Please describe the **differences** in your teaching, in student achievement, and in student behavior in the former building versus the current school facility in the following categories.

	Old Building	New Building
Lighting		
Thermal Climate/Temperature		
Outside Areas		
Exterior Noise		
Technology		

Please share any other experiences or information relating to the current building, its impact on teaching and learning, student achievement, and student behavior.

APPENDIX J  
RECRUITMENT LETTER FOR RESEARCH PARTICIPANT

[Date]

Dear Parents:

My name is Callie M. Richardson. I am a doctoral student in the Educational Leadership and Policy Studies Department at Virginia Polytechnic Institute and State University. I am doing research to see if there is a link between school building condition and student achievement, attendance, and behavior. The study will take place in an urban elementary school in Virginia.

The purpose of this study is to learn if moving from an old school to a new school makes a difference in boys' and girls' reading and mathematics test scores, attendance, and behavior. It will also see if moving to a new school makes a difference in students' attitudes.

I am requesting your participation in a focus group. You will be asked to share your thoughts about your child's achievement, behavior, and attitude in the new building and the old building. This small-group conversation will take place at the school after dismissal. It will last for about 60 minutes. The session will be tape-recorded so that important ideas from the conversation can be written down by the researcher to share as a part of the study results. Your name will not be used when the researcher writes down important ideas from the tape. Only the researcher will have a copy of the tape. This tape will be destroyed at the end of the study.

Child care can be provided for up to two school-age children. ***Participation in the study is voluntary. Your responses will be used in summary form.*** You will not be identified by name.

A permission form is included with this letter. Please review it. If you agree to participate, please sign the form. Return it in the self-addressed stamped envelope. If you have questions about this study, you may call me at (757) 852-4641. Thank you for your help in this research study.

Sincerely,

Callie M. Richardson

Attachments

APPENDIX K  
PARENT FOCUS GROUP QUESTIONS

Were there features/factors of the former school facility that hindered your child's achievement in reading and mathematics? Please describe and explain.

Are there features/factors of the current school facility that have impacted your child's achievement? If so, what are they?

Have you noticed any difference in your child's behavior in the current building?

What difference have you seen in the lighting, temperature, space, and safety in the current building?

Please share anything else you would like to tell me about any differences you have noticed in your child's achievement in reading and mathematics and your child's behavior as a result of moving to the current school facility.

APPENDIX L

STUDENT, TEACHER, AND PARENT FOCUS GROUP INTERVIEW TRANSCRIPTS

1 Student Focus Group One Transcript March 14, 2009

2  
3 **Question 1. Tell me the differences between your former school and your current school?**

4  
5 Student 1: The new school has an elevator and a larger media center.

6  
7 Student 3: The old school had stinky bathrooms and bugs. The new school has things  
8 like clean toilets and no bugs or insects.

9  
10 Student 6: The new school has Smart Boards and cameras and new computers. It has  
11 a track and a playground.

12  
13 Student 8: The new school has bigger bathrooms and more stalls, so we don't have to  
14 stand in line and wait.

15  
16 Student 2: We have Smart Boards rather than just regular boards.

17  
18 Student 4: The old school was nasty and rotting. The new building is much cleaner.  
19 They shine the floor more and clean up better. This school is like a mansion.

20  
21 Student 5: There is a plasma screen in the lunchroom.

22  
23 Student 7: The old school was dirty and unsafe; the roof was falling off, and there  
24 were bugs. The new school has more activities for the kids like the playground.

25  
26 **Question 2. Has being in your new school made a difference in your reading and**  
27 **mathematics grades? Explain.**

28  
29 Student 7: Yes, because in math I can use new tools.

30  
31 Student 5: I made improvement in my reading. There were words and meanings I  
32 didn't understand.

33  
34 Student 2: I feel smarter and more confident.

35  
36 Student 1: What I learned this year was awesome. I made B honor roll and learned the  
37 circumference of a circle.

38  
39 Student 3: I think the new school changed my grades because of the new teaching supplies.

40  
41 Student 6: It is a new learning environment, and I learn better.

42  
43 Student 4: It has not changed my grades.

44  
45 Student 8: We have new materials and Smart Boards to help us learn better.

46

47 **Question 3. Has the move to the current school had any influence on your study habits?**

48 Student 2: I concentrated more. Now since we have a new school, I am an honor student.

49

50 Student 3: Last year the air was loud, now I hear better.

51

52 Student 1: My reading level went from 4.0 to 6.8 probably because I read more.

53

54 Student 4: Yes, I get more help at the new school.

55

56 Student 7: No it's still the same.

57

58 Student 8: Yes because of new books and technology. It is easier.

59

60 Student 6: No. Even though I'm in a new school, I can learn the same things.

61

62 Student 5: Yes, because I'm in better surroundings.

63

64 **Question 4. Has the way your teachers teach their classes changed from the former school**  
65 **to the current school?**

66

67 Student 3: There's no difference to me because they're just acting the same.

68

69 Student 4: My teacher teaches better now because she has a SMART Board, which is really  
70 cool.

71

72 Student 8: Because we have the same teachers, they act the same way, but they're using new  
73 stuff, and they have more space to put stuff.

74

75 Student 5: She is teaching us better with all these materials. Students are learning better.

76

77 Student 6: We have SMART Boards and our teachers create Power Points.

78

79 Student 1: They are the same.

80

81 Student 7: They're being more strict.

82

83 Student 2: They teach better.

84

85 **Question 5. Have you noticed any changes in the behavior of your classmates since moving**  
86 **to the current building? If so, how?**

87

88 Student 1: There have been less fights.

89 Student 2: There's not as many fights as there were last year.

90

91 Student 6: Yes, because a lot of people do not fight anymore.  
92  
93 Student 5: People don't get picked on anymore.  
94  
95 Student 3: In the girls bathroom, they would wet the toilet paper and throw it on the ceiling  
96  
97 Student 4: They have matured.  
98  
99 Student 7: Some people used to be quiet and nice, but this year they are kind of bad.  
100  
101 Student 8: My friends are the same. We're just in another grade.  
102

103 **Question 6. Do you feel your behavior has changed since moving into the current building?**

104 Student 8: I was always getting in trouble, but all that changed when I came to this  
105 school.  
106  
107 Student 6: It changed my behavior a little  
108  
109 Student 7: I have never been that good.  
110  
111 Student 5: My behavior has been better.  
112  
113 Student 3: My behavior is really picking up. I finally changed from a bad way to a  
114 good way.  
115  
116 Student 4: My behavior didn't change at all. I am still a good student.  
117  
118 Student 2: I have been bad.  
119  
120 Student 1: Nothing changed in my behavior.  
121

122 **Question 7. Do you see any difference in the instructional areas of your current building**  
123 **from those of the former school building?**  
124

125 Student 7: Our math and science labs are great.  
126  
127 Student 8: There's more space to move around. The library is big, and we have a  
128 reading room.  
129  
130 Student 6: They have more books, technology, computers, and more space.  
131  
132 Student 5: There is a teacher's lounge for copies.  
133  
134 Student 4: More windows  
135

136 Student 3: It's clean and fresh, not old and moldy.

137

138 Student 2: No mobiles.

139

140 Student 1: We have cubbies, tvs, SMART Boards.

141

142 **Question 8. Do you miss any features of your former building? If so, what are they?**

143 Student 1: I miss some of the old teachers.

144

145 Student 3: The pre-k classes had 2 doors.

146

147 Student 2: I miss the shade in the back playground.

148

149 Student 4: The anti-bacterial soap smelled good.

150

151 Student 8: Playing hide-and-seek around the mobiles.

152

153 Student 5: The mobiles were like a maze where you could play hide and seek.

154

155 Student 6: Having a teacher table in the cafeteria

156

157 Student 7: I miss fun Fridays.

158

159 **Question 9. What features of your current building do you like most? Why do you like**  
160 **them?**

161 Student 2: It has more space, and it is more modern.

162

163 Student 3: The new school has a track, basketball court, three playgrounds, and  
164 a big field to play in.

165

166 Student 8: New lunch tables are better than the old ones.

167

168 Student 4: Very big music and art room

169

170 Student 5: I like the mural on the wall. I like the flooring.

171

172 Student 6: This school has more mirrors.

173

174 Student 1: It has a computer room.

175

176 Student 7: Now we use SMART Boards and not chalk.

177

178 **Question 10. What is different about the current building and the former building when**  
179 **you think about temperature, windows (natural light), lights, colors, noise,**  
180 **and safety?**

181  
182 Student 1: The old building was really hot.  
183  
184 Student 8: It stays colder in the summer and warmer in the winter.  
185  
186 Student 4: It's very cold.  
187  
188 Student 7: Sometimes I need a sweater.  
189  
190 Student 2: It was warmer than it is now.  
191  
192 Student 3: It's not so hot in the new building.  
193  
194 Student 6: cooler  
195  
196 ***What is different about the current building and the former building when you think about***  
197 ***windows (natural light)?***  
198  
199 Student 3: There's a lot of windows to see out of.  
200  
201 Student 1: We have more sunlight and oxygen.  
202  
203 Student 4: People look in and there's not as much privacy.  
204  
205 Student 2: Windows have different shapes—squares, rectangles.  
206  
207 Student 5: They are sparkly and cleaner.  
208  
209 Student 8: They are easier to open.  
210  
211 Student 6: Windows were closed in the old building.  
212  
213 Student 7: They used to get stuck.  
214  
215  
216 ***What is different about the current building and the former building when you think about***  
217 ***lights?***  
218  
219 Student 1: You can see better.  
220  
221 Student 2: More lights  
222  
223 Student 3: It's much brighter.  
224  
225 Student 4: Lights are bright and shiny.  
226

227 Student 6: All lights are on at all times.  
228  
229 Student 5: They come right on.  
230  
231 Student 7: And the lights stay on and don't flicker.  
232  
233 Student 8: Lights have improved. There are two light switches instead of one, so when we use  
234 the SMART Board, we can turn half the room off.  
235

236 ***What is different about the current building and the former building when you think about***  
237 ***acoustics (noise)?***

238  
239 Student 3: It was very noisy.  
240  
241 Student 4: The vents were loud too.  
242  
243 Student 2: The old lunch room was very loud.  
244  
245 Student 5: The walls used to shake because of noise.  
246  
247 Student 6: Everything is quieter in the new building.  
248  
249 Student 1: There's barely any noise or interruptions.  
250  
251 Student 7: Hallway is never loud  
252  
253 Student 8: Except when the alarm goes off, it's louder.  
254

255 ***What is different about the current building and the former building when you think***  
256 ***about colors?***

257  
258 Student 1: Our cafeteria has a nice mural on the wall. It brings out lots of color into the room.  
259  
260 Student 5: It's more colorful.  
261  
262 Student 6: Looks artistic  
263  
264 Student 2: Colors are great.  
265  
266 Student 3: Eye-catching  
267  
268 Student 7: More expression  
269  
270 Student 4: Brighter  
271  
272 Student 8: The colors are bright and surprising.

273 ***What is different about the current building and the former building when you think***  
274 ***about safety?***

275  
276 Student 8: The new school keeps me safe from cars.

277  
278 Student 2: The old school wasn't as safe.

279  
280 Student 3: It didn't have cameras.

281  
282 Student 1: Stairs are much stronger and not rusty.

283  
284 Student 4: It's safer in the new school.

285  
286 Student 5: New safety

287  
288 Student 6: The doors lock behind you.

289  
290 Student 7: Drop off and pick up is [*sic*] safer

291  
292 ***Question 11. Is there anything else that you would like to say that you didn't get a chance to***  
293 ***say about your experience in the former building and the current building?***

294  
295 Student 8: I have a better environment to work in.

296  
297 Student 6: I like my new school because of the equipment and the whiteboard and the  
298 SMART Board. The classrooms look nice too. I know for sure that I feel  
299 safe.

300  
301 Student 2: The old school smelled like butt, but the new school smells like fresh  
302 lemons.

303  
304 Student 1: I always wanted a school like this. This school changed my life. My  
305 whole family loves this school because of the track.

306  
307 Student 4: I feel happy they did all these changes just for the kids.

308  
309 Student 3: I love how the teachers say "Good Morning" when I arrive. I love this  
310 school!

311  
312 Student 5: I like my new school. It makes the neighborhood look better.

313  
314 Student 7: I like that we have SMART Boards.

315

1 Transcript from Student Focus Group Two March 14, 2009

2 **Question 1. Tell me the differences between your former school and your current school?**

3 Student 8: There are no trailers, and you don't have to worry about getting carried  
4 away with the tornadoes.

5  
6 Student 5: Our classrooms are much brighter since we have bigger windows.

7  
8 Student 1: The art room was in a mobile. The music room was in a mobile. The PE  
9 room was small. Now they are inside and bigger. The gym is a gym and auditorium.  
10 The music room has space for more instruments, and the classrooms have lots of  
11 cabinets.

12  
13 Student 2: The new building has more technology than the old building. At first we  
14 didn't have a computer lab, but now we do.

15  
16 Student 4: The old building didn't have math and science labs.

17  
18 Student 3: In the gymnasium, it has different basketball hoops than it did in the old  
19 school.

20  
21 Student 7: PE room had lots of roaches crawling around, but this one is clean and  
22 roach free.

23  
24 Student 6: We didn't have a playground and a track before.

25  
26 **Question 2. Has being in your new school made a difference in your reading and  
27 mathematics grades? Explain.**

28  
29 Student 2: Yes, because I was doing bad but the Smart Board helps me in math.

30  
31 Student 6: No. My math and reading grades stayed the same all year long.

32  
33 Student 5: At the beginning of the year, my math grade was an E and it went up to an  
34 A. And my reading grade was D, and it went to a B.

35  
36 Student 1: In the new school using new boards and textbooks, I brought my C in  
37 reading to an A, and my D in math to a B. So I say yes to the question.

38  
39 Student 8: Yes, I have interaction with more opportunities, like the SMART Board  
40 and new selection of novels to read.

41  
42 Student 7: Yes, because we have more tools like highlighters and calculators and  
43 protractors. Before, there weren't enough. Here we learned more.

44

45 Student 3: Yes, because I used to fail in my reading, but I have improved.

46

47 Student 4: My reading and math grades have gone down. I have no clue why they  
48 have gone down.

49

50 **Question 3. Has the move to the current school had any influence on your study habits?**

51 Student 6: I'm more organized.

52

53 Student 2: There's more space to study and read in the new school.

54

55 Student 3: I can focus more in the new school.

56

57 Student 5: It helped me understand reading more because I can go to the computer lab  
58 and do reading and math.

59

60 Student 8: Yes, I'm more focused on my work than worrying about rats and roaches  
61 eating my work papers.

62

63 Student 7: Yes, because we have new supplies and the after school program.

64

65 Student 1: The books are new. Now I read more because the pages aren't ripped out or  
66 written on.

67

68 Student 4: We have a lot more stuff to help us learn like globes and computers and  
69 science labs.

70

71 **Question 4. Has the way your teachers teach their classes changed from the former school  
72 to the current school?**

73

74 Student 1: They have more space to move around and they get to use the whiteboards instead  
75 of chalkboards.

76

77 Student 6: They tried to teach us how to use technology in the old school, but it really didn't  
78 work.

79

80 Student 8: The teachers use laptops and we get to learn chemistry.

81

82 Student 3: Now they do activities on the SMART Board and Turning Point to make learning  
83 more interesting.

84

85 Student 5: They use the SMART Board and the marker board.

86

87 Student 7: The difference is the teachers have more supplies now than they did in the past  
88 years

89

90 Student 4: They use more technology to teach in the new school.

91

92 Student 2: The old school had an old board. Every time she wrote, it was like a fire drill.

93 Now the SMART Board is computer technology.

94

95 **Question 5. Have you noticed any changes in the behavior of your classmates since moving**  
96 **to the current building? If so, how?**

97

98 Student 6: They show more respect.

99

100 Student 7: In the new school, it's more friendly.

101

102 Student 8: I'm still the same ole me. Some are a little different.

103

104 Student 5: We feel better about learning.

105

106 Student 4: More relaxed and not irritated, more eager to learn than in the old  
107 school

108

109 Student 1: Kids care more because they know they are getting a better education.

110

111 Student 2: We still act the same way we did before, but some people have better  
112 attitudes.

113

114 Student 3: Most people really want to learn.

115

116 **Question 6. Do you feel your behavior has changed since moving into the current building?**

117 Student 1: Yes, because when I was in the old school I used to have a bad attitude, but  
118 since I've been in the new school, my attitude to learn is growing day-by-  
119 day.

120

121 Student 3: Now I get in less trouble. Last year I stayed in trouble.

122

123 Student 8: My behavior is different because I see the new school as a start over for  
124 me.

125

126 Student 7: No because I always have been nice to everyone and respected myself and  
127 my teachers. The only thing that changed about me is not to have fear of  
128 bugs.

129

130 Student 5: The old school had my respect, but I have more respect because the school  
131 is new.

132

133 Student 2: My behavior is the same.

134

135 Student 4: No. It hasn't. I've never really acted up.

136

137 Student 6: I have more respect for the new building too.

138

139 **Question 7. Do you see any difference in the instructional areas of your current building**  
140 **from those of the former school building?**

141 -

142 Student 2: Classrooms have SMART Boards.

143

144 Student 6: Now we have science labs.

145

146 Student 1: Some of the classrooms have sinks; the library is extra large. We never had  
147 a computer lab before.

148

149 Student 5: The media center is bigger and has more books that I find interesting.

150

151 Student 7: We have enough classrooms for everyone, and they're bigger.

152

153 Student 4: We have a technology lab and a big PE room.

154

155 Student 3: Media center has rocking chairs and lots of windows.

156

157 Student 8: Classrooms are brighter and have more room. Their wasn't much space in  
158 the old building.

159

160 **Question 8. Do you miss any features of your former building? If so, what are they?**

161 Student 4: No. The new school is good.

162

163 Student 8: The anti-bacterial soap in the bathrooms smelled better.

164

165 Student 7: The upstairs classrooms in the old building didn't have windows  
166 where people could look in and see you.

167

168 Student 5: The gym was a different room than the auditorium in the old  
169 building.

170

171 Student 6: The gym was actually larger in the old building, and we had  
172 basketball courts outside.

173

174 Student 1: The larger cafeteria in the old building

175

176 Student 2: The old cafeteria was much larger.

177

178 Student 3: I miss the old cafeteria too.

179

180 **Question 9. What features of your current building do you like most? Why do you like**  
181 **them?**

182 Student 3: It has an elevator. No mobiles! Now we don't have to go outside to go to  
183 art or music.

184  
185 Student 8: I like that there is a skylight. It lets sun in so it doesn't make me feel so  
186 confined.

187  
188 Student 1: We have a beautiful entrance with big windows, and I like the playground  
189 because of the equipment.

190  
191 Student 4: How clean it is, because everyday the floors are clean, the walls are clean,  
192 and the glass is clean

193  
194 Student 5: I like the sinks in the bathroom because they turn on and off by themselves.

195  
196 Student 6: The thing I like best is that when people come by they are interested and  
197 think this is a good school to go to.

198  
199 Student 2: The wall has fresh paint and a lot of decorations on it. It is just eye-  
200 catching just like a rainbow.

201  
202 Student 7: I like the design of the building—the walls , floors and the roof. They are  
203 all unique.

204  
205 **Question 10. What is different about the current building and the former building when**  
206 **you think about temperature, windows (natural light), lights, colors, noise,**  
207 **and safety?**

208  
209 Student 7: In the old building, the ac/heat used to break down.

210  
211 Student 8: Now we have new units.

212  
213 Student 5: We have technical problems with the AC. Sometimes it's too cold.

214  
215 Student 2: Sometimes it's cooler. It changes often.

216  
217 Student 1: I think it stays comfortable (in new building).

218  
219 Student 3: You need a key to control temperature.

220  
221 Student 6: Just right

222  
223  
224  
225

226 ***What is different about the current building and the former building when you think about***  
227 ***windows (natural light)?***

228  
229 Student 4: The windows are wider in the new building.

230  
231 Student 7: They're clean and tinted.

232  
233 Student 5: Cleaner

234  
235 Student 8: Windows get opened now.

236  
237 Student 6: We get more light.

238  
239 Student 3: The windows were cracked and rain would come in (in the older building).

240  
241 Student 2: Most of the shades were broken.

242  
243 Student 1: Blinds were shut like a dungeon.

244  
245 ***What is different about the current building and the former building when you think about***  
246 ***lights?***

247  
248 Student 2: It took lights a long time to come on.

249  
250 Student 1: Some lights were out in the old building.

251  
252 Student 3: The lights used to hang from the ceiling in the old building.

253  
254 Student 5: They used to flicker like a dead zone.

255  
256 Student 6: Lights blinked off and on like a seizure

257  
258 Student 7: Old building was dimmer.

259  
260 Student 8: It was dim and dark and hard to see assignments.

261  
262 Student 4: Now they're bright and shiny, not dull and blinking.

263  
264 ***What is different about the current building and the former building when you think about***  
265 ***acoustics (noise)?***

266  
267 Student 1: In the old building you had to close the door  
268 because you could hear yelling and screaming.

269  
270 Student 6: They use to have to blink cafeteria lights for noise. Now there are mikes in the  
271 cafeteria.

272 Student 7: And in the gymnasium  
273  
274 Student 8: It's quieter, and we can hear much better now.

275 Student 3: Less noise  
276  
277 Student 2: More sound proof too. Before, you could feel vibrations.  
278  
279 Student 5: Yeah  
280  
281 Student 4: In the beginning of the year, while they were still fixing things in the new building,  
282 we had some problems with noise.  
283

284 ***What is different about the current building and the former building when you think***  
285 ***about colors?***  
286

287 Student 8: No more dull gray  
288  
289 Student 2: It has a collage of colors.  
290  
291 Student 1: More colors than before-turquoise, burgundy,  
292 yellow, beige, and blue  
293  
294 Student 3: New colors make it look bright.  
295  
296 Student 4: The old building was all white.  
297  
298 Student 6: The walls were brick.  
299  
300 Student 5: It looked faded.  
301  
302 Student 7: Colors were dull and bleak.  
303

304 ***What is different about the current building and the former building when you think***  
305 ***about safety?***  
306

307 Student 2: Cameras Everywhere!  
308  
309 Student 6: There are gates for safety.  
310  
311 Student 3: Alarm is better.  
312  
313 Student 5: More patrols are on duty.  
314  
315 Student 1: You can see all the way down the halls.  
316

317 Student 4: We watch safety videos and do drills.

318

319 Student 7: There are no mobiles.

320

321 Student 8: The trailers were not stable.

322

323 **Question 11. Is there anything else that you would like to say that you didn't get a chance**  
324 **to say about your experience in the former building and the current**  
325 **building?**

326

327 Student 3: It's fun with a new park. Everything is new. A lot of people are happy  
328 about the new school.

329

330 Student 8: I like the technology room and the main office because it is much  
331 prettier than in the old building

332

333 Student 5: I like the colorful walls. They make me think harder. I used to be a bad  
334 student, but I'm not now.

335

336 Student 4: I like the big class rooms. There are no more insects and rats. Plus it  
337 stays clean and has fun events.

338

339 Student 1: Because the board is not squeaky, I don't get headaches much.

340

341 Student 6: I like the rolling chairs in the science labs.

342

343 Student 7: Teachers in the old building had to breakup fights, but in the new  
344 school, they have better chances with teaching.

345

346 Student 2: I like the new school because I've been in the old school since pre-k  
347 and there are new things in the new school.

**Question 1: Was there anything in the former building that hindered your teaching?  
Please describe and explain.**

Teacher 1: Lack of space limited the ability to do more small groups. Computers didn't work.

Teacher 2: Limited technology and lights that that were low or didn't work made the room dreary. There was only one copier for all the teachers to share.

Teacher 4: Teaching in a mobile unit, I was a bit more secluded from the rest of the student body.

Teacher 5: Classroom arrangement was inflexible and sometimes inconvenient.

Teacher 3: Limited storage space and outdated equipment were a hindrance.

Teacher 8: Didn't have enough equipment for students.

Teacher 6: I was housed in one of the mobiles, and I constantly feared for the safety of the students and other teachers. We had limited space and limited access to supplies, necessary facilities, media center, and cafeteria. It also contributed to more falls and asthma-related problems.

Teacher 7: Mold and roaches. I was sick more often from mold.

**Question 2. Are there features/factors of the current school facility that have enhanced your teaching? Please describe and explain.**

Teacher 3: The new building has brought life into my lessons. It helped to bring my lessons into the 21<sup>st</sup> century.

Teacher 4: SMART Board activities allowed me to differentiate instruction and give learning a chance to compete against the graphics and excitement of video games that kids play at home.

Teacher 5: In class restrooms saved time and interruptions.

Teacher 8: I am able to expose my students to literature in a variety of forms through technology. This has improved my average DRA score.

Teacher 7: Turning Point and DVD/VCR combo made reviewing easier and more fun for the students.

Teacher 6: Now that we are in the current school, the students have more space for their learning and creativity, and so do I.

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92

Teacher 1: Adequate space, technology, healthy environment

Teacher 2: SMART Boards are good for teaching and practice. There are lots of computers for practice and differentiation. Teaching is interactive and enhanced by technology.

**Question 3. Are there features/factors of the current school facility that have impacted student achievement? If so, what are they?**

Teacher 1: Technology, building appearance

Teacher 4: The SMART Board because it allows students to see and hear lessons that they can also manipulate themselves. By appealing more to their senses, they are able to retain more information.

Teacher 3: Technology in the building has exposed them to the newest equipment and software and higher level thinking.

Teacher 8: Materials are more student friendly and contribute to achievement.

Teacher 2: Teachers can expose students to more things through the internet.

Teacher 6: The computer lab and the media center are the two main features that have had positive influence on student achievement because the students were able to receive additional remediation through the use of technology integration. There was also more space available for remediation.

Teacher 5: Layout of the building decreased walking time to and from lunch, and resources and allowed for more instructional time.

Teacher 7: I think students were more excited about school and wanted to do their best.

**Question 4. Are there features/factors of the current school facility that have impacted student behavior? If so, what are they?**

Teacher 1: Pride in the new building impacted student behavior and performance.

Teacher 3: How clean the building is. With this new crisp clean look, the students have something to be proud of.

Teacher 7: I believe the children took better care of the building. The

93 children didn't write on the nice clean walls or on the bathroom stalls.

94

95 Teacher 2: The newness and cleanliness of the building has made students respect the school  
96 more. Plus constant interaction and hands-on activities like computers, SMART  
97 Boards, document readers, etc., keep students motivated.

98

99

100 Teacher 5: New bright and clean facility has increased school pride.

101

102 Teacher 4: The students are all around more calm in their behavior and actions. They have  
103 been given a chance to respect something new that belongs to them and makes them  
104 feel a part of the school. Students feel safe here.

105

106 Teacher 8: I have seen more parent participation this year. I think parents  
107 and students take more pride in the school.

108

109 Teacher 6: Being in a more modern building with adequate space and  
110 knowing that the building is equipped with lots of safety features inside and outside  
111 like cameras. The students are aware that they have safety features throughout the  
112 school which causes them to think rationally before breaking or violating school  
113 rules. Whereas, in the old building, the students didn't use good judgment about  
114 violations and they were able to get away with more unnoticed offenses.

115

116

117 **Question 5. Please describe the differences in your teaching, in student achievement, and in**  
118 **student behavior in the former building versus the current building in the**  
119 **following categories: lighting, thermal climate/temperature, outside areas,**  
120 **exterior noise, and technology.**

121

## 122 **Lighting**

123

124 Teacher 1: Low lights and lights not working made the room dreary. It was not motivating.  
125 (In the newer facility)All lights are working. Lots of windows too.

126

127

128 Teacher 5: The flickering (in the older facility) was distracting./ Brighter lights promote  
129 learning.

130

131 Teacher 7: Dreary. Dark. It may have impacted the mood of students. Good lighting (in the  
132 newer facility) may positively affect mood/behavior of students.

133

134 Teacher 8: Very Poor, insufficient lighting depressed students (in the older facility).  
135 It encouraged students to be alert (in the newer facility).

136

137 Teacher 3: Lights constantly went out. It was somewhat disruptive./ Now lighting is good and  
138 evenly distributed.

139  
140 Teacher 4: The lights were very dim (in the older facility).  
141 (In the newer facility) It's brighter, easier to control, and better for staff and students.  
142

143 Teacher 2: Lights blew out frequently. Then rooms would be dark.  
144 Lights (in the newer facility) are bright and easy to see. Great assets to teaching and  
145 learning.  
146

147 Teacher 6: Ample (in the older facility) vs. Bright and cheerful (in the newer facility)  
148

### 149 **Thermal Climate/Temperature**

150  
151 Teacher 1: Temperature could be adjusted by the teacher. / Now temperature cannot be adjusted  
152 by teachers. Rooms tend to get too hot or too cold. It's hard to learn in extremes.  
153

154 Teacher 2: In the old school I was able to control the room temperature to suit the needs of my  
155 students and myself./ Students would complain about being cold, but we had them  
156 bring sweaters.  
157

158 Teacher 4: The students were irritated in colder and warmer months due to improper air  
159 conditioning units./Temperature is more controlled and has "cleaner" out put, so the  
160 students are more capable of focusing on learning.  
161

162 Teacher 7: Sometimes no heat in winter, no air conditioning in spring. There were times when  
163 no instruction could take place. Even though we can't control heat and air  
164 conditioning, it's suitable for instruction to take place.  
165

166 Teacher 3: The old building was unbearably hot in warm weather. Students got cranky./ New  
167 building is comfortable—even cold at times, but less aggravating to teachers and  
168 students.  
169

170 Teacher 8: Temperature is hard to regulate.  
171

172 Teacher 6: Each classroom could control the temperature./Building is always too cold.  
173

### 174 **Outside Areas**

175  
176 Teacher 4: Unsafe and minimal for recreation. Time was lost traveling inside from mobile area.  
177 Being inside instead of outside in mobiles has made achievement and teaching much  
178 better.  
179

180 Teacher 1: Very little recreational space (in the older facility)/ Now, lots more playgrounds for  
181 the students to let off some steam.  
182

183 Teacher 2: (It's) Easier to watch the children.  
184

185 Teacher 3: There were not a lot of safe play areas for students—they acted up on the  
186 playground ./ (The newer facility has) better quality playgrounds with rules; Students  
187 enjoyed using the track.  
188

189  
190 Teacher 5: Playing area was far from classrooms. There were more chances to get hurt or  
191 misbehave./ (Now) The playground provides incentive to complete work to go  
192 outside.  
193

194 Teacher 6: (Outside areas were) spacious but not really usable./ (The newer facility has a) well-  
195 designed play ground.  
196

197 Teacher 7: The areas are more appealing and taken care of better.  
198

199 Teacher 8: Landscaping and better designed areas are very beneficial to students.  
200

201 **Exterior Noise**  
202

203 Teacher 7: Not much difference  
204

205 Teacher 4: Loud noise from lawn cutter and traffic was distracting./Being inside has eliminated all  
206 outside noise elements, and there are no distractions to hinder learning.  
207

208 Teacher 8 Having a new two-story building has cut down on a lot of the outside noises from the  
209 neighborhood.  
210

211 Teacher 5: Street sounds were sometimes distracting./ No street sounds now.  
212

213 Teacher 2: When mowers would come, students would be distracted by noise/Now there's none that  
214 distracts in the classroom.  
215

216 Teacher 1: Before the students could only go outside in front, and it was noisy and distracting./ We still  
217 hear some playground noise, but not to the same extent. It's really not a big distraction.  
218

219 Teacher 6: Many distractions (in the older facility)/ Very little noise can be heard (in the newer facility)  
220

221 Teacher 3: Mostly noise from landscapers and construction was very disruptive./ Now there's very little  
222 noise and increased on-task time.  
223

224 **Technology**  
225

226 Teacher 5: Multimedia projector offers easy use of United Streaming and other educational  
227 sources.  
228

229 Teacher 4: Technology was limited and antiquated. I only had 3 computers that worked. /  
230 SMART Board, computer lab, and at least 6 computers in class have been a great  
231 asset to teaching.  
232

- 233 Teacher 1: We had to share computers (in the older facility). / We are well endowed with  
234 computers for us and the students. Plus we have more printers, and let's not forget  
235 the SMART Boards. We can have two groups of kids on computers.  
236
- 237 Teacher 8: We went from having old chalkboards, old maps, and old computers to new SMART  
238 Boards, new maps and globes, new computers, and a new technology lab in the  
239 building  
240
- 241 Teacher 2: (Technology was) unreliable, not easy to access. (In the newer facility, it's)  
242 Fabulous. I mean it has added extra to my lessons and increased student  
243 achievement.  
244
- 245 Teacher 3: Little technology available except for class computers and library. In the new  
246 building, SMART Board is an indispensable instructional tool. Students really tuned  
247 into it.  
248
- 249 Teacher 7: Because we have more technology, instruction is enhanced.  
250
- 251 Teacher 6: Same # of computers are in each classroom. All computers work and (there's) also a  
252 computer lab.  
253  
254
- 255 **Question 6. Please share any other experiences or information relating to the current**  
256 **building, its impact on teaching and learning, student achievement, and**  
257 **student behavior.**  
258
- 259 Teacher 4: Overall, I am very pleased with the new facility; it's like a giant  
260 "Christmas" present that you never out grow!  
261
- 262 Teacher 7: The students enjoyed using the new technology.  
263
- 264 Teacher 3: The new building seems to have increased student pride and achievement.  
265
- 266 Teacher 1: Now the class sizes are actually smaller than they were. By far, this new  
267 building is better for student learning, achievement, behavior, and teaching.  
268
- 268 Teacher 8: The new school creates a desire to come to school and a greater interest in  
269 learning.  
270
- 271 Teacher 2: Though we have full-inclusion, it would be nice to have a dedicated space  
272 for special education students to work one-on-one with the teacher to review.  
273
- 274 Teacher 6: I would like to have more control of classroom temperature.  
275
- 276 Teacher 5: Teaching in the new building has been a joy that is shared by my students.  
277 I have not missed a day due to illness. Student health seems to be better too.  
278 The more they're here, the more they learn.

1 Teacher Focus Group Transcript 2 April 10, 2009

2

3 **Question 1: Was there anything in the former building that hindered your teaching?**

4 **Please describe and explain.**

5

6 Teacher 3: Size of the classroom and few computers

7

8 Teacher 6: Old equipment

9

10 Teacher 4: Being in the mobile and having horrible lighting

11

12 Teacher 2: Poor ventilation

13

14 Teacher 5: Mice and roaches

15

16 Teacher 7: Writing on a chalkboard

17

18 Teacher 8: Outdated and overcrowded

19

20 Teacher 1: Inadequacy of the media center and technology for the number of students we  
21 served.

22

23 **Question 2. Are there features/factors of the current school facility that have enhanced your**  
24 **teaching? Please describe and explain.**

25

26 Teacher 3: Mounted multi-media projectors, document camera, and the number of the  
27 computers in the classroom ( 6 plus a laptop).

28

29 Teacher 5: A large classroom, new equipment, and huge media center gave options for  
30 moving students to different environments geared to stimulating thinking and  
31 interest in a lesson.

32

33 Teacher 1: The design of the current school affords less transitioning time in  
34 movement from one activity to another such as going to lunch and resources.  
35 Classrooms are spacious and well-equipped with sinks, SMART Boards and  
36 restrooms. Students have less need to leave their classrooms. The media center and  
37 computer lab can accommodate more students, which allows more students an  
38 opportunity to utilize technology in their studies.

39

40 Teacher 8: I can rely on consistent routines and access to materials.

41

42 Teacher 2: Technology and whiteboards

43

44 Teacher 7: SMART Board makes writing on a chalkboard obsolete. I was able to be  
45 more creative.

46

47 Teacher 6: Using the internet as a teaching tool- Better technology, better lighting,  
48 better equipment, more storage  
49

50 Teacher 4: DVD/VCR Combo, computers, projectors, SMART Boards, space, and desks  
51 for all children  
52

53 **Question 3. Are there features/factors of the current school facility that have impacted**  
54 **student achievement? If so, what are they?**  
55

56 Teacher 7: I think the students achieved just as much in the old building.  
57

58 Teacher 1: Students have access to more technology and spend more time-on-task.  
59

60 Teacher 5: Having dedicated math and science labs where students could get hands-  
61 on lessons with manipulatives  
62

63 Teacher 8: Interacting with the SMART Board using reading books, math games, and SOLs  
64

65 Teacher 2: There is much less time spent out of the classroom, which affords more  
66 teaching time.  
67

68 Teacher 6: Computers, SMART Boards, safe building. Students are academically challenged.  
69

70 Teacher 3: Access to technology-Turning Point and all the updated technology  
71

72 Teacher 4: Students were more engaged because technology keeps their attention, so  
73 they excel when given the opportunity.  
74

75 **Question 4. Are there features/factors of the current school facility that have impacted**  
76 **student behavior? If so, what are they?**  
77

78 Teacher 8: The air quality, lighting and condition of the new facility  
79

80 Teacher 7: There are no changes in student behavior.  
81

82 Teacher 3: Students feel more responsible for keeping the building nice  
83

84 Teacher 5: Students were more willing to do work because they felt safe  
85 and had pride in the learning environment.  
86

87 Teacher 6: Students are more compliant and less prone to bullying. Students  
88 fought a lot in the old building. Now there appear to be fewer fights.  
89

90 Teacher 2: Students had better attitudes toward learning and were better with  
91 keeping the building clean.  
92

93 Teacher 1: Students seem to be more in control in the new building. There  
94 appears to be less noise and running in the halls. They express appreciation for the  
95 new building.  
96

97 Teacher 4: Students feel more a part of the community and less alienated like  
98 when they were in the mobiles. Every time they used to leave the  
99 classroom, their behavior used to fall apart because there was no  
100 way to monitor them.  
101

102 **Question 5. Please describe the differences in your teaching, in student achievement, and in**  
103 **student behavior in the former building versus the current building in the**  
104 **following categories: lighting, thermal climate/temperature, outside areas,**  
105 **exterior noise, and technology.**  
106

### 107 **Lighting**

108  
109 Teacher 2: Mobiles were dark and dreary. It was hard to see.  
110

111 Teacher 4: It was sufficient, but now it is much improved. It encourages students to be alert.  
112

113 Teacher 7: There were high ceilings with dim, faulty lighting. Now there are well-lit rooms and  
114 bright lights.  
115

116 Teacher 5: Water dripped through. Light bulbs blew out a lot. /Everything is fine now.  
117

118 Teacher 6: Dim lighting was kind of depressing for both students and teachers./ I think it (bright  
119 lighting) inspires fresh ideas  
120

121 Teacher 8: Lights are no longer noisy, and there are two settings to adjust lights.  
122

123 Teacher 3: Lots of windows/bright lights allow for better sight for objects being observed.  
124

125 Teacher 1: Brightly lit rooms provide a more positive, happy atmosphere.  
126

### 127 **Thermal Climate/Temperature**

128  
129 Teacher 2: In the mobiles, if I didn't plug in an extra heater, the students would freeze.  
130 We don't control it in the new building. Sometimes it's hot; sometimes it's cold.  
131

132 Teacher 4: It was either too hot or too cold. Students got sleepy when it was too hot.  
133

134 Teacher 5: Ditto. It was very uncomfortable with regard to climate (in the older facility).  
135

136 Teacher 7: There were weeks with no heat in winter and no air on hot days (in the older facility).  
137 Now that the temperature is regulated, the climate is fine (in the newer facility).  
138

139 Teacher 1: Improper air conditioning units irritated students (in the older facility).

140  
141 Teacher 3: It was always too hot (in the older facility).  
142 (In the newer facility) We were able to relax in the controlled environment.  
143 It helped children pay attention and be more focused.  
144  
145 Teacher 8: Temperature is more at a comfortable level since we don't have to go in and out of  
146 the mobiles.  
147  
148 Teacher 6: In-room thermostat helped keep kids comfortable (in the old building). It's hard to  
149 focus otherwise.

150  
151 **Outside Areas**

152  
153 Teacher 4: Run down grass  
154  
155 Teacher 6: Restricted. Decrepit. Dangerous.  
156  
157 Teacher 5: Before there was not enough playground equipment.  
158 Very modern play equipment is good for students.  
159  
160 Teacher 1: There were cement slabs. Now there is grass, better playground equipment, and  
161 a track.  
162  
163 Teacher 8: Moving students from one area to another is easier because its safer and there's more  
164 space.  
165  
166 Teacher 2: We went from having no playground to having three playgrounds with a track. Kids  
167 can run off energy!  
168  
169 Teacher 7: Three Nicer playgrounds and resources. Kid friendly!  
170  
171 Teacher 3: All resources and classes are inside which is better.

172  
173 **Exterior Noise**

174  
175 Teacher 7: My class faced the road and it used to be noisy right outside my window. My class  
176 still faces the road, and there is no noise that distracts the classroom.  
177  
178 Teacher 8: You used to be able to hear loud noises from the street—trucks, cars, and voices.  
179  
180 Teacher 4: It gets a little noisy after lunch, but it's a lot less.  
181  
182 Teacher 2: It's about the same to me.  
183  
184 Teacher 6: It's muted-doesn't hinder instruction. Past years were so loud.  
185

186 Teacher 1: We don't hear as much playground noise as we did last year.  
187  
188 Teacher 3: Windows didn't seal out noise./We don't hear traffic noise anymore either.  
189  
190 **Technology**  
191  
192 Teacher 1: Limited/Limitless!!  
193  
194 Teacher 5: Improved. Easy access  
195  
196 Teacher 8: The new and improved technology truly impacts student learning.  
  
197 Teacher 4: There is more available and it is easily accessed by students. Students learn through  
198 hands-on technology.  
199  
200 Teacher 7: Because it's wireless, we can use laptops in the rooms. Multiple computers in the  
201 media center and computer labs allows for whole classrooms to attend at one time.  
202  
203 Teacher 3: Document camera, turning point, and other new items are readily available and very  
204 engaging.  
205  
206 Teacher 6: Technology was hard to access./ Lessons are more hands on and interactive. Student  
207 achievement increases because their interest levels increase.  
208  
209 Teacher 2: New technology keeps kids on task. We used to have three computers; now we have  
210 six (computers), a document camera, SMART Board, and DVD/VCR combo.  
211  
212 **Question 6. Please share any other experiences or information relating to the current**  
213 **building, its impact on teaching and learning, student achievement, and**  
214 **student behavior.**  
215  
216 Teacher 6: I am able to teach better, children are able to learn, and we all feel a sense  
217 of pride in our new facility.  
218  
219 Teacher 8: Everyone has a better attitude. The changes in the environment allow us  
220 to collaborate more. This is good for student achievement.  
221  
222 Teacher 4: This building instills a sense of pride in our students. They feel good  
223 about their school and they enjoy the new facilities and hands-on  
224 technology.  
225  
226 Teacher 1: Students seem to take pride in the building and themselves.  
227  
228 Teacher 7: Our school is bright and inviting. Everything about our building  
229 encourages learning and acceptance.  
230

231 Teacher 2: I think that students need to have lessons on how to treat new items such  
232 as equipment, building, etc. They will not treat it different unless taught  
233 or told otherwise.  
234

235 Teacher 5: I would like to have more control over classroom temperature.  
236

237 Teacher 3: Faculty, staff, students overall felt a sense of belonging, pride and safety  
238 during the instructional day. It's a place to want to go to work. We see smiles on  
239 parents faces as they talk about the new school. We are glad the city cares about  
240 our urban population, which represents some of the poorest students.  
241

1 Transcripts of Parent Focus Groups March 12, 2009

2  
3 **Question 1. What were the features/factors of the former school facility that hindered your**  
4 **child’s achievement in reading and mathematics? Please describe and explain.**

5  
6 Parent 4: The old building was dark and had a strange “old-like” odor to it.

7  
8 Parent 2: It was old and outdated.

9  
10 Parent 3: It was in dire need of upgrading.

11  
12 Parent 7: The old building was dreary.

13  
14 Parent 6: Classrooms were too small.

15  
16 Parent 8: The old building was very small and dark. It was very difficult attending  
17 school functions due to overcrowding in the gym.

18  
19 Parent 1: The outside of the building had a lot of cosmetics done, but inside of the  
20 building, the air circulation or quality was not clean, and rodents!

21  
22 Parent 5: I was amazed at its dilapidated condition. The building was due replacing.

23  
24 **Question 2. Are there features/factors of the newly constructed school facility that have**  
25 **impacted your child’s achievement? If so, what are they?**

26  
27 Parent 1: better air quality

28  
29 Parent 6: safety and classrooms are organized

30  
31 Parent 2: very organized, beautiful

32  
33 Parent 8: new technology and overall floor plan

34  
35 Parent 7: I especially like the wide hallways. It seemed more conducive to a better  
36 learning environment.

37  
38 Parent 5: It’s a more modern educational facility.

39  
40 Parent 4: space and well-lit

41  
42 Parent 3: high-tech features

47 **Question 3. Have you noticed any difference in your child's behavior in the current**  
48 **building?**

49  
50 Parent 5: She never had bad behavior while attending either building. She loves  
51 going to school more.

52  
53 Parent 7: My child is more excited to go to school. She used to complain about the  
54 old building being too cold and having bugs.

55  
56 Parent 4: I haven't seen any differences

57  
58 Parent 1: There hasn't been much change. I can only say that I expect my child to  
59 behave the way they've been taught at home.

60  
61 Parent 6: More obedience and helpful

62  
63 Parent 3: She has developed a sense of pride and school spirit.

64  
65 Parent 8: It turned very positive this year. She was more focused. She wanted to  
66 become involved in more school activities. She was hoping there would  
67 have been a track team this school year.

68  
69 Parent 2: She has a lot more pride in her school's activities.

70  
71 **Question 4. What difference have you seen in the lighting, temperature, space, and safety**  
72 **in the current building?**

73  
74 Parent 2: Once the monitor was established at the front door, I saw more security. I  
75 believe the space allows more of the children to be comfortable.

76  
77 Parent 5: The old building was too hot in the summer, and too cold in the winter.

78  
79 Parent 1: Lighting is excellent. Temperature could be looked into more to regulate it  
80 during climate changes. More than enough space.

81  
82 Parent 4: The building is brighter and cooler.

83  
84 Parent 8: The old school was very dark and small. The new building is very spacious  
85 and well-lit.

86  
87 Parent 3: The building is huge!! I love the library. Lots of space.

88  
89 Parent 7: The new building is brighter. The temperature is comfortable, and it seems to be safer  
90 because they are no hanging ceilings.

91  
92 Parent 6: All of them are satisfactory.

93 **Question 5. Please share anything else you would like to tell me about any differences you**  
94 **have noticed in your child's achievement in reading and mathematics and**  
95 **your child's behavior as a result of moving to a new school facility?**  
96

97 Parent 7: My child improved. She went from making C's to making A's and B's.  
98

99 Parent 4: My son is a better person now. He hasn't got a bad grade this year.  
100

101 Parent 1: My child has worked really hard this year.  
102

103 Parent 3: Grades have improved.  
104

105 Parent 6: She has a big improvement in her academics.  
106

107 Parent 2: More focused and enthused about work and projects  
108

109 Parent 8: I feel that my child's achievement is a result of good parenting and  
110 encouragement and a good teacher, not a result of a new building.

111 The new building does offer more resources and learning tools.

112 The classes are bigger and more organized, offering room for more  
113 learning stations.  
114

115 Parent 5: My grandchild's academics are better.  
116

1 Parent Focus Group Transcript 2 March 12, 2009

2  
3 **Question 1. What were the features/factors of the former school facility that hindered your**  
4 **child's achievement in reading and mathematics? Please describe and**  
5 **explain.**  
6

7 Parent 8: In bad need of repairs, practically falling about

8  
9 Parent 5: Building was out of date. Area flooded real bad [*sic*]. Not enough parking  
10 and assembly seating

11  
12 Parent 2: The old school building was dark and unwelcoming. The bathrooms were  
13 not inviting, and my son and daughter chose not to use them.

14  
15 Parent 1: Because it was old and dirty and literally falling apart.

16  
17 Parent 3: It needed work. It was small.

18  
19 Parent 7: The old building was in need of serious repairs and upgrades

20  
21 Parent 4: Old and outdated

22  
23 Parent 6: It needed to be torn down 12 years ago. It was in bad condition.

24  
25 **Question 2. Are there features/factors of the newly constructed school facility that have**  
26 **impacted your child's achievement? If so, what are they?**  
27

28 Parent 5: The new building is more modern, spacious, and bigger.

29  
30 Parent 6: New equipment for better learning

31  
32 Parent 2: The school building is more open, brighter, and welcoming.

33  
34 Parent 1: It is clean, spacious, and feels like the walls are not closing in.

35  
36 Parent 8: It's great—very well organized.

37  
38 Parent 4: It's fresh, light, spacious, and clean.

39  
40 Parent 7: The resources, like the computer lab, is beneficial in helping students  
41 advance in this technological era.

42  
43 Parent 3: My child's academics have been about the same.  
44  
45  
46

47 **Question 3. Have you noticed any difference in your child’s behavior in the current**  
48 **building?**

49

50 Parent 1: My child was always a good student, but being in a new building really  
51 made him more excited and eager to be at school.

52

53 Parent 5: I’ve noticed pride and a sense of belonging to something great.

54

55 Parent 3: Behavior has gotten better.

56

57 Parent 8: More attention and improvement in behavior matters. I think I have seen  
58 an improvement, or the teacher is tired of writing notes. (Chuckle.)  
59 Nothing too serious, mostly talking in class to classmates.

60

61 Parent 4: Positive. She has been pushing herself harder.

62

63 Parent 2: My son’s behavior and attitude has changed, and I can attribute it to great  
64 teachers and staff.

65

66 Parent 6: He wanted to go to school everyday because he liked to go the computer  
67 room and the library. He would come home and tell me, “Mom, you have  
68 to see my school.”

69

70 Parent 7: I think they interact with their classmates more.

71

72 **Question 4. What difference have you seen in the lighting, temperature, space, and safety in**  
73 **the current building?**

74

75 Parent 6: The lighting makes it safe for our kids. There’s good temperature.

76

77 Parent 3: I think the safety is very good, and the lighting and space.

78

79 Parent 7: I’ve noticed the building is much brighter than the old building. It’s more  
80 spacious and the temperature is more comfortable than in the previous old building.  
81 Safety is excellent.

82

83 Parent 8: The space and lighting is definitely improved, Especially the temperature!!  
84 I do believe the gym should be larger or there should be a separate gym and  
85 auditorium. During programs, all of the parents do not fit.

86

87 Parent 1: The lighting is wonderful. The building is very spacious, and I think  
88 because of that the children’s safety will not be compromised.

89

90 Parent 5: The school appears to be more lively!! Doesn’t appear dreary and dark.  
91 There’s double the light in the new school and more color.

92

93 Parent 2: The new school is much brighter than the previous. My son has not  
94 complained about the temperature in the current school. Each season, winter and  
95 spring, the temperature has been adequately set. The classes are much larger and it  
96 appears that the school technology has greatly improved.  
97

98 Parent 4: Now there's a very pleasant atmosphere.  
99

100 **Question 5. Please share anything else you would like to tell me about any differences you**  
101 **have noticed in your child's achievement in reading and mathematics and**  
102 **your child's behavior as a result of moving to a new school facility?**  
103

104 Parent 2: Academics have improved; however, I am not sure if it is due to the new  
105 building or his maturity and current teachers.  
106

107 Parent 3: I am very impressed with his learning; he is doing very well.  
108

109 Parent 5: New school spiked an increase in achievement and interest. They can  
110 perform research in more depth.  
111

112 Parent 6: My son's academics have really improved since the new building. I am so  
113 pleased.  
114

115 Parent 4: She enjoys the faculty.  
116

117 Parent 8: The facility has improved. He's doing really well.  
118

119 Parent 7: I really know the new building and equipment made a great difference in  
120 children's learning.  
121

122 Parent 1: I look at it like moving into a new house. It makes you feel good inside  
123 and excited about the new change. My son has been here since pre-k, and I have seen  
124 a lot of changes between then and now, and as a parent, I'm very pleased with the  
125 changes and improvements.  
126

APPENDIX M  
MATRIX OF RELATED LITERATURE

APPENDIX M  
MATRIX OF RELATED LITERATURE

Researcher (Year & University)	Title	Setting of the Study	Study Sample	Method of Data Collection	Instruments & Field testing	Data Analysis	Findings	Future Research (Reasons for Inclusion )	Similarities to Proposed Study
Cash (1993 VA Tech)	Building Condition and Student Achievement & Behavior	1992  Rural Public High Schools  Virginia	43 schools  36 school districts	Schools provided data on behavior, achievement, and free-and-reduced lunch status.  CAPE was used to survey principals.  Demographic were collected from the Virginia Department of Education.	CAPE  Field tested in 8 Virginia Beach Schools	Analysis of covariance ANCOVA	Test scores increased in all areas as building condition improved.  Students in better quality schools had more discipline problems.	Researcher suggested replicating study in urban schools, elementary schools, and newly constructed schools.	The proposed study will examine achievement in a newly constructed, urban elementary school as recommended.
Hines (1996 VA Tech)	Building Condition and Student Achievement & Behavior	1992-1993  Metropolitan areas  Virginia	88 Secondary Schools in cities with populations over 100,000 & districts w/ enrolments over 25,000	CAPE survey  Test of Academic Proficiency Results  Behavior Data & Free/Reduced Lunch status	CAPE Survey  Test of Academic Proficiency	Analysis of covariance ANCOVA	As overall building condition improved, achievement improved by 7 to 11 points.  Discipline also increased.	The researcher suggested investigating effect of building condition on attitudes and the impact of outsourcing facility maintenance on student achievement.	The proposed study will examine the effect of building condition on attitude as recommended.
Phillips (1997 Univ. of Georgia)	Educational Facility Age & the	1993-1996  3 rural	150 students in two cohorts	Attendance data from school records	Iowa Test of Basic Skills (ITBS)	ANCOVA to analyze achievement	There is a relationship between facility	Researcher suggested replicating the	The proposed study will replicate

	Academic Achievement and Attendance of Upper Elementary Students	elementary schools northeastern GA				data. Pearson r was used to determine relationship between achievement and attendance.	age and student achievement. Moving from an old facility to a new facility increased attendance by 2 days.	study with other grade levels in other geographic locations.	portions of this study in a different geographic location as recommended.
Researcher (Year & University)	Title	Setting of the Study	Study Sample	Method of Data Collection	Instruments & Field Testing	Data Analysis	Findings	Future Research (Reasons for inclusion)	Similarities to Proposed Study
Lemasters (1997 VA Tech)	A Synthesis of Studies Pertaining to Facilities, Student Achievement, and Student Behavior	Reviewed studies conducted since 1980	53 studies were reviewed.	Meta-Analysis  Examined and rated instruments, research design, techniques, methodology, and statistical significance	Critiqued and rated instruments used in other studies	Charts and Matrices	Well-maintained facilities impact achievement and behavior positively. Health is improved by the use of fluorescent lighting. Noise not related to instruction has a negative impact on achievement.	Researcher suggested using longitudinal research, replicating the study in geographical areas, and developing a format for further research.	The Lemasters' study gives an overview of studies and sets the stage for proposed study.
Lanham (1999 VA Tech)	Relating building and classroom conditions to student Achievement in Virginia's Elementary Schools	1997-1998  Virginia's public elementary schools	300 elementary schools with grades 3 and 5	Modified version of CAPE survey	SOL tests CAPE survey	SPSS Pearson's r Stepwise Multiple Regression Analysis	Free and reduced status accounted for 48% of variance in 3 <sup>rd</sup> grade English and 52% of variance in 5 <sup>th</sup> grade English, but only 26% in 3 <sup>rd</sup> grade math and 16% in 5 <sup>th</sup> grade math. Network connections were also determined to be a factor in achievement.	Researcher suggested replicating the study at elementary schools after SOLs have been used longer, replicating study on a national level, replicating study in middle schools, and conducting a detailed study on technology.	The proposed study will be conducted in a similar setting—an elementary school in Virginia.  SOL tests will also be used in the proposed study as an instrument to measure achievement.
Al-Enazi (2002)	A Study of the Relationship	Kuwait 2000-2001	56 public high schools (28	CAPE survey	CAPE High school	Pearson r Descriptive	Statistically significant	Replicate study in other countries	Al-Enazi's study

VA Tech)	Between School Building Conditions & Academic Achievement of 12 <sup>th</sup> grade Students in Kuwaiti Public High Schools	school year	boys/28 girls)	Achievement data from exam scores were obtained from the Ministry of Education	tests	Stats  2-way ANOVA t-tests  stepwise multiple regression	relationship between building conditions and student achievement for boys was found.	outside US  Study teacher attitudes about facility condition	examined achievement data and looked at differences in performance between boys and girls, as will the proposed study.
Researcher  (Year & University)	Title	Setting of the Study	Study Sample	Method of Data Collection	Instruments & Field Testing	Data Analysis	Findings	Future Research (Reasons for Inclusion)	Similarities to Proposed Study
Broome (2003 )	Relationship Between Design of School Facilities and Student Behavior and Academic Achievement	2001-2002 Middle schools in Mississippi and Tennessee	29 middle schools that contained 8 <sup>th</sup> graders and were constructed in 19997, 1998, 1999, 2000, 2001	Discipline records from schools  Population data from child nutrition  Academic achievement from Dept. of Education  Direct Observation by researcher	Standardized Tests  Iowa Test of Basic Skills (ITBS)  Tennessee Comprehensive Assessment Program (TCAP)	Bi-variant correlations	The strong relationship between 5 elements of school design and student achievement no longer exists when SES is controlled for. SES accounted for 67% of variance in student achievement	Replicating study using longitudinal format and focusing on relationship between schools visual appearance and student behavior were two of the researcher's suggestions.	The proposed study will also examine student achievement in a newer facility.
Lair (2003 Univ. of Texas)	A Study of the Effect School Facility Conditions Have on Student Achievement	2000-2001 Yelseta, Texas	29 schools 4 high schools  11 middle schools  14 elementary schools	Interviews  Document Examination  Observations  CAPE survey	CAPE was field tested by Carol Cash in Virginia Beach schools.	Mixed-Methods  Case Study  Surveys were scored using multiple regression.	Building age was the most significant predictor of test scores.  Maintenance, cleanliness, and school size were additional factors.	The researcher recommended replicating the study in other districts across Texas.	The proposed study will employ a similar methodology.
Hughes (2005)	The Relationship Between School Design Variables	2003-2004 Urban Texas district	20 elementary schools	Demographics  School ratings from Texas Ed. Agency  Characteristics of	TAKS (given in 3-11)  DASE	Chrombach's Alpha  t-tests  1-way	Design variables, especially color, were found to correlate to reaching, science, and math	The researcher suggested replicating the study in an area where more schools in each	The proposed study will also be conducted in an elementary school in an

	and Student Achievement in a Large Urban Texas School District			Professional Staff Square footage Acreage Capacity Construction data Environment		ANOVA	achievement.	rating category are found.	urban district.
Researcher  (Year & University)	Title	Setting of the Study	Study Sample	Method of Data Collection	Instruments & Field Testing	Data Analysis	Findings	Future Research (Reasons for Inclusion)	Similarities to Proposed Study
Crook (2006 VA Tech)	Relationship between the Percentage of Students Passing the Standards of Learning End-of Course Tests & Condition of Educational Facilities in the High Schools in the Commonwealth of Virginia	03-04  Virginia High Schools	142 schools from 88 school districts	Building ratings from CAPE  % of students passing SOL tests  Socioeconomic status of schools	SOL Tests  CAPE	Correlations  ANCOVA  Pair-wise Comparisons	Percentage of students passing the SOLs was higher in standard school buildings than in substandard school buildings except for Algebra I. There was a difference in the pass rates of students in standard and substandard buildings on the reading/writing SOLs when building conditions were categorized into structural & cosmetic. Building age was a factor in achievement.	Crook suggested examining the relationship between building condition and performance of minority students in standard and substandard buildings and revising the CAPE for elementary schools to see if there is a difference between SOL pass rates and building condition.	Proposed study follows the recommendations. It will be conducted in a school with a high minority enrollment where student achievement can be compared in a deteriorating vs. a newly constructed elementary school where SOLs are used to measure achievement.
O'Sullivan (2006 VA Tech)	Relationship Between Building Conditions and Student Academic Achievement	02-03 03-04 04-05 Pennsylvania High Schools	205 Pennsylvania High schools with 11 <sup>th</sup> grade  Buildings 7-46 years old	Building condition (CAPE)  Free/reduced lunch participation  Achievement Data	Pennsylvania System of School Assessment (PSSA)  Commonwealth	Stepwise Multiple Regression	Percentage of students in free & reduced price lunch was the most significant predictor of achievement; it	Researcher suggested identifying high performing, high-poverty schools & examining the relationship	The proposed study will examine the relationship between building conditions and

	in Pennsylvania's High Schools				Assessment of Physical Environment (CAPE)		accounted for 9.8% of the variance on PSSA writing test. When coupled with building condition categories, scores declined by .08+ points for every 1% increase in free & reduced lunch percentage.	between building conditions and student achievement.	achievement in a high-performing, high-poverty school.
Researcher (Year & University)	Title	Setting of the Study	Study Sample	Method of Data Collection	Instruments & Field Testing	Data Analysis	Findings	Future Research (Reasons for Inclusion)	Similarities to Proposed Study
Edwards (2006 Ohio State)	School Facilities & Student Achievement : Student Perspectives on the Connection Between the Urban Learning Environment & Student motivation & Performance	Summer 2006 over a six-week period in urban Ohio school district	39 students 14 middle school 25 high school students	Survey Semi-structured interview Observations	Survey Instrument	Coding responses from surveys & interviews into categories by emergent themes  Item analysis	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.	The researcher posed the following questions for further research. 1. What do parents think about the overall condition of their child's school? 2. Is there a relationship ship between a school building's overall condition and pupil attendance and achievement? 3. Do urban students in new schools have attitudes like those in deteriorating schools?	Edwards' study is qualitative; the proposed study will employ a mixed-methods approach and will use focus groups to identify themes.
Richardson (2009)	The Relationship Between School Facility	2006-2007 2007-2008 Newly	3 <sup>rd</sup> & 4 <sup>th</sup> Grade Students in 2006-2007 who moved from old	Achievement Data (SOLs)  Attendance Data	Virginia SOL Tests in Reading and Math	Focus Group/ (coding of data for	Facility condition had a statistically significant relationship to achievement in fourth- and fifth-	Conduct a qualitative case study documenting the transition from an older, deteriorating facility to newly	N/A

	Conditions and Student Achievement, Attendance, and Behavior an Urban Elementary School in Southeastern Virginia	constructed Urban elementary school in Southeastern Virginia	facility to newly constructed facility in 2007-2008	Behavior Data  Focus Groups with students, parents, and teachers	Average Daily Membership  Discipline Infraction Reports  Focus Group Questions	emergent themes)  Achievement Data (paired t-Tests and linear regression)	grade mathematics and third-grade reading. Female students in fifth-grade also had a greater difference in mathematics scores than did fifth-grade boys. Attendance and behavior differences were not significant.	constructed facility.  Replicate in lower elementary grades—kindergarten, first-grade, and second grade—using PALS, DRA, and/or Stanford Achievement Test (SAT 10) data	
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