Principals' Perceptions of the Impact of Building Condition on Student Achievement

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Abstract of Dissertation

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Although inequity in educational opportunity provided to children (based on poverty, ethnicity, disability, or English as a second language) has led to a massive federal and state initiative to reshape public education (ESEA 1965 and ESEA 2001, known as the No Child Left Behind Act, or NCLB), the issue of the condition of the schools such children attend has been resistant to inclusion in the culture of educational reform. This study was undertaken to probe this resistance by examining the perceptions of a specific population of principals whose evaluation and continuing employment was tied to improving student achievement in their schools, in order to assess the condition of their buildings and their identification of condition with effect on student achievement.

An online survey was designed to obtain descriptive results using frequency and percentages to answer the proposed research questions. Demographic questions were included, based on those used by Cash (1993) in her study to provide a basis for describing these schools. Of the 74 schools identified as being in school improvement, 39 were ineligible due to nonparticipation by districts. Of the 35 schools that were eligible for the study, one had closed, and three had replaced the principal. A total of 31 school principals received the survey and 27 responded (87%).

The survey findings indicated that Respondents did not attach the same level of importance to building condition as they did to eight of the nine essential elements of school improvement. Unexpectedly, respondents attached even less importance to using teacher mentoring programs than they did to achieving and maintaining satisfactory building condition. The extent to which principals perceived Earthman's prioritized

building conditions as problems in their buildings was related to their perceptions of overall building condition. The extent to which principals perceived that the physical condition of the building impacted their ability to engage in effective schools practices appeared to be related to their perceptions of overall building condition, as did their perceptions that their schools had lost instructional time. Discernible differences in building condition between schools of varied community settings, grade ranges, and sizes were not apparent.

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Chapter 1

Introduction

Overview

The school building has stood as a symbol of opportunity for academic success from the very beginning of public education in the United States. Recent research has supported the claim that building condition has an indirect as well as a direct impact on student achievement, particularly for children of poverty. Multiple studies have reported that schools in poor condition are more likely to be unsafe, deter student achievement to a significant level, and promote or sustain inequity in educational opportunity for poor children, who tend to live near and attend schools in bad condition (Lemasters, 1997). Although inequity in educational opportunity provided to children (based on poverty, ethnicity, disability, or English as a second language) has led to a massive federal and state initiative to reshape public education (ESEA 1965 and ESEA 2001, known as the No Child Left Behind Act, or NCLB), the issue of the condition of the schools such children attend has been resistant to inclusion in the culture of educational reform (Earthman, 2002).

Since the passage of NCLB (2001), changes in federal and state laws designed to determine the success of schools and principals have resulted in the building principals' being identified as the agents responsible for the success or failure of the children attending their schools. A comparison of the essential correlates for student achievement, as set forth in the effective schools model, Virginia law concerning the responsibilities of the principal, and the evaluation criteria and performance indicators for principal

evaluation in Virginia reveals a common set of factors deemed essential for student achievement. Under NCLB, Title I elementary schools in Virginia that do not attain the required levels of achievement are identified as high-poverty, low-performing schools and are inducted into the school improvement process supervised by visiting review teams under the auspices of the state department of education. The Code of Virginia is specific about the steps that must be taken to improve instruction and raise test scores. With regard to principal performance and its assessment, common expectations are expressed, described, required, and sought; however, assessing and addressing substandard building conditions is not included in the school improvement process.

For over 50 years, the United States has promoted and supported, through law, the provision of equal educational opportunity for all children. In 2001, the renewal of ESEA, known as NCLB, targeted traditionally underperforming groups of children, including children of poverty. For the first time, states, districts, and schools were held accountable for student achievement. In high-poverty, low-performing schools, principals were identified as being responsible for the achievement of their schools' children, and formal procedures were established to provide resources, monitor progress, and evaluate job performance. In implementing this program of educational reform, practices based on research regarding school and classroom practices resulting in improved student achievement were identified and incorporated.

During the same time frame, another body of research reported that poor building conditions affect student achievement, thereby promoting achievement inequities for children living in poverty. Such research was being used in expert testimony concerning the importance of adequate building condition in addressing equity issues for children

traditionally underserved in public schools (Earthman, 2002, 2004; Oakes, 2002). Other research identified specific physical conditions that affected student achievement negatively. For example, unhealthy air in school buildings was associated with respiratory ailments that led to increased absenteeism (Schneider, 2002). Schools that lacked proper temperature control were tied to absenteeism due to school closures (Duke, 1998). In other studies, teachers reported that not being able to adjust classroom temperatures to provide comfort to their students and themselves led to job dissatisfaction and represented part of the reason for teachers' leaving their positions (Schneider). In Virginia, when high-poverty, low-performing schools do not meet the minimum requirements for student achievement on state assessments, the school improvement model implemented to guide the principal and staff to make adequate yearly progress does not include the consideration of the school's physical condition as a factor that might be affecting student achievement.

Principals of high-poverty, low-performing schools serve on the front line of the effort to raise student achievement. What are their perceptions of their buildings' condition? With the absence of building condition as a part of the designated action to be taken to improve student achievement, do they nevertheless perceive building condition as a factor in their drive to raise student achievement?

In this study, principals of high-poverty, low-achieving elementary schools, designated as Title I schools in improvement in Virginia, formed a population with unique qualifications to respond to questions about the role building condition plays in their efforts to raise student achievement. In this study, they were asked to complete an online questionnaire concerning their perceptions of a relationship between building

condition and factors identified through the school improvement process as being essential to raising student achievement. They were asked to evaluate the condition of their buildings in terms of physical factors that previously had been found to have an impact on student achievement. Finally, they were asked to indicate their perceptions regarding the effect of building condition on student achievement in general and on achievement in their schools, specifically. Their responses were organized according to four research questions into a description that summarized the perceptions of this specific group of educators.

Statement of the Problem

As districts have become more accountable for meeting state standards for student achievement, the principal's responsibility for his or her school's success has increased; the principal is publicly accountable for meeting or failing to meet accreditation requirements as well as the requirements of the NCLB legislation. Further, as the stakes for failing to achieve at required levels become greater than ever before, the principal is increasingly being held accountable for leading his or her school to success. While extensive research was found indicating that building condition affects student achievement and therefore may play a role as a resource for principals, there was scant research regarding (a) whether or not principals actually perceive the condition of their buildings to be a resource in their quest for raising student achievement, or (b) the ways in which they perceive building condition to be a resource in this regard.

For principals of low performing high poverty schools, held responsible for their schools' success or failure to achieve explicit goals for student achievement, the perception of their buildings' condition and the possible effect it might have on student

achievement speaks to the issue of the relative merits of available resources. Their possible perceptions that the condition of their schools was adversely affecting their ability to raise student achievement would seem to indicate that building condition might also be an impediment that was without ready remediation within the existing organization of resources for that purpose.

Purpose and Research Questions

The purpose of this study was to explore the perceptions of principals of Title I Virginia schools identified for School Improvement in 2008-2009 concerning the condition of their school buildings and the impact of that condition on their efforts to raise student achievement. All of the principals in this study led high-poverty, low-performing schools that had been identified for a mandated school improvement process based on effective schools practices.

The study and the questionnaire were designed to answer the following exploratory research questions:

1 Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?

2 With what frequency do principals report each building condition of Earthman's (2004) prioritized list as an issue in terms of their perceptions of overall building condition?

3 With what frequency do principals report the impact of building condition on effective schools practice?

4 Is there a relationship between principals' perceptions of overall building condition and their perceptions of the impact of building condition on achievement due to loss of instructional time?

Statement of Potential Significance

As principals continue to be held accountable for student achievement in their schools, their perceptions of available resources will drive many of their decisions. Research on the relationship between school physical condition and improved student achievement has yielded findings that support the use of building condition as a resource that may have an impact on that achievement (Cash, 1993; Crook, 2006; Hines, 1996; Lanham, 1999). Among numerous factors identified as part of the physical environment of the school building, the most significant conditions that affect student achievement have been identified by a growing body of research (Earthman, 2004; Lemasters, 1997; Schneider, 2002). Inadequate building condition has been identified as a compelling factor in expert testimony concerning inequities in educational opportunities, for example, in a fairly recent class action suit against the schools in California (Earthman, 2002; Oakes, 2002). Recent studies concerning the causes for the loss of experienced teachers identified inadequate building condition as a factor affecting teacher decisions to leave (Buckley, Schneider, & Shang, 2004; Hirsch, 2005; Hirsch & Emerick, 2006; Ruszala, 2008).

Building upon the body of research examining characteristics of school buildings that have had an impact on student performance, this study connects those characteristics with the perceptions of the role they play for principals held accountable for minimum achievement levels, particularly in historically underserved groups. The underserved

populations addressed in this case are represented by the four subgroups identified by NCLB (2001): (a) students with disabilities, (b) students with limited English proficiency, (c) students living in poverty, and (d) students belonging to ethnic minorities. Grubb and Goe (2002) identified gaps that had endured despite persistent efforts to reduce the perceived results of unequal access to resources, the most enduring being the gap in test scores found among different ethnic groups and the differences in educational attainment by income or class, most famously identified by Coleman (1966). In her synthesis of expert reports prepared for the class action suit Williams v. State of California, Oakes (2002) stated,

> Teachers, books, and adequate school buildings are the staples of American teaching and learning. They are not usually thought of as educational resources or conditions whose availability varies significantly among schools, or whose centrality to education requires examination, documentation, and defense. The state has failed to provide these basic educational tools to many, many school children. Most often these are children who are poor, non-English speaking, African American, and Latino. (p. 3)

The issue of adequate facilities was highlighted in additional evidence presented by Earthman (2002). Earthman's research comprised an extensive overview of research supportive of the relationship between building condition and student achievement.

When high-poverty, low-performing schools in Virginia do not meet the minimum requirements for student achievement on state assessments, the school improvement model implemented to guide the principal and staff toward adequate yearly progress does not include assessment of the school's physical condition as a factor that

might be affecting student achievement. This study sought to elicit the perceptions of the principals of those schools and to provide a description of their responses. The collection and examination of those perceptions can be used to address the question of why inadequate building condition, identified as a factor in a growing body of research, has remained unacknowledged and unavailable as a resource for school improvement, particularly in high-poverty, low-performing schools.

Theoretical Framework

Two themes formed the framework for this study. The first was the role of school building condition as a resource in the drive to raise student achievement, particularly in high-poverty, low-achieving schools. The second theme was the relationship of the principal's accountability for his or her school's success in achieving the required test scores to his or her perceptions of the resources available under the school improvement process.

The first theme underlay the review of research concerning the impact of school building condition on the academic achievement of children in the building, as well as the review of literature concerning how the historic role of the school building itself has evolved as an icon for the nation's expectations for both its children and its future. The second theme formed the basis for the review of literature concerning the emergence of the principal's role in the school improvement process, including personal accountability for student achievement, how it is connected to performance evaluation in Virginia, and the ensuing use of the characteristics of the school improvement model as a basis for providing resources to the principal.

The first theme was based upon a relationship, delineated in part according to the

concept of building condition and its direct and indirect impact on student achievement, particularly for children of poverty. A growing body of research has addressed this impact; the research has included summaries of studies of the impact of specific characteristics of building condition such as those identified in the work of Earthman (2002, 2004), Lemasters (1997), and Schneider (2002). In the research collected in these summaries, the findings were built on the premise that building condition has an impact on student achievement, either directly through specific physical conditions that affect the health and comfort of the occupants, or indirectly through the perception of the physical condition as a reflection of attitudes and beliefs about the school, the people who occupy the school, and the community surrounding the school. In this research, explanations for differences in student achievement beyond the strong impact of student socioeconomic condition were sought

Using the findings of earlier research, Cash (1993) created a theoretical model to explain the relationship between the condition of a school building and student achievement and behavior. This model is useful for demonstrating the various aspects of that relationship, particularly the financial capacity of the school district and the attitude of school leadership concerning the importance of the appearance and upkeep of the building. Cash's model is also useful for demonstrating the underlying premise for the theme of the relationship assumed in this study. Indeed, the model has been used in succeeding research to explore the relationship between building condition and student achievement (Crook, 2006; Hines, 1996).

A second area that was explored within the relationship theme concerned the perception of the school building itself as an iconic representation of the beliefs and

values of the American culture concerning education, economic opportunity, and the intergenerational transmission of values (Cutler, 1989). The identification of the school building as representing the political, economic, and social value of those attending carries an additional message. When schools are allowed to serve children in an environment that is unhealthy, unsafe, and chronically lacking in needed resources, an iconic message is delivered to students, teachers, parents, and communities. The concept that the school conveys a message about the people who work and learn there supports its use as an icon for the potential achievement that may be expected.

The second theme was addressed through a review of the literature concerning the redefinition of accountability in public schools and its impact on the leadership role of the building principal. The burden of accountability has shifted from the student and his or her effort and ability to the individual providing the instruction. The principal as linchpin for the success of the school, particularly as demonstrated by standardized test scores, has evolved through national movements such as the effective schools movement (Lezotte, n.d.). The use of student test scores to evaluate the performance of building principals has evolved from a national emphasis on accountability for student achievement generated by NCLB (2001). Review of the literature concerning principal evaluation in Virginia, based on the utilization of effective schools strategies and tied to student outcomes, addressed this theme. Both themes are discussed in chapter 2.

The theoretical framework for this study, as well as the relationship between the themes of the framework, is demonstrated by the model presented in Figure 1:

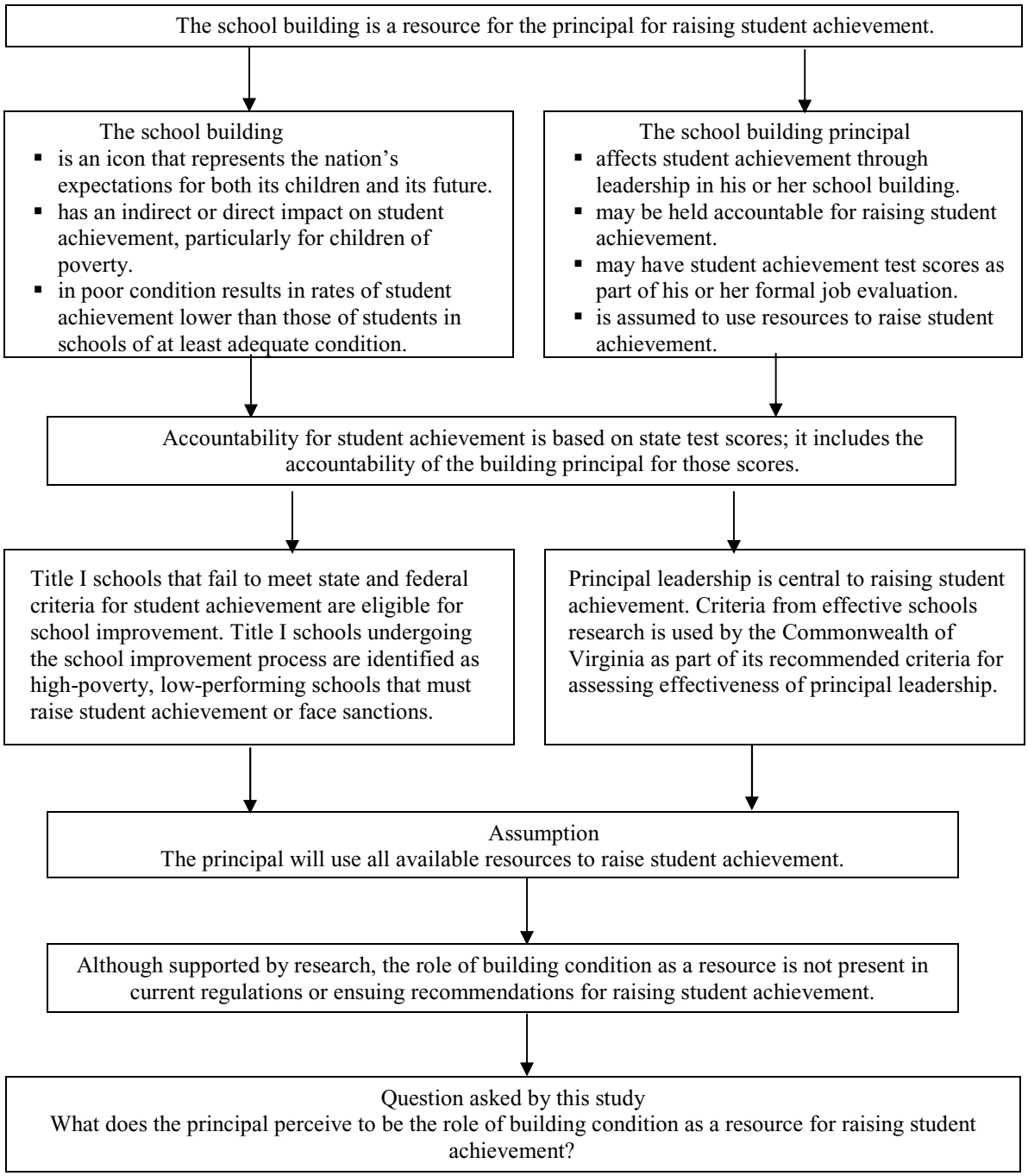

Figure 1. Theoretical framework.

Summary of the Methodology

This is a descriptive study of Title I school principals' perceptions regarding the role of building condition in raising student achievement. A survey instrument was created to collect data to answer the proposed research questions. The survey instrument was developed to elicit information indicative of the perceptions held by members of the population of Title I elementary school principals in Virginia in 2008-2009. All Title I elementary school principals whose schools were designated as schools in improvement were the recipients of the survey. The survey was based in part on previous surveys conducted to gather information about condition and characteristics of buildings as well as demographic information. The survey was pretested and evaluated by a panel of experts to establish content validity and enhance the reliability of the instrument. An online-survey program was used to contact designated principals and deliver the survey.

Delimitations

The participants in this study were Virginia principals of Title I elementary schools labeled as being in school improvement in 2008-2009 in districts granting approval for participation in this study. These schools had failed to achieve the required minimum scores on the Virginia Standards of Learning tests as established by the Virginia Department of Education (VDOE) in compliance with the regulations set forth by the U.S. Department of Education (USDOE). Principals of Title I schools not in improvement were not included in this study, nor were principals of non-Title I schools that did not make adequate yearly progress. The data were collected from late spring of the 2008-2009 school year through early fall of the 2009-2010 school year as access to principals became available.

Limitations

This study was limited to the perceptions of a specific population of principals identified by two conditions: (a) they were principals of high-poverty, low-performing elementary schools in improvement as designated by the Commonwealth of Virginia, and (b) the status of their schools was limited to the specific school year identified. Schools in improvement work toward raising student achievement in order to exit that status. Mitigating factors at a particular school might have resulted in unsatisfactory test scores that do not reflect the level of student achievement likely to have been attained without the interference of those factors. Because school performance is evaluated yearly, the status of schools can change from year to year. Further, the results of the study are valid to the extent that the respondents understood the survey questions and answered candidly concerning their perceptions. The response rate in this study reflects the number of schools eligible for the survey through district permission.

Assumptions

It was assumed that the perceptions of the identified population of principals could be accurately collected, analyzed, and reported. It was assumed that the data obtained would provide useful information concerning the role of building condition in student achievement, as described by a specific population of principals held directly accountable for student achievement and expected to make use of research and resources to assist in that endeavor. It was assumed that the identified population of principals would participate and complete the online survey in a timely manner with a high rate of return.

Definitions

For the purposes of this study, the following terms are defined:

Accountability. Accountability implies responsibility for the achievement of students and schools according to state-defined academic standards, which are quantified by state test scores.

Adequate Yearly Progress. Under the provisions of the 2001 NCLB Act, Adequate Yearly Progress (AYP) represents the minimum level of improvement that schools and school districts must achieve each year as determined by NCLB.

Administrator evaluation criteria and performance indicators. As part of the Guidelines for Uniform Performance Standards and Evaluation Criteria for Teachers, Administrators, and Superintendents (VDOE, 2000a), these indicators form the basis for evaluation criteria for principals in Virginia.

Elementary and Secondary Education Act (ESEA). As the primary federal law affecting K-12 education, this act is reauthorized by Congress every 6 years. The most recent authorization also is referred to as the NCLB Act; it was approved by Congress in 2001 and signed into law in January 2002.

Free and reduced-price lunch eligible. Students who apply are identified as eligible for the Free and Reduced-Price Lunch Program under the National School Lunch Act, which provides subsidies for free and reduced-price lunches to students based on family size and income.

In school improvement. This term is used nationwide to designate any school in a process of responding to required procedures as a result of not making AYP for 2 of 3 consecutive years of state assessment. In addition, the term is used to designate the steps

required to meet the objective of positive gains in the Virginia Standards of Learning test scores.

If a Title I school does not make AYP in the same subject area (math, reading, or science) for 2 of the past 3 years, the school is designated as being "in improvement" and is required under NCLB to take certain prescribed actions to raise achievement as evidenced by state test scores in those subject areas.

Instructional leader. The principal, designated by the Virginia Standards of Accreditation (SOA) as the instructional leader, is the person held most accountable for effective school management that promotes student achievement.

Local education authority (LEA). According to Virginia and federal law, each school district in the state is designated as a local education authority. Based upon the Guidelines for Sanctions/Corrective Actions for Virginia School Districts in Improvement Status as Required by the No Child Left Behind Act of 2001, adopted by the Virginia Board of Education (2004), each local education authority is annually reviewed by the state education agency to determine if (a) its Title I schools are making AYP and (b) it is carrying out its responsibilities with respect to school improvement.

No Child Left Behind Act. No Child Left Behind is the name applied to the 2001 renewal of the Elementary and Secondary Education Act (ESEA), which was first enacted in 1965; it redefined the federal role in public education, calling for stronger accountability for results on the part of the states and, through them, on the part of local school districts and schools.

Standards of Accreditation (SOA). The Standards of Accreditation set forth regulations for accrediting public Schools in Virginia. Revised in 1997, the regulations

launched public school accountability as part of education reform in Virginia. The SOA delineate specific responsibilities for ensuring that students are provided the opportunity to learn.

Standards of Learning (SOL). First adopted in June 1995 by the Virginia Board of Education, the SOL represent a comprehensive plan of standards-based objectives for subjects taught in public schools in Virginia. Currently the scores for four core subjects are used to determine school accreditation: English, math, science, and social studies.

Title I school. A school that is designated as being high poverty and eligible for participation in programs authorized by Title I of P.L. 107-110 may be designated as a Title I school, based upon the following criteria: (a) The percentage of children from low-income families is at least as high as the percentage of children from low-income families served by the local education authority (LEA) as a whole, or (b) 35% or more of the children are from low-income families (Hoffman, 2007).

Title I. Title I is the federal funding program designed to assist low-income children who are either behind academically or at risk of falling behind. Title I funding is based on the number of low-income children in a school, generally those eligible for free or reduced-fee lunch programs. Low income status is determined by student participation in the free and reduced price lunch program.

Summary

The role of school building condition in student achievement, particularly in schools attended by children of poverty, has been the focus of numerous studies. In several of these studies, the direct impact of specific conditions on student achievement has been investigated. In other studies (Hirsch & Emerick, 2006; Schneider, 2003), the

focus of research has been on the indirect impact of building condition in terms of student, teacher, and staff perceptions of the message conveyed by building conditions with regard to their own status, value, and potential. The school building itself has served an iconic role in the history of American education, reflecting the cultural expectations for public schooling.

As the issue of accountability for student performance has shifted toward teachers and administrators, the principal, identified as the instructional leader accountable for student achievement in his or her building, has become the focus of school improvement procedures. Despite an extensive search of the literature, the impact of building condition was not identified as a factor related to the perceptions of a principal's success or failure. In this study, the responses of principals of high-poverty, low-achieving schools formed a basis for describing their perceptions of the role, if any, that building condition played in their quest for raising student achievement.

Chapter 2 of this dissertation presents a review of the research literature upon which the theoretical framework of this study was grounded. Chapter 3 describes the methodology used to collect the relevant data. Chapters 4 and 5 present the findings and interpretations of the study results.

Chapter 2

Review of the Literature

The role of the school building as a symbol of opportunity for academic success can be traced back to the very beginning of public education in the United States. Recent research has produced credible evidence that the actual physical condition of the school building may have a measurable effect on student achievement. This relationship between the school building and student achievement is both abstract and concrete; the building has maintained an iconic role in American culture, and the physical condition of the building has been linked to measurable levels of student achievement.

The national quest for raising student achievement has focused on test scores as the indicator of improvement; currently, scores from state-created tests are used to indicate improved student achievement. This focus on monitoring the improvement of student achievement was a central component of the 2001 renewal of the Elementary and Secondary Education Act (ESEA) legislation, titled No Child Left Behind (NCLB), which has brought dramatic changes to the delivery and assessment of public education in the United States. The use of tests to assess student achievement at the building level has resulted in individual schools' being labeled as successful or unsuccessful in visible, collectible, and publishable outcomes, including test scores, levels of absenteeism, and rates of high school graduation. As school districts have become more accountable for meeting state standards for student achievement, the success of individual schools has become crucial to those districts, and the principal's responsibility for his or her school's success has become an accepted and expected factor.

For example, the Code of Virginia section on the role of the principal (8VAC20-131-210) explicitly connects the actions of the principal to the expectation of progress in student achievement. Further, national organizations have published research findings regarding the role of principal leadership in securing progress in academic achievement. One fairly recent national survey on the perceptions of public school superintendents and principals reported that the majority of surveyed superintendents thought it was a good idea to hold principals accountable for students' standardized test scores at the building level (Farkas, Johnson, & Duffett, 2003).

Because schools and their principals are held accountable for student achievement through the use of high-stakes testing, low-performing schools with high levels of poverty are expected to make progress according to explicit standards. One may logically conclude that building condition is considered as a resource when planning for school improvement. It may be argued that principals held accountable for student achievement perceive the condition of their school buildings as a factor in their ability to succeed, particularly if the school is perceived to be in poor condition.

The research for this study was organized into four strands. The first strand investigated the role of the school building in the history of public education in America, specifically the origin and evolvement of the traditional iconic connection between the school building and the theme of progress in American culture. This theoretical connection was based on the image of the schoolhouse associated with the moral, social, and intellectual content of the curriculum taught within. The influence of early educators on both the initial design of the one-room school as well as the expanded school building design was pervasive, encouraging the construction of the best types of schools to support

student achievement (Stuttgen, 2002). This early union between the design and environmental condition of school buildings and their perceived benefits with regard to achievement provided the precedent and background for examining current beliefs about the importance of the school building itself.

The second strand of investigation explored research supportive of the impact of building condition on student achievement as demonstrated by performance on standardized tests. First, the growing trend to link accountability for student achievement to the school and staff rather than hold the individual student responsible for his or her own learning was examined. This trend has been fostered by the connection of student achievement to singular performance scores on standardized tests such as the Virginia SOL tests. Results of these tests are used to determine whether or not schools, particularly Title I schools, meet the AYP benchmarks required under NCLB.

Included in the second strand was research connecting building condition to student achievement (Cash, 1993; Earthman, 2004; Hines, 1996; Lemasters, 1997); the research reported the results of studies regarding the impact of physical building conditions on student achievement, health, and rates of absenteeism, as well as the ways in which building condition affects the principal's ability to lead his or her school toward achieving required scores on state standardized tests.

The third strand of investigation related to the ways in which accountability for student achievement has changed the responsibilities, actions, and evaluation of the building principal. Principals of Title I schools, identified as such because of high student poverty, are subject to the greatest amount of attention and control within NCLB regulations. When such schools perform poorly, the potential for public failure and

ensuing sanctions places particular responsibility upon these schools' principals. From the beginning of public education, principals have played a pivotal leadership role. As instructional leaders in their buildings, their success in academic leadership now depends upon their schools' meeting AYP, which is determined by whether or not they reach state standards for student achievement on state-administered standardized tests. In Virginia, the mandate to meet state and federal academic requirements has led to a change in the traditional evaluation of principal performance. Prior to 1999, principal performance evaluation was conducted according to individual district custom and policy. Since the passage of the Virginia Guidelines for Uniform Performance Standard and Evaluation Criteria for Teachers, Administrators, and Superintendents (VDOE, 2000a), there has been a uniform set of standards for the evaluation of principals in the Commonwealth. Thus there has been a change in the role, the evaluation, and the job security of school principals in Virginia; this change emanated directly from state law that holds principals accountable for their students' academic progress.

In the fourth strand of investigation, the effect of NCLB testing on the assessment of school performance in Virginia was examined. In 2001, NCLB tied school accountability to the achievement of high-quality standards on state-created standardized tests. The high stakes of test results has been reflected in the marshaling of resources to support student achievement. Based upon studies suggesting that building condition is tied to student achievement, the potential impact of building condition as a resource to support or, at the very least, not to erode student achievement seemed to be indicated.

This review of the literature was developed through a systematic search of available electronic databases, notably Aladin, ProQuest, EBSCO Academic Search

Premier, ERIC, and JSTOR. Primary sources such as texts cited in the literature were obtained through interlibrary loan and Internet search, using keywords in the Google search engine. Research also focused on the ongoing published work of experts in the following fields: the relationship between building condition and student achievement, the influence of the long-standing iconic role of the school building in American culture, and the influence of accountability for student achievement standards in evaluation guidelines on the perceptions of principals in public schools.

The Role of the School Building in the History of Public Education in America

The architecture of the schoolhouse has undergone synchronous changes in design and appearance as it has responded to historical changes in the cultural, political, and economic conditions of the United States. The public schoolhouse has been one of the most recognizable public buildings, synonymous with formal teaching (Cutler, 1989). As the public school has evolved from the existence of the iconic one-room school with a singular, defined purpose to the construction of complex "small cities" of 5,000 high school students with myriad purposes, school buildings have reflected the changing definitions of what schooling should be. The earliest architectural plan books were written by educators William Alcott, Horace Mann, and Henry Barnard in the 1830s (Stuttgen, 2002). Barnard likened the schoolhouse to a "temple, consecrated in prayer to the physical, intellectual, and moral culture of every child" (as cited in Cutler, 1989, p. 55).

When Horace Mann became Secretary of the Massachusetts Board of Education in 1837, the school buildings used by most children did not even provide adequate shelter from the weather. The health and safety of pupils was important to Mann but not simply

as an end in itself; he also believed that the comfort and security of children affected their capacity to learn. With Henry Barnard, Mann created volumes of information regarding the heating, lighting, and ventilation of schools. According to Messerli (as cited in Cutler, 1989), Barnard and Mann rallied support for public education by focusing on the obvious problems of unsafe schools, based on their conviction that the child whose body is favored, not abused, will be a better student.

In the 19th century, education included moral development, and the schoolhouse design was expected to "inspire and shape human intellect, morals, disposition, and aesthetic sensibilities" (Stuttgen, 2002, p. 13). Both Mann and Alcott addressed the aesthetic and practical requirements of the school building. In 1832, Alcott published An Essay on the Construction of the School House, which addressed not only the moral and spiritual improvements to be gained from a well designed and constructed schoolhouse but also the importance of proper ventilation, lighting, and steady temperature (as cited in Stuttgen, p. 27). Mann stated,

> [The] construction of schoolhouses connects itself closely with the love of study, with proficiency, health, anatomical formation, and length of life. [The improvement of school house construction] would be returned a thousand-fold in the improvement of those habits, tastes, and sentiments of our children, which are so soon to be developed into public manners. (as cited in Stuttgen, p. 30)

The 19th century in America also witnessed the transformation of informal, unregulated activity into systematic, well organized, and standardized practices. Because education of the young was separated from the work or home environment, specialized training by qualified instructors became necessary (Cutler, 1989). This cultural belief

regarding education extended into the 20th century, with further consolidation of small, one-room schools into larger buildings, often with standardized floor plans determined by school building codes set by educators (Cutler). Despite any disagreements that developed over these cookie-cutter designs, uniformity in regulations for health and safety formed the bedrock foundation for advocates of reform. John Dewey's progressive theories promoted learning through creative participation, thereby bringing an end to the rigid early design and incorporating science laboratories, arts, and vocational education into the public high school (Bradley, 1996). The Gary Plan, Superintendent William A. Wirt's response to Dewey's proposed program, was widely copied between 1912 and 1928 (Cutler).

At the turn of the 20th century, smaller isolated schools yielded to the pressures for economic and thematic consolidation into new, larger schools, and the design and construction of these new schools was placed under the auspices of professional educators. As part of their progressive beliefs in the necessity of standardized school buildings to promote high academic, social, and moral standards, educators pushed for uniformity of size and adequate ventilation, as well as the preferred temperature, type and arrangement of furniture, size and function of school yards and playgrounds, and use of appropriate lighting (Stuttgen, 2002).

Growing concern for the health of the urban school child became the basis for the school hygiene movement in the early 20th century, as well. During this era educators imagined a direct connection between the design of the school house and pupil mastery of the curriculum. According to Spatz, New York City's first school architect, C. B. J. Snyder, hoped to "make the school building itself quite as much a factor in education as

the textbooks" (as cited in Cutler, 1989, p. 10).

The Sanitary School Law of 1911 emerged from the ceding of control from local autonomy to a national model for the design and content of public schools. The funding for schools has always been a local responsibility (Stuttgen, 2002). The elaborate "temples" to learning that were built in the early part of the 20th century were intended to be distinctive, visual, and recognizable public landmarks representative of civic commitment to the values of education in American culture (Cutler, 1989). Throughout the latter 19th and early 20th century, the push for improved education was not separate from the push for the kind of building necessary to provide it. Indeed, Cutler noted that many school reformers described themselves as "community leaders charged with protecting nothing less than the future of American society" (Cutler, p. 7).

The image of the school yielded to streamlined "factories" after World War II. At the end of the 20th century, the social imagination had left this "Cold War" icon behind, and school design represented a variety of social and cultural beliefs about the quality and condition of such places for children. What did not change were the firm expectations that schools and learning were still synonymous and that the building of a new school represented a major event in the life of the community (Cutler, 1989).

In the 1960s, the image of the school was turned upside down by such writers as Herbert Kohl and Jonathan Kozol. The rundown look of the school building represented the rundown ideas and spirit of the people within. Broken desks and windows reflected indifference to racism and educational failure. Kozol's (1967) Death at an Early Age depicted failure of the physical environment as representative of the failure of the education being delivered. That is, the school building represented the factors that limited

or reduced student achievement. The condition of urban, mostly black public schools was compared to that of suburban, mostly white public schools in middle class communities to represent the inherent inequality of opportunity created by prejudice against race and poverty.

The image of the school as a temple to education also was reversed in the belief that modern school design, based on economic minimums, led to buildings that resembled prisons (Cutler, 1989, p. 38). In 1984, John Goodlad expressed his belief that "well-maintained schoolhouses will encourage high attendance and achievement by engendering respect for the school" (as cited in Cutler, p. 38). Cutler noted that despite the flaws in school buildings, faith in their importance and their role in American culture continued.

Early justification of public schooling was based on a 19th-century belief in the individual's right to self-improvement, which was evidenced through the struggle to gain access to the school and the education available there (Stuttgen, 2002). The belief that public education was justified by the anticipated rewards for those who could make something of themselves by attending school and becoming educated rested on this self-improvement model. This belief that learning opened the door for anyone who could attend and learn what was taught there created a lasting cultural assumption that the success or failure of the individual resides within himself or herself: It is the responsibility of the individual to learn what needs to be learned, and it is the responsibility of the public school to provide that opportunity. This rugged individualism philosophy has been challenged by a new cultural belief that the struggle is no longer one of individual self-determination. Rather, at the turn of the 21st century, the struggle is for

individual achievement from uniform instruction as measured by minimum scores on standardized tests (Stuttgen).

Congruently, the United States has changed in its social and political ambitions and mandates for public schooling. From the early religious and classical models, schools have moved through the progressive visions of the early 20th century, thereby expanding the idea of universal education. Schools currently encompass a mix of expectations that include growing responsibilities for the well-being of the entire child and the shift of responsibility for achievement from the child to the school system (Stuttgen, 2002). Thus, examination of the research concerning the history of public school design indicates that it has traditionally mirrored public expectations for the kind of learning that should occur in the school, as well as the nature and level of the resulting capacity of the students who are considered to be successful there.

Building Condition as a Resource that Affects Levels of Student Achievement on Standardized Tests

The purpose of this section of the literature review was to examine the body of published reports, studies, and research that support the existence of a relationship between building condition and student achievement. A large and growing amount of research has found a positive relationship between school facilities and student achievement (Earthman, 2002, 2004; Lemasters, 1997; Schneider, 2002). Much of this research focused on the physical attributes of school buildings and their relationship with student learning.

Other studies investigated the impact of building condition on instructional time (Duke, 1998), one of the key elements identified as an essential component of school

improvement. The importance of instructional time for standards-based curriculum and testing was reported in a study for the Institute of Education Sciences, U.S. Department of Education, by Mid-continent Research for Education and Learning (McREL) (Kendall & Snyder, 2003), which stated that research into curriculum and teaching practices concluded that for all students to be successful in meeting expectations, they need adequate, which sometimes means additional, time to learn. According to Anderson, a number of studies have shown that

> • the more time students spend engaged in learning, the higher their achievement; spending less time than was needed resulted in decreased student achievement; and
>
> • the more time allocated to a particular content area, the greater the student achievement in that area. (as cited in Kendall & Snyder, pp. 15-16)

With the standards-based curriculum and objectives established by the Virginia Department of Education (Standards of Learning), instruction in Virginia has become increasingly based on the belief that there is specific knowledge that all students should have, regardless of characteristics that might call for alternative methods of instruction. For all students to reach the same indicators of successful learning, some learners require extra time to learn what is necessary. Standards-based instruction is predicated on the availability of time for all students to learn. In low-performing schools, maximum time availability represents a component for student success.

Still other studies identified disparity in building conditions as a factor in schools with minority or high-poverty students (Earthman, 2004). In the majority of studies, student achievement was represented by standardized test scores and building condition

was determined through the examination of survey responses. A number of studies were conducted in which specific environmental conditions such as temperature, levels of natural light, levels of humidity, indoor air quality, and presence of hazardous materials were measured in relationship to levels of student achievement. Some of the studies indicating a relationship between building condition and student performance were conducted in settings that were not schools but had similar physical attributes such as amount of air flow, presence of light, and levels of noise (Earthman; Schneider, 2002).

The rationale for research investigating the relationship between environmental conditions and the performance of building occupants, as well as interest in the findings of such research, has been supported across a wide range of organizations connected to school facilities planning. Reports issued at both the federal and state government levels have presented research findings indicating the impact of building condition on student achievement.

In 1995, the U.S. General Accounting Office issued a document reporting the findings of a study concerning the extent to which schools had the capacity to support the learning requirements of the 21st century (U.S. General Accounting Office, 1995). A nationally representative sample of approximately 10,000 schools, representing a response rate of 78%, indicated that most schools were not prepared in critical areas such as modern technology and access to the Internet. Further, the study found that 40% of the surveyed schools reported that their schools did not meet the basic requirements for science laboratory or large group instruction. The report also revealed that schools with minority populations above 50% were more likely to fall short of adequate technology and to have a greater number of unsatisfactory environmental conditions.

Lewis et al. (2000) authored a report for the National Center for Education Statistics on the condition of American public schools and the cost for bringing them into good condition. They presented a statistical analysis of data obtained through a questionnaire sent to public schools. The sample included 1,004 schools, and the data were obtained from the questionnaires returned from 903 schools; the data were "weighted to produce national estimates that represent[ed] all regular public schools in the United States" (p. iii). In the executive summary, the report noted that schools indicating the condition of the building (whether permanent or temporary) or any building condition (such as plumbing, roof repair, or electrical power) as less than good was given a rating of fair, poor, or replace; the report provided information about the cost of ameliorating the condition (p. iii). A summary table of buildings in less than adequate condition by school characteristics revealed that the higher the percentage of minority enrollment or the percentage of students eligible for free or reduced-price school lunch, the greater the percentage of schools in less-than-adequate condition (see Table 1).

Table 1. Percentage of Public Schools With Each Type of Building, and Percentage of Respondents Rating Each Building Type in Less than Adequate Condition, by Certain School Characteristics, from the Survey on the Condition of Public School Facilities, 1999

School characteristics	Original buildings		Permanent additions		Temporary buildings	
	School has building type	Less than adequate condition[1]	School has building type	Less than adequate condition[1]	School has building type	Less than adequate condition[1]
All public schools	[2]100	19	67	16	39	19
School instructional level						
Elementary school	[2]100	19	64	17	40	18
High school	99	21	74	14	37	21
Combined	100	[3]10	92	[3]11	27	—
School enrollment size						
Fewer than 300	99	22	64	16	21	—
300 to 599	100	19	70	17	39	22
600 or more	[2]100	18	65	14	50	20
Locale						
Central city	100	20	62	18	45	19
Urban fringe/large town	100	18	66	17	44	18
Rural/small town	99	19	71	14	29	19
Percent minority enrollment						
5% or less	99	19	68	11	25	12
6% to 20%	[2]100	18	70	14	39	22
21% to 50%	100	16	62	16	44	14
More than 50%	100	23	67	24	51	24
Percent of students in school eligible for free or reduced-price school lunch						
Less than 20%	99	20	63	8	35	17
20% to 39%	100	18	64	13	36	16
40% to 69%	100	16	74	16	42	19
70% or more	100	25	65	30	43	25

— Too few cases for a reliable estimate.

[1]Based on schools with that type of building. Ratings of less than adequate include ratings of fair, poor, and replace.

[2]Rounds to 100% for presentation in the table.

[3]Coefficient of variation greater than 50%.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on the Condition of Public School Facilities, 1999.

The report by Lewis et al. (2000) indicated that cost was a substantial hindrance in improving school condition. Three fourths of the schools completing the survey indicated the need to spend money on repairs, renovations, and modernization. One in four schools reported that at least one type of on-site building was in less than adequate condition. Specifically, 19% of the schools responding to the survey (n = 903) reported their original buildings to be in less than adequate condition, 16% of those schools with building additions reported them to be less than adequate, and 19% of those schools with temporary buildings reported them to be less than adequate. Further, 4% to 6% of the schools reported buildings to be in poor condition, and 1% to 2% reported that their buildings needed to be replaced. The report noted that 11 million students thus were placed in less-than-adequate schools (defined as fair, poor, or replace).

With regard to the issue of disparity in school conditions according to poverty and minority status, the report (Lewis et al., 2000) stated that schools with the highest level of poverty (70% or higher) were more likely to report at least one building feature as less than adequate than were schools with levels of poverty at 20% to 39% or less than 20%: that is, 63% of the schools with the highest level of poverty versus 45% each for schools with 20% to 39% or less than 20% levels of poverty (p. 15). Addressing the responses concerning building features and environmental factors, the report included the following information:

> When considering specific building features and environmental factors, two differences emerged between schools with more than 50% minority students and schools with 21 to 50% minority, both showing a higher percentage of schools with more than 50% minority enrollment indicating the feature to be in less than

> adequate condition. Specifically, schools with more than 50% minority enrollment were more likely than schools with 21 to 50% minority enrollment to report inadequate exterior walls, finishes, windows, or doors, and schools with greater than 50% minority enrollment were more likely than all other schools to report inadequate electric power. Moreover, schools with more than 50% minority enrollment were generally more likely than schools with lower concentrations of minority students to be severely overcrowded. (Lewis et al., p. 59)

Information provided in the summary of the NCES report (Lewis et al., 2000) indicated that one quarter of American public schools reported at least one type of on-site building in less than adequate condition. Half of the respondents indicated that their schools had building features that needed repair, and 43% reported unsatisfactory environmental conditions. The report further found that many of the oldest schools, despite being the most in need of attention, did not have plans for improvement. One quarter of the schools reported overcrowding, and almost 10% had enrollments more than 25% beyond the capacity of the school's permanent buildings. The report concluded that although most schools were in adequate condition, many were in poor condition, facing substantial costs for remediation or replacement.

In the discussion of its methodology, the NCES report (Lewis et al., 2000) described the protocol of its Fast Response Survey System (FRSS), established in 1975 and designed to collect small amounts of data in a small amount of time. In this process, data are collected from relatively small samples to maintain speed, and are "weighted to produce national estimates of the sampled education sector" (p. A-3). The report stated that the surveys were designed to take no more than 30 minutes and to be no longer than

three pages in length. National estimates of the sampled education sector were produced by weighting the data. Although the sample size permitted some breakouts by classification variables, the sample size within categories decreased as the number of categories within classification variables increased. This phenomenon resulted in larger sampling errors for the breakouts by classification variables. In this survey, the sample of public schools consisted of 1,004 regular schools at the elementary, middle, and high school levels. The sample was selected from the 1996-1997 NCES Common Core of Data School Universe File. The sampling frame included 80,238 public schools: 49,266 regular elementary schools, 14,808 middle schools, and 16,164 high schools. Special education, vocational, and alternative schools were excluded. A school was designated as elementary if the lowest grade was less than or equal to Grade 3, and the highest was Grade 8 or lower. A middle school represented a range of grades from no lower than Grade 4 and no higher than Grade 9. High schools included those with no lowest grade higher than Grade 9 and no highest grade lower than Grade 10. Combined schools included (a) those with no lowest grade less than Grade 3 and no highest grade lower than Grade 9; or (b) schools for which the lowest grade was in Grades 4 through 8, and the highest grade was in Grades 10 through 12. High schools and combined schools were placed into one category for sampling.

The sampling frame was stratified by instructional level, location, and school size (Lewis et al., 2000). Schools were also sorted by geographic region and percentage of minority enrollment in the school. From the strata sample sizes, a total sample of 1,004 schools was selected systematically from the sorted file using independent random starts. The final sample contained 401 elementary, 301 middle, and 302 high and combined

schools. The 1,004 schools were located in 838 school districts.

A questionnaire was mailed to each school district, requesting that the most knowledgeable personnel complete the survey, as well as to each of the sampled schools (Lewis et al., 2000). The respondents to the survey were either at the district level or at the school level, in which case the principal was the usual respondent. A telephone call was used as a follow-up communication to districts that did not reply initially. A total of 990 eligible schools remained in the sample; the response rate was 91%.

The NCES report (Lewis et al., 2000) stated that the responses were weighted to produce national estimates, designed to adjust for the variable probabilities of selection and differential response. Thus the findings of the report were estimates based on the selected sample and therefore subject to sampling variability. The survey estimates were also subject to nonsampling errors. Such errors can arise because of nonresponse errors, as well as errors in reporting and data collection. A pretest with a panel of experts was used to reduce the potential for such errors. The report defined standard error and reported standard errors for each table and figure presented in the report. This report presented the findings of its national survey in terms of response comparisons, noting that differences appearing to be large might not be statistically significant due to the relatively large standard errors around the estimates inherent in the small sample size and the high variability in some of the responses. The Bonferroni adjustment was used to control for multiple comparisons, thereby resulting in a more conservative critical values being used in judging statistical significance.

The NCES report (Lewis et al., 2000) indicated that millions of public school students were in schools less than adequate; the report also concluded that the disparity

between economic class and race was evidenced by the finding that schools with the highest levels of poverty were more likely to report at least one building feature as less than adequate than were schools with poverty levels of 20% to 39% or less than 20%.

Interest in the quality and efficacy of school building condition has been promoted by professional organizations whose livelihood is embedded in the design, construction, and maintenance of school facilities. Architects, designers, facility planners, and contractors involved in building and maintaining schools might well be expected to advocate adequate building condition. Nonprofit organizations composed of professionals whose work focuses on the design, construction, and maintenance of schools have also contributed to the national perception of the importance of building condition. The Council of Educational Facility Planners International (CEFPI), founded in 1921 as the National Council on Schoolhouse Construction, promotes the theory that school building condition has an impact on student achievement but does not base this assertion solely on a corpus of sustained research findings. According to this group of professionals, all engaged in the construction and maintenance of school buildings, improved school facilities are encouraged through the following activities:

1. Advocacy and education of the general public, including policymakers, on the efficacy of school design and student outcomes; resource for planning effective educational facilities.

2. Training and professional development for promoting best practices in creative school planning.

3. Research and dissemination of information regarding the linkage between the educational facility, its design and student success. (CEFPI, n.d)

At both the federal and national levels, the importance of the condition of school buildings is supported by public- and private-sector reports, as well as articles written for both professional journals and the popular press in advocacy for improved building condition in urban neighborhoods and rural small towns. Articles in the popular press, whether they support or question the impact of building condition, generate publicity and attention to the relationship. When an article is published in a local newspaper or in an education journal concerning building condition, or when a court case is reported concerning the less than adequate condition of schools attended by poor and minority children, it may be argued that the perception of a connection between building condition and student performance is available for the attention of communities, parents, teachers, and principals.

Review of the literature revealed a body of research that examined the impact of building condition on student achievement in a number of ways. Research was found that included the results of a self-reporting school survey in relationship to student achievement at the school. In this type of research, a theoretical framework was established for the method of impact (Cash, 1993; Lanham, 1999; Lemasters, 1997), and research questions were generated for the study. Other research examined the impact of specific environmental conditions on student achievement. This type of research controlled for the impact of other influences and established the probability of the impact of a particular condition (Lemasters, 1997).

Cash (1993) studied small, rural high schools in Virginia, identifying 47 schools located outside urban areas; each school served a population having fewer than 100 students in the senior class. Cash developed the Commonwealth Assessment of the

Physical Environment (CAPE) instrument by reviewing existing assessment instruments and using the findings of research concerning those factors identified with student achievement and behavior: lighting, acoustics, climate control, color, density, science lab quality, and aesthetics. Cash reported that the instrument was reviewed by experienced professionals in facilities management, revised, and then field tested and adjusted. The resulting instrument was used to score school building condition as being substandard, standard, or above standard. The instrument was composed of 27 items. The principals' responses to the objective questions created the data that were used to provide hierarchical scores: Schools that scored in the bottom quartile were labeled substandard; schools that scored in the middle two quartiles were labeled as standard; schools in the upper quartile were labeled above standard. Socioeconomic status of students was determined based on the percentage participating in the free or reduced-price lunch program in each school. Cash presented her findings in Table 2.

Table 2: Differences in Student Achievement, as Established by the Test of Academic Proficiency (TAP), in Substandard, Standard, and Above-Standard Schools

	Overall building condition					
	Substandard		Standard		Above standard	
	Mean	PR*	Mean	PR	Mean	PR
TAP subtest						
Reading	185	47	185	47	188	51
Math	179	43	180	45	181	47
Written expression	191	57	186	51	193	59
Sources of information	189	48	191	50	193	52
Basic composite	186	49	186	49	189	53
Social studies	190	48	191	48	192	51
Science	190	50	193	55	193	55
Complete composite	187	47	188	49	190	52

Cash (1993)
Note: Percentile ranks were derived from scale score means, which were adjusted for socioeconomic status.

In discussion of the findings, Cash (1993) noted that the scale score means for above-standard buildings were higher than those for substandard buildings on every subtest; the resulting complete composite scores were 190 and 187, respectively. To facilitate the comparisons, Cash used percentile ranks associated with each of the adjusted scale score means. She found that the largest difference in percentile rank between substandard buildings and above-standard buildings was five percentile points, which was noted for the science subtest and for the complete composite score. The

above-standard percentile rank was higher than the substandard percentile rank for each subtest, thereby confirming an overall gain.

Cash (1993) noted three limitations to her study. First, as with self-reporting in general, there was an assumption of objectivity on the part of the local district personnel in assessing the condition of their facilities. Second, Cash noted that it was impossible to identify all the variables that could affect student achievement and behavior; therefore, there was potential for a large error variance and a less significant correlation for the variables of interest in the study. Finally, the limited extent of the population, restricted as it was to small, rural high schools, inhibited the generalizability of the results beyond that group.

In a similar study, Hines (1996) used the CAPE (Cash, 1993) to assess building condition in urban high schools in Virginia. As did Cash, Hines used the test scores from the Test of Academic Proficiency (TAP), given to 11th-grade students in 1992-1993, to measure student achievement. Of the 88 urban schools included in the population, 66 returned the instrument, resulting in a 75% response rate. Hines completed a second analysis by eliminating the data from all but five districts, using data from only Virginia Beach, Henrico County, Arlington, Fairfax, and Prince William County, which he identified as districts with better systems because of affluence levels and the quality of their school buildings.

When Hines (1996) compared student achievement across building condition for the entire sample, he found that students in above-standard schools scored between 9 and 17 percentile points higher than those attending substandard schools. Specific features associated with the higher scores were building age, window condition, floor condition,

heat and air conditioning quality, exterior paint, mopped floors, little or no graffiti and its prompt removal, condition of the school grounds, and wall color.

Major factors that were not found to be significant with regard to student achievement were lighting, noise, and density. The five affluent districts identified in the study reflected better overall building conditions as reported on the CAPE. Although the findings of this study supported Cash's (1993) study regarding the importance of the relationship between building condition and student achievement, there were similar limitations in the self-reporting nature of the survey instrument and the identification of factors that potentially limited the generalizability of the findings. One primary limitation in this study was Hines's failure to present a rationale for his selection and use of the five school districts for additional analysis.

Lanham (1999) followed the research conducted by Cash (1993) and Hines (1996), but focused on a different population, asking, "What is the relationship between student achievement and the physical condition of school buildings and classrooms in Virginia elementary schools?" (p. 5). The 989 Virginia elementary schools constituted the population for Lanham's study, and a random sample of schools that included third and fifth grade was used for his study. Of the 299 principals surveyed, 197 or 66% responded. Lanham revised several of the questions on the CAPE to be more applicable to elementary schools.

Unlike Cash (1993) and Hines (1996), Lanham (1999) used the test scores from the Virginia Standards of Learning tests rather than those of national standardized tests such as the Iowa Test of Basic Skills (ITBS) or the TAP. Lanham presented information on the reliability and validity of the SOL tests, which were administered for the first time

in the spring of 1998, citing the field testing conducted in the spring of 1997 and further data provided by the Virginia Department of Education. Lanham noted that the change to the SOL tests limited the comparability of student achievement across states, although the tests were aligned to the objectives that formed the instructional curriculum. Because the SOL test scores were used to determine progress in student achievement at the district, state, and federal levels, their use in this role was assumed to be valid.

Lanham (1999) noted that elementary students spend most of their day in a single classroom, unlike the high school students involved in Cash's (1993) and Hines's (1996) studies, who have more mobility during the day. As did Cash, Hines, and Lemasters (1997), Lanham constructed a theoretical model to examine the relationship between building condition and student achievement, extending the use of the model to the elementary level and modifying it to include deferred maintenance, funding priorities, and administrative decisions as exogenous variables. Lanham noted that although these variables are influenced by factors outside the model, they play a major role in influencing building and classroom conditions. In particular, deferred maintenance is an issue in maintaining building condition when funding is redirected to other education reform needs.

Lanham (1999) used multiple regression analysis, which allowed him to determine the relationship between the identified dependent variables and two or more independent variables. Average scale scores from the SOL tests were used as the dependent variable for each multiple regression. Multiple regression analysis was carried out for each dependent variable: third-grade English, third-grade math, fifth-grade English, and fifth-grade math. The research question was worded as follows:

> To what extent can student achievement on a specific SOL assessment test be explained by socio-economic condition, school size, building age, original purpose, roof integrity, interior painting, exterior painting, electrical service, overall cleanliness, overall maintenance, overall structural condition, percentage of classes in trailers, percentage of classes with windows, heating quality, air conditioning quality, lighting quality, wall color, ceiling material, classroom outlets, classroom furniture, and classroom structure, and overall classroom cosmetic condition? (p. 77)

Lanham (1999) concluded that certain building conditions and cosmetic characteristics, when combined with socioeconomic information, provided partial explanations for the variance in student achievement as measured by the SOL tests in English, math, and technology. Air conditioning was identified as a significant factor in three of the five regression analyses in the study. Lanham concluded that improving air conditioning can improve student achievement. Air conditioning also was identified as a significant factor in the studies conducted by Cash (1993) and Hines (1996).

These three studies (Cash, 1993; Hines, 1996; Lanham, 1999) have contributed a significant corpus of research conducted in Virginia schools to determine the impact of building condition on student achievement. All three studies acknowledged limitations that might affect the generalizability of the findings. Significant findings did emerge from analysis of the data, but such findings did not lead to generalizability beyond the subjects in the studies. It may be suggested that part of the general limitations found in the study of building condition and student achievement lies in the lack of demonstrated cause and effect, or even of correlation. It may be argued, however, that the accumulated weight of

the findings in these studies, as well as their repetitive appearance, builds the case for a relationship between condition and achievement.

Three major reports concerning building condition and student achievement provided broad overviews of relevant research. These reports examined the corpus of current research and organized, summarized, and discussed the findings. The first study, by Lemasters (1997), represented a synthesis of the research and findings of 53 studies between 1980 and 1996 concerning the relationships between school facilities and student achievement and school facilities and student behavior. Lemasters selected studies by using generally accepted sources, including studies expected to be useful to educators and architects. The independent variables were identified by clustering like variables together. The resulting list of eight variables organized the discussion of the studies. Lemasters's conclusions also contained a caution concerning factors in these studies that placed limitations on the impact of their findings.

The second summary report, published by the National Clearinghouse for Educational Facilities, was written by Schneider (2002). This document presented an overview of research organized around environmental conditions and variables such as school size and age. Although Schneider did not provide a rationale for the choice of the studies or the categories into which they were organized, he used the same general categories and highlighted studies that were also used Lemasters (1997) and later by Earthman (2004) in their examination of the research. Schneider summarized the findings of 130 studies that had explored the relationship between building conditions and student achievement. His document was not intended to be scholarly, but it was intended to present research that supported the connection between school buildings and student

achievement, and it was intended to be read by and to influence a wide audience of readers seeking information about this connection. Although such readers had the option of pursuing the research conducted in individual studies, they were more likely to read a National Clearinghouse on Educational Facilities report for general information. Schneider discussed studies that reported on the relationship of various factors of school condition to student achievement, with more detailed attention paid to some studies and brief reference to others. Although Schneider reported on numerous studies, he also discussed the difficulty of reliably singling out a single factor and its impact on student achievement.

The third report was prepared by Earthman, at the request of the American Civil Liberties Union (ACLU) of Maryland. In 1996, the ACLU represented the plaintiffs in Bradford et al. v. Maryland State Board of Education et al. In this case, the Circuit Court for Baltimore City found that the students of Baltimore City were being denied their constitutional right to a thorough and efficient education.

In his report, Earthman (2004) presented a prioritization of the school building elements that most affect student achievement based on a review of the research on those elements. This prioritization organized the numerous studies into a ranking that facilitated the identification of elements found to be more essential when determining the condition of school buildings. Earthman presented summaries of research concerning older buildings and their effect on student achievement, as well as research concerning elements that were considered to have the most impact on student achievement. Earthman reported that the results of these studies had been used to provide school authorities with "ample evidence" (p. 20) of the negative effect of building age on student achievement

by identifying the necessary elements supportive of student learning that older buildings may not have, such as air conditioning and proper lighting.

Lemasters (1997) undertook a critical review of the research concerning building condition and student achievement, which extended reviews that had been conducted previously. Weinstein (1979) and McGuffey (1982) had provided syntheses of more than 200 studies conducted up to the time of their reports. Lemasters conducted a systematic critical review of the research conducted between the years of those studies and the year of her study. Her synthesis of 53 studies between 1980 and 1997 identified eight prominent variables in the research, the quality of which affected children's performance: noise, facility age, color, lighting, maintenance, density, climate conditions, and classroom structure.

Lemasters (1997) pointed out that earlier reviews, such as those of McGuffey (1982) and Weinstein (1979), provided an overview of the research in the field by examining studies concerning relationships between physical school design and educational programs. McGuffey identified out-of-date classrooms and materials as factors that interfered with student learning and concluded that well-maintained facilities enhanced student learning. Weinstein concluded that research should be designed to account for the complexity of these environment-behavior relationships and that methodological rigor was essential to advancing the field. Both concluded that the physical environment played an important role in the student's school experience. Weinstein expressed the caution that characterizes many of the studies of building condition effect on student achievement, noting that although the weight of the evidence suggested that certain design features could have an effect on student behavior and

attitudes, it was difficult to find reliable evidence.

Lemasters (1997) developed a matrix of the research studies that had been conducted since 1980 relevant to her review of the relationship between building condition and student achievement and behavior. The matrix identified the researchers and the areas in which the research had been conducted as well as areas in which research was not available. This information not only provided access to research for those who had an interest, such as facility planners, architects, and designers, but also indicated areas in which there was a need for further research.

Lemasters (1997) drew several conclusions from her meta-synthesis of the research. She noted that well-maintained school buildings appeared to have a positive impact on student achievement as well as on student behavior. She reported that research supported the assertion that students seek areas of privacy, specifically to reduce stress and anxiety. She reported the effect of lighting on student health: “Full spectrum fluorescent lighting with trace amounts of ultraviolet content has a positive effect on student health” (p. 198). Finally, noise unrelated to instruction was found to have an adverse effect.

In reporting the recommendations made by researchers in her synthesis, Lemasters (1997) pointed out that researchers should not assume that they have identified all the independent variables in a study; their conclusions should be made without assuming that any model they develop encompasses all the relevant independent variables for as complex a variable as student achievement. As did several other researchers in this area, Lemasters cautioned that more research was needed to establish results with greater rigor in their findings. She noted that one limitation of her research was that it did not address

the total area of facility planning, design, and finance. The matrix and synthesis of her research were limited to studies of the relationship between the physical condition of the building and measures of student achievement and student behavior. In addition, she noted that her search might not have identified every available study despite efforts to find all significant studies.

The National Clearinghouse for Educational Facilities published a document in 2002 in which Schneider presented a summary of findings concerning the impact of building condition on student achievement. This document was intended to provide general information about research indicating that building condition had an impact on student achievement and student behavior. In his introduction, Schneider noted the growing body of research addressing the questions of which building conditions have the most effect on student achievement, in what manner, and to what extent. He also noted that the results for this mounting research were mixed, describing some of the research as excellent, some of it as not as good, and much of it as inconclusive.

Schneider (2002) examined pertinent research in eight areas: indoor air quality, ventilation, thermal comfort, lighting, acoustics, building age and quality, school size, and class size. As did Earthman (2004) and Lemasters (1997), Schneider reported on studies that linked poor indoor air quality with increased absenteeism. Schneider also reported on studies indicating that schools with a high percentage of low socioeconomic and minority children were more likely to suffer from poor indoor air quality.

All of the studies reviewed by Schneider (2002) were supportive of the theoretical construct indicating the existence of a perception, supported by a large body of research, that building condition has an impact on student achievement. This report is similar to

others that have been created by organizations seeking to promote the need to address issues of building condition, based on the argument that building condition does have an impact on student achievement. For example, with the intention of promoting wider understanding, the Tennessee Advisory Commission on Intergovernmental Relations published in 2003 a staff information report to share information and research findings that the Commission considered relevant to important public issues. This document, Do K-12 School Facilities Affect Education Outcomes? A Staff Information Report, reflected the proposition of similar studies in its presentation of the issue of adequate building condition and student achievement:

> There is growing evidence of a correlation between the adequacy of a school facility and student behavior and performance. Almost all of the studies conducted over the past three decades, including two in Tennessee, have found a statistically significant relationship between the condition of a school, or classroom, and student achievement. In general, students attending school in newer, better facilities score five to seventeen points higher on standardized tests than those attending in substandard buildings. (p. vii)

The Tennessee report acknowledged that the influence of the physical condition of the school is difficult to measure, cited personal experiences that support the assumption that setting does make a difference to the person experiencing it, and asserted that school buildings affect the mood, perceptions, and attitudes of those who must occupy them.

In 2004, the American Civil Liberties Union (ACLU) of Maryland published the document by Earthman, which presented an overview of research concerning the impact of building condition on student achievement. The report was commissioned in response

to the Task Force to Study Public Education Facilities, which had been established to examine the adequacy and equity of public school buildings in Maryland. In 2003 the Task Force released a report of minimum adequacy guidelines, based on 31 criteria. All 24 school jurisdictions surveyed their schools to identify deficiencies by school according to the criteria. One of the results of the survey was an estimate of almost $4 billion to bring buildings up to minimum adequacy. The ACLU of Maryland commissioned an analysis by Earthman to identify and prioritize the building deficiencies that were highly correlated with student achievement as well as student health (ACLU of Maryland, 2004).

In his summary of findings, Earthman (2004) cited numerous research studies to provide support for the argument that poor building condition not only was deleterious to student health, performance, and achievement, but also resulted in a disproportionate number of poor and minority children attending such schools. Earthman provided a general summary of research over 3 decades; the research supported the link between building condition and student achievement. He described buildings in poor condition by noting, "[They] lack appropriate HVAC systems, have poor lighting, are old, are noisy, lack functional furniture, or have some variation or combination of these qualities" (p. 8).

Earthman (2004) discussed studies in which "the researcher found a significant difference in the achievement scores of students in poor buildings and in good buildings" (p. 18). The differences these researchers found ranged from 3 percentile rank scores to 17 percentile rank scores. In reviewing the research on specific building conditions and their impact on student achievement, Earthman prioritized the conditions identified by the Maryland Task Force, beginning with the conditions indicated by research as having the

most impact on student achievement. The prioritized list included seven criteria, presented in order of impact as indicated by the research: human comfort (e.g., temperatures within the human comfort range, as regulated by appropriate HVAC systems), indoor air quality, lighting, acoustical control, secondary science laboratories, student capacity at the elementary level, and student capacity at the secondary level.

In one section of his report, Earthman (2004) considered the age of the building as a factor affecting student achievement, noting that age alone is not necessarily a negative factor but that age may limit the adaptability of the building's structure for renovations identified as important to student achievement. For example, older buildings with no air conditioning may also have outdated lighting, old and inefficient heating systems, and a buildup of dust and mold. These older buildings may have structural limitations that put a restraint on needed improvements.

The research on which Earthman (2004) reported found a significant difference between scores of students in buildings in poor condition and scores of students in buildings of fair to good condition. Three of the studies were conducted in Virginia (Cash, 1993; Hines, 1996; Lanham, 1999) and used Cash's Commonwealth Assessment of Physical Environment as a form of building evaluation to determine the condition of the building. This survey instrument was sent to building principals, who were asked a series of questions about their school buildings.

Analysis of these three summaries of research concerning student achievement and building condition revealed certain common features of the physical environment. The summaries represent an examination of a large body of research to support the theory that building condition affects student achievement. It is not the intent here to provide a

comprehensive review of research that supports the connection between building condition and student achievement. Rather, this section of the review of the literature has focused on seminal studies that have appeared in numerous publications as well as publications summarizing research in the field, which have been intended for a wide audience interested in such a topic. This decision reflects a research approach with an objective of representing the subject under discussion in broad and accessible terms (Gilderhus, 2000).

As part of her research, Cash (1993) had developed a model to demonstrate the relationship between principal leadership and financial capacity, which ultimately influenced the way in which building condition affected, directly and indirectly, student achievement and student behavior. Cash's model is presented in Figure 2.

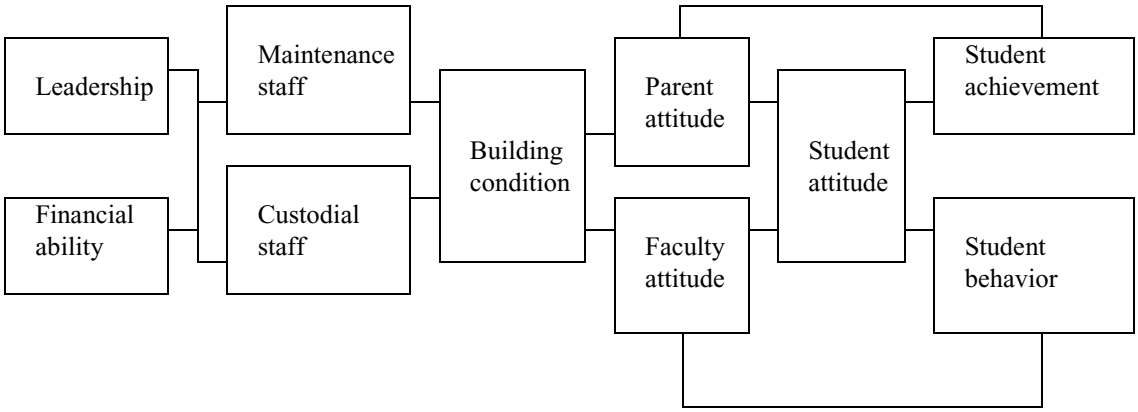

Figure 2. Cash's theoretical model (1993).

In Cash's model, leadership and financial ability influenced the work of maintenance and custodial staffs in school, thereby directly affecting building condition. This identification of leadership as one of the two factors that influence the impact of building condition on student achievement linked the perceptions of the principal to the identification of building condition as a factor.

As reflected in Cash's (1993) model, maintenance and custodial staffs of schools work within the financial resources they have been given and carry out the work set as a priority by school leaders. Thus, a school building's condition is based in part on the quality of the work and on the choices related to the application of resources as set by the school leadership. In Cash's model, the building condition exerts both a direct and an indirect influence on student achievement and behavior. The indirect influence includes the perception of building condition by faculty and parents, which in turn influences student attitude. The relationship between principal leadership and building condition demonstrated by Cash's model also was found in research on teacher satisfaction and retention (Buckley et al., 2004; Hirsch, 2005; Hirsch & Emerick, 2006; Ruszala, 2008).

Lemasters (1997), in concluding her synthesis of research on building condition and student achievement, adjusted Cash's model (1993), based on the research of Cash and Hines (1996), to include structural and cosmetic conditions. Lemasters's model is presented in Figure 3.

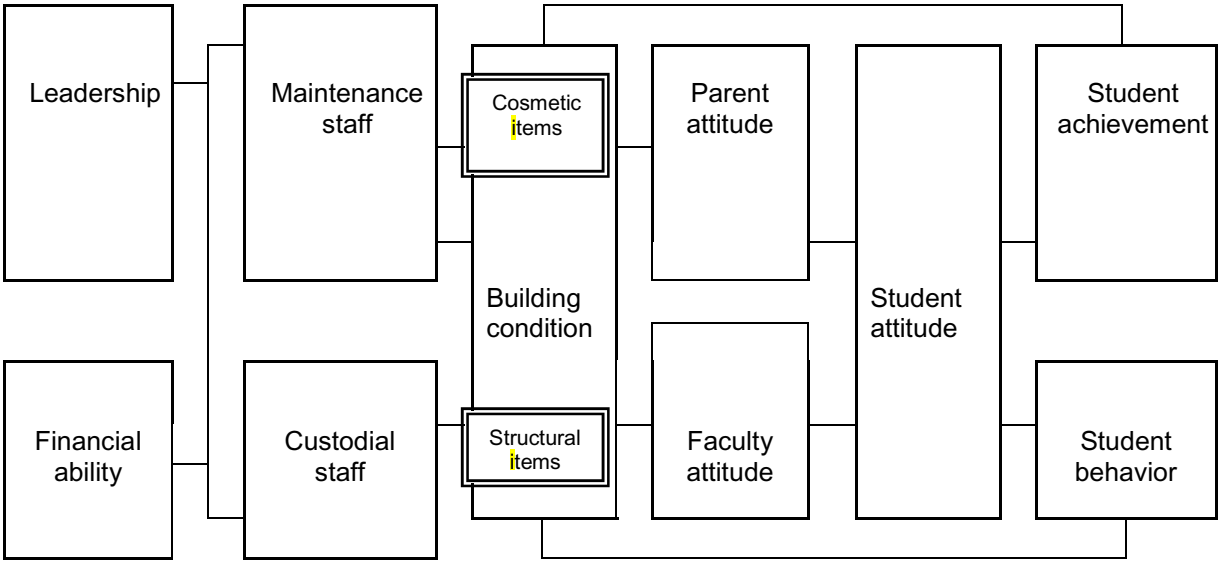

Figure 3. Lemasters's theoretical model.

In Lemasters's model, the complexity of the variables that make up building condition has been addressed by expressing them in terms of both cosmetic and structural items. This categorization supports findings that identify graffiti, peeling paint, and broken windows as factors that affect student achievement and student behavior as do issues of air quality, temperature, and light. By representing them as components of building condition, the model better accommodates the complexity of determining the variables that can be identified and studied for their role in affecting student achievement and behavior.

In general, research regarding building condition and student achievement has followed a process that identifies particular school conditions as variables and investigates those variables to determine whether or not their relationship to student achievement is found to be statistically relevant (Earthman & Lemasters, 2004). The

conclusions of these studies support the finding that schools in poor condition are more likely to be unsafe, deter student achievement to a significant level, and promote or sustain inequity in educational opportunity for poor children, who tend to live near and attend schools in bad condition (Earthman, 2004).

Schneider (2002) also noted that many of the observed effects could be determined based upon their negative rather than positive impact. Poor performance tended to be found in poorly maintained schools.

In addition to the research that found a relationship between various characteristics of school facilities and student achievement and behavior, there were studies that found no significant relationship between the physical characteristics of school buildings and the achievement and behavior of the students within. Lemasters (1997) observed that although researchers may assume they have found all the relevant independent variables in a study, the complexity of the relationship to student achievement may require more rigorous examination of their assumptions. Lackney (1999) noted that focusing on single-variable relationships can lead to minimizing the complexity of the relationship between building condition and selected educational outcomes. Bosch (2003) pointed out that if the methodology used is too simple, the statistical processes may suggest conclusions that more sophisticated statistical analyses may dispute.

Another criticism of this type of research was that the differences in interests and goals of researchers and practitioners diffused the focus of the research and that the research, in fact, contained too many separate fields of study, including architecture, behavioral education, building technology, environmental health, and other areas (Bosch,

2003). Further studies questioned the methodology used to establish the significance of research results, pointing out the problems that arose when the number of survey responses was small, or the possibility of bias that might result from a researcher's reliance on a particular group's perceptions (such as principals' responses to surveys about their schools): Inadequacy or inappropriateness of the statistical operations was also identified as a potential problem (Palardy, 2003).

In a summary article for Education Week, Stricherz (2000) reported on research supportive of the idea that decent schools boosted student achievement above levels found in inadequate schools whereas improvement of decent schools with additional resources did not. Tracing the issue back to the Coleman Report of 1966, Stricherz noted Coleman's conclusion that although the presence of textbooks, labs, and libraries seemed to be related to academic achievement, overall schooling had very little effect once socioeconomic status was considered. The study found that socioeconomic background was the key indicator for predicting student achievement. The publication of the Coleman Report engendered additional research that led to the effective schools model, and it set the stage for examining outcomes (productivity) rather than inputs (equal funding of schools) for improving student achievement (Wenglinsky, 1997).

More recent studies have capitalized on newly available research analysis and have identified school facility condition as a factor influencing student achievement. In terms of the theoretical concept of building education capacity, the built environment in which instruction takes place represents the physical capacity resource that contributes to student achievement (Crampton, 2003). Crampton identified five major studies that examined the relationship between the quality of certain building conditions and the level

of student achievement in that building (see Table 3). According to Crampton, one factor that tended to dilute the impact of these studies of the relationship between school condition and student achievement was the large body of publications by a variety of researchers in many different professions, including academic as well as commercial organizations. For example, Crampton pointed out that architects might have brought their utilitarian and aesthetic perspective to building design, whereas building contractors might have sought the most efficient systems for rapid air return in buildings. Crampton's examination of the early research on the connection between building condition and student achievement pointed out these diverse sources of early attempts to identify building condition as a factor in achievement. Crampton joined other researchers, such as Lemasters (1997), who also had noted concerns about the rigor of early research and the need for further study.

Research methodology itself has evolved in the past 15 years, allowing researchers to conduct more rigorous studies that address the questions and criticisms concerning the level of rigor in earlier studies. Rather than including studies using qualitative or descriptive statistics, Crampton (2003) reviewed examples of research employing quantitative methods to determine the impact of school conditions on student achievement. For example, Crampton discussed the use of multivariate statistical analysis and modeling, which led to production–function analysis. By using statistical tools available as of 2003, the researcher asserted that the current research designs had established the capacity to more systematically identify and compare independent variables relevant to school condition, while student achievement, the desired outcome, served as the dependent variable. Five exemplary examples of the more recent research

were presented as examples, two of which were conducted in Virginia. These studies are summarized in Table 3.

Table 3. Comparison of Five Studies Cited by Crampton (2003) for Academic Rigor

Researcher and document	Variable(s) studied	Description and analysis of research method	Description and analysis of results
1. Cash, C. S. Unpublished doctoral dissertation (1993)	Dependent variable: Student achievement scores Independent variables: Building condition, SES	▪ Designed a comprehensive survey, 91% return. ▪ Used ANCOVA and simple regression. ▪ Used a test of academic proficiency. ▪ Schools were rated, compared to mean student achievement scores adjusted for SES.	• 5% increase in scores in above-standard schools • 5 percentile points between schools rated highest and lowest • Robust relationship between building condition and student behavior indicated
2. Hines, E. Unpublished doctoral dissertation (1996)	Dependent variable: Student achievement scores Independent variables: Building condition, SES	▪ Replicated first part of Cash study; used Cash's survey, 75% return. ▪ Replicated Cash's use of ANCOVA to adjust student achievement scores for SES.	• (Urban high schools found to be in better condition than the rural schools in Cash's study) • Rise in student achievement scores with improvement of overall building condition 14 percentile points between schools rated highest and lowest
3. Berner, M. Peer-reviewed journal article, Urban Education (1993)	Dependent variable: Student scores Independent variables: Building condition, PTA membership per student, PTA budget per student, school age, school size	▪ Multiple regression (Ordinary Least Squares [OLS] and logistic)	• Examined condition of school buildings in Washington, DC in relation to parental involvement, as measured by size of PTA budget and effect of school building condition on student achievement. • Found support for PTA budget (significant at the .10 level). • A school's improving its condition from "poor" to "excellent" predicted an increase of 10.9 points in the school's average achievement test scores.

(continued)

Table 3. Comparison of Five Studies Cited by Crampton (2003) for Academic Rigor (continued)

Researcher and document	Variable(s) studied	Description and analysis of research method	Description and analysis of results
4. Lewis, M. Technical Report for CEFPI 2001	Dependent variable: Student achievement scores Independent variables: Building condition, controlled for attendance, mobility, truancy, race suspensions, and poverty	▪ Survey developed by Construction Control Corporation to assess general health conditions in selected facilities via proprietary evaluation form with 5-point rating scale ▪ Multiple regression based on development of a production-function equation	• Building condition contributed significantly to student achievement in the Milwaukee Public Schools. • Coefficient for building condition was statistically significant, accounting for 16% of the variation in student scores on the math component and 14% of the science component. The independent variables accounted for 44% of the variation in math scores.
5. Harter, E. A. Statewide study of 2860 elementary schools 1999	Dependent variable: Student achievement scores on TASS Independent variables: Budget for maintenance (from school expenditures), geographic variables, school size Control variables: academic potential and SES.	▪ Descriptive statistics: per-pupil expenditures by spending categories for low-achieving (1st and 2nd quartiles) v. high-achieving (3rd and 4th quartiles) elementary schools ▪ Multiple regression, production-function approach	• On average, low-achieving schools spent substantially less on maintenance per pupil than high-achieving schools. The highest achieving schools spent 36.6% more on maintenance than did the lowest achieving schools. • Results of multiple regression supported the overall importance of maintenance expenditures and reinforced the finding of a divide between high-achieving and low-achieving schools in resources allocated to school upkeep.

In these studies, the impact of building condition was statistically significant and

accounted for significant percentages of the variations in student achievement scores. It is relevant to note that the limitations of other studies apply to these, as well; the exportability of these findings to populations outside those sampled in these studies is still in question. Also, four of the five studies used surveys to secure data, thereby retaining the cautions concerning threats to validity that should be addressed in studies such as these.

One other question that was related to these studies concerned the extent to which the building condition needs to be more than adequate. Stricherz (2000) noted that although the research did reveal that student achievement lagged in poorly maintained school buildings, the research did not indicate that student achievement rose when building conditions improved from adequate to elaborate. Duke (1998) conducted a study of Virginia schools and found that many schools lost class time because of poor building conditions. Duke reported that of the state's 132 districts, 36 had been forced to close one or more schools due to condition during the 2 years of the study. Because of those closings, Duke noted, 96 days of instruction were lost. Lack of air conditioning alone accounted for the loss of more than 38 days. To Duke, the most important factor was the loss in learning time, which led to less learning and, therefore, lower achievement.

Finally, Stricherz (2000) predated Earthman's (2004) observation that many of the research studies on the effect of building condition on student achievement were dissertations completed by graduate students who did not follow up their doctoral work. Two factors that may mitigate the perception of the importance of building condition are, first, that capital outlay costs are rarely more than 10% of overall spending, and, second, that significantly more research has been conducted regarding other factors affecting

student achievement (Stricherz). It may be more evident that the complexity of the role played by building condition, its smaller part in overall scholarly research, and the mixed findings all contribute to a perception that the role of building condition is important when health and safety issues are critical but less so when buildings are deemed adequate.

Duke (1998), less supportive of the argument that improved funding leads to improved student achievement, did acknowledge that support of more funds for building and maintaining facilities does play a role in the moral, rather than empirical, argument. This viewpoint was assumed by researchers who expressed the opinion that poorly maintained, often overcrowded, and in many cases, unhealthy and unsafe schools attended by poor children, particularly poor children of color, could be tied to the inequity of school funding and staffing across the United States (Earthman, 2004). A 1988 Carnegie Foundation report on saving urban schools noted the following:

> A good building does not necessarily make a good school. But the tacit message of the physical indignities in many urban schools is not lost on students. It bespeaks neglect, and students' conduct seems simply an extension of the physical environment that surrounds them. City leaders who take pride in the office towers that house banks, hotels, and shops are content to send children to decaying buildings. (The Carnegie Foundation for the Advancement of Teaching, p. 36)

In Williams v. State of California, the physical condition of school buildings was cited as one of three critical criteria that demonstrated inequality for students of color, students in poverty, and non-English speaking students (Oakes, 2002). In a position paper

prepared for the case, Oakes argued that building condition not only had an impact on student achievement but also represented intentionally unequal treatment under the law. In her summary of expert reports prepared for the plaintiffs in the case, Oakes declared that three criteria in particular generated adequate or inadequate resources for determining the plaintiffs' claims: qualified teachers, available relevant instructional materials, and "clean, safe, and educationally appropriate facilities…important to students' education" (p. 1). She further noted that the effects of a lack in these factors were most evident in high-poverty schools. Oakes cited Earthman's (2004) research concerning the impact of building conditions on students' educational experiences and outcomes: "Researchers have repeatedly found a difference of…5-17 percentile points…between achievement of students in poor building conditions and those students in above-standard buildings, when socioeconomic status of students is controlled" (as cited in Oakes, pp. 3-4). Oakes concluded that the three criteria used to demonstrate the educational inadequacy of California schools were concentrated in schools serving low-income students of color (p. 19). The court case was decided in the favor of the plaintiffs.

Another approach to ongoing research concerning the impact of school condition on student achievement may be found in two recently published studies that examined the efforts to recruit and retain highly qualified teachers. In a report for the National Clearinghouse for Educational Facilities, Schneider (2003) discussed the findings of a study concerning how a sample of teachers in Chicago and Washington, DC rated the working conditions in their schools and how they perceived the effect of these conditions on their performance. A random sample of teachers was drawn from a membership list provided by the Chicago Teachers Union. Following deletion of invalid phone numbers,

1,252 teachers were included in the phone survey. A total of 688 interviews were completed, representing a response rate of 55%. A paper version of the survey generated a 25% return rate for teachers in Washington, DC.

In this survey, teachers were asked to evaluate the condition of their buildings according to the characteristics identified in earlier studies such as Earthman's 2002 research. About one third of the teachers in the Chicago sample (n = 688) and over one half of the teachers in the Washington, DC sample (n = 1273) were dissatisfied with the condition of their buildings. According to Schneider (2003), among the teachers who gave their schools a grade of C or lower, over 40% indicated that poor conditions had caused them to consider changing schools and 30% had considered changing careers. Schneider provided no information regarding rates of teachers' transferring schools or leaving the teaching profession in either city; his conclusions concerning the potential impact of building condition on teacher retention were based solely on the responses to the survey.

A series of comprehensive surveys conducted in North Carolina also focused on teacher opinions about their working conditions, the effect of conditions upon their performance, and their levels of job satisfaction. The Center for Teaching Quality, located in North Carolina, conducted analyses of state working conditions through the use of surveys, which indicated that working conditions play a role in teacher retention. Surveys conducted in 2002 and 2004 indicated the perception that improved teacher working conditions in terms of time, professional development, leadership, empowerment, and facilities and resources could improve student learning conditions and help retain teachers.

During the mid-2000s, the North Carolina Teacher Working Conditions Initiative administered a voluntary, 39-question survey instrument concerning the extent to which state working condition standards were being met. Data from the 2004 North Carolina Teacher Working Conditions Survey (Hirsch, 2005) indicated that schools in which teachers indicated that critical working conditions were in place were more likely to make AYP, when controlling for student poverty, school size, and other factors. In examining correlations between working conditions and student achievement, Hirsch observed,

> Again, although teachers indicated that time was the area most critical to improving student learning, it is not correlated with high school performance, and only weakly correlated with the performance composite at the elementary and middle school levels. Professional development was not correlated at any level. Facilities and resources—in particular safety, cleanliness and access to sufficient instructional resources—leadership and empowerment were all significantly correlated with student achievement at all three levels. (p. 8)

In 2006, more than 75,000 educators (66%) responded to the North Carolina Teacher Working Conditions Survey; more than 85% of the schools in the state (1,985) reached the minimum rate of response to generate valid data. In addition to the findings that working conditions affected teachers, the report revealed a relationship between building condition and student achievement. The report indicated that although other factors were identified as the most powerful predictors of student achievement (for high schools, leadership was the single greatest predictor, and in middle schools, professional development was the factor), facilities and resources were also significant and

meaningful predictors of student development across school levels (Hirsh & Emerick, 2006).

The Redefining of Accountability for Student Achievement

As the essential criteria for signifying student achievement have been redefined, from the high school diploma granted by the local school district, to the comparison of standardized test scores across a state's districts and across the states, the concept of accountability has also changed. At the national, state, and local levels accountability refers to the systematic collection, analysis, and use of information to hold schools, educators, and others responsible for student performance. Standards-based accountability refers to collecting and reporting information based on student progress in achieving established standards (Armstrong, 2002). Accountability has been refocused on the individual school, making it answerable for student test scores that determine whether the school is a success or a failure at the local, state, and national levels. This refocus can be traced over the previous 50 years.

The accountability movement, including standards-based education, may be traced back to the work of Bloom and others, who in 1956 created a taxonomy that was widely accepted and used as a standard with which to define and order learning objectives (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). This concept of an objective, uniform system for standardizing the assessment of instructional outcomes established a precedent for the accountability of instructional effort beyond the grades of individual students. During the 1960s, federal involvement in education began to expand with involvement in the creation of a national student assessment program. In the assessment program's earliest stages, its proponents argued that the results of such a test

would encourage states and perhaps even local officials to improve their schools to maintain a comparable level with other schools. It was also proposed that the state level test data could be used to make decisions regarding the allocation of federal education funds (Vinovskis, 1998). There was opposition to the collection of data that could be used to judge or compare student achievement on the basis of a national test. In its early stages this test, the National Assessment of Educational Progress (NAEP), avoided collecting data at the state, community, or individual level. Through the 1970s, there was a push to make the NAEP assessment data more relevant, but it was the publication of A Nation at Risk in 1983, calling for education to go back to the basics and focus on student achievement (Vinovskis), that catapulted the test into eminence as a measure of the nation's success in its educational efforts.

The stated purpose of the NAEP was to be an ongoing, periodic assessment of the knowledge, skills, understandings, and attitudes of American students. Since its inception, the NAEP report has been used as the basis for the publication of The Nation's Report Card, which compares student performance at the state level for the purpose of setting a benchmark against which school progress in raising student achievement is measured (Vinovskis, 1998).

In the meantime, the role of the federal government in measuring and determining accountability for student performance was increasing as court rulings and federal law and funding shaped decisions formerly left to the governance of the local school board. For example, the Supreme Court determined the constitutionality of the local practice of racial segregation in schools (Brown v. Board of Education, 1954), and federal laws were passed to enforce the Constitution concerning equal treatment under the law for special

education students (The Individuals with Disabilities Act, 1975, 2004) and children of poverty (ESEA, Title I, 1965).

The federal educational role changed significantly in the NCLB reauthorization of Title I. Prior to this reauthorization, participation in the NAEP testing was voluntary; consequently, with fewer than all 50 states participating, there was no method to generate a true national sample. According to the 2002 reauthorization of ESEA, all states were required to participate in a national NAEP assessment. This full set of data engendered a national sample to represent the total national student population, both handicapped and nonhandicapped. In addition to being required to participate in the NAEP sampling, each state was directed to administer standardized tests based on "high-quality" standards. Under this law, students in Grades 3 through 8 and in selected secondary grades must be tested annually in reading, math, and science. Each year, all states must set incrementally increased benchmarks for schools districts; by 2014 all students, including students with disabilities, those with limited English proficiency, students of low socioeconomic status, and minority students, must pass the tests.

To meet the current requirements of NCLB, each district must test a minimum of 95% of their total student population, including 95% in each subgroup. Districts and states that fail to meet NCLB requirements are subject to sanctions, which include transferring students, paying for public or private tutoring, or restructuring staff and resources (The NCLB Act of 2001: Executive Summary, 2002).

In Virginia, the role of state government in education accountability has been long established. The Virginia Constitution establishes education as a fundamental right and authorizes the Standards of Quality, known as the SOQ (VDOE, 2003). Standard 1 of the

SOQ requires the establishment of educational objectives known as the Standards of Learning (SOL) (Code of Virginia, 2003; VDOE, 2002b; VDOE, 2003). The Standards of Learning provide school districts with the objectives, the standardized curriculum, and the test data for assessing student outcomes.

Standard 3 of the SOQ requires that the State Board of Education prescribe requirements for school accreditation, known as the Standards of Accreditation (SOA) (§ 221.-253.13.3) (VDOE, 2002a). In 1997, the SOA were revised, creating a new type of accountability for schools, linking accreditation to SOL test performance (VDOE). As reported in 2004 by the Joint Legislative Audit and Review Commission (JLARC), the SOL test results are now Virginia's primary performance measure of school and students.

Effect of the NCLB Testing Process on Assessment of School Performance in Virginia

In Virginia, schools and districts are held responsible for academic achievement based increasingly upon a single, defining delineator—single test scores on standardized tests administered by the state. Across the Commonwealth, test scores have become the single most important component of student achievement. Accountability for student performance has constituted a powerful political agenda in both state and federal legislation. Virginia's Standards of Quality (SOQ), Standards of Learning (SOL), and Standards of Accreditation (SOA), as well as the federal No Child Left Behind Act of 2001 define student competency and the measures that are used to evaluate student progress in every public school in the state. In fact, public schools in Virginia face substantial sanctions if, over time, they fail to meet the standards.

Schools that do not achieve full accreditation undergo academic review under the direction of the Virginia Department of Education. As part of the academic review,

schools must develop a 3-year school improvement plan. Academic review teams from the VDOE work with the principal and faculty to identify issues affecting student performance. These team members also observe classroom instruction, meet with teachers, and make recommendations. Follow-up visits are provided, as well (VDOE, 2004).

Virginia schools that do not meet the federal AYP Standards for 2 consecutive years must undergo school improvement activities, as well. The school improvement plans of such schools must include promotion of parental involvement, use of 10% of the school's Title I funds for professional development, and incorporation of a teacher mentoring program. The rationale for mandating a mentoring program may be connected to early calls for improving professional development for teachers. Hargreaves and Fullan (2000) noted that although mentoring programs had become widespread, mentoring practice often proved to be problematic. The problems associated with mentoring were connected to levels of understanding of the role and responsibility of the mentor in the school as well as to perceived skill and effectiveness of individual mentors in a program.

If a school fails to meet the state performance target for 3 years, parents of children in the school must be offered the option of using federal Title I money to purchase supplemental educational services from an approved provider on the open market. After 4 years of failing to meet the state performance target, the school becomes subject to corrective action, which may include replacement of staff, reduction of the management authority of the school administration, bringing in outside experts to advise the school, lengthening the school day or year, or restructuring the school. These measures are cumulative. If at any point the school has 2 successive years of meeting its

target, it ceases to be designated as a failing school.

Each phase of school improvement involves additional requirements. Schools may be required to offer transfers to students, pay for public or private tutoring, restructure staff and resources, and have Title I funds diverted into required expenditures such as staff development rather than funding for additional instructional positions. Districts may face penalties that include replacement of staff, restructuring of the district, school closings, fiscal loss, or a state takeover. Sanctions against the state may include fiscal loss (NCLB Act of 2001: Executive Summary, 2002). Nowhere in these detailed, well-articulated plans for schools to attain state accreditation or federal AYP does the state direct the schools or the assistance teams to assess the physical condition of the schools themselves as a resource with a potential impact on student achievement.

Changing Role of the Principal

The position of school principal evolved from the organization of early schools created by colonial town legislatures. Governance decisions were made at a local level from the beginning of publicly financed education. As schools increased in size, it became necessary for the authority exercised by the local community to be transferred to the pedagogical dictates of a professional educator. This position was originally a part-time function with teaching duties. The position ultimately evolved into the principal position as it is known today. The principal originally was able to function with relatively little intraschool challenge to his or her authority because the person occupying the position emerged from the larger teacher membership and his or her function was facilitative in nature. Complexities associated with operating schools and further definitions in policy and code for school principals established a historical and legally

derived charge to effect goal achievement in schools (Sergiovanni & Carver, 1980).

In July 1966, “The Equal Educational Opportunity Survey” by James Coleman concluded that the student’s family background, not the school, was the major factor in determining student achievement. One of the most significant effects of the report was the establishment of the federal entitlement programs that dominated school improvement efforts throughout the 1970s and 1980s. The Elementary and Secondary Education Act established the enduring funding source of Title I programs, aimed at helping low-income children improve their academic achievement. Part of the fallout of the Coleman report was a perception that because family background was the major determining factor in student achievement, school actions did not make a difference. Ronald Edmonds, Director of the Center for Urban Studies at Harvard University, and others conducted research aimed at determining the characteristics of schools in which children from high-poverty homes and communities nevertheless reached high levels of achievement. Edmonds and his associates investigated schools that would be expected to have poor student achievement but were nevertheless producing high student achievement. The effective schools movement was one outgrowth of this examination of factors common to such successful schools (Edmonds, 1982). These factors became the seven correlates of effectiveness: a safe and orderly environment; a clearly stated and focused mission; instructional leadership; high expectations for all students; frequent monitoring of student progress; maximization of learning opportunities; and positive communication between school, home, and community. The correlate of instructional leadership defined the role of the principal as instructional leader.

In the effective school, the principal acts as an instructional leader and

successfully and persistently communicates the mission of the school to staff, parents, and students. In addition, the principal understands and applies the characteristics of instructional effectiveness in the management of the instructional program (Lezotte & McKee, 2002). Guidelines for Uniform Performance Standards and Evaluation Criteria for Teachers, Administrators, and Superintendents (VDOE, 2000a) establish instructional leadership as one of five criteria for principal evaluation.

The effective schools movement was a forerunner to standards-based education, and its language is reflected in the Code of Virginia's description of criteria for principal evaluation. Besides establishing the role of the principal as instructional leader, the effective schools correlates persist in the common language of standards-based education.

In Virginia, the principal's responsibilities are set forth in the Code of Virginia (8VAC20-131-210). As the instructional leader, the principal is responsible for effective school management that promotes positive student achievement. In the Code, the Virginia Board of Education (VBOE) has recognized the critically important role of the principal in the success of public schools and has encouraged local boards to provide principals with the maximum amount of authority available under the law while recognizing that principals will also be held accountable for conditions under their direct control.

In December 1997, the Virginia Board of Education's Resolution Number 1997-4 articulated the accountability of the principal with regard to the Standards of Accreditation regulations in clear and unequivocal terms:

> WHEREAS the Board of Education has adopted revised Regulations Establishing Standards for Accrediting Public Schools in Virginia; and

> WHEREAS the revised accreditation standards specify the crucial role for the school principal, the professional teaching staff, and the support staff in providing the instructional leadership necessary to implement the standards, and
>
> WHEREAS it is the intent of the Board, in specifying the role of the principal in Section 8 VAC 20-131-210, Role of the Principal, that the principal shall seek to ensure that all students are provided the opportunity to learn. (JLARC, 2004, ¶5)

As the effective schools movement gained momentum, major national corporations and government officials began to collaborate on a model for public education that required the evaluation of schools based on the level of student achievement (Vinovskis, 1999). As part of the growing influence of business on the goals for public education, the business management model for administrators in public education began to shape the definition of the public school administrator, including the role of the principal. Another business concept, the site-based management model, influenced the perception that leadership in decision-making power belonged at the school-site level (Cotton, 2001). Thus, the emphasis on accountability for student achievement was focused at the school level of performance (Wimpelberg, 1997).

An outgrowth of this perceived need to reform public schools was a change in the outcome used to determine levels of success. Across the nation, state-level standardized tests became the sole measure. The effect of this mandate has changed the traditional role of local control. School districts have found themselves responding to requirements that affect them differently from other districts.

In response to this conundrum, Sergiovanni (2000) identified the need to provide leadership in encouraging and enabling schools to be more adaptive to changes in their

environment and in seeking to change the environment itself. It became the responsibility of the principal to mediate between the enthusiasms of the standards movement and the resources and values of the local community. At the heart of this imbalance was the shift from assessing the process to assessing the results; Sergiovanni described this shift as a problem of the end determining the means. Although states allowed local districts and their communities control over the means, they took more control over what the ends were to be. With high-stakes test scores as the end, local resources were left with little discretion over the policy process as it affected teaching, learning, and assessments. Sergiovanni cited five principles developed by Madus that lay out the dilemma faced by principals:

1. If teacher evaluation is determined by test results, teachers will teach to the test, which narrows the curriculum and omits other outcomes that may be more important, in the long run.
2. If high-stakes tests become final exams, the curriculum is set according to the content tested by those tests, and the educator's role as the professional expert in curriculum development disappears.
3. Using the convenience of multiple-choice answers on high-stakes tests results in teaching geared to that format, so that practicing the test occupies much of instruction.
4. With test scores the only determiner of future education or life choices, society comes to treat test results as the goal of education, rather than as an indication of achievement.
5. Control over the curriculum, teaching and learning transfer to the agency or

> group that controls the exam. This control passes from parents, teachers, and the local community to legislators, state boards of education, politicians, and other elites with influence at the state level. (pp. 3-4)

The principal has been called upon to balance these influences with the organizational need to promote schools that have control over their own destinies, with norms to guide them toward achieving their goals (Sergiovanni). The latter are essential to building social and academic capital. Social capital is generated by the "rituals, norms, commitments, and traditions that cultivate and maintain a deep culture of teaching and learning in a school" (Sergiovanni, p. 4). Another key factor in building social and academic capital is the participation of parents, students, and teachers in deciding their focus—their goals, purposes, and the ways in which they plan to achieve them. Schools located in high-poverty areas are characterized by low levels of participation in school decisions, adding to the existing deficit in resources available to such schools (Noguera, 2004).

In Virginia, rigorous standards for student performance (Standards of Learning), high-stakes testing, and consequences for schools that fail to meet scheduled levels of performance correlate with the five characteristics identified by Madus (as cited in Sergiovanni, 2000). Since the establishment of the Virginia Standards of Learning in 1995, state legislation and policy have consistently inserted external mandates into the tradition of local autonomy in matters of public education.

As the process of accountability has continued to tighten requirements and impose sanctions, state guidelines for categories and descriptions of desired behaviors have been integrated into the local protocols for evaluation (Virginia Department of Education,

2000a). Teachers are evaluated at the district level; however, the observation criteria, arranged in categories, have been established at the state level. In addition, Virginia has moved toward evaluation of building and district administrators based on levels of student achievement. This type of accountability has banished the traditional role of local autonomy as the sole source of control for public education. Principals are evaluated in terms of student performance on the SOL tests, student attendance, and rates of graduation (Virginia Department of Education, 2000). The role of the principal has become a balance between the demands of being the instructional leader of a particular building and the demands of conforming to federal- and state-driven criteria for performance and evaluation.

Summary

Review of the literature indicated the existence of compelling evidence that poor school building conditions have an impact on student achievement. The connection between what occurs in school and the conditions under which it occurs has been the subject of numerous recent research studies (Earthman, 2004; Lemasters, 1997; Schneider, 2002). The significance of establishing this relationship emerges from the ongoing national quest to raise test scores as a result, in part, of the renewal of the Elementary and Secondary Education Act (ESEA) legislation, NCLB. Beginning in 2001, this legislation has brought dramatic changes to the delivery and assessment of public education in the United States.

A number of studies focused on the changes that have occurred at the school level, where principals are held accountable for the student achievement levels of their students. This review revealed sparse research concerning whether or not and in what

manner principals perceive their building condition as an available resource in their quest for raising student achievement. Principals of Title I elementary schools are in charge of schools identified as high-poverty schools; according to NCLB, these principals are just as accountable for student performance as are principals of schools in the most affluent areas of the Commonwealth of Virginia.

The review of the literature examined the history of schooling in America, specifically the origin and evolvement of the school building's iconic role in American culture. This connection between a school and its community has deep roots in the national quest to provide an opportunity for children to improve their expectations for the future through public education. In the last 50 years, this quest has revealed itself in a national commitment to addressing inequities in public education. Its current manifestation is NCLB, which requires that states implement a plan for raising the academic achievement levels of groups traditionally underserved. Prominent in this group are children of poverty (No Child Left Behind Act of 2001).

Review of the literature involved examination of the corpus of research indicating a relationship between school condition and student achievement, particularly for children in poverty. The review was organized around three major summaries of the research (Earthman, 2004; Lemasters, 1997; Schneider, 2002). In these summaries, research targeted specific physical characteristics that were tied to student performance. Earthman conducted a meta-analysis of published research studies that indicated a positive relationship between building condition and student achievement. The researchers found a significant difference between the achievement scores of students in buildings in poor condition and the scores of students in buildings in good condition. The

differences ranged from 3 percentile rank scores to 17 percentile rank scores. Based upon the studies' findings, Earthman concluded that students attending buildings in poor condition were falling behind in academic achievement; such students scored between 5 and 10 percentile rank points lower than students at schools in better condition. Schneider had reported in his summary of research findings that schools with a high percentage of low socioeconomic and minority children were more likely to be affected by poor indoor air quality, which was identified as a major factor in the determination of building condition

The literature review comprised numerous studies supportive of the need for further investigation of the impact of poor building condition on national, state, and local efforts to raise the academic achievement of children in poverty. The review included studies of the ways in which low-performing Title I schools not meeting minimum standards set by NCLB (2001) are designated to follow a school improvement process. The evaluation of building condition as a factor affecting student achievement was not included as a component of that improvement process. NCLB places principals of high-poverty, low-performing schools on the front line of school improvement. With the absence of poor building condition as a factor to be considered when undertaking school improvement, what do principals of such schools perceive regarding whether or not the condition of their buildings is a resource that impacts their efforts to raise student achievement? What might change if building conditions were included in school improvement plans to increase student achievement in high-poverty schools?

Chapter 3

Design of the Study

Overview of the Methodology

The purpose of this descriptive study was to explore the perceptions of the principals of Title I Virginia schools identified for school improvement in 2008-2009 concerning the condition of their school buildings and its impact on student achievement. These principals represented an identified population of principals whose schools failed in 2008-2009, for the second time in the past 3 years, to meet the local, state, and federal student achievement standards established under NCLB (2001). A survey instrument was used to collect data to answer the proposed research questions.

This study sought to describe the perceptions of this specific group of principals concerning the role of identified elements of school improvement in evaluating principal performance, the influence of building condition on student achievement, and the influence of building condition on the successful implementation of the objectives of school improvement as delineated by the school improvement process. A Web-based survey was used to ascertain the principals' perceptions of the effect of building condition on their charge to improve the status of their schools by raising student achievement.

Statement of Research Questions

The study and the survey were designed to answer the following exploratory research questions:

1. Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?

2. With what frequency do principals report each building condition of Earthman's (2004) prioritized list as an issue in terms of their perceptions of overall building condition?

3. With what frequency do principals report the impact of building condition on effective schools practice?

4. Is there a relationship between principals' perceptions of overall building condition and their perceptions of the impact of building condition on achievement due to loss of instructional time?

Participants

The population for this study included all the Title I elementary principals of schools identified by the Virginia Department of Education as high-poverty, low-performing schools in school improvement status for the 2008-2009 academic year. The 74 elementary schools in this study were designated as being in school improvement based upon failure to make AYP in reading or math or both in 2 of the last 3 years. The identification of these elementary schools as high-poverty schools was established by the Title I criterion of percentage of students participating in the National School Lunch Program, a federally assisted meal program providing low-cost or free lunches to children meeting certain criteria. Districts first qualify for Title I services based on poverty data from the U.S. Census. Schools in the district are then designated as Title I schools according to the percentage of students participating in the free or reduced-price lunch

program in relation to other schools in the district. The identification of these schools as low-performing was established by the criteria for minimal student scores on the Virginia Standards of Learning (SOL) tests. Title I schools that failed to reach required levels of achievement in each of the four subgroups identified by NCLB (2001) were considered to be low-performing schools. These requirements included not only an overall percentage of passing scores but also attainment of AYP in the scores of four subgroups of students identified in the law: minority students, low socioeconomic status students, students with limited English proficiency, and students with disabilities.

The principals of these Title I elementary schools were designated as the instructional leaders in their buildings and were accountable for their students' academic performance, as set forth in the Regulations Establishing Standards for Accrediting Public Schools in Virginia (VDOE, 2000b) and the Virginia Guidelines for Uniform Performance Standards and Evaluation Criteria for Teachers, Administrators, and Superintendents (VDOE, 2000a). The leadership provided by principals has been identified as essential to school success by Section 8 VAC 20-131-210 of the SOA regulations (VDOE, 2000b). In Virginia law, the building principal is the linchpin for moving his or her school through the highly structured school improvement process with the explicit assumption that compliance with the requirements of this process will result in the principal's achieving success. Consequently, the principals' perceptions of their roles, their responsibilities, their objectives, and their resources play an essential part in their decisions and actions in their school buildings, as leaders and as managers.

The identified Title I elementary schools were located throughout the state; however, the majority of the schools were in urban settings. The names and addresses of

the elementary school principals were listed in the Virginia AYP Status for 2008-2009 document available on the Virginia Department of Education Web site (http://www.pen.k12.va.us). The e-mail addresses were listed in the education directory included on that Web site; this listing constituted the sampling frame for this study. Names, addresses, and e-mail addresses were a matter of public record.

Instrumentation

A quantitative approach was deemed to align with the purpose of this study, which was to describe the status of subjects with regard to a specific context. Descriptive studies are used to describe the attitudes and beliefs of the population being studied (Babbie, 2001). Babbie stated that a survey method is frequently used in descriptive studies. In this study, a survey was used to ascertain principals' perceptions of the role of building condition in the improvement of student achievement. Items that measured the extent of the principal's agreement or disagreement with relevant statements included a Likert-type scale for responses.

The survey instrument used in this study was developed from a literature-based matrix regarding building condition and student achievement (Appendix A). The items generated to address the research questions were composed of choices indicated by the literature review to be pertinent to those questions. The questionnaire included checklists and ratings based on Likert-type scales to elicit responses from the principals in this study. The 31 survey items were categorized into three areas: demographic information about the school and the principal, perceptions about the adequacy of the building conditions, and perceptions of importance of elements identified as being essential for raising student achievement.

Items relating to demographic information about the schools were modeled on demographic items such as those developed for the CAPE (Cash, 1993). These questions concerned building size, grade range, age, setting, and condition. Demographic questions have been used in several surveys of building condition in Virginia based on Cash's items (Crook, 2006; Hines, 1996; Lanham, 1999). Demographic data regarding respondents also were collected.

A Likert-type scale may be constructed with varying numbers of choices on a scale. In this study, a four-point scale was chosen to determine the degree of importance for Items 1-10: (1 = not as important as other factors, 2 = about the same in importance as other factors, 3 = more important than other factors, and 4 = much more important than other factors). To indicate the degree to which the respondent agreed with each statement, a similar scale was chosen for Items 16-22 (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) and Items 25-31 (1 = had no impact, 2 = very little impact, 3 = some impact, 4 = had a strong impact).

Items 16-22 in Question 7 were derived from Earthman's (2004) research-based list of identified building conditions prioritized in terms of their effect on student achievement, as well as the findings described in an NCES statistical analysis report, Condition of America's Public School Facilities (Lewis et al., 2000). The responses to these items were used to explore connections between the principals' perceptions of overall building condition and specific conditions prioritized according to the perceived level of impact on student achievement, as indicated by extensive research. With regard to Earthman's designation of condition of adequate science labs as a priority for assessing building condition, it was anticipated that this item would address perceptions of the

importance of this capacity in the elementary school; science labs have been more typically a physical feature of middle and high schools rather than elementary schools (Earthman). A shift in the perception that there is an increased need for hands-on science instruction for elementary students creates an ancillary assumption that the physical capacity of the building should have the capacity to accommodate and facilitate this initiative. Principal responses concerning the capacity of the building for science labs would provide information concerning their perceptions about their buildings.

Content validity of the survey was addressed by submitting the proposed online survey to a panel of experts. Babbie (2001) wrote, "Validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration" (p. 143). Content validity is the extent to which an assessment adequately represents the subject domain being sampled (Babbie). To establish the content validity of this questionnaire, the items were reviewed by a panel of experts who completed the survey and completed an evaluation form modeled on the form Cash (1993) used to establish content validity for the CAPE instrument. The principals of three Title I elementary schools that had been in school improvement and had successfully exited that status reviewed the questionnaire. These principals were responsible for managing building conditions as well as leading their schools successfully through the school improvement process. The questionnaire also was reviewed by a former assistant superintendent for instruction for a school district in which four Title I elementary schools worked to achieve full accreditation while going through the school improvement process. Three recently graduated doctoral students who had used a survey instrument in their research also reviewed the questionnaire. Finally, a professor of education, who

regularly chairs dissertations that use surveys for gathering data, reviewed the questionnaire.

The group evaluated the clarity of the directions, the content and flow of the items, and the ease of completing the questionnaire online through SurveyMonkey. Reviewers' feedback provided on the evaluation form was used to evaluate and implement recommended changes to improve the quality of the questionnaire. One recommendation concerning the intent of a question was implemented, and the question was resubmitted to the panel for their comments and approval. The goal of this part of the process was to produce a questionnaire that would result in reliable and valid data. To support that goal, the instrument was reviewed to achieve clarity in its directions, ease of completion, and unambiguous content in its items. The panel was asked to evaluate the questionnaire itself in terms of its structure, format, and content for the purpose of establishing reliability. The questionnaire was adjusted to gain the best fit with the experts' commentary.

The other methods for establishing reliability estimation, test-retest reliability, and parallel forms reliability did not apply to this study because the items were created to elicit singular responses that address the concepts represented by the research questions. The comparison of responses for individual items and the alignment of the items with the experts' recommendations created a survey with items for collecting data concerning this study's research questions.

After considering the advantages and disadvantages of using a paper copy or an online survey program to obtain this information with economy, a Web survey program (SurveyMonkey) was chosen. Designed to conduct surveys electronically, online

programs offer several advantages for administering and collecting the data from this study's questionnaire.

Concerning the general use of such a format for soliciting information, Wright (2005) noted that the use and acceptability of online surveys to conduct research rapidly increased during the previous decade. According to Wright, with the increasing amount of communication via the Internet and e-mail, there has been an increase in the use of the online capacity for conducting surveys. This use has presented researchers with the challenge of integrating traditional research methods with the potential presented by the use of the Internet. The advantages of using a Web survey such as SurveyMonkey include ease of administration, shortened time for response, automatic anonymity of individual responses, and the presentation of data in organized formats such as spreadsheets and tables. Unlike paper questionnaires, online questionnaires do not require printing, packing, mailing, and tracking of individual copies. An e-mail message containing the URL connection to the survey was sent to the participants with an anticipated short period of time for return. The SurveyMonkey program collected and separated responses from responders, organizing the data automatically while protecting the respondent's anonymity.

Possible disadvantages include those similar to the drawbacks of using paper questionnaires. Konstan, Rosser, Ross, Stanton, and Edwards (2005) examined potential pitfalls in the use of Internet survey research, specifically participant validity, assuring that participants are eligible to take the survey and that they do not complete the survey more than once. The authors noted that researchers can take steps to assure that ineligible responses are purged by anticipating and checking for indicators such as duplication of

information. The surveying of this specific population, as well as the subject matter of the survey, appeared to render this concern irrelevant. Konstan et al. concluded that the use of a Web-based survey provides an easier way to reach a large population that is geographically dispersed. The small population of this study was dispersed across the Commonwealth of Virginia.

In this study, the responses of a named, finite group (the identified principals) were collected and organized, and a list of nonrespondents was generated, all without the researcher's having access to individual principals' responses. This process allowed the researcher to reassure the participants of the anonymity of their responses.

Shannon, Johnson, Searcy, and Lott (2002) reported the perceptions and recommendations of 62 experienced survey researchers from the American Educational Research Association concerning the use of electronic surveys. Shannon et al. noted concerns for limitations in the use of this medium that were similar to those cited by Konstan et al. (2005) and Wright (2005). Shannon et al. were concerned about the respondents' level of familiarity with the technology and the need for confidentiality. They were also concerned about the limited sampling frames of electronic surveys due to limited access; however, the authors acknowledged that the Internet was becoming more accessible. For the population of principals surveyed in this study, this potential problem appeared to be irrelevant, as part of the principal's daily work involves the regular use of such technology.

In general, research on the efficacy of online surveys examined the facility of using electronic surveys based upon the traditional recommendations and cautions from decades of paper-copy survey use. Shannon et al. (2002) reported on research that

focused on both the advantages and the limitations of electronic surveys. The list of recommendations developed by the researchers appeared to apply to both paper and online media. They cited the importance of the first question, grouping and sequencing questions for appeal and ease, clear and specific directions, prenotification, personalized cover letters, and the use of multiple contacts with respondents to encourage them to complete and return the survey.

Mertler (2003) expressed concern with the electronic format, including respondents' lack of technological familiarity, their unwillingness to use a computer to complete a survey, and the potential for others to be able to identify individual respondents. These concerns were addressed by examining the setting in which the principals in this group worked. The technological familiarity of the respondents was assuredly high enough to accommodate the requirements of this online format, as was their experience with e-mail, because ongoing, daily use of e-mail was a requirement for their jobs. Unwillingness to complete the survey is addressed in subsequent discussion. Finally, the collection and reporting of data through the SurveyMonkey format prevented identification of specific responses for specific respondents.

With the rapidly changing availability of computer technology and the prevalent and growing use of the Internet and e-mail services, the earlier potential concerns were addressed. For this study, the issue of limited access to e-mail and the Internet was mitigated by the expectation that these principals, as do all public school principals in Virginia, regularly conduct their business through the Internet and e-mail communication. The Virginia Department of Education regularly communicates to principals crucial information, reports, and requests via e-mail. Principals submit reports online, often using

processes more complicated than that required to complete Web surveys such as those administered by SurveyMonkey, the program used to administer the delivery and retrieval of questionnaire information in this study.

Data Collection and Analysis

Collection. All data were collected using the SurveyMonkey Web-survey program. This program delivered the online survey, tallied the responses, and made available various table and graph formats for displaying the results. The program also regenerated the list of e-mail addresses for nonresponses and set up a second request for them. This process was completed without revealing the names of individual participants to the investigator.

A mailing list of the principals to participate in this study was obtained from the Virginia Department of Education Web site. The physical address, e-mail address, and school phone number for each principal were obtained and entered into a standard spreadsheet. SurveyMonkey used this information to generate a mailing list for the survey.

The superintendents for the school districts in which these schools were located were sent a letter requesting permission to survey identified principals within their districts (40 districts). The first contact with each principal whose superintendent granted approval was in the form of a mailed letter announcing the forthcoming e-mail, including its purpose and the indication of support from the district superintendent and assuring anonymity of participants through the use of the SurveyMonkey software. The letter requested the principal's participation in the study. A $5.00 gift certificate from Barnes and Noble was included with the letter, accompanied by the online address for the

bookstore and an expression of support for the principal's hard work and dedication.

Three working days after the estimated time of arrival of the letter, an e-mail communication was sent by SurveyMonkey announcing the survey and containing the link and the statement of informed consent. As described in the SurveyMonkey User Manual (2010), the e-mail distribution list of principals, which included their names and their e-mail addresses, was uploaded and the e-mail containing the survey link was sent to the recipients. The survey link could not be forwarded to others, nor could multiple responses or new responses be submitted. The e-mail message stated that the principal's response was highly valued and that it would remain anonymous; it stated further that the participant's informed consent was assumed by the act of completing the questionnaire. The principal was given the choice of opting out of participation by connecting to the survey site and indicating that choice.

SurveyMonkey provided the ability to track who had and who had not responded to the survey, who had partially answered the survey, and who had opted out. The e-mail list section for this survey indicated the status of response regarding the survey, designating counts for "responded," "unresponded," or "opted out."

Response rate was monitored. When the rate of e-mail replies came to a halt, a second e-mail request was sent via SurveyMonkey to those who had not responded. The time between the first and second e-mails was a maximum of 2 weeks. A principal not wishing to participate could opt out by indicating that he or she did not wish to be contacted. After a maximum of 2 additional weeks, a postcard was sent to all principals to thank respondents and ask those who had not responded to participate in the survey. Although it was anticipated that after a reasonable period of time, the responses would be

considered complete, that period of time was extended as part of a renewed effort to solicit the remaining nonrespondents. The maximum period of time for the entire process extended beyond 6 weeks, the length of time judged to balance the recipients' opportunity to take the time to participate with the fading connection between the request and rationale in the first contact and the sense of momentum maintained once the first contact was made.

Analysis

When all attempts to obtain responses were exhausted, the data were collected as frequencies and percentages from the survey account on the SurveyMonkey Web site. Through the use of SurveyMonkey, principals responded to the items by clicking on their selections; they were also invited to enter additional information where appropriate. The participant could skip a question, but because he or she was required to click on radio buttons, out-of-range responses or multiple answers to the same item were not possible. Transformation of data (reordering, composite scores, etc.) was not necessary for the analysis to be undertaken. Nevertheless, once the data had been collected into tables of frequencies and percentages, tables that contained a range of responses such as much more important and more important were collapsed to assist in making comparisons across principal responses.

The data will reside in the SurveyMonkey Web site for a year. After the data were downloaded, the tables and cross tabulation tables were printed and incorporated into the discussion of results. The printed data were not checked case by case to ensure accuracy of the download due to the design of the online survey. The SurveyMonkey User Manual (2010) explicitly described its security measures. Additionally, expert opinion

examination of the security procedures found that the SurveyMonkey protocols exceeded necessary requirements with regard to the sensitivity of the data. Finally, the files were saved daily on a dedicated flash drive and were also sent to the author as e-mail attachments. Expert opinion found these measures to be more than reasonable.

The Principals' Survey was presented online as 11 questions. Questions 1, 7, 9, and 10 are composed of a series of statements asking for a response in a Likert-type format. For purposes of tracking responses, the individual statements were treated as separate items and added to Questions 2, 3, 4, 5, 6, 7, and 11. This combination totals 31 individual responses, as represented in the Matrix of Author by Feature (Appendix A).

Question 1 asked respondents to rate each of 10 items in terms of how important they perceived it to be in raising student achievement in that building. Nine of the items described the essential elements of school improvement as used by the Virginia Department of Education; one item addressed building condition. Consequently, the rating of the importance of achieving and maintaining satisfactory building condition may be compared to ratings for each of the essential elements. The potential respondents constituted a population of principals at Title I schools in improvement status in the Commonwealth of Virginia. The purpose was to compare the indicated importance of each school improvement element as well as the perceived importance of achieving and maintaining satisfactory condition of the school building. The frequencies and percentages of the instances in which respondents indicated importance were displayed for comparison across items.

Principals' responses concerning their perceptions of the importance of the essential elements of school improvement were reported within the framework of their

perceptions of overall building condition. Table 4 displays the manner in which the frequencies and percentages were organized. The table formed the basis for a description of the responses.

Table 4. Ratings of Importance for School Improvement Factors and Building Condition

Question 1: Rate each of the following statements in terms of how important a role it plays in your efforts to raise student achievement.	Not important	Some-what important	Important	Very important	No response	TOTAL
1. Use time and scheduling practices that maximize instruction	f / %	f / %	f / %	f /%	f / %	f / %
2. Use teacher mentoring programs	f / %	f / %	f / %	f /%	f / %	f / %
3. Use data-driven school improvement planning	f / %	f / %	f / %	f /%	f / %	f / %
4. Recruit and retain highly effective teachers	f / %	f / %	f / %	f /%	f / %	f / %
5. Achieve and maintain satisfactory condition of the school building	f / %	f / %	f / %	f /%	f / %	f / %
6. Create and maintain a school culture that promotes effective parent involvement	f / %	f / %	f / %	f /%	f / %	f / %
7. Provide extended learning time (e.g., before and after school, summer school)	f / %	f / %	f / %	f /%	f / %	f / %
8. Ensure that instructional intervention and resources are aligned to areas of need	f / %	f / %	f / %	f /%	f / %	f / %
9. Use instructional strategies grounded in scientifically based research	f / %	f / %	f / %	f /%	f / %	f / %
10. Implement an ongoing, school-based program of professional development	f / %	f / %	f / %	f /%	f / %	f / %

(Research Question 1: Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?)

Responses to Questions 2 through 6 and Question 8 required the respondent to click a radio button that corresponded to the choice that best described his or her situation. These responses were reported using frequencies and percentages as outlined in Table 5.

Table 5. Presentation of Descriptive Data for Questions 2 Through 6 and Question 8

Question 2. School setting		
Small town/rural	f	%
Large town/Urban fringe/Suburban	f	%
City/Urban	f	%
Total	f	%
Question 3. Grades taught		
Pre-K – 2	f	%
Pre-K – 5	f	%
Pre-K – 6	f	%
Grades Pre-K –7	f	%
K – 5	f	%
K – 6	f	%
Grades 3 – 6	f	%
Grades 3 – 7	f	%
Grades 4 – 7	f	%
Total	f	%
Question 4. School size		
Fewer than 300 students	f	%
301 to 500 students	f	%
501 to 750 students	f	%
751 to 1,000 students	f	%
More than 1,000 students	f	%
Total	f	%
Question 5. Age of school		
0 – 2 years	f	%
3 – 10 years	f	%
11 – 25 years	f	%
More than 25 years old	f	%
No response	f	%
Total	f	%
Question 8. Years principal in the school		
2008-2009 first year here	f	%
2 – 3 years	f	%
4 – 10 years	f	%
11 – 25 years	f	%
More than 25 years	f	%
Other (please specify)	f	%
Total	f	%

Question 7 requested principals to indicate the extent to which each building condition of Earthman's (2004) prioritized list was an issue in their buildings. Responses to the items in Question 7 were reported in a cross tabulation table with the principals' perceptions of their overall building condition; the conditions were the top seven from Earthman's list. For each condition, the responses of agree and strongly agree were combined, as were the responses of disagree and strongly disagree. These combined responses were representative of principals' perceptions of overall building condition and were reported as reflected in Table 6. Consequently, inspection of this table affords the possibility of demonstrating which of the seven prioritized elements appear to contribute to principals' perceptions of their overall building condition.

Table 6. The Extent to Which Principals Agreed on the Effect of Each of Earthman's Prioritized List of Conditions with Regard to the Rating of Building Condition

	Building Condition							
	Substandard		Standard		Above standard			
Question 7: The extent to which you agree that each of the following describes the condition of your school building:	Strongly agree/ Agree	Strongly disagree/ Disagree	Strongly agree/ Agree	Strongly disagree/ Disagree	Strongly agree/ Agree	Strongly disagree/ Disagree	No response	Total
The temperature in the building is too hot or too cold for the students to work in comfort.	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
The air in the building is not healthy.	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
The light in the building is a problem for the students and staff.	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
The facilities are not of sufficient quality to carry out science labs.	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
The building would look better if obvious maintenance and repairs needs were addressed.	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
The high noise level is a problem for the students and staff.	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
The building is overcrowded.	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
TOTALS	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)

(Research Question 2. With what frequency do principals report each building condition of Earthman's (2004) prioritized list as an issue in terms of their perceptions of overall building condition?)

Question 9 asked principals to indicate the extent to which they agreed or disagreed that the physical condition of a school building has an effect on the levels of student achievement due to loss of instructional time. Responses to this item were also reported in a cross tabulation table according to principals' perceptions of overall building condition. The responses of agree and strongly agree were combined, as were the responses of disagree and strongly disagree. These combined responses were reported as indicated in Table 7.

Table 7. Cross Tabulation of Lost Instructional Time by Building Condition

	Above standard	Standard	Substandard	Total
My school has not lost instructional time that interfered with student achievement because of the physical condition of the building.	f (%)	f (%)	f (%)	f (%)
My school has lost some instructional time because of the condition of the building, but it did not interfere with student achievement.	f (%)	f (%)	f (%)	f (%)
My school has lost instructional time because of the condition of the building, and it affected student achievement.	f (%)	f (%)	f (%)	f (%)

(Research Question 4: Is there a relationship between principals' perceptions of overall building condition and their perceptions of the impact of building condition on achievement due to loss of instructional time?)

Question 10 asked principals to rate the extent to which the physical condition of the school adversely impacted conditions associated with the effective schools model; these data were reported as noted in Table 8. Responses to the items were also reported in a cross tabulation table (see Table 9) according to principals' perceptions of their overall building condition, thereby allowing comparison of the responses of principals who perceived their buildings to be in above standard, standard, or substandard condition. Again, respondents represented a population for which the use of inferential statistics is inappropriate.

Table 8. Extent to Which the Physical Condition of the School Impacted Each of the Following Seven Conditions During the Previous School Year

Question 10: The physical condition of the building affected my ability to	No impact	Little impact	Some impact	Strong impact	Total
offer extended learning time (i.e., before school, after school, summer school).	f (%)	f (%)	f (%)	f (%)	f (%)
recruit and retain highly effective teachers.	f (%)	f (%)	f (%)	f (%)	f (%)
maintain an adequately safe and orderly environment.	f (%)	f (%)	f (%)	f (%)	f (%)
create and support a positive school climate	f (%)	f (%)	f (%)	f (%)	f (%)
carry out scheduling practices that maximize instruction.	f (%)	f (%)	f (%)	f (%)	f (%)
create active parent participation opportunities.	f (%)	f (%)	f (%)	f (%)	f (%)
promote instructional strategies that incorporate active student learning (i.e., labs, small group instruction, centers).	f (%)	f (%)	f (%)	f (%)	f (%)

Table 9. Cross Tabulation of Effective Schools Practices by Building Condition

	Building condition			
Affected my ability to offer extended learning time (i.e., before school, after school, summer school).	Above standard	Standard	Substandard	Total
Had no/very little impact	f (%)	f (%)	F (%)	f (%)
Had some/strong impact	f (%)	f (%)	F (%)	f (%)
Total	f (%)	f (%)	F (%)	f (%)
	Building condition			
Ability to recruit and retain highly effective teachers.	Above standard	Standard	Substandard	Total
Had no/very little impact	f (%)	f (%)	f (%)	f (%)
Had some/strong impact	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)
	Building condition			
Ability to maintain an adequately safe and orderly environment.	Above standard	Standard	Substandard	Total
Had no/very little impact	f (%)	f (%)	f (%)	f (%)
Had some/strong impact	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)
	Building condition			
Ability to create and support a positive school climate.	Above standard	Standard	Substandard	Total
Had no/very little impact	f (%)	f (%)	f (%)	f (%)
Had some/strong impact	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)

(Research Question 3: With what frequency do principals report inadequate implementation of the essential elements of school improvement due to building condition?)

Finally, four survey items requested that the principal report on certain aspects of his or her work: geographic location of the school, grade range, size of the school, and age of the school building. Responses to these items were reported in a cross tabulation table (see Table 10) according to principals' perceptions of overall building condition. The results were presented in the table format.

Table 10. Principals' Demographic Data by School Condition

Demographic information	Building condition			
School setting	Above	Standard	Substandard	Total
Small town/Rural	f (%)	f (%)	f (%)	f (%)
Large town/Urban fringe/ Suburban	f (%)	f (%)	f (%)	f (%)
City/Urban	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)
Grade range	Above	Standard	Substandard	Total
Pre-K – 2	f (%)	f (%)	f (%)	f (%)
Pre-K – 5	f (%)	f (%)	f (%)	f (%)
Pre-K – 6	f (%)	f (%)	f (%)	f (%)
K – 5	f (%)	f (%)	f (%)	f (%)
Grades 3 – 6	f (%)	f (%)	f (%)	f (%)
Grades 3 – 7	f (%)	f (%)	f (%)	f (%)
Grades 4 – 7	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)
School size	Above	Standard	Substandard	Total
Fewer than 300 students	f (%)	f (%)	f (%)	f (%)
301 to 500 students	f (%)	f (%)	f (%)	f (%)
501 to 750 students	f (%)	f (%)	f (%)	f (%)
751 to 1,000 students	f (%)	f (%)	f (%)	f (%)
More than 1,000 students	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)
School age	Above	Standard	Substandard	Total
0-2 years	f (%)	f (%)	f (%)	f (%)
3-10 years	f (%)	f (%)	f (%)	f (%)
11-25 years	f (%)	f (%)	f (%)	f (%)
More than 25 years old	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)
Years principal in building	Above	Standard	Substandard	Total
2008-2009 first year in building	f (%)	f (%)	f (%)	f (%)
2 – 3 years	f (%)	f (%)	f (%)	f (%)
4 – 10 years	f (%)	f (%)	f (%)	f (%)
11 – 25 years	f (%)	f (%)	f (%)	f (%)
More than 25 years	f (%)	f (%)	f (%)	f (%)
Other (please specify)	f (%)	f (%)	f (%)	f (%)
Total	f (%)	f (%)	f (%)	f (%)

The frequencies and percentages reported for these demographic items were examined to determine whether or not there were differences in the reported building condition as related to principal experience, geographic setting, size of the school building, or age of the school building.

Several items included the opportunity for respondents to provide information by using the other response. Indication of school size (enrollment) presented a list of the most common configurations for Title I elementary schools. Any other configurations could be noted with use of the other grade range response. Information about the grade ranges was presented in a general discussion of the frequencies and percentages of responses. The principal's choice for the best description of his or her building's condition included a text box to provide the opportunity for a response not indicated by the three options provided. The principal had an opportunity to add any condition he or she identified as having an impact that had not been included in the response options. These written responses were included in a general discussion of the responses.

The final item of the survey provided principals with the opportunity to include any additional information about their schools and their efforts to raise student achievement. Responses to this item were reported in the general discussion, using frequency and percentage statistics when appropriate.

Human Subjects and Ethics Precautions

A final consideration in the selection and use of an online survey rests in the legal and ethical aspects of research involving human subjects. The protection of human beings from harm through their participation in research focuses on the possibility of physical or psychological damage. Use of the Internet and online surveys represents a new and rapidly developing medium for research, thereby increasing the possibility for unexpected and unintended difficulty with regard to the way in which such research is created, solicited, and used. Frankel and Siang (1999) summarized the issues that were beginning to emerge in the late 1990s concerning research on the Internet. Most of the concerns centered around the solicitation of private information on sensitive subjects from vulnerable members of cyberspace communities. The issues of autonomy, beneficence, and justice in terms of the available Internet technology were considered. The issues of autonomy—respect, informed consent, risks, and benefits—focused on the capacity for anonymity and privacy in the storage paradigms described previously. Many of these concerns have been addressed with the invention and use of more technically sophisticated processes; however, the underlying criteria were considered in the design of this study.

First, Frankel and Siang (1999) cautioned against direct references to the community under study, which might have a negative effect on the group. The information being solicited by this survey did not relate to personal or private opinions or behaviors; rather, the information concerned principals' perceptions of known conditions and beliefs. Individual perceptions were embedded in a number of responses. In this study, caution was reflected in the format through which data were collected and

reported.

Further, confidentiality was ensured in the use of the software (SurveyMonkey), which did not make individual identification of particular responses available: Although the researcher could use the response data and request and receive a list of nonrespondents, the researcher did not have access to the responses of particular individual respondents in carrying out this survey.

The beneficence of this research lay in its potential contribution to the general knowledge about the topic. Principals are often the focus of attention in public education, and their increased levels of responsibility and accountability draw researchers' attention to their behaviors and perceptions. Participating principals will receive the results of this study, so that they can examine for themselves the results of their participation.

Finally, Frankel and Siang (1999) considered the issue of justice in the use of online surveys, cautioning that participation in the study should not cause undue stress for the participants. In this study, principals were asked to provide their perceptions concerning topics that were well within the range of their skill sets as instructional leaders and building managers. Completion of the questionnaire was not time consuming; an estimate of 10 minutes for completion of the survey seemed a reasonable assurance to make to the responders. Consequently, principals participating in this study were not likely to suffer undue stress as a result of their participation.

There were no standard potential risks involved in participation in this study. The application for approval through the Office of Human Research for The George Washington University was submitted and approved prior to the start of the study. Informed consent was embedded in the initial e-mail communication to principals,

including all the information required by the Institutional Review Board (IRB). Participants were assured of anonymity of data gleaned from the study. The consent form also informed participants of the lack of compensation for participation as well as their right to withdraw from the study at any time.

Summary

This was a descriptive study that explored perceptions of the responding principals of 74 Title I Virginia elementary schools identified for the school improvement process in 2008-2009 as a result of not meeting local, state, and federal student achievement standards established under NCLB (2001). The purpose of this study was to examine the impact of poor building condition on student achievement as perceived by school principals. A survey instrument was used to ascertain possible answers to the proposed research questions. Each item on the survey was designed to investigate the perceptions of principals concerning the importance of elements identified by the Virginia Department of Education as essential components of school improvement planning for raising student achievement scores to required levels. The survey questionnaire was used to elicit principal perceptions of the importance of adequate building conditions in implementing their responsibility for raising student achievement.

Chapter 4

Results

The purpose of this descriptive study was to explore the perceptions of the principals of Title I Virginia elementary schools identified for school improvement in 2008-2009 with regard to the condition of their school buildings and its impact on student achievement. These participants were an identified population of principals whose schools, in 2008-2009, failed for the second time in the past 3 years to meet the local, state, and federal student achievement standards established under NCLB (2001). The survey of 31 items was designed to elicit information to investigate the following research questions:

1. Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?

2. With what frequency do principals report each building condition of Earthman's (2004) prioritized list as an issue in terms of their perceptions of overall building condition?

3. With what frequency do principals report the impact of building condition on effective schools practice?

4. Is there a relationship between principals' perceptions of overall building condition and their perceptions of the impact of building condition on achievement due to loss of instructional time?

Principals of Virginia Title I elementary schools in school improvement for 2008-

2009 constituted the population for this study. Of the 40 school districts with which these schools were associated, 22 districts gave permission to contact principals for this study. One school was reported as closed at the conclusion of the 2008-2009 school year. Three schools had new principals in the fall of 2009; the principals of these schools were not included in the survey because survey items addressed experiences of the previous year, 2008-2009. Ultimately, 31 school principals were eligible for the survey. A total of 27 principals completed the survey for a response rate of 87%. If all principals had been given district permission to participate, 27 responses would have resulted in a 36.5% response rate. Table 11 depicts the participation of the principals in this survey.

Table 11. Principal Survey Participation

Total Title I elementary schools on Virginia Department of Education School Improvement list for 2008-2009	74
Total schools ineligible due to nonparticipation by district	39
Title I elementary schools available for participation in study	35
Schools closed at end of 2008-2009 school year	1
Schools with new principals at the start of 2009-2010 school year (Not principals in the year for which data were being collected)	3
Eligible schools	31
Total principals not responding to requests for participation in survey	4
Total principals completing survey	27
Response rate (27/31)	87%

District permission to participate in external research was an eligibility requirement for principals included in this population. The researcher followed the same

protocol for all district applications; she sent a written request to each district superintendent. If no response was received, she sent a second request.

The researcher sought information regarding demographic characteristics of the nonresponding principals. She contacted each school by phone and requested to talk to someone in the office who had the capacity to answer questions about the school's history and characteristics. The information received is displayed in Table 12.

Survey data are reported in two sections. In the first section, the data from six items are used to present demographic information about the participants as well as characteristics of the responding principals' schools. These data have been cross tabulated with responding principals' perceptions of building condition.

In the second section, data that directly address each research question are presented. These data were examined in terms of building condition by cross tabulating the percentages and frequencies with the principals' perceptions of building condition.

Survey Results: Population Characteristics

Table 12 displays demographic information for respondents, including school setting, grade range, school size, school age, and number of years the responder had been principal of his or her school. The responses are presented as frequencies and percentages. This information was important for establishing a profile of responding principals in the same terms used to describe principals participating in other research regarding building conditions.

A majority (70.4%) of the schools participating in this study were located in small town or rural settings. This percentage is slightly higher than the representation of rural schools in the population of elementary schools in improvement. Of the 40 districts

containing designated schools, 24 may be considered rural, with the remaining 16 either urban or suburban. Thus about 60% of these districts may be considered rural, and of these 24 school districts, responses were received from principals in 20 of those districts. 60% of the schools housed Pre-Kindergarten or Kindergarten through Grade 5. Sixteen (59.2%) of the schools each included a span of six grade levels whereas four (15%) included seven or eight grade levels. Thus almost three-quarters of the schools included a span of at least 6 years. The remaining schools reported a wide range of grades. A majority of schools, about 55%, enrolled between 301 and 500 students; about a third (33.3%) of the schools enrolled 501 to 750 students. Thus, 89% of the schools reported a school size between 301 and 750 students. Nearly 60% indicated that their schools were at least 25 years old, and all principals reporting substandard conditions were serving in schools at least 25 years old.

Nearly all (92.6%) of the principals had been principals at their schools for fewer than 11 years. Almost 60% reported that they had been at their schools for 2 to 3 years. Demographic data are depicted in Table 12.

Table 12. Demographic Information

Question 2. School setting	f	%
Small town/rural	19	70.4%
Large town/Urban fringe/Suburban	3	11.1%
City/Urban	5	18.5%
Total	27	100%
Question 3. Grades taught	**f**	**%**
Pre-K – 2	4	14.8%
Pre-K – 5	8	29.6%
Pre-K – 6	1	3.7%
Grades Pre-K – 7	2	9.1%
K – 5	8	29.6%
K – 6	1	3.7%
Grades 3 – 6	1	3.7%
Grades 3 – 7	1	3.7%
Grades 4 – 7	1	3.7%
Total	27	100%
Question 4. School size	**f**	**%**
Fewer than 300 students	2	7.4%
301 to 500 students	15	55.6%
501 to 750 students	9	33.3%
751 to 1,000 students	0	0.0%
More than 1,000 students	1	3.7%
Total	27	100%
Question 5. Age of school	**f**	**%**
0 – 2 years	0	0.0%
3 – 10 years	5	19.2%
11 – 25 years	6	23.1%
More than 25 years old	15	57.7%
No response	1	3.7%
Total	27	100%
Question 8. Years as principal in the school	**f**	**%**
2008-2009 first year in the school	2	7.4%
2 – 3 years	16	59.3%
4 – 10 years	7	25.9%
11 – 25 years	1	3.7%
More than 25 years	0	0.0%
Other (please specify)	1	3.7%
Total	27	100%

Table 13 presents the information obtained concerning principals' perceptions of their buildings' conditions. When asked to rate their overall building conditions as above standard, standard, or substandard, most principals (70.4%) rated their buildings as being in standard condition: Students, staff, and parents found conditions to be acceptable, but occasionally expressed concerns about conditions that caused discomfort, interrupted learning, or presented safety issues. Five principals (18.5%) reported their building conditions to be above standard: Students, staff, and parents found conditions to be comfortable in the building, with no problems that caused discomfort, interrupted learning, or presented safety issues. Three responding principals (11.1%) reported their buildings to be substandard: Students, staff and parents found conditions to be unacceptable, with identified problems that caused discomfort, interrupted learning, or presented safety issues.

Table13. Principals' Perceptions of Building Conditions

Question 6. Description of physical condition	f	%
Above standard (Students, staff, and parents find conditions comfortable in the building, with no problems that cause discomfort, interrupt learning, or present a safety issue)	5	18.5%
Standard (students, staff, and parents find conditions acceptable, but occasionally express concern about conditions which cause discomfort, interrupt learning, or present a safety issue)	19	70.4%
Substandard (students, staff, and parents find conditions unacceptable, with identified problems that cause discomfort, interrupt learning, or present a safety issue)	3	11.1%
Total	27	100%

The principals at three schools had begun their principalship at the beginning of the 2009-2010 school year and, therefore, were not eligible to take the survey concerning the 2008-2009 school year. Four other principals elected not to respond to the requests to complete the survey. Tables 14 and 15 present the demographic information collected regarding the seven identified schools that did not take part in this study.

The number of responding schools in this study was affected by limited access to eligible schools, as represented in Table 11. The principals in districts that did participate in the study provided the researcher with a high response rate. There were districts with Title I schools in improvement, however, that opted not to permit principal participation.

The setting, the grades taught, and the student population for each of these seven schools were available from two sources: the school directory maintained at the Virginia Department of Education Web site (http://www.doe.virginia.gov/directories/index.shtml), and the school search tool at the National Center for Education Statistics Web site (http://www.nces.ed.gov/ccd/schoolsearch). In addition, the researcher contacted each school and conversed with a member of the office staff to ascertain answers to questions regarding four areas: the age of the school building; whether or not it had undergone major renovation; the number of years the principal had been at the school (for nonresponding principals); and the staff person's perception of whether or not there was a consensus of opinion that the condition of the building was above standard, standard, or below standard in terms of how well children were able to learn. This last question revealed that one of the schools had been rebuilt within the past 6 to 8 years and was in above standard condition. The other six schools were reported to be in standard condition.

Table 14. Demographic Information for Schools With Nonresponding Principals or New Principals

Question 2. School setting for nonresponding and new principals	Nonresponding principals f (%)	New principals f (%)	Total f (%)
Small town/Rural	3 (75%)	3 (100%)	6 (86%)
Large town/Urban fringe/Suburban	1 (25%)	0 (0.0%)	1 (14%)
Total	4 (100%)	3 (100%)	7 100%)
Question 3. Grades taught	**Nonresponding principals f (%)**	**New principals f (%)**	**Total f (%)**
Pre-K – 2	2 (50%)	1 (33%)	3 (42.8%)
Pre-K – 5	2 (50%)	1 (33%)	3 (42.8%)
Grades Pre-K – 7	0 (0.0%)	1 (33%)	1 (14.2%)
Total	4 (100%)	3 (100%)	7 (100%)
Question 4. School size	**Nonresponding principals f (%)**	**New principals f (%)**	**Total f (%)**
Fewer than 300 students	2 (50%)	0 (0.0%)	2 (28.5%)
301 to 500 students	1 (25%)	3 (100%)	4 (57.1%)
501 to 750 students	1 (25%)	0 (0.0%)	1 (14.2%)
Total	4 (100%)	3 (100%)	7 (100%)
Question 5. Age of school	**Nonresponding principals f (%)**	**New principals f (%)**	**Total f (%)**
3 – 10 years	1 (25%)	0 (0.0%)	1 (14.2%)
11 – 25 years	0 (0.0%)	0 (0.0%)	0 (0.0%)
More than 25 years old	3 (75%)	2 (67%)	5 (71.4%)
No response		1	1
Total	4 (100%)	3 (100%)	7 (100%)
Question 8. Years principal in the school (applies only to nonresponding principals)		**Nonresponding principals f (%)**	
2 – 3 years		2 (50%)	
4 – 10 years		2 (50%)	
Total		4 (100%)	

Table 15. Perception of Office Staff Person Concerning Building Condition and Its Possible Effect on Students Doing Well in School

Question 6. Description of physical condition	Nonresponding principals f (%)	New principals f (%)	Total f (%)
Above standard (Students, staff, and parents find conditions comfortable in the building, with no problems that cause discomfort, interrupt learning, or present a safety issue)	1 (25%)	0 (0.0%)	1 (14%)
Standard (Students, staff, and parents find conditions acceptable, but occasionally express concern about conditions which cause discomfort, interrupt learning, or present a safety issue)	3 (75%)	3 (100%)	6 (86%)
Substandard (Students, staff, and parents find the conditions unacceptable, with identified problems that cause discomfort, interrupt learning, or present a safety issue)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total	4 (100%)	3 (100%)	

Data available for nonrespondents do not reflect meaningful differences between respondents and nonrespondents.

In Table 16, respondents' demographic characteristics were cross tabulated with perceptions of overall building condition. Differences in building condition between schools in varied community settings were not discernible. The grade range of the schools did not exhibit any differences related to building condition. School size did not reflect any discernible differences in terms of building condition.

Differences in building condition between schools of varying ages were discernible. None of the five schools reporting above-standard conditions was older than 25 years, whereas 12 of 18 standard-condition schools (66.7%) were more than 25 years

old, and all of the school buildings reported as substandard were more than 25 years old.

Almost 60% of the responding principals reported serving as principal of the school building for fewer than 4 years. This percentage included all of the principals reporting substandard building condition.

Substandard schools tended to be rural, small, and more than 25 years of age. Principals of substandard buildings reported no more than 3 years of service at their buildings; only 30% of all responding principals had more than 3 years of experience in their current schools. Apparently, schools in improvement were led by new principals with limited experience in their buildings or by experienced principals recently recruited to these schools. In either case, this phenomenon may be characteristic of schools in need of improvement, if not a function of building condition: A relationship between years as principal in the building and perception of overall building condition is not discernible in Table 16.

Table 16. Demographic Information Cross Tabulated With Designation of Building Condition

Demographic information	Building condition			
School setting	Above f (%)	Standard f (%)	Substandard f (%)	Totals f (%)
Small town/Rural	5 (18.5%)	12 (44.1%)	2 (7.4%)	19 (70.3%)
Large town/Urban fringe/Suburban	0 (0.0%)	3 (11.1%)	0 (0.0%)	3 (11.1%)
City/Urban	0 (0.0%)	4 (14.8%)	1 (3.7%)	5 (18.5%)
Total	5 (18.5%)	19 (70.3%)	3 (11.1%)	27 (100%)
Grade range	Above f (%)	Standard f (%)	Substandard f (%)	Totals f (%)
Pre-K – 2	0 (0.0%)	2 (7.4%)	2 (7.4%)	4 (18.2%)
Pre-K – 5	3 (11.1%)	5 (18.5%)	0 (0.0%)	8 (36.4%)
Pre-K–6	0 (0.0%)	1 (3.7%)	0 (0.0%)	1 (4.5%)
K – 5	2 (40.0%)	5 (35.7%)	1 (33.3%)	8 (36.4%)
Grades 3 – 6	0 (0.0%)	1 (7.1%)	0 (0.0%)	1 (4.5%)
Grades 3 – 7	0 (0.0%)	1 (7.1%)	0 (0.0%)	1 (4.5%)
Grades 4 – 7	0 (0.0%)	1 (7.1%)	0 (0.0%)	1 (4.5%)
Missing values				3
Total	5 (18.5%)	16 (59.3%)	3 (11.1%)	27 (100%)
School size	Above f (%)	Standard f (%)	Substandard f (%)	Totals f (%)
Fewer than 300 students	0 (0.0%)	1 (5.3%)	1 (33.3%)	2 (7.4%)
301 to 500 students	2 (40.0%)	11 (57.9%)	2 (66.7%)	15 (55.6%)
501 to 750 students	3 (60.0%)	6 (31.6%)	0 (0.0%)	9 (33.3%)
751 to 1,000 students	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
More than 1,000 students	0 (0.0%)	1 (5.3%)	0 (0.0%)	1 (3.7%)
Total	5 (18.5%)	19 (70.3%)	3 (11.1%)	27 (100%)

(continued)

Table 16. Demographic Information Cross Tabulated With Designation of Building Condition (continued)

School age	Above f (%)	Standard f (%)	Substandard f (%)	Totals f (%)
0 – 2 years	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
3 – 10 years	3 (60.0%)	2 (11.1%)	0 (0.0%)	5 (19.2%)
11 – 25 years	2 (40.0%)	4 (22.2%)	0 (0.0%)	6 (21.1%)
More than 25 years old	0 (0.0%)	12 (66.7%)	3 (100.0%)	15 (57.7%)
Missing values				1
Total	5 (19.2%)	18 (69.2%)	3 (11.5%)	26
Years principal in the building	**Above f (%)**	**Standard f (%)**	**Substandard f (%)**	**Totals f (%)**
2008-2009 first year	0 (0.0%)	1 (5.3%)	1 (33.3%)	2 (7.4%)
2 – 3 years	4 (80.0%)	10 (52.6%)	2 (66.7%)	16 (59.3%)
4 – 10 years	1 (20.0%)	6 (31.6%)	0 (0.0%)	7 (25.9%)
11 – 25 years	0 (0.0%)	1 (5.3%)	0 (0.0%)	1 (3.7%)
More than 25 years	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Other (please specify)	0 (0.0%)	1 (5.3%)	0 (0.0%)	1 (3.7%)
Total	5 (18.5%)	19 (70.3%)	3 (11.1%)	27 (100.0%)

Survey Results: Data Related to Research Questions

Table 17 displays principals' perceptions of the importance of the nine essential elements for school improvement and building condition in raising student achievement in their schools. These data were collected to address Research Question 1: Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement? Responding principals indicated their perceptions for each item by selecting one of four choices in a rating scale: not as important as other factors, about the same in importance, more

important, or much more important.

Using data-driven school improvement planning that addresses identified areas of weakness generated the strongest response; 22 responding principals (81.5%) indicated that it was much more important than other factors listed. Four other essential elements were selected by over 50% of the responding principals as much more important: recruiting and retaining highly effective teachers (51.9%), using time and scheduling practices that maximize instruction (55.6%), using instructional strategies grounded in scientifically based research (66.7%), and ensuring that instruction intervention and resources are aligned to areas of need (69.2%).

Of the remaining essential elements for school improvement and the factor of building condition, two were indicated least frequently by respondents as being much more important: achieving and maintaining satisfactory condition of the school building, which received one response (3.7%) of much more important, and using teacher mentoring programs, which received four responses (14.8%) of much more important. These data are represented in Table 17.

Table 17. Survey Responses Related to Question 1: Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?

Rank each of these statements according to how you perceive its importance in raising student achievement in your school	Not as important as other factors f (%)	About the same in importance f (%)	More important f (%)	Much more important f (%)	Total f (%)
1. Using time and scheduling practices that maximize instruction	0 (0.0%)	3 (11.1%)	9 (33.3%)	15 (55.6%)	27 (100%)
2. Using teacher mentoring programs	1 (3.7%)	13 (48.1%)	9 (33.3%)	4 (14.8%)	27 (100%)
3. Using data-driven school improvement planning that addresses identified areas of weakness	0 (0.0%)	1 (3.7%)	4 (14.8%)	22 (81.5%)	27 (100%)
4. Recruiting and retaining highly effective teachers	0 (0.0%)	2 (7.4%)	11 (40.7%)	14 (51.9%)	27 (100%)
5. Creating and maintaining a school culture that promotes effective parent involvement	0 (0.0%)	6 (22.2%)	14 (51.9%)	7 (25.9%)	27 (100%)
6. Achieving and maintaining satisfactory condition of the school building	2 (7.4%)	10 (37.0%)	14 (51.9%)	1 (3.7%)	27 (100%)
7. Providing extended learning time, i.e., before and after school, summer school	1 (3.7%)	7 (25.9%)	13 (48.1%)	6 (22.2%)	27 (100%)
8. Ensuring that instructional intervention and resources are aligned to areas of need	1 (3.7%)	0 (0.0%)	8 (29.6%)	18 (66.6%)	27 (100%)
9. Using instructional strategies grounded in scientifically based research	0 (0.0%)	2 (7.4%)	7 (25.9%)	18 (66.7%)	27 (100%)
10. Implementing an ongoing, school-based program of professional development	1 (3.7%)	1 (3.7%)	15 (55.6%)	10 (37.0%)	27 (100%)

When responses for more important and much more important were combined (see Tables 18 through 27), two items reflected the highest response rate of more important–much more important: using data-driven school improvement planning that addresses identified areas of weakness (96.3%) and ensuring that instructional intervention and resources are aligned to areas of need (96.3%).

Four of the nine essential elements of school improvement were almost as highly ranked: recruiting and retaining highly effective teachers (92.5%); ensuring that instructional intervention and resources are aligned to areas of need (92.5%); using instructional strategies grounded in scientifically based research (92.5%); and implementing an ongoing, school-based program of professional development (92.5%).

Using teacher mentoring programs was perceived least frequently (48.3%) to be more important or much more important. The second lowest percentage (55.6%) of more important or much more important responses was noted for achieving and maintaining satisfactory condition of the school building.

The first research question asked, “Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?” As expected, respondents recognized eight of the nine essential elements of school improvement as actions with potential for improving achievement in their buildings. Respondents overwhelmingly reported these items as being more important or much more important than other factors. The potential of achieving and maintaining satisfactory building condition for improving student achievement was recognized as more important or much more important less frequently,

indicating that respondents did not attach the same level of importance to building condition as they did eight of the other items.

Respondents attached even less importance to using teacher mentoring programs than they did to achieving and maintaining satisfactory building condition. of the importance of using teacher mentoring programs are not apparent in the data.

Cross tabulation tables for Items 1-10 in Question 1. Respondents' perceptions of the importance of the nine essential elements of school improvement and achieving and maintaining satisfactory building condition are cross tabulated with overall physical condition of the building in Tables 18 through 26. The responses for much more important and more important have been combined in these tables.

Three principals (11%) indicated that they perceived using time and scheduling practices to be about the same in importance as other factors. All other principals, including those who indicated their buildings were in substandard condition indicated that this element was more important or much more important than other factors. These data are presented in Table 18.

Table 18. Cross tabulation table for Question 1, Item 1

1. Using time and scheduling practices	Physical condition of building: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
About the same in importance as other factors	1 (20.0%)	2 (10.5%)	0 (0.0%)	3 (11.1%)
More important or much more important than other factors	4 (80.0%)	17 (89.4%)	3 (100.0%)	24 (88.8%)
Total	5 (100%)	19 (100%)	3 (100.0%)	27 (100%)

Just over half (52%) of responding principals indicated that using teacher mentoring programs was not as important or about the same in importance as other factors. Using teacher mentoring programs received the lowest ranking in terms of importance for raising student achievement. Differences in respondents' perceptions regarding using teacher mentoring programs by building condition are not discernible. A majority (60%) of principals serving in buildings of above-standard condition deemed the use of teacher mentoring programs to be not as important or about the same in importance as other factors, as did all (100%) of the principals in buildings of substandard condition. The majority (63%) of principals in standard-condition buildings ranked teacher mentoring programs as more important or much more important than other factors. The lack of importance that principals attached to using teacher mentoring programs, although unexpected, does not appear to be a function of overall building

condition. These data are presented in Table 19.

Table 19. Cross tabulation table for Question 1, Item 2

	Physical condition of building			
2. Using teacher mentoring programs	Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	1 (20.0%)	0 (0.0%)	0 (0.0%)	1 (3.7%)
About the same in importance as other factors	2 (40.0%)	8 (42.1%)	3 (100.0%)	13 (48.1%)
More important or much more important than other factors	2 (40.0%)	11 (57.9%)	0 (0.0%)	13 (48.1%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

Twenty-six (96.3%) of the respondent principals indicated that using data-driven school improvement planning that addresses identified areas of weakness was more important or much more important than other factors. One principal of an above-standard school ranked it as about the same in importance as other factors. These data are presented in Table 20.

Table 20. Cross tabulation table for Question 1, Item 3

3. Using data-driven school improvement planning that addresses identified areas of weakness	Physical condition of building: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
About the same in importance as other factors	1 (20.0%)	0 (0.0%)	0 (0.0%)	1 (3.7%)
More important or much more important than other factors	4 (80.0%)	19 (100.0%)	3 (100.0%)	26 (96.2%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

One principal of an above-standard building and one principal of a substandard building ranked using data-driven school improvement planning that addresses identified areas of weakness as about the same in importance as other factors. All other principals (93%) ranked it as more important or much more important than other factors. These data are presented in Table 21.

Table 21. Cross tabulation table for Question 1, Item 4

4. Using data-driven school improvement planning that addresses identified areas of weakness	Physical condition of building: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
About the same in importance as other factors	1 (20.0%)	0 (0.0%)	1 (33.3%)	2 (7.4%)
More important or much more important than other factors	4 (80.0%)	19 (100.0%)	2 (66.7%)	25 (92.5%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

Item 5 asked principals to rank the importance of creating and maintaining a school culture that promotes effective parent involvement. A substantial majority (74%) of principals ranked it as more important or much more important than other factors. Six principals (26%) ranked it as about the same in importance as other factors. These data are presented in Table 22.

Table 22. Cross tabulation table for Question 1, Item 5

5. Creating and maintaining a school culture that promotes effective parent involvement	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	No response f (%)
Not as important as other factors	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
About the same in importance as other factors	2 (40.0%)	3 (15.8%)	1 (33.3%)	6 (22.2%)
More important or much more important than other factors	3 (60.0%)	16 (84.3%)	2 (66.7%)	21 (77.7%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

Respondents attached relatively low importance to achieving and maintaining satisfactory building condition with regard to raising student achievement. The majority (52.6%) of principals who indicated their buildings were in standard condition ranked achieving and maintaining satisfactory building condition as more important or much more important than other factors. All principals of substandard buildings ranked building condition as more important or much more important than other factors. One of the five principals of above-standard buildings ranked it as not as important as other factors. Two of those five principals ranked it as more important or much more important than other factors. More than half (55.5%) of all principals ranked the factor as being more important or much more important than other factors. Consequently, the importance that principals attached to achieving and maintaining satisfactory building condition to improve student achievement appeared to be related to the overall condition of the building, reflecting

greater importance in substandard buildings than in buildings above the threshold of adequacy. These data are presented in Table 23.

Table 23. Cross tabulation table for Question 1, Item 6

	Building condition			
6. Achieving and maintaining satisfactory condition of the school building	Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	1 (20.0%)	1 (5.3%)	0 (0.0%)	2 (7.4%)
About the same in importance as other factors	2 (40.0%)	8 (42.1%)	0 (0.0%)	10 (37.0%)
More important or much more important than other factors	2 (40.0%)	10 (52.6%)	3 (100.0%)	15 (55.5%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

Providing extended learning time, such as before and after school or during summer school, was deemed to be of high importance. Only one of the responding principals, a principal of a substandard school, indicated that he or she perceived this factor to be not as important as other factors. Seven responding principals (25.9%) perceived this factor to be about as important as other factors; 19 principals (70.3%) considered this factor to be more important or much more important than other factors. These data are presented in Table 24.

Table 24. Cross tabulation table for Question 1, Item 7

7. Providing extended learning time	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	0 (0.0%)	0 (0.0%)	1 (33.3%)	1 (3.7%)
About the same in importance as other factors	1 (20.0%)	5 (26.3%)	1 (33.3%)	7 (25.9%)
More important or much more important than other factors	4 (80.0%)	14 (73.7%)	1 (33.3%)	19 (70.3%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

The importance of ensuring that instructional intervention and resources are aligned to areas of need was ranked by nearly all principals (92.6%) as more important or much more important than other factors. Only one principal, who served in an above-standard building, perceived that ensuring that instructional intervention and resources are aligned to areas of need was not as important as other factors. These data are presented in Table 25.

Table 25. Cross tabulation table for Question 1, Item 8

8. Ensuring that instructional intervention and resources are aligned to areas of need	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	No response f (%)	Total % (f)
Not as important as other factors	1 (20.0%)	0 (0.0%)	0 (0.0%)		1 (3.7%)
About the same in importance as other factors	0 (0.0%)	0 (0.0%)	0 (0.0%)		0 (0.0%)
More important or much more important than other factors	4 (80.0%)	18 (100.0%)	3 (100.0%)		25 (92.6%)
No response				1 (3.7%)	1 (3.7%)
Total	5 (100%)	18 (100%)	3 (100%)	1 (3.7%)	27 (100%)

Nearly all principals (92.6%), including all principals of substandard buildings, deemed the use of instructional strategies grounded in scientifically based research as more important or much more important than other factors. These data are presented in Table 26.

Table 26. Cross tabulation table for Question 1, Item 9

9. Using instructional strategies grounded in scientifically based research	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
About the same in importance as other factors	1 (20.0%)	1 (5.3%)	0 (0.0%)	2 (7.4%)
More important or much more important than other factors	4 (80.0%)	18 (94.7%)	3 (100.0%)	25 (92.6%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

Implementing an ongoing, school-based program of professional development was ranked as more important or much more important than other factors by all but two (92.6%) of the responding principals, including all principals of substandard buildings. One principal of an above-standard building ranked it as not as important as other factors, and one principal of a standard building ranked this factor as about the same in importance as other factors. These data are presented in Table 27.

Table 27. Cross tabulation table for Question 1, Item 10

	Building condition			
10. Implementing an ongoing, school-based program of professional development	Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Not as important as other factors	1 (20.0%)	0 (0.0%)	0 (0.0%)	1 (3.7%)
About the same in importance as other factors	0 (0.0%)	1 (5.3%)	0 (0.0%)	1 (3.7%)
More important or much more important than other factors	4 (80.0%)	18 (94.7%)	3 (100.0%)	25 (92.6%)
Total	5 (100%)	19 (100%)	3 (100%)	27 (100%)

Table 28 displays the extent to which respondents agreed that each of Earthman's (2004) list of seven most important building conditions were issues. These data were collected to address Research Question 2: With what frequency do principals report each building condition of Earthman's (2004) prioritized list as an issue in terms of their perceptions of overall building condition?

Table 28. Extent to Which Survey Respondents Deemed Earthman's Prioritized List of Building Conditions to be Issues

Please indicate the extent to which you agree or disagree with the following statements:	Strongly disagree f (%)	Disagree f (%)	Agree f (%)	Strongly agree f (%)	Total f (%)
1. The temperature in the building is too hot or too cold for the students to work in comfort.	3 (11.1%)	17 (63.0%)	5 (18.5%)	2 (7.4%)	27 (100%)
2. The air in the building is not healthy.	3 (11.1%)	19 (70.4%)	4 (14.8%)	1 (3.7%)	27 (100%)
3. The light in the building is a problem for the students and staff.	4 (14.8%)	17 (63.0%)	5 (18.5%)	1 (3.7%)	27 (100%)
4. The facilities are not of sufficient quality to carry out science labs.	2 (7.4%)	9 (33.3%)	14 (51.9%)	2 (7.4%)	27 (100%)
5. The building would look better if obvious maintenance and repair needs were addressed.	3 (11.1%)	8 (29.6%)	14 (51.9%)	2 (7.4%)	27 (100%)
6. The high noise level is a problem for the students and staff.	5 (18.5%)	16 (59.3%)	5 (18.5%)	1 (3.7%)	27 (100%)
7. The building is overcrowded.	4 (14.8%)	12 (44.4%)	8 (29.6%)	3 (11.1%)	27 (100%)

These data are also displayed in Table 29; however, strongly disagree and disagree responses have been combined in this table, as have strongly agree and agree responses. One quarter (25.9%) of the principals agreed with the statement that the temperature had an impact on students' comfort when working. Air quality was identified

by 18.5% of the principals as unhealthy, and the light in the building was identified as a problem by 22% of the principals. These three conditions, along with high noise level, appeared to be the least frequently cited problems in the buildings of responding principals (approximately 20%-25%).

Nearly 60% of the respondents agreed or strongly agreed that facilities were not of sufficient quality to carry out science labs and that the buildings would look better if obvious maintenance and repair needs were addressed. Additionally, 40.7% of the respondents reported overcrowded conditions.

Table 29. Aggregated Data Regarding Earthman's List of Building Conditions as Issues

Please indicate the extent to which you agree or disagree with the following statements:	Strongly disagree/ Disagree f (%)	Strongly agree/Agree f (%)	Total f (%)
1. The temperature in the building is too hot or too cold for the students to work in comfort.	20 (74.1%)	7 (25.9%)	27 (100%)
2. The air in the building is not healthy.	22 (81.5%)	5 (18.5%)	27 (100%)
3. The light in the building is a problem for the students and staff.	21 (77.8%)	6 (22.2%)	27 (100%)
4. The facilities are not of sufficient quality to carry out science labs.	11 (40.7%)	16 (59.3%)	27 (100%)
5. The building would look better if obvious maintenance and repairs needs were addressed.	11 (40.7%)	16 (59.3%)	27 (100%)
6. The high noise level is a problem for the students and staff.	21 (77.8%)	6 (22.2%)	27 (100%)
7. The building is overcrowded.	16 (59.2%)	11 (40.7%)	27 (100%)

Principals' perceptions concerning Earthman's prioritized list are cross tabulated with principals' perceptions of overall building condition in Table 30. Responding principals in above-standard buildings rarely agreed that any of these conditions were problems in their buildings. Only one principal in an above-standard building agreed that facilities were not sufficient to carry out science labs; similarly, only one principal in an above-standard building agreed that noise level was a problem for students and staff.

Agreement that these seven conditions presented problems was more prevalent among principals of buildings of standard condition. That the building would look better if obvious needs and repairs were addressed was deemed to be a problem in 14 (73.6%) of the 19 standard-condition schools. Of those 19 principals, 12 (63.1%) agreed that facilities were not sufficient to carry out science labs. Almost half (47.4%) of the principals of standard-condition schools reported overcrowding as a problem. Each of Earthman's seven factors was reported to be a problem by at least 19% of the respondents. Six of the seven conditions were reported as problems in at least two of the three buildings of substandard condition. Also, principals in substandard buildings consistently reported that the facilities were not sufficient to carry out science labs. In substandard buildings, only noise level was reported as a problem less frequently than not. These data are presented in Table 30.

Table 30. Cross Tabulation of Earthman's (2004) Prioritized List of Building Conditions by Actual Building Condition

	Building condition			
1. The temperature in the building is too hot or too cold for the students to work in comfort	Above Standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Strongly disagree/Disagree	5 (100.0%)	14 (73.6%)	1 (33.3%)	20 (74%)
Agree/Strongly agree	0 (0.0%)	5 (26.3%)	2 (66.6%)	7 (25.9%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100%)
	Building condition			
2. The air in the building is not healthy.	Above Standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Strongly disagree/Disagree	5 (100.0%)	16 (84.2%)	1 (33.3%)	22 (81.4%)
Agree/Strongly agree	0 (0.0%)	3 (15.7%)	2 (66.7%)	5 (18.5%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100%)
	Building condition			
3. The light in the building is a problem for the students and staff	Above Standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Strongly disagree/Disagree	5 (100.0%)	15 (78.9%)	1 (33.3%)	21 (77.7%)
Agree/Strongly agree	0 (0.0%)	4 (21.1%)	2 (66.7%)	6 (22.2%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100%)

(continued)

Table 30 (continued)

	Building condition			
4. The facilities are not of sufficient quality to carry out science labs	Above Standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Strongly disagree/Disagree	4 (80.0%)	7 (36.8%)	0 (0.0%)	11 (40.7%)
Agree/Strongly agree	1 (20.0%)	12 (63.1%)	3 (100.0%)	16 (59.2%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100%)
	Building condition			
5. The building would look better if obvious maintenance and repairs needs were addressed.	Above Standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Strongly disagree/Disagree	5 (100.0%)	5 (26.3%)	1 (33.3%)	11 (40.7%)
Agree/Strongly agree	0 (0.0%)	14 (73.6%)	2 (66.7%)	16 (59.2%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100%)
	Building condition			
6. The high noise level is a problem for the students and staff	Above Standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Strongly disagree/Disagree	4 (80.0%)	15 (78.9%)	2 (66.7%)	21 (77.7%)
Agree/Strongly agree	1 (20.0%)	4 (21.1%)	1 (33.3%)	6 (22.2%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100%)

(continued)

Table 30 (continued)

	Building condition			
7. The building is overcrowded.	Above Standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Strongly disagree/Disagree	5 (100.0%)	10 (52.6%)	1 (33.3%)	16 (59.2%)
Agree/Strongly agree	0 (0.0%)	9 (47.4%)	2 (66.7%)	11 (40.7%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100%)

Cross tabulation of Earthman's seven conditions by building age suggests that facilities' being of insufficient quality to carry out science labs and needing maintenance and repair to improve appearance were related to building age. These data are presented in Table 31.

Table 31. Cross Tabulation of Earthman's Seven Conditions by Building Age

	Building age				
1. The temperature in the building is too hot or too cold for the students to work in comfort.	0-2 years f (%)	3-10 years f (%)	11-25 years f (%)	More than 25 years f (%)	Total f (%)
Strongly disagree/Disagree	0 (0.0%)	3 (60.0%)	4 (66.7%)	12 (80.0%)	19 (73.0%)
Agree/Strongly agree	0 (0.0%)	2 (40.0%)	2 (33.3%)	3 (20.0%)	7 (26.9%)
Total	0 (0.0%)	5 (100.0%)	6 (100.0%)	15 (100.0%)	26 (100%)
	Building age				
2. The air in the building is not healthy.	0-2 years f (%)	3-10 years f (%)	11-25 years f (%)	More than 25 years f (%)	Total f (%)
Strongly disagree/Disagree	0 (0.0%)	3 (60.0%)	6 (100.0%)	13 (86.6%)	22 (84.6%)
Agree/Strongly agree	0 (0.0%)	2 (40.0%)	0 (0.0%)	2 (13.3%)	4 (15.3%)
Total	0 (0.0%)	5 (100.0%)	6 (100.0%)	15 (100.0%)	26 (100%)
	Building age				
3. The light in the building is a problem for the students and staff.	0-2 years f (%)	3-10 years f (%)	11-25 years f (%)	More than 25 years f (%)	Total f (%)
Strongly disagree/Disagree	0 (0.0%)	3 (60.0%)	6 (100.0%)	11 (73.3%)	20 (77.0%)
Agree/Strongly agree	0 (0.0%)	2 (40.0%)	0 (0.0%)	4 (26.6%)	6 (23.0%)
Total	0 (0.0%)	5 (100.0%)	6 (100.0%)	15 (100.0%)	26 (100%)

(continued)

Table 31 (continued)

	Building age				
4. The facilities are not of sufficient quality to carry out science labs.	0-2 years f (%)	3-10 years f (%)	11-25 years f (%)	More than 25 years f (%)	Total f (%)
Strongly disagree/Disagree	0 (0.0%)	3 (60.0%)	3 (50.0%)	5 (33.3%)	11 (42.3%)
Agree/Strongly agree	0 (0.0%)	2 (40.0%)	3 (50.0%)	10 (66.7%)	15 (57.7%)
Total	0 (0.0%)	5 (100.0%)	6 (100.0%)	15 (100.0%)	26 (100%)
	Building age				
5. The building would look better if obvious maintenance and repairs needs were addressed.	0-2 years f (%)	3-10 years f (%)	11-25 years f (%)	More than 25 years f (%)	Total f (%)
Strongly disagree/Disagree	0 (0.0%)	3 (60.0%)	3 (50.0%)	5 (33.3%)	11 (42.3%)
Agree/Strongly agree	0 (0.0%)	2 (40.0%)	3 (50.0%)	10 (66.7%)	15 (57.7%)
Total	0 (0.0%)	5 (100.0%)	6 (100.0%)	15 (100.0%)	26 (100%)
	Building age				
6. The high noise level is a problem for the students and staff.	0-2 years f (%)	3-10 years f (%)	11-25 years f (%)	More than 25 years f (%)	Total f (%)
Strongly disagree/Disagree	0 (0.0%)	2 (40.0%)	6 (100.0%)	12 (80.0%)	20 (77.0%)
Agree/Strongly agree	0 (0.0%)	3 (60.0%)	0 (0.0%)	3 (20.0%)	6 (23.0%)
Total	0 (0.0%)	5 (100.0%)	6 (100.0%)	15 (100.0%)	26 (100%)

(continued)

Table 31 (continued)

7. The building is overcrowded	Building age 0-2 years f (%)	3-10 years f (%)	11-25 years f (%)	More than 25 years f (%)	Total f (%)
Strongly disagree/Disagree	0 (0.0%)	4 (80.0%)	4 (66.7%)	8 (53.3%)	16 (61.5%)
Agree/Strongly agree	0 (0.0%)	1 (20.0%)	2 (33.3%)	7 (46.6%)	10 (38.5%)
Total	0 (0.0%)	5 (100.0%)	6 (100.0%)	15 (100.0%)	26 (100%)

Table 32 displays principals' perceptions concerning the extent to which physical building condition affected their ability to engage in each of the seven effective schools practices. Survey Question 10 was designed to elicit descriptive information concerning principals' perceptions concerning the third research question: With what frequency do principals report the impact of building condition on effective schools practices?

Based upon principals' responses, it appears that building conditions impacted the effective schools practices only about 10% of the time. No responding principals reported that the physical condition of the building affected the ability to create parent visiting opportunities. Only two effective schools practices were perceived by more than 25% of the responding principals as being impacted by building condition: "ability to schedule practices that maximize instruction" and "ability to promote instructional strategies that incorporate active student learning." These data are presented in Table 32.

Table 32. Extent to Which Physical Condition of the School Impacted the Principal's Ability With Regard to Effective Schools Practices

The physical condition of the building affected my ability to	Had no impact f (%)	Had very little impact f (%)	Had some impact f (%)	Had a strong impact f (%)	Total f (%)
1. offer extended learning time (i.e., before school, after school, summer school).	21 (77.8%)	3 (11.1%)	3 (11.1%)	0 (0.0%)	27 (100%)
2. recruit and retain highly effective teachers.	21 (77.8%)	3 (11.1%)	3 (11.1%)	0 (0.0%)	27 (100%)
3. maintain an adequately safe and orderly environment.	16 (59.3%)	8 (29.6%)	2 (7.4%)	1 (3.7%)	27 (100%)
4. create and support a positive school climate	16 (59.3%)	9 (33.3%)	1 (3.7%)	1 (3.7%)	27 (100%)
5. carry out scheduling practices that maximize instruction.	17 (63.0%)	3 (11.1%)	5 (18.5%)	2 (7.4%)	27 (100%)
6. create active parent participation opportunities.	20 (74.1%)	7 (25.9%)	0 (0.0%)	0 (0.0%)	27 (100%)
7. promote instructional strategies that incorporate active student learning (i.e., labs, small group instruction, centers).	19 (70.4%)	1 (3.7%)	6 (22.2%)	1 (3.7%)	27 (100%)

In Table 33 responses indicating no impact were combined with responses indicating very little impact; likewise, responses indicating some impact were combined with responses indicating strong impact. Results for the combined category reveal that approximately one fourth (25.9%) of the responding principals perceived that the physical condition of the school building had at least some impact on (a) their ability to carry out scheduling practices that maximize instruction and (b) their ability to promote instructional strategies that incorporate active student learning (i.e., labs, small group instruction, centers).

Table 33. Aggregated Data Regarding the Extent to Which the Physical Condition of the School Impacted the Principal's Ability With Regard to Effective Schools Practices

The physical condition of the building affected my ability to	Had no impact/Had very little impact f (%)	Had some impact/ Had a strong impact f (%)	Total f (%)
1. offer extended learning time (i.e., before school, after school, summer school).	24 (88.9%)	3 (11.1%)	27 (100%)
2. recruit and retain highly effective teachers.	24 (88.9%)	3 (11.1%)	27 (100%)
3. maintain an adequately safe and orderly environment.	24 (88.9%)	3 (11.1%)	27 (100%)
4. create and support a positive school climate	25 (92.6%)	2 (7.4%)	27 (100%)
5. carry out scheduling practices that maximize instruction.	20 (74.1%)	7 (25.9%)	27 (100%)
6. create active parent participation opportunities.	27 (100.0%)	0 (0.0%)	27 (100%)
7. promote instructional strategies that incorporate active student learning (i.e., labs, small group instruction, centers).	20 (74.1%)	7 (25.9%)	27 (100%)

Responding principals' perceptions concerning the impact of building condition on each of the effective schools practices are cross tabulated in Table 34. Responding principals in buildings of above-standard condition never reported that the physical condition of the building affected their ability to engage in any of the seven effective schools practices. Principals in buildings of standard condition reported that the physical condition infrequently (0%-26%) affected their ability to perform the effective schools practices. On the other hand, two of the three principals in substandard buildings reported that building condition affected their ability to recruit or retain highly effective teachers, carry out scheduling practices that maximize instruction, and promote instructional strategies that incorporate active student learning. Consequently, a relationship between the extent to which principals perceive that the physical condition of the building impacts their ability to engage in effective schools practices and their perceptions of their overall building conditions is apparent in the data. These data are presented in Table 34.

Table 34. Cross Tabulation of Impact on Effective Schools Practices by Building Condition

The physical condition of the building affected my ability to				
	Building condition			
1. offer extended learning time (i.e., before school, after school, summer school).	Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Had no/very little impact	5 (100.0%)	17 (89.5%)	2 (66.7%)	24 (88.8%)
Had some/strong impact	0 (0.0%)	2 (10.5%)	1 (33.3%)	3 (11.1%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)
	Building condition			
2. recruit and retain highly effective teachers.	Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Had no/very little impact	5 (100.0%)	18 (94.8%)	1 (33.3%)	24 (88.8%)
Had some/strong impact	0 (0.0%)	1 (5.2%)	2 (66.7%)	3 (11.1%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)
	Building condition			
3. maintain an adequately safe and orderly environment.	Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Had no/very little impact	5 (100.0%)	17 (89.4%)	2 (66.7%)	24 (88.8%)
Had some/strong impact	0 (0.0%)	2 (10.6%)	1 (33.3%)	3 (11.1%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)

(continued)

Table 34 (continued)

4. create and support a positive school climate.	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Had no/very little impact	5 (100.0%)	17 (89.5%)	2 (66.7%)	24 (88.8%)
Had some/strong impact	0 (0.0%)	2 (10.5%)	1 (33.3%)	3 (11.1%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)

5. carry out scheduling practices that maximize instruction	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Had no/very little impact	5 (100.0%)	14 (73.6%)	1 (33.3%)	20 (74%)
Had some/strong impact	0 (0.0%)	5 (26.3%)	2 (66.7%)	7 (26%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)

6. create active parent participation opportunities	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Had no/very little impact	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)
Had some/strong impact	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)

(continued)

Table 34 (continued)

7. promote instructional strategies that incorporate active student learning	Building condition: Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
Had no/very little impact	5 (100.0%)	14 (73.7%)	1 (33.3%)	20 (74.0%)
Had some/strong impact	0 (0.0%)	5 (26.3%)	2 (66.7%)	7 (26.0%)
Total	5 (100.0%)	19 (100.0%)	3 (100.0%)	27 (100.0%)

In Table 35, principals' perceptions of the extent to which building physical condition contributed to lost instructional time that interfered with student achievement are cross tabulated with their perceptions of overall building condition. Principals' perceptions regarding instructional time lost due to building condition were sought to address Research Question 4: Is there a relationship between principals' perceptions of overall building condition and their perceptions of the impact of building condition on achievement due to loss of instructional time?

The extent to which principals perceived that their schools had lost instructional time because of the condition of the building appears to be related to their perceptions of overall building condition. Principals in buildings of above-standard condition (N=5) consistently reported no loss of instructional time that interfered with student achievement due to the physical condition of the building. Principals who perceived their buildings as meeting standard conditions (N=19) reported loss of instructional time due to building condition infrequently (21%). Principals consistently reported a loss of

instructional time due to building conditions even though it did not interfere with student achievement when they perceived their buildings' conditions to be substandard overall (N=3). Consequently, principals' perceptions of a loss of instructional time due to building condition are clearly related to their perceptions of the overall building condition. These data are presented in Table 35.

Table 35. Cross Tabulation of Lost Instructional Time by Building Condition

	Above standard f (%)	Standard f (%)	Substandard f (%)	Total f (%)
My school has not lost instructional time that interfered with student achievement because of the physical condition of the building.	5 (18.5%)	15 (55.5%)	0 (0/0%)	20 (74%)
My school has lost some instructional time because of the condition of the building, but it did not interfere with student achievement.	0 (0.0%)	2 (7.4%)	3 (11.1%)	5 (18.5%)
My school has lost instructional time because of the condition of the building, and it affected student achievement.	0 (0.0%)	2 (7.4%)	0 (0.0%)	2 (7.4%)

Conclusions

The purpose of this descriptive study was to explore the perceptions of the principals of Title I Virginia schools identified for school improvement in 2008-2009 concerning the condition of their school buildings and its impact on student achievement. The survey contained 31 items for the purpose of eliciting information to investigate four

research questions concerning the impact of building condition on the principal's mandate to raise student achievement.

The first section of the survey collected information about population characteristics: school setting, grade range, school size, school age, and number of years the respondent had been principal of his or her school. The respondents' demographic characteristics were cross tabulated with their perceptions of overall building condition. Community setting, grade range, and school size reflected no discernible differences with regard to building condition; however, differences in building condition were noted between schools of varying ages. All substandard schools tended to be rural, small, and over 25 years old; furthermore, principals of these schools had served in their positions the least number of years, 3 or fewer.

The second section of the survey collected data related to the research questions. The first research question asked, "Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?" This question was addressed by Question 1 of the survey, which asked principals to rate the importance of the nine essential elements of school improvement as well as the importance of achieving and maintaining satisfactory condition of the school building.

Respondents recognized eight of the nine essential elements of school improvement as structures with potential for improving achievement in their buildings. Respondents overwhelmingly reported eight of the nine essential elements of school improvement as being more important or much more important than other factors. Achieving and maintaining satisfactory building condition was reported as more

important or much more important for improving student achievement less frequently. Consequently, respondents did not appear to attach the same level of importance to building condition as they did to eight of the nine essential elements of school improvement. Respondents indicated the use of teacher mentoring programs as being more important or much more important for raising achievement in their buildings less frequently than they indicated achieving and maintaining satisfactory building condition.

Responding principals in above-standard buildings rarely agreed that any of Earthman's conditions were problems in their buildings; one principal indicated that the facilities were not of sufficient quality to carry out science labs, and one principal indicated that the high noise level was a problem for students and staff. Among principals in schools of standard condition, agreement that these conditions presented problems was more prevalent. The majority of principals of these schools indicated that the buildings would look better if obvious needs and repairs were addressed and that facilities were not sufficient to carry out science labs. Almost half reported overcrowding as a problem. Among principals in schools with substandard building conditions, the majority reported that six of the seven conditions were problems; only noise level was reported as a problem less frequently. Based upon the data, it appears that facilities' being of insufficient quality to carry out science labs and needing maintenance and repair to improve appearance might appear to be a function of building age.

Principals rarely reported that building condition impacted effective schools practices. Only two of the effective schools practices were considered by over 25% of the responding principals to be impacted by building condition: "The physical condition of the building affected my ability to schedule practices that maximize instruction," and

"The physical condition of the building affected my ability to promote instructional strategies that incorporate active student learning."

The extent to which principals perceived that the physical condition of the building impacted their ability to engage in effective schools practices appears to be related to their perceptions of their overall building conditions. Responding principals in buildings of standard condition reported that the physical condition infrequently (20% or less) affected their ability to perform effective schools practices. Two of the three principals in substandard buildings, however, reported that building condition affected their ability to recruit or retain highly effective teachers, carry out scheduling practices that maximize instruction, and promote instructional strategies that incorporate active student learning.

The extent to which principals perceived that their schools had lost instructional time because of the condition of the building appears to be related to their perceptions of overall building condition. Principals in buildings of above-standard condition consistently reported no loss of instructional time that interfered with student achievement because of the physical condition of the building. Principals who perceived their building to meet standard conditions reported loss of instructional time due to building condition infrequently (21%). Principals who perceived their buildings to be of substandard condition overall consistently reported a loss of instructional time due to building conditions but no interference with student achievement. Thus, principals' perceptions of a loss of instructional time due to building condition appear to be clearly related to their perceptions of overall building condition.

Based upon examination of the data gathered through the responding principals'

responses to the survey, it may be concluded that perceptions of an adverse impact of building condition are clearly related to perceptions of the overall building condition. When principals perceived their buildings to be substandard, building condition mattered. These principals perceived more frequently that building condition affected their ability to carry out essential elements of school improvement as well as effective schools practices and that there was a loss of instructional time.

Chapter 5

Interpretations, Conclusions, and Recommendations

Introduction

The purpose of this descriptive study was to explore the perceptions of the principals of Title I Virginia schools identified for school improvement in 2008-2009 concerning the condition of their school buildings and its impact on student achievement. Four research questions were formulated to generate the focus and content of this study:

1. Do building principals perceive building condition to be of the same importance for raising student achievement as they perceive the essential elements of school improvement?

2. With what frequency do principals report each building condition of Earthman's (2004) prioritized list as an issue in terms of their perceptions of overall building condition?

3. With what frequency do principals report the impact of building condition on effective schools practice?

4. Is there a relationship between principals' perceptions of overall building condition and their perceptions of the impact of building condition on achievement due to loss of instructional time?

As school districts have become more accountable for meeting state and federal standards for student achievement, the success of individual schools has become crucial to those districts, and the principal's responsibility for his or her school's success has become an accepted and expected factor. Because schools and their principals are held

accountable for student achievement as measured by the results of high-stakes testing, principals of low-performing schools with high levels of poverty are expected to make progress according to explicit standards. The resources available to such principals are clearly articulated through research that supports the effective schools model (Lezotte, n.d.) and its ensuing essential elements for school improvement (Guidelines for Uniform Performance Standard and Evaluation Criteria for Teachers, Administrators, and Superintendents, VDOE, 2000a). This study followed a theoretical framework based on the assumption that the school building is a resource for the principal for raising student achievement. The notion that the principal will use all available resources to raise student achievement led to the following question: What does the principal perceive to be the role of building condition as a resource for raising student achievement?

The review of the literature revealed the existence of compelling evidence that poor school building conditions have an impact on student achievement, particularly for children in poverty, as is the case with the Title I elementary schools in this study. This evidence is important given the necessity to raise student achievement using all appropriate resources. In this study, the responses of principals of high-poverty, low-performing schools formed the basis for describing their perceptions of the potential role of building condition in their quest for raising student achievement.

Findings in the literature review indicative of an impact of building condition on student achievement are consistent with this study's findings. Earthman (2004) noted that schools in poor condition are more likely to be unsafe, deter student achievement to a significant level, and promote or sustain inequity in educational opportunity for poor children who tend to live near and attend schools in bad condition. The three principals in

this study who indicated that their schools were in substandard condition did indicate that they perceived a connection between building condition and student achievement. Oakes (2002) argued that building condition not only has an impact on student achievement but also represents intentionally unequal treatment under the law. She declared that one of the criteria for determining inadequate resources is "clean, safe, and educationally appropriate facilities" (p. 1). Although Oakes's study did not involve a class action suit brought against a state to force it to acknowledge and act on substandard building conditions, the issue of inaction was evidenced by principals' not connecting loss of instructional time due to substandard building condition and its impact on student achievement. As noted by Duke (1998), research concerning the impact of physical conditions on student achievement does not lead to the perception that it is compelling enough to take action. This assertion was supported by this study's participating principals (n = 27) who, when asked to rank the importance in raising student achievement of nine statements concerning school improvement goals and one statement concerning building condition, ranked eight of the nine goals as more important or much more important than building condition. It was further supported when five principals indicated that they had lost instructional time but did not associate it with an impact on student achievement.

Unique to this study are the population studied (all principals of Virginia Title I elementary schools in improvement for the 2008-2009 school year) and the specific criteria for the factors that lead to increased student achievement: essential components of school improvement (Virginia Department of Education, 2000a) and correlates of effective schools (Lezotte, n.d.), especially instructional time. When building condition

was added to those specific factors in this study, it was found that building condition does have an impact.

Summary of the Results

The results of this study are summarized as follows:

1. Respondents did not attach the same level of importance to building condition as they did to eight of the nine essential elements of school improvement.

2. Unexpectedly, respondents attached even less importance to using teacher mentoring programs than they did to achieving and maintaining satisfactory building condition.

3. The extent to which principals perceived Earthman's prioritized building conditions as problems in their buildings was related to their perceptions of overall building condition.

4. Of Earthman's prioritized conditions, only insufficient quality to carry out science labs and the potential for improved appearance as a result of maintenance and repair needs appeared to be related to building age

5. The extent to which principals perceived that the physical condition of the building impacted their ability to engage in effective schools practices appeared to be related to their perceptions of overall building condition.

6. The extent to which principals perceived that their schools had lost instructional time because of the condition of the building appeared to be related to their perceptions of overall building condition.

7. Discernible differences in building condition among schools of varied community settings, grade ranges, and sizes were not apparent; however, schools with

substandard conditions were led by principals who had been leaders within the building fewer than 3 years.

Interpretation of Findings

The first finding indicated that respondents did not attach the same level of importance to building condition as they did to eight of the nine essential elements of school improvement. In Virginia, the essential elements of school improvement form the basis for activities to raise student achievement. The school principal, accountable for raising student achievement, is responsible for implementing these activities effectively. In the detailed, well-articulated plans for schools to attain state accreditation or make Adequate Yearly Progress (AYP), there is no direction to assess the physical condition of the building as part of the identified resources to raise student achievement.

As expected, respondents recognized eight of the nine essential elements of school improvement as vital structures for improving achievement in their buildings. Respondents overwhelmingly reported these items as being more important or much more important than other factors that are known to affect student achievement, including building conditions. The potential of achieving and maintaining satisfactory building condition with regard to improving student achievement was recognized less frequently as being more important or much more important than other factors for raising student achievement. This result is consistent with the literature that indicates the role these essential elements play in the expectations for principals of schools in improvement (Virginia Department of Education, 2000a). Thus, it appears that principals do not attach as much importance to achieving and maintaining satisfactory building condition as they do to the essential elements of school improvement (with the exception of teacher

mentoring programs).

The perception of the importance of building condition might be tempered if there are consistently no funds available to alleviate identified problems. As Noguera (2004) noted, when there is a perception that resources will not be available in schools in high-poverty communities, the level of participation in school decisions is lower and the generation of resources to plan and carry out solutions to chronic problems is reduced. The high cost of addressing perceived problems with building condition, especially when there is no funding for it, may incite principals to minimize the priority of improving building condition compared to school improvement actions that do in fact have funding and other resources. Title I school improvement funds are not available for building condition problems no matter how severely these conditions are perceived to negatively impact these principals' ability to raise student achievement.

The second finding indicated that, unexpectedly, respondents attached even less importance to using teacher mentoring programs than they did to achieving and maintaining satisfactory building condition. The literature suggested that principals would perceive this element to be more important or much more important, as was the case for the other elements, in raising student achievement (Joint Legislative Audit and Review Commission, 2004). Teacher mentoring programs constitute one of the components of the No Child Left Behind school plan (NCLB, 2001). Teacher mentoring programs, as a means for school improvement, have appeared prominently in effective schools research (Hargreaves & Fullan, 2000). The Virginia Department of Education has used the mentoring model as a fundamental component in its training of school improvement teams for school improvement. The Virginia Department of Education

Office of School Improvement considers mentoring new teachers and mentoring principals to implement the components of school improvement to be a vital part of their efforts to carry out the intention of Title I. The Virginia Department of Education Office of School Improvement, which oversees the implementation of the school improvement plan in each low-achieving Title I school, as required by law, regularly conducts training in mentoring as part of professional development (Personal communication, February 3, 2010).

The expectation that teacher mentoring programs represent a strong resource for principals working to improve their student achievement is not supported by the results of this study. A review of the literature indicated that components of school improvement such as mentoring were perceived to be necessary to success. In a critical review of research on mentoring, Feiman-Nemser (1996) noted that despite enthusiasm for mentoring and high hopes for its fostering of improved teaching and reduced teacher attrition, there was little rigorous empirical study supporting the general expectations for mentoring. Some studies indicated that when mentoring is carried out to support the acquisition and sustenance of conventional norms and accepted practices, reform may be limited. Possibilities for this phenomenon include the improper or ineffective implementation of mentoring programs. Hargreaves and Fullan (2000) suggested that poor planning and program design are likely to lead to disappointing results. Further research may reveal a basis for principals' perceptions of teacher mentoring as an important process.

One factor not present in current research is the possible impact of severe budget constraints on school districts in an economic recession. A reduction in the number of

teachers retiring and thus a reduction in the hiring of new teachers as their replacements may lead to a lower demand for mentoring programs for new teachers. Smaller school system budgets may lead to a reduction in the number of teachers employed, and the importance of retaining employment may become economically essential to teachers still employed. The use of mentoring as part of a process that may lead to loss of employment and real economic hardship may very well be deemed unacceptable.

The other focus for mentoring, which is to improve the quality of instruction of teachers who have low-performing students, may become highly politicized within a school if the role of mentoring ineffective teachers contains implications of judgment and evaluation. Although mentors may model and demonstrate recommended practices, how and when such practices are implemented by the recipients of the mentoring procedure may become problematic for the building principal. There may be a fine line between using mentoring to encourage low-performing teachers to adopt new or more effective practices and the implication that such a process is evaluative and critical. Mentoring may be attached to a more formal process such as placing a teacher on a plan of action. It may be that dealing with potential difficulties within the mentoring process accounts for some portion of its lower importance to principals of low-performing schools.

Finally, the ongoing implementation of instructional technology will continue to place demands on both teachers and facilities. The association of youth with innovations in technology translates into the greater likelihood that younger teachers are likely to be more adept in the incorporation of popular and widely used innovations that their students are discovering and using. Older teachers may find that they maintain a cultural and technological framework for teaching their content that is quite different from that of

both younger, newer teachers as well as their own students. The role of mentoring may thus be reversed in that new teachers will be cast in the role of technology mentors for experienced teachers, thereby transforming current understanding of and expectations for the traditional mentoring process.

The third finding indicated that the extent to which principals perceived Earthman's prioritized conditions as problems in their buildings was related to perceptions of overall building condition. The review of the literature (Earthman, 2002; Earthman & Lemasters, 2004) suggested that principals who indicated that their buildings were in standard or above-standard condition would not perceive Earthman's prioritized conditions as problems, whereas principals of substandard buildings would. In the results of this study, two of the three principals in substandard buildings perceived most of Earthman's prioritized conditions as problems. Although small in number, the three principals who indicated that their buildings were substandard reported that building conditions were adversely affecting their ability to carry out those actions deemed to be essential to raising student achievement.

The literature indicated that Earthman's prioritized conditions would not be found to be problems as frequently in adequate buildings, as was the case in this study. The relative importance of building condition when compared to other school improvement activities may have been masked by the fact that the majority of principals in standard and above-standard buildings did not report problems with the physical plant. Within the context of following directives of the school improvement process, it may be that principals in substandard buildings fail or choose not to recognize the impact of building condition on school improvement efforts, focusing their efforts instead, either by choice

or default, on those factors they can address successfully. For example, although principals in buildings above the threshold of adequacy identified excessive noise as a problem in their buildings when they reported no other problems, principals of schools in substandard condition, with numerous problems, tended to perceive noise as a less serious issue.

The fourth finding confirmed that, of Earthman's prioritized conditions, only insufficient quality to carry out science labs and the potential for improved appearance as a result of maintenance and repair needs appear to be related to building age. Earthman (2004) indicated that older buildings require local school jurisdictions to continually appropriate an expansive amount of revenue to keep them operational; consequently, they represent a significant revenue drain on taxpayers. More significantly, many researchers in the area of facility construction and planning hold the belief that school buildings tend to be designed to support the type of instruction considered to be effective when the schools are designed; at the time that most of the schools in this study were constructed (more than 25 years ago), the expectation that elementary classrooms have the flexibility to set up hands-on science activities was unusual (Cutler, 1989). In this study, principals perceived the lack of available space to set up such activities as a problem. The effectiveness of other current practices, such as constructivist instruction, or the growing use of technology also might be similarly limited in physical plants designed before their advent. Teachers are likely to have an increased need for ample and available space as they incorporate more innovative technology, and the enthusiasm for new programs and equipment in older buildings is likely to encounter the implacable constraints of brick walls. It is much more likely that recently constructed schools will have accommodations

that facilitate the innovation required by the incorporation of technology into all aspects of school life. Smartboards, blogs, wikis, podcasts, texting, social networking, and other emergent technologies and innovations are likely to have ramifications regarding school construction, maintenance, and modification, even though the most recent innovations carry no assurance of a long lifespan when compared to the 600 years that the lectern held dominance. The placement of televisions on wall mounts in classrooms has come and gone, along with the use of slide projectors, 8mm film, video cassette recorders, and overhead projectors. This intersection between the transformation of the school environment and the role of the teacher will be the focus of future research. Awareness of the need for planning how the school building will meet and support the relentless emergence of new technologies for learning is an important focus for future research. When public buildings such as banks, libraries, and schools were built with temple-like façades to invoke their importance, the connection to the past was intentional. When the iconic schoolhouse transformed from a temple of learning to a factory model (Cutler, 1989), one might say that the connection shifted to the industrial present. It may be that the façade of the new iconic schoolhouse is likely to be one that is modeled on and maintained by the use of new technologies.

Implementation of changes in the social organization of instruction may also be impacted by the age of the school building. The physical organization of a classroom designed to accommodate a lectern and rows of desks that are oriented around the lectern will not easily facilitate a new paradigm that requires multiple access sites for knowledge and information and space for construction of projects and products based on cooperation, mutual understanding, and teamwork. A new paradigm that values group

work and its attendant noise and movement may struggle in a physical environment designed for silent and isolated pursuit and demonstration of knowledge and understanding.

The fifth result of this study indicated that the extent to which principals perceived that the physical condition of the building impacted their ability to engage in effective schools practices appeared to be related to their perceptions of overall building condition. Principals in above-standard buildings never reported that the physical condition of their buildings affected their ability to engage in any of the seven effective schools practices. Principals in standard-condition buildings reported that the physical condition infrequently affected their ability to perform the effective schools practices. In two instances, these principals reported at a higher frequency that the building condition had some impact: first, on their ability to carry out scheduling practices that maximize instruction and, second, their ability to promote instructional strategies that incorporate active student learning. Principals in substandard buildings reported more frequently that building condition affected their ability to recruit or retain highly effective teachers, carry out scheduling practices that maximize instruction, and promote instructional strategies that incorporate active student learning. Thus, a relationship between the extent to which principals perceive that the physical condition of the building impacts their ability to engage in effective schools practices and their perceptions of overall building condition is apparent in the data. Highly effective teachers have been identified as crucial to effective schools practice as well as to school improvement. Several studies indicated that teachers' perceptions of their ability to teach are affected by their perceptions of the condition of their schools (Hirsch & Emerick, 2006; Schneider, 2003). Consequently,

when principals in substandard buildings and standard buildings report that poor condition negatively impacts their ability to recruit and retain effective teachers, it is likely to be because teachers are neither comfortable nor as effective as they could be in substandard buildings. The loss of an opportunity to recruit and retain effective teachers is the loss of a resource highly valued for raising student achievement.

Principals in substandard buildings and in standard buildings reported more frequently that the physical condition affected their ability to carry out scheduling practices that maximize instruction and to promote instructional strategies that incorporate active student learning. The ability to carry out scheduling practices that maximize instruction is related to the most effective use of available time for instruction. Active student learning benefits from flexibility in available space within a building. In a building that is not designed to accommodate active student learning, the principal may find that the building configuration works against practices that are deemed important for raising student achievement.

The sixth finding indicated that the extent to which principals perceived that their schools had lost instructional time because of the condition of the building appears to be related to their perceptions of overall building condition. Principals of above-standard buildings reported no loss of instructional time. Principals of standard buildings reported loss of instructional time infrequently. All principals of substandard buildings reported loss of instructional time.

Consequently, the extent to which principals perceived that their schools had lost instructional time appears to be related to their perceptions of overall building condition. Still, respondents indicated that the loss did not affect student achievement. Thus, they

were aware of the loss of instructional time due to poor building conditions but were unlikely to recognize its negative impact. This finding appears to represent a surprising response to the perception of lost time. Effective schools allocate and protect significant amounts of time for instruction to support student learning and achievement. Loss of time due to weather conditions is often associated with an impact on student achievement when the allocation for such contingencies is exceeded. The loss of time due to building condition, such as the loss of heat, does not seem to result in the same association (Duke, 1998; Earthman, 2004). For principals in school improvement, pressed to raise student achievement using all available resources, the loss of instructional time is the loss of an important resource (Lezotte, n.d.).

The context within which the principals in this study indicated no negative impact for the loss of instructional time may have mitigated their perceptions. It may be that the quality of instruction was so poor overall that missing instructional time was not perceived, in and of itself, as having an impact on overall student achievement. It may be that principals perceived that other factors drove down test scores, such as an ineffective faculty, institutional bias against a significant portion of the student body, or community conditions beyond the control or influence of the school or its principal.

The availability of instructional time to reinforce and remediate instruction has been a concern for those involved in school improvement. Finding and making effective use of available time is considered a resource for raising student achievement. If a principal is not monitoring students and their progress closely and carefully, he or she may not have a true sense of how the whole student population is doing, academically, as they prepare throughout the school year for the standardized testing that will determine

the success or failure of the school. Without an attitude and an expectation based on tight monitoring of student progress, the loss of instructional time may not be recognized for its negative impact on school improvement efforts. Further research may reveal the conditions under which principals of schools in improvement become concerned about the loss of instructional time.

The results of this study revealed no discernible differences in building condition between schools based upon community setting, grade range, or school size. The number of schools of substandard condition led by principals who had been leaders within their buildings fewer than 3 years, however, was notable. It may be that these individuals were experienced principals who recently had been recruited to provide the necessary leadership to effect the changes necessary to move the school out of school improvement. This is especially possible where the previous principal's departure was due at least in part to failure to achieve the required test scores for exiting school improvement.

Conclusions

The results of this study support the conclusion that principals of low-performing schools generally do not perceive achieving and maintaining a satisfactory building condition to be as important as the essential elements of school improvement supported by the effective schools model. In addition, for the most critical and vulnerable schools, those of substandard condition, building condition causes loss of instructional time and inhibits the principals' ability to engage in essential components of school improvement.

Building condition was perceived to be less important than other elements of school improvement in schools that were perceived to be in above-standard or standard condition. Building condition was perceived to be more important to principals who

perceived their buildings to be substandard. Building condition was an impediment to their success. For principals in substandard buildings, the impact of building factors on their school improvement efforts to succeed was unacknowledged and therefore not addressed by building principals

Where failure to meet accountability standards is perceived to be beyond the control of the school personnel, systemic complacency may become an obstruction. The tolerance of inadequate building condition contributes to this culture and inhibits efforts toward essential and mandated change. Perhaps, when principals concede as beyond their control the achieving and maintaining of satisfactory building conditions, these efforts are not added to the roster of activities worthy of effort and attention and become neglected; their importance is further diminished in the eyes of principals and consequently in the eyes of those they supervise as well as those who supervise them. Thus, the connection they make between student achievement and the effects of poor building condition is lost.

Substandard building condition is unlikely to be addressed in high-poverty, low-performing schools because there is no venue for its acknowledgement and remediation within the highly structured process for improving student achievement. All Title I schools in improvement must follow the same guidelines, make the same use of accepted best practices, and be measured for success in the same way. The identification of building condition as an impediment to student achievement is currently unlikely until the principal perceives that it negatively impacts what he or she is required to do. And even then, it may be neglected because of principals' failing to understand the connection or choosing to focus their efforts where they feel they have the necessary expertise for success.

Finally, even with the understanding and commitment to address building condition, and the establishment of a place to talk about it in the school improvement process, there is a lack of money. Even when funding is made available to address deplorable building conditions, it is more likely to be based upon the moral and ethical issues that arise from sending children into such buildings, not from the decision to use needed building condition improvements to raise student achievement (Earthman, 2002; Oakes, 2002). If the connection between substandard building condition and student achievement were to be incorporated into the process of inducting a school into the improvement process, such schools might then be provided access to funds. With the successful institutionalized process of identification and remediation of building issues as part of school improvement, opportunities are created to generate concrete evidence that what is wrong can be acknowledged and repaired and that such repairs can have an impact on all other school improvement efforts and, consequently, student achievement.

The theoretical framework supporting this research asserted that the principal will use all available resources to raise student achievement (see Chapter 1 of this study). Nevertheless, the principals (n = 3) who indicated that their buildings were substandard also acknowledged a loss of instructional time but did not indicate that it affected student achievement. Of the principals (n = 19) who indicated that their buildings were in standard condition, 4 (15%) reported that the school had lost instructional time, but 2 of those 4 indicated that it had not affected student achievement. All principals (n = 5) who reported that their buildings were in above standard condition indicated that there had not been a loss of instructional time.

With regard to the principals (n = 5) indicating lost instructional time that did not

affect student achievement, the following conclusions are offered:

- Principals did not perceive building condition as a resource.
- Principals did not understand the relationship between loss of instructional time due to building condition and the negative impact it has on student achievement.
- Principals did not have access to an institutionalized infrastructure that supported identification and remediation of poor building conditions, leaving such conditions unlikely to be addressed.

With such a low number of respondents (n = 5) in this regard, future researchers grounded within the qualitative paradigm may find these educational leaders to be potential subjects for future research to confirm or deny these speculations.

Recommendations for Further Study

1. One finding of this study indicated that respondents attached even less importance to using teacher mentoring programs than they did to achieving and maintaining satisfactory building condition. This was unexpected. The literature suggested that principals would perceive this element to be more important or much more important, as was the case for the other elements, in raising student achievement (Joint Legislative Audit and Review Commission, 2004). Further, teacher mentoring programs constitute one of the components of the No Child Left Behind school plan (NCLB, 2001). Teacher mentoring programs, as a means for school improvement, have appeared prominently in effective schools research (Hargreaves & Fullan, 2000). The Virginia Department of Education has used the mentoring model as a fundamental component in its training of school improvement teams for the school improvement process. The

Virginia Department of Education Office of School Improvement considers mentoring new teachers and mentoring principals to implement the components of school improvement to be a vital part of their efforts to carry out the intention of Title I.

On the other hand, Feiman-Nemser (1996), in a critical review of research on mentoring, noted that despite enthusiasm for mentoring and high hopes for its fostering of improved teaching and reduced teacher attrition, there had been little rigorous empirical study supporting the general expectations for mentoring. Hargreaves and Fullan (2000) suggested that poor planning and program design are likely to lead to disappointing results. Further research is recommended concerning the discrepancy between the high expectations for mentoring and the literature indicating that mentoring expectations may not be supported by actual effects.

2. The second recommendation for further research concerns the role of mentoring as part of ongoing implementation of instructional technology that will continue to place demands on both teachers and facilities. The association of youth with innovations in technology translates into the greater likelihood that younger teachers will be more adept in the incorporation of popular and widely used innovations that their students are discovering and using. Older teachers may find that they maintain a cultural and technological framework for teaching their content that is quite different from that of both younger, newer teachers as well as their own students. The role of mentoring may thus be reversed in that new teachers will be cast in the role of technology mentors for experienced teachers, thereby transforming current understanding of and expectations for the traditional mentoring process. It also may be such new teachers, intent upon integrating the pervasive technology outside the school into classroom instruction, who

provide another voice concerning the impact of building condition on student achievement.

3. A finding of this study indicated that the extent to which principals perceived that their schools had lost instructional time because of the condition of the building appeared to be related to their perceptions of overall building condition. Principals of above-standard buildings reported no loss of instructional time. Principals of standard buildings reported loss of instructional time infrequently. All principals of substandard buildings reported loss of instructional time. Consequently, the extent to which principals perceived that their schools had lost instructional time appears to be related to their perceptions of overall building condition.

Respondents indicated that this loss of instructional time did not affect student achievement. Thus, they were aware of the loss of instructional time due to poor building conditions but were unlikely to recognize its negative impact. This finding appears to represent a surprising response to the perception of lost time. Effective schools allocate and protect significant amounts of time for instruction to support student learning and achievement. For example, loss of time due to weather conditions is often associated with an impact on student achievement when the allocation for such contingencies is exceeded. The loss of time due to building condition, such as the loss of heat, does not seem to result in the same association (Duke, 1998; Earthman, 2004). For principals in school improvement, pressed to raise student achievement using all available resources, the loss of instructional time is the loss of an important resource (Lezotte, n.d.).

A question for further research concerns the context within which the principals in this study indicated no negative impact for the loss of instructional time. It may be that

other factors mitigated their perceptions, and these factors may explain why principals did not respond to evidence of loss of instructional times as being of importance. It may be that the quality of instruction was so poor overall that missing instructional time was not perceived, in and of itself, as having an impact on overall student achievement. It may be that principals perceived that other factors drove down test scores, such as an ineffective faculty, institutional bias against a significant portion of the student body, or community conditions beyond the control or influence of the school or its principal.

The availability of instructional time to reinforce and remediate instruction has been a concern for those involved in school improvement. Finding and making effective use of available time is considered a resource for raising student achievement. If a principal is not monitoring students and their progress closely and carefully, he or she may not have a true sense of how the whole student population is doing, academically, as they prepare throughout the school year for the standardized testing that will determine the success or failure of the school. Without an attitude and an expectation based on tight monitoring of student progress, the loss of instructional time may not be recognized for its negative impact on school improvement efforts. Further research may reveal the conditions under which principals of schools in improvement become concerned about the loss of instructional time.

Recommendations for Application From this Study

Based on the conclusions from this study, it is recommended that achieving and maintaining satisfactory building condition be included as an essential element of school improvement that can be identified and addressed in the school improvement process. The first step would be to create and analyze a complete inventory of the building's

condition to determine if there are impediments to student learning. This inventory can be used to identify schools that need access to resources to remedy conditions that are impeding the school improvement process. Earthman and others (Cash, 1993; Earthman & Lemasters, 2004) have developed valid, reliable, and convenient tools with which to facilitate this process. Such an inventory does not require extraordinary action on the part of the principal for completion. Through counting, observing, and recording, substandard conditions are revealed as data that can lead to discussion and formal steps for remediation.

The inventory results can become standardized into a process of review and action. Effective policy and practice to create the accompanying authority, responsibility, and accountability are required, with the building principal's assuming the central role for this component, just as he or she does for the other components of the school improvement process. Based on the low number of substandard buildings identified in this study, the number of schools for whom there would be a financial need to assist would be small, which may make the recommendation for addressing the needs of such schools more palatable with regard to funding.

Another function of a standardized inventory is its use as a basis for discussion about building condition as a factor in raising test scores. Currently, there is no formal framework within which to discuss substandard building conditions in connection with school improvement. The establishment through a formal evaluation process of substandard building condition as a component of school improvement would accomplish three necessary steps: (a) establishing a place for addressing substandard building conditions within the venue of school improvement, (b) providing access to funding as a

formal procedure of that process, and (c) providing the long-needed creation of an infrastructure to do something about such conditions.

The research connecting adverse building condition and its impact on student achievement is extensive. What has been lacking is the arc that connects this research to its actualization as a significant resource for instruction. The implementation of a standardized inventory, the use of an established protocol that holds the principal accountable for addressing substandard conditions as is he or she for the other components of school improvement, and the availability of funds to remedy deleterious conditions create the bridge between the research and a venue for its actualization.

This study examined the perceptions of principals of Title I Schools in improvement in Virginia during the 2008-2009 school year. This study built its theoretical framework upon the extensive research concerning the impact of building condition on student achievement and linked building condition as a resource to specific factors identified as essential for raising achievement. The findings are consistent with the research indicating that schools in poor condition are more likely to deter student achievement. Principals in this study who indicated that their school buildings were substandard reported that student achievement was affected by the conditions identified by Earthman as having the most impact on student achievement (2004).

Although these principals of Title I schools in improvement did not perceive achieving and maintaining a satisfactory building condition to be as important as the essential elements of school improvement, survey results indicated that principals who perceived their schools to be in substandard condition also reported that they lost instructional time and were inhibited in their ability to engage in the essential elements of

school improvement. Nevertheless, they did not link the loss of instructional time due to building condition to its impact on student achievement. It was concluded that even with the understanding and commitment to address building condition, principals have many factors that impede correction. One of these factors is that the principals did not connect building condition to essential resources. Another is that principals have neither the expectation of nor the access to an institutionalized infrastructure that supports the process of identification and correction of poor building condition. Without this infrastructure, addressing and correcting poor building conditions becomes idiosyncratic and creates an opportunity cost for the principal that is singular and personal.

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Appendix A: Matrix of Author by Feature

	FEATURE: SURVEY ITEM															
AUTHOR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Buckley, Schneider, Shang. (2004)													X			
Cash, C. (1993)						X							X			
Chaney & Lewis (2007)											X	X	X	X	X	X
Crampton & Thompson, Eds.						X										
Current Guidelines for Uniform Performance Standards and Evaluation (2000)	X	X	X	X	X		X	X	X	X						
Earthman (2004)						X									X	X
Earthman & Lemasters (1998)						X							X			
Lackney (1999)						X									X	X
Lemasters, 1997						X							X		X	
Lezotte (n.d.)	X	X	X	X	X		X	X	X	X						
NCES Common Core of Data: 2005-06													X			
Schneider (2003)						X										
Tanner (2007)						X										
Weiss, J. D. (2004).													X		X	X

AUTHOR	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Buckley, Schneider, Shang. (2004)															
Cash, C. (1993)						X	X								
Chaney & Lewis (2007)	X	X	X	X	X										
Crampton & Thompson, Eds.				X											
Current Guidelines for Uniform Performance Standards and Evaluation (2000)									X	X	X	X	X	X	X
Earthman(2004)	X	X	X	X		X									
Earthman & Lemasters (1998)						X									
Lackney (1999)	X														
Lemasters, 1997	X	X		X		X									
Lezotte (n.d.)															
NCES Common Core of Data: 2005-06															
Schneider (2003)				X											
Tanner (2007)															
Weiss, J. D. (2004).	X			X											

FEATURES:

QUESTION 1: RANKING IMPORTANCE OF VDOE CRITERIA FOR PRINCIPAL IN-SCHOOL IMPROVEMENT PROCESS, PLUS BUILDING CONDITION AS CRITERIA

1. Use time and scheduling practices that maximize instruction
2. Use teacher mentoring programs
3. Use data-driven school improvement planning that addresses identified areas of weakness
4. Recruit and retain highly effective teachers
5. Create and maintain a school culture that promotes effective parent involvement
6. Achieve and maintain satisfactory condition of the school building
7. Provide extended learning time
8. Ensure that instructional intervention and resources are aligned to areas of need
9. Use instructional strategies grounded in scientifically based research
10. Implement an ongoing, school-based program of professional development

SCHOOL CONDITION AND SETTING

QUESTION 2: SETTING

11. Setting of school as city, urban fringe/large town/suburban, or small town/rural

QUESTION 3: GRADE RANGE

12. Grades taught at this school

QUESTION 4: SIZE

13. Student enrollment

QUESTION 5: AGE

14. Age of building

QUESTION 6: PHYSICAL CONDITION

15. Best description of physical condition of building

QUESTION 7: RESEARCH: FEATURE EFFECT ON STUDENT ACHIVEVEMENT

16. Human comfort (temperature)
17. Indoor air quality (appropriate ventilation and filtering systems (also HVAC)
18. Lighting
19. Facilities not sufficient quality to carry out science labs
20. Maintenance and repair needs
21. Acoustical (noise) level
22. Building overcrowded

QUESTION 8: PRINCIPAL EXPERIENCE

23. Number of years as principal

QUESTION 9: LOSS OF INSTRUCTIONAL TIME DUE TO BUILDING CONDITION EFFECT ON STUDENT ACHIEVEMENT

24. Extent to which building condition led to loss of instructional time that affected student achievement

QUESTION 10: EFFECTIVE SCHOOLS CRITERIA

Building Condition Affected Ability to:

25. offer extended learning time
26. recruit and retain highly effective teachers
27. maintain an adequately safe and orderly environment
28. create and support a positive school climate
29. carry out scheduling practices that maximize instruction
30. create active parent participation opportunities
31. promote instructional strategies

Appendix B: Letter to Superintendent

Address

Date

<Superintendent name>
<Address>

Dear <Superintendent name>:

I am currently conducting research in cooperation with the Graduate School of Education and Human Development at The George Washington University. My research involves a study of the relationship between school building condition and student achievement in Title I elementary schools in Virginia.

The purpose of my study is to examine the perceptions of Title I principals concerning the role that building condition may or may not play in student achievement. [Name(s) of schools] has(have) been designated as schools in improvement in your district. I would like permission to contact [name(s) of principals] with a request to take part in this study by completing the online survey.

The questionnaire I am using is administered through a recognized online survey procedure (SurveyMonkey) and is completely confidential. No individual, school, or district can be identified through this survey process. The survey will take approximately 10 minutes to complete.

If you have a person designated to handle research requests for your district, please forward this e-mail to him or her.

Please indicate your response by selecting one of the choices below and returning this post card to me. Thank you for making time for this request in your busy schedule.

☐ Yes, my school district will participate in this study.

☐ No, my school district will not participate in this study.

_____

Signature Date

Appendix C: Initial Letter to Principal

Date:

Principal
School address

Dear (name):

As the principal of a school that was identified for the School Improvement Review process in 2008-2009, you play a very important role, a pivotal role in your school's success. Your experiences and perceptions drive your decisions, yet there is little research that asks, "What do you base your decisions on? What are your perceptions about the factors that support your efforts to improve your students' academic achievement?"

I will be very honored if you will provide your responses to these questions by completing a simple, easy-to-use, online survey, which you will receive from me in the next few days.

Your superintendent, <name>, has given me permission to conduct this study. Individual responses are completely anonymous, and the summary of the findings will be reported only for the entire group of respondents. All individuals' data will be destroyed once the research is completed.

The survey program, called SurveyMonkey, includes built-in safeguards to preserve anonymity and protect individual responses. The program is easy to use; it has been used in major research studies since its development several years ago.

I will send you an e-mail (eliseh@gwu.edu) requesting your help in developing this research; the e-mail will include a URL address, a link through which the SurveyMonkey program will take you directly to the survey. This survey will take no more than 10 minutes to complete.

Thank you so much for your assistance in this project. I look forward to sending you the results of this research, should you desire a copy.

Please accept this gift card for Barnes and Noble Books as my gratitude for your help in completing this research. Barnes and Noble may be accessed online at www.barnesandnoble.com

Elise Harrison
Doctoral Candidate
The George Washington University

Appendix D: Survey Instrument as Presented by SurveyMonkey

Principal Survey Summer 2009

1.

1. *Rank each of these statements according to how you perceive its importance in raising student achievement in your school.*

	Not as important as other factors	About the same in importance as other factors	More important than other factors	Much more important than other factors
Using time and scheduling practices that maximize instruction	○	○	○	○
Using teacher mentoring programs	○	○	○	○
Using data-driven school improvement planning that addresses identified areas of weakness	○	○	○	○
Recruiting and retaining highly effective teachers	○	○	○	○
Creating and maintaining a school culture that promotes effective parent involvement	○	○	○	○
Achieving and maintaining satisfactory condition of the school building	○	○	○	○
Providing extended learning time, i.e. before and after school, summer school	○	○	○	○
Insuring that instructional intervention and resources aligned to areas of need	○	○	○	○
using instructional strategies grounded in scientifically-based research	○	○	○	○
Implementing an ongoing, school-based program of professional development	○	○	○	○

Principal Survey Summer 2009

2.

2. Please place a check in front of the following choice that best describes your school's setting:

- ○ Small town/Rural
- ○ Large town/Urban fringe/Suburban
- ○ City/Urban

3. Which grades are taught in your school? Check the range of grade levels that matches your school. If you have a different range, please enter ir in the box provided.

- ☐ Pre-K - 2nd
- ☐ Pre-K - 3rd
- ☐ Pre-K - 5th
- ☐ Pre-K - 6th
- ☐ K - 2nd
- ☐ K - 3rd
- ☐ K - 5th
- ☐ Grades 2 - 5
- ☐ Grades 2 - 6
- ☐ Grades 3 - 6
- ☐ Grades 3- 7
- ☐ Grades 3 - 8
- ☐ Grades 4 - 7
- ☐ Grades 4 = 8

Other (please specify)

4. Please select your school's size from the following:

- ○ less than 300 students
- ○ 301 to 500 students
- ○ 501 to 750 students
- ○ 751 students to 1,000
- ○ more than 1,000 students

5. How old is your school (in terms of years since built, or since extensive renovation)?

- ○ 0-2 years
- ○ 3-10 years
- ○ 11-25 years
- ○ more than 25 years old

Principal Survey Summer 2009

6. Which term best describes the physical condition of your school building?

- **above standard** (students, staff, and parents find conditions comfortable in the building, with no problems that cause discomfort, interrupt learning, or present a safety issue)
- **standard** (students, staff, and parents find the conditions acceptable, but occasionally express concern about conditions which cause discomfort, interrupt learning, or present a safety issue)
- **substandard** (students, staff, and parents find the conditions unacceptable, with identified problems that cause discomfort, interrupt learning, or present a safety issue)
- Other (please specify)

7. Please indicate the extent to which you agree or disagree with the following statements:

	strongly disagree	disagree	agree	strongly agree
The temperature in the building is too hot or too cold for the students to work in comfort.				
The air in the building is not healthy.				
The light in the building is a problem for the students and staff.				
The facilities are not of sufficient quality to carry out science labs.				
The building would look better if obvious maintenance and repairs needs were addressed.				
The high noise level is a problem for the students and staff.				
The building is overcrowded.				

8. How many years have you been the principal of this school?

- 2008-2009 was my first year here
- 2-3 years
- 4-10 years
- 11-25 years
- more than 25 years
- Other (please specify)

Principal Survey Summer 2009

9. In the past year, do you believe that your school lost instructional time, due to conditions such as school cancellation, early dismissal, or altered schedules due to conditions such as excessive noise, hot or cold weather, plumbing breakdowns, crowding or inadequate space, or other physical situations?

- ○ My school has not lost instructional time that interfered with student achievement because of the physical condition of the building.
- ○ My school has lost some instructional time because of the condition of the building, but it did not interfere with student achievement.
- ○ My school has lost instructional time because of the condition of the building, and it affected student achievement.

10. Rate the extent to which the physical condition of your school impacted each of the following seven conditions during the last school year: *The physical condition of the building:*

	Had no impact	Had very little impact	Had some impact	Had a strong impact
affected my ability to offer extended learning time (i.e. before school, after school, summer school)	○	○	○	○
affected my ability to recruit and/or retain highly effective teachers	○	○	○	○
affected my ability to maintain an adequately safe and orderly environment	○	○	○	○
affected my ability to create and support a positive school climate	○	○	○	○
affected my ability to carryout scheduling practices that maximize instruction	○	○	○	○
affected my ability to create active parent participation opportunities	○	○	○	○
affected my ability to promote instructional strategies that incorporate active student learning (i.e. labs, small group instruction, centers)	○	○	○	○

11. Is there anything more that you would like to tell me about your school and your efforts to raise student achievement that has not been addressed by the questions in this survey. If so, please use this text box to enter your response. Thank you for taking this survey.

Appendix E Open-Ended Answers to Question 11

Question 11. Is there anything more that you would like to tell me about your school and your efforts to raise student achievement that has not been addressed by the questions in this survey? If so, please use this text box to enter your response. Thank you for taking this survey.

Responses (cross tabulation with building age)

1. (More than 25 years old) Approximately 25% of my time is dedicated to building/facility issues related to lack of upkeep on the part of the district. MAJOR renovations are necessary, yet are not on the capital improvement plan. Because my time is diverted from instruction, this has a negative impact on student achievement since I have less time to devote to teaching and learning due to facility issue of a 50+ year old building that is in dire need of repair.

2. (3-10 years)We have a lovely building that is maintained with pride by a dedicated custodial staff. We have spent the last two years trying to change the culture of our school to one that reflects confidence that we can be successful. Both staff and students are adopting this attitude and we are showing great improvements. None of the achievement problems we have experienced are in any way associated with the condition of our building.

3. (11-25) First year as a Pre-K - 7 school - Still trying to work out some of the kinks associated with the transition of middle school students back into the elementary school.

4. (3-10) In my humble opinion there is no resource for learning better than the human resource - the teacher.

5. (3-10) We have hired a school coach...using our Title I differently this year for more time for identified students...extended our mentoring program, using RTI, and peer tutoring between grades!