School Facility Conditions and the Relationship Between Teacher Attitudes

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Abstract

This study was designed to address questions related to (a) school facility conditions in two elementary schools in the Commonwealth of Virginia and (b) the relationship of school facility conditions to teacher attitudes. The purpose of this study was to determine if there was a significant relationship between school facility conditions and teacher attitudes. Two instruments were utilized to answer the proposed research questions, the Commonwealth Assessment of Physical Environment (CAPE), and the My Classroom Assessment Protocol (MCAP) instrument. The schools used in this study were selected to provide a contrast between an older and a newer building.

Data from the CAPE was used to determine the condition of both buildings, while data from the MCAP was used to compare teacher responses with both schools. Data from the CAPE indicated that more desirable conditions were present in the newer building than in the older building. The MCAP revealed that teachers in the newer building had better attitudes about: (1) the condition of their classrooms, (2) how the condition of their classrooms made them feel, and (3) the affect of classroom conditions on student learning. Together these findings suggest that teacher attitudes are directly influenced by conditions within the building.

Keywords: facility conditions, teacher, attitudes, CAPE, MCAP

Dedication

This work is dedicated to my family, for their continuous love and support throughout all of my endeavors. I would also like to dedicate this work to the many wonderful teachers whom I have had the pleasure to learn from. It is because of you and your dedication to public education that I was able to complete this most worthwhile endeavor. Thank you so much for believing in me and helping me to make my dreams come true. You are all real American heroes.

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Chapter 1

Introduction of the Study

Teaching and learning is a complex activity that tests the skill set, motivation, and physical ability of the teacher and student alike. For this reason the study of school facility conditions and the relationship to teacher attitudes is critical if the nation's educational system is to be improved. While there are several studies that link school facility conditions to student academic performance, very few have looked at school facility conditions and the relationship to teacher attitudes. This research will become increasingly more important as school divisions link teacher performance to evaluations, and teacher pay. If teacher attitudes have a relationship to school facility conditions, then school divisions will have to look more closely at school facility management and its influence on teachers.

Research is sorely needed in linking school facility conditions to teacher attitudes, particularly in light of recent efforts to enforce more teacher accountability. If more accountability is required of teachers in the day to day task of teaching, then more research is needed in looking at the physical work environment and how it influences teacher attitudes. Proponents for more teacher accountability will say that, "Good teachers can teach anywhere", but what does the research say? Several studies have made the case that students taught in adequate school facilities perform better than their counterparts in less than adequate school facilities. What does the research say about teacher attitudes in schools deemed inadequate? Is there evidence to show that teachers' attitudes in adequate school facilities are better? A report done in 2000, found that poor indoor air quality makes teachers and students sick, and sick students and teachers cannot perform as well as healthy ones (EPA, 2000).

In a 2008 study, the American Lung Association found that American school children missed more than 14.4 million school days because of asthma exacerbated by poor indoor air quality, lowering teacher and student productivity (ALA, 2012). The effects of these trends include declining job satisfaction, reduced ability of teachers to meet students' needs, significant incidences of psychological disorders leading to increased absenteeism, and high levels of claims for stress-related disability (Farber, 1991; Troman and Woods, 2000). Thus, research into teacher attitudes is becoming more important given not only that a growing number of teachers leave the profession but also that dissatisfaction is associated with decreased productivity (Tshannen-Moran et al., 1998). Lemasters (1997) suggested that school leaders should consider whether or not the condition of the school building has a direct relationship to teacher satisfaction. In response to Lemasters' (1997) recommendations for further study with regard to the relationship between building condition and teacher satisfaction, as well as the gap in research in this particular area, this study will address the relationship between the condition of two elementary school facilities and teacher attitudes in one of the Commonwealth of Virginia's metropolitan school divisions.

Statement of the Problem

There has been much research conducted that suggests there is a positive relationship between school facility conditions and student achievement. However little research is available on the relationship between school facility conditions and its influence on teacher attitudes. This study was designed to address two questions related to: (a) school facility conditions in two elementary schools in the Commonwealth of Virginia and (b) the relationship of school facility conditions to teacher attitudes.

Purpose of the Study

The purpose of this study was to determine whether there is a significant relationship between school facility conditions and teacher attitudes.

Research Questions

The main research question guiding this study is: Does the condition of the school building influence teacher attitudes? The main research question is supported by the following sub-questions that will guide the study.

Research Sub-Questions

1. Does the condition of teachers' classrooms, affect their attitude towards their job as measured by the My Classroom Assessment Protocol (MCAP)?
2. Is there a significant relationship between school building conditions and teachers' attitudes about how classroom conditions affect student learning as measured by the My Classroom Assessment Protocol (MCAP)?

Significance of the Study

The data from this study could be used to help policy makers make strategic decisions about the current and future working conditions of teachers in their division. Data from this study could also be used to look at school facility conditions and its influence on teaching methodologies. Teachers must use a variety of strategies and methods to ensure that all students have equal opportunities to learn. Educators could also use the results of this study to examine the relationship between school facilities and their influence on the physical and mental health of teachers. Finally educators themselves may use the data from this study to help frame conversations about the state, and local governments' accountability in providing adequate working conditions for teachers to deliver high quality instruction to students.

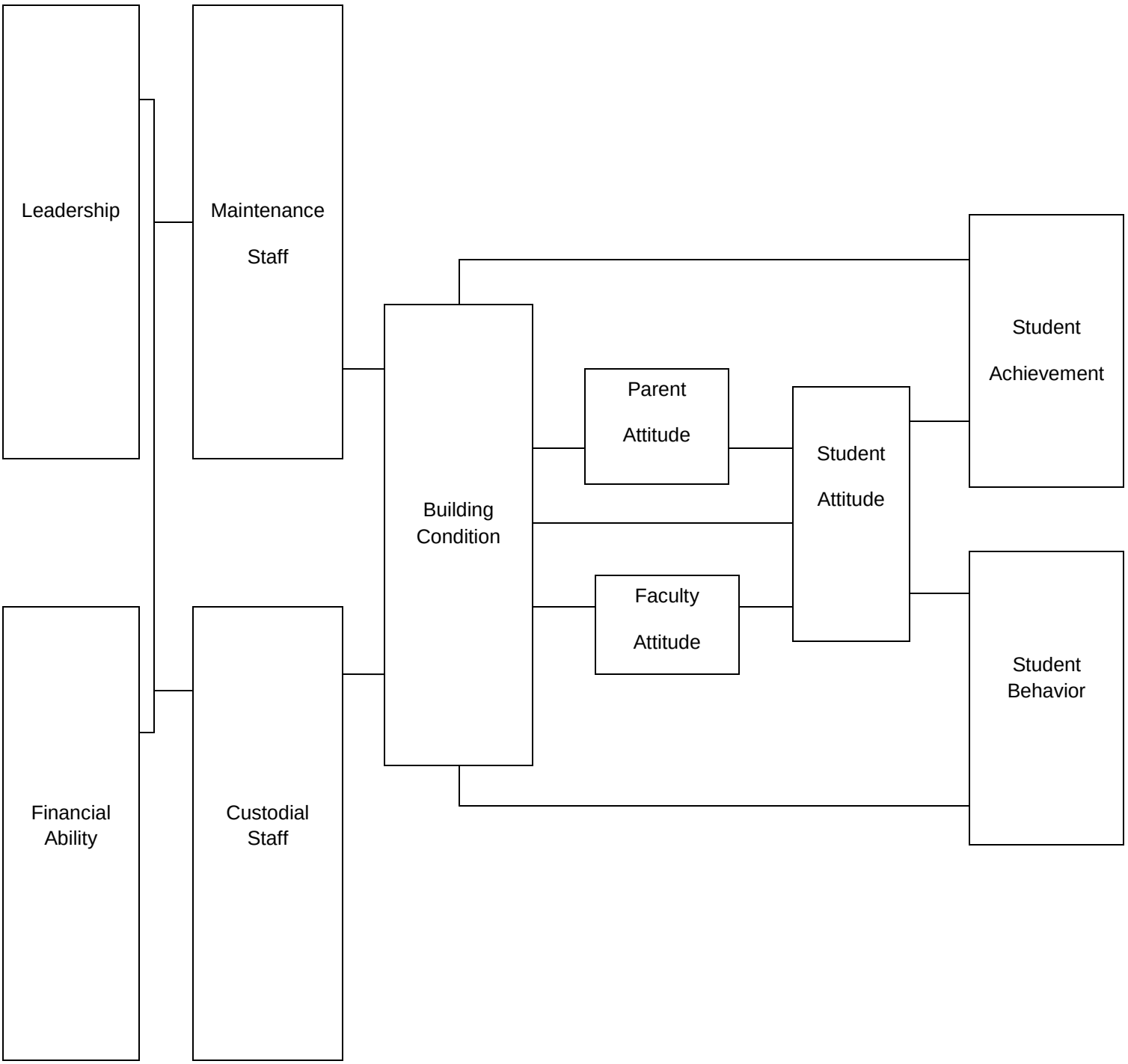
Theoretical Basis of Study

This study was designed to explore the possible relationship between teacher attitudes and building conditions. If as the research suggests a relationship can be found between building conditions and teacher attitudes, then policy makers and local school divisions can make better decisions about facility management. These decisions could influence teacher performance thereby affecting academic outcomes. Cash (1993) developed a theoretical model that has been used to explain the relationship between building conditions and student academic achievement and behavior (See Figure 1). Other research studies such as Hines (1996), and Crook (2006), used the Cash (1993) model.

Cash's (1993) model also suggested that school building conditions could influence the attitudes of faculty. The condition of buildings themselves could have a positive or negative influence on the attitudes of teachers. Building conditions could have a direct correlation to the attitudes of faculty. Buildings that are well maintained contribute to the overall climate of the school. Faculty members expect to work in facilities that are cared for and maintained. They generally equate building conditions to the level of expectations that are conducive to learning. Classroom space and modern equipment contribute to the attitude of the faculty and staff. When necessary equipment is in place and in good repair, the attitude of the faculty is generally positive. When there is adequate space in the facility to address the need of the student population, there are usually positive attitudes from the faculty and staff (Dawson and Parker, 1998).

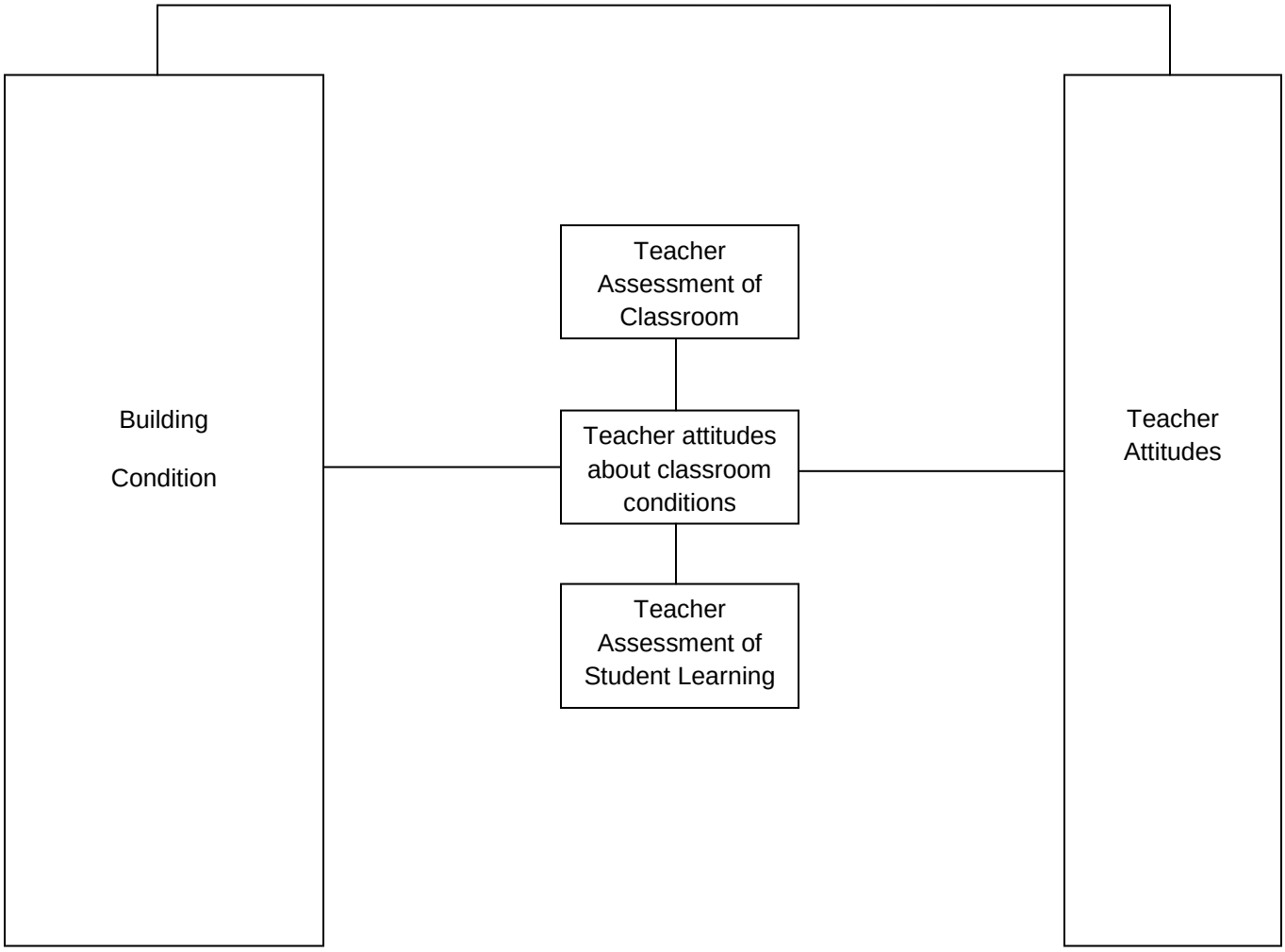
In proposing this study, a model was developed based on the Cash (1993) model. This model (See Figure 2) focuses on one particular relationship of the Cash (1993) model, the relationship between building conditions and teacher attitudes. The new model suggests that

building conditions may directly affect teacher attitudes. The direct impact on teacher attitudes may come from the inability to control temperature, poor ventilation, poor indoor air quality, or inadequate facilities because of building age. Building conditions may also directly and indirectly influence teacher satisfaction about their job. This may result from teacher attitudes about the condition of their classroom, their attitudes about how their classroom makes them feel, or their attitudes about the student's ability to learn within the classroom environment. This model focuses on three variables of classroom conditions. These variables may play an important role in determining teacher attitudes within a school building.



Model Design (Cash, 1993, p.4)

Figure 1



The effect of building conditions on teacher attitudes.

Figure 2

Definitions

The following definitions are provided for terms used in the study.

1. School Facility- A building used to provide free public education, including instructional, resource, food service, and general or administrative support areas, so long as they are a part of the facility (GAO, 2009).
2. Newer Building- This term is used to refer to any school facility less than ten years old at the time of this study. This term does not include school facilities that have been renovated.
3. Older Building- This term is used to refer to any school facility more than ten years old at the time of this study.
4. Building Age- Is based on the year of construction of the main instructional building for schools that have not experienced any major renovations since their original construction (IES, 2000).
5. Facility Condition- The physical school environment encompasses the school building and all its contents including physical structures, infrastructure, furniture, and the use and presences of chemicals and biological agents; the site on which a school is located; and the surrounding environment including the air, water, and materials with which students and teachers may come into contact, as well as nearby land uses, roadways and other hazards (WHO, 2003). For the purposes of this study it is measured by the CAPE.
6. Teacher attitudes- Teacher attitudes are composed of past and present experiences and are not observable as such, but are evidenced in behavior. “Teacher attitudes suggest a hidden process occurring within the individual, and are used as an explanation of the

relationship between stimulus events and the teacher's responses" (Oskamp & Schultz, 2005).

Delimitations

This study was delimited to principals and teachers in a school division located in southeastern Virginia during the 2011-2012 academic school year. The study only surveyed School Administrators and teachers from two selected elementary schools within the same school division during the 2011-2012 school year. This study was further delimited to classroom teachers who teach in grades two through five including resource (Gifted, Art, Music, and Physical Education) and special education teachers. Teachers who taught in mobile units or trailers were excluded from the study.

Limitations of the study

Because of the small sample size findings from this study may not be generalized beyond the schools represented in this study. Male teacher responses may also have been affected by its small sample size. The objectivity of the responses to the survey instrument may be affected by personal biases of the school personnel completing the instrument. Personnel completing the survey may have been affected by local politics and the local budget cuts that affected the school division during the 2011-2012 school year. Student overcrowding, and the physical location of both buildings could also affect the personnel completing the survey. Some staff members may choose for personal reasons not to participate in this study. Teacher responses may also be affected by school leadership. Correlations normally do not represent a causal relationship.

Organization of the Study

This study of the relationship between school facility conditions and teacher attitudes is divided into five chapters. Chapter 1 includes an introduction, a statement of the problem,

research questions, significance of the study, definitions, and the study's organization. Chapter 2 includes a review of the literature related to school facility conditions and the relationship to teacher attitudes. Chapter 3 contains a description of the research methodology, the setting, the population, study sites, data collection, and the method of data analysis. Chapter 4 describes the data and results of the surveys and provides an analysis of the data relating to the research questions. Chapter 5 contains the summary of findings, discussions, conclusions, implications, and recommendations for further study.

Chapter 2

Review of Literature

Introduction

The purpose of this chapter was to provide a review of the literature which was relevant to school facility conditions and the relationship to teacher attitudes. The context for this study was developed by researching why school building conditions are important to teacher attitudes. Research on school building conditions and the relationship to teacher attitudes were explored to determine if there were relationships between the variables, as reported by these studies. Finally works relating to teacher attitudes and building conditions were also reviewed for this study.

On any given school day, about twenty percent of Americans spend time in a school building (Schneider, 2002). Teaching and non-teaching staff naturally spend more time than students in these building. New educational reforms require schools to accommodate new teaching and learning styles, which included providing laboratory classrooms; flexible instructional areas that could facilitate small-group, large group, and multiage instruction, and multimedia centers that offered a variety of technological resources (Dewees, 1999).

According to Filardo (2008), school districts face problems of the basic condition of their buildings as well as the need to modernize obsolete or old building designs. School districts have to face the problems of (a) early childhood education – the expansion of half-day kindergarten to full-day programs for three year olds; (b) technology for instruction, security, the need for electrical upgrades, video, data highways, computers, smart boards, and other classroom technology; and (c) science education – laboratory, hands-on, and inquiry-based science (Filardo, 2008).With this in mind, it is crucial that school districts be able provide adequate facilities as to attract the best and brightest teachers to work in their division. Building

deficiencies impair the quality of teaching and learning and contribute to health and safety problems of staff and students. Building design and facility conditions have also been associated with teacher motivation and student achievement. For example, classroom lighting and thermal comfort are commonly cited by teachers as determinants of their own morale and the engagement of their students (Corcoran, Walker, and White 1988; Jago and Tanner 1999).

Most teaching takes place in a specific physical location (a school building) and the quality of that location can affect the ability of teachers to teach, teacher morale, and the very health and safety of teachers. Deficiencies within a school building impair the quality of teaching and learning that contribute to health and safety problems for staff and students. Buckley, Schneider and Shang (2004) found the benefits of facility improvement for retention to be equal to or greater than those from pay increases. About forty eight percent of teachers who transferred to another school and thirty nine percent of teachers who left teaching cited the need for significant repair of school facilities as a source of dissatisfaction (U.S. Department of Education 2005; see also Buckley, Schneider, and Shang 2005). Noise is also a factor in teacher dissatisfaction within a building according to the Buckley, Schneider and Shang (2004) study. Lackney (1999) found that teachers believe that noise impairs academic performance. Almost seventy percent of Washington teachers report that their classrooms and hallways are so noisy that it affects their ability to teach. Indeed, it appears that external noise causes more discomfort and lowered efficiency for teachers than for students (Lucas, 1981).

According to Earthman (2002), school facilities have an impact on teacher effectiveness. School facility repair and renovation are also related to teacher attitudes. Ethnographic and perception studies indicate that poor school facilities negatively impact teacher effectiveness and performance. Earthman (2002), reported that in a study by Lowe (1990) teachers in buildings in

poor condition stated that the design and appearance of the facility had a negative impact upon the learning climate. Conversely, teachers in buildings in good condition reported the building had a positive influence upon the learning climate. This size and organization of instructional space was reported as having an influence upon the learning climate. The maintenance of the building, according to the teachers, seemed to impact the learning climate, as did the design and appearance of the building (Earthman, 2002).

In his research in 2007, McGowen found that teacher turnover was one of two dependent variables that proved to have statistically significant relationships to school facility conditions (McGowen, 2007). Johnson (1990) found that the school's physical environment influences the intentions of even the best teachers to continue in teaching. In a 1991 study entitled, Surviving the Worst, Expecting the Best (1991), teachers in the study (Commonwealth of Virginia) were overwhelmingly dissatisfied with the physical conditions of their building. Teachers described problems such as overcrowding, climate control problems, and inadequately planned instructional spaces (VEA, 1991).

A (1998) study by Duke and Griesdorn, found that in ninety six percent of the Virginia school divisions that returned surveys, instructional time was lost due to facility problems, which reduced the effectiveness of teaching. Lack of air conditioning was not the only reason for lost instructional time in Virginia, though it was the most frequently mentioned. Problems related to HVAC systems accounted for 39 days of lost instruction, electrical systems and wiring another 10 days, and water and sewer problems an additional 6 days. Most of the HVAC problems involved boiler failures during winter months. Curriculum offerings were reduced due to the limitations of school facilities, and teacher absenteeism was high due to the health and safety

issues such as students falling through rotten sections of flooring and building based allergies and poor ventilation within the buildings (Duke and Griesdorn, 1998).

Corcoran et al. (1988) in a study of working conditions in urban schools concluded that "physical conditions have direct positive and negative effects on teacher morale, sense of personal safety, feelings of effectiveness in the classroom, and on the general learning environment. The study also found that "where the problems with working conditions are serious enough to impinge on the work of teachers, they result in higher absenteeism, reduced levels of effort, lower effectiveness in the classroom, low morale, and reduced job satisfaction. Where working conditions are good, they result in enthusiasm, high morale, cooperation, and acceptance of responsibility (Corcoran, 1998).

Earthman and Lemasters (2011) found that faculty members were directly affected by their immediate surroundings and working conditions. If they are in a facility that is rundown and lacking in certain features such as thermal control of the environment, adequate lighting and windows, modern science equipment, and controlled acoustical environment, among other features, their attitude will not be as positive as that of faculty members in better kept and modern buildings (Earthman and Lemasters, 2011). Accordingly Cash's (1993) theoretical model indicates that condition of the school buildings can have a direct relationship to teacher attitudes..

Yielding (1991) in a study of three K-2 elementary schools in northern Alabama found that specific physical features such as space, equipment, maintenance, appearance, comfort and general physical arrangement, positively or negatively affected the learning environments in each school in the study (Yielding, 1991). Teacher behaviors and attitudes have also been linked to the quality of school facilities (Uline & Tschannen-Moran, 2008). A myriad of factors affect teacher retention, but most teachers work in a specific physical facility (the school building) and

the quality of that building has an impact on teacher morale, the ability of teachers to teach, and the health and safety of teachers. Unfortunately, we should expect school facilities problems to worsen since school buildings in the United States, on average, are over forty-years-old, just the time when rapid deterioration typically begins (Buckley, Schneider, & Shang, 2004).

According to Leung, Chan and Wang (2006) facility conditions and facility management have an impact on the working behaviors of teachers. Table 1 explains the impact facility management has on teacher behavior.

Table 1

Impact of Facility Management in Primary Schools

	Functions	**Possible Problems**
Space management		
-This refers to the type and design of space for Personal and team work	-To maximize the utilization of workspace to achieve the ongoing effectiveness of the working environment, as well as future business needs (Park, 1998).	The more crowded the staff room, the greater the unhappiness of teachers (Rose, 1994).
Teachers Lounge		
-This is a place for teachers to relax from intense work	-To alleviate teachers' pressure and fatigue, and allow refreshment from their work. -To enhance interaction and affability among teachers	Teachers have no specific area for relaxation or chat. It will directly affect their social activity and creativity.
Outside view		
-Size of the windows directly affects the outside view in staff rooms.	-To release physical pressure on the eyes. -To refresh energy -To ensure staff happiness and satisfaction within the building Leaman & Bordass, 2000).	Teacher stress cannot be released easily. No stimulation/creation in their daily work.
Lighting		
-Levels of luminaries, glare and brightness are used to measure visual comfort.	-To ensure concentration. -To increase the degree of human responses, task performance, productivity, product quality, morale, health, and energy conservation (Park, 1998; Wood, 1996).	Poor lighting and glare lead to eye strain, headaches, visual fatigue, tension, and frustration (Rose, 1994). Excessive brightness causes tension and leads to difficulty concentrating.

Impact of Facility Management in Primary Schools

	Functions	Possible Problems
Ventilation		
-This involves natural mechanical ventilation	-To improve the performance of office work such as text typing and proof reading (Wargocki et al., 2000). -To refresh the brain in order to lead clear-headed thinking.	Poor ventilation induces poor indoor air quality resulting from airborne contaminants, such as volatile organic compounds suspended particulates, or microbial particles. It causes illness and seriously diminishes learning potential (Friday & Cotts, 1995; Waddick, 1997).
Temperature		
-An effective temperature refers to an individual's perception of the ambient temperature and is strongly influenced by the humidity of the air (McAndrew, 1993).	-A room with a slightly cool temperature leads to more effective activities (McAndrew, 1993; Clothier, 1996).	A cold temperature reduces manual dexterity, tactile sensitivity, and motivation levels, and increases reaction time (McAndrew, 1993). -High humidity not only has a negative effect on people's health and comfort, but also on their efficiency (Pratt, 1994; Rose 1994).
Teaching Facilities		
-This refers to the computers, projectors, printers, and relevant software.	-To initiate/create new teaching methods and materials. -To improve work efficiency.	Working in a staff room with insufficient teaching facilities can cause teachers to be in a bad mood and decrease work enthusiasm or work efficiency.

Impact of Facility Management in Primary Schools

	Functions	**Possible Problems**
Indoor Plant		
-This refers to indoor decoration in the staff room	-To remove atmospheric pollutants from sealed environments (Wolverton, work. 1990; Foster 1996). -To decorate the indoor environment. -To establish a pleasant, happy, and healthy environment for teachers. -To establish perseverance in the working environment.	No stimulation/creation for daily
Noise		
-This is a psychological concept defined as unwanted sound and considered as a source of stress (McAndrew, 1993; Rose, 1994).	-To ensure a consistent working environment for educational activities. -To prevent any disturbance.	-Excessive noise can reduce tolerance of other stressors and affect the motivation of teachers (Rose, 1994). -Intermittent and unpredictable noise has to be dealt with since may have a sudden impact on task performance.
Privacy		
-This refers to teachers' personal information at work .	-To allow room for creativity and relaxation. -To enable concentration on work.	Teachers may feel uncomfortable if their personal information is exposed.

Note. Adapted from "Impact of School Facilities on Working Behavior of Teachers by M.Y. Leung, J.K.W. Chan, and Z. H. Wang, 2006, pp. 80-82.

Earthman and Lemasters (2009) investigated teacher perceptions of classroom conditions and how the condition of the building influenced their work. The population for this study consisted of teachers identified in the Crook (2006) study. Crook (2006) identified 11 high schools that were identified by their principal as being unsatisfactory. The buildings were matched with a like number of schools in which the principals identified the schools as being in satisfactory condition. The attitudes of the teachers in these two groups of school buildings were compared through the use of an attitudinal scale developed for the project: the My Classroom Appraisal Protocol © (Earthman, 2006) developed by the researcher (Crook, 2006). This study was one of the first to compare the perceptions of teachers in satisfactory buildings with those in unsatisfactory school buildings. The findings of this study correlated with the findings of previous researchers (Earthman & Lemasters, 2011).

Building Age

The United States Department of Education, National Center for Education Statistics [USDOENCES] *Condition of America's Public School Facilities* (2000*)* reported the average age of school buildings was 40 years old and in need of repairs, with over thirty percent of the buildings using portable buildings for general classrooms(USDOENCES, 2000) . GAO (1995) found that there were a high number of inadequate buildings, in rural, urban, as well as suburban area. The most common problem was the age of the schools (GAO, 1995). According to Ornstein (1994), when a school is 20 to 30 years old, frequent replacement of equipment is needed. Between 30 and 40 years old, the original equipment should have been replaced, including the roof and electrical equipment. After 40 years, a school building begins rapid deterioration, and after 60 years most schools are abandoned (Ornstein, 1994). The physical characteristics of aging or poorly designed schools can also inhibit learning with poor lighting, plumbing, and

temperature control systems. The decision to build educational facilities with fewer windows in favor of fluorescent lighting may have reduced the amount of heat loss, but may also have created a more serious risk to health and performance (Morris, 2003).

Earthman (1994) stated the need for renovating our schools and the finances to complete this endeavor are steadily increasing due to the age of the present facilities. In Earthman's (2004) synthesis for the American Civil Liberties Union Foundation (ACLU) of Maryland, *Prioritization of 31 Criteria for School Building Adequacy*, he concluded that the building age of a school is quite significant in the negative impact upon students. Older buildings generally do not have control over other variables such as the thermal environment, lighting, acoustical control, support facilities, laboratory conditions, and aesthetics of the environment (Earthman, 2000). Another indicator that serious building deficiencies are the norm rather than the exception is the American Society of Civil Engineers report card on infrastructure. The society began including public schools in its infrastructure report card in 1998; in that year it gave public schools an F, followed by a D- in 2001 and 2003, and a D in 2005 (Filardo, 2008).

NCES (2000) reported factors that contributed to school conditions. The factors were (a) deferred maintenance and renovation—the decision of overlooking the maintenance and modernization of old schools facilities versus the instructional programs because of insufficient funds and (b) overcrowding—the number of students enrolled in the school was larger than the number of students the school was designed to accommodate (the facilities were too small to accommodate the students and teachers who resided there (NCES, 2000). Eric Smith, Energy Committee leader for Build for the Future (BFTF), says the research that his group has been conducting highlights the age of a building as a factor of poor air quality. "Air quality issues may be caused by poor design and add-on construction to the building, but generally can be attributed

to heating, ventilation and air conditioning (HVAC) systems that are simply outdated and inefficient," said Smith (Peterson, 2011).

Indoor Air Quality

In a study in 2002, the researcher found that two-thirds of the teachers in Washington, D.C. and over half the teachers in Chicago found indoor air quality fair or poor. Over 30 percent of Chicago teachers and forty percent of Washington teachers reported that their classrooms were uncomfortable. Over forty percent of Chicago teachers and seventy percent of Washington teachers reported that their classrooms and hallways were so noisy that it affected their ability to teach. In Washington, D.C. 20 percent of teachers say that they can't see out of their windows, ten percent in Chicago said the same. Even more disturbing forty percent of teachers in Washington, D.C. and twenty percent in Chicago can't even open their classroom windows, which contributes to poor indoor air quality. In Washington, D.C. the study reported that a third of the teachers lost time at work because of health problems, in Chicago it was about twenty percent (Schneider, 2002).

Studies of poor indoor air quality have developed the concept of the "sick building syndrome" which affects both students and teachers. Asthma studies have shown that both students and teachers lose considerable school time because of poor indoor air quality. Two-thirds of the teachers in Washington, DC reported poor indoor air quality as a concern. In a Chicago study that paralleled the Washington, DC study, over one quarter of Chicago teachers reported asthma and respiratory problems as their most frequent health problem. Another 16 percent reported health problems linked to poor air quality (Buckley et al, 2004).

According to Bomier (2002), school buildings built after World War II were not

responsive to the weather or other environmental conditions in the area. Brick was porous, supported by low-grade iron, and coated with feather-light asbestos fireproofing. Centralized controls were placed in the buildings; these controls were unable to address comfort in building sections or individual rooms. Local building codes reduced the minimum levels of required fresh air; the air was simply recycled to make up for heating loss due to the deficient wall mass. Codes allowed auxiliary air to be brought into classrooms; the result became known as the ―make-up air system. The ratio of fresh air brought into the school buildings declined from fifty percent to twenty five percent (Bomier, 2002).

According to Wakefield (2002), there are thousands of schools across the nation that may have placed students, teachers, and staff at risk related to the following factors: molds, pesticides, transmittable diseases, exposure to toxic chemicals, and hazards of the crumbling school infrastructure. Children spend roughly eighty five percent of their time indoors, including about 7 hours a day in school. Although poor indoor air quality has been most predominant in reported concerns related to the school environment, it is important not to overlook the detrimental effects of mold fragments and spores (Wakefield, 2002). Bailey (2009) in a compilation of relevant studies was able to state that the sum of the research indicated the existence of a positive relationship between condition of the school and health and performance of students and teachers (Bailey, 2009).

Temperature and Ventilation

Students are not the only ones affected by poor quality buildings. Teacher attitudes and behaviors have also been found to be related to the quality of school facilities. Teacher retention/attrition decisions were significantly related to the quality of school facilities, even when controlling for a host of factors (Buckley, Schneider, & Shang, 2004). Factors that most

directly affected the quality of teacher work life also included indoor air quality, thermal controls, noise level and acoustics, adequate classroom lighting, and the amount of natural daylight. Teachers who perceived a detrimental effect on their health due to building conditions, or who were stressed by high noise levels, poor acoustics, and lack of thermal controls were more likely to seek employment elsewhere (Buckley, Schneider, & Shang, 2004).

Lowe (1988) in an interview of state teachers of the year found that the teachers' ability to control classroom temperature is crucial to the effective performance of both students and teachers (Lowe, 1998). Bomier (2002) reported that the greatest impact on the nation's school building environment results from the configuration of ventilation systems. Old ventilation systems were regulated by teachers, through their control of either windows or radiators. Since WWII, ventilation systems have been mechanically activated building wide (Bomier, 2002). Accordingly, in a report issued by the USDOE (2000), the NCES indicated that 26 percent of the reporting schools perceived ventilation to be the most unsatisfactory environmental condition (USDOE, 2000).

Thermal comfort is also an important issue in relation to school facilities. Lackney (2000) states that classroom temperatures affect task performance and students' attention spans (Lackney, 2000). Leaky plumbing systems in poorly ventilated schools contribute to the growth of mold on bathroom surfaces (Davis, 2001). The affects of mold in the environment can be as minor as simple irritation of the sinuses or much more serious depending on the duration of the exposure and the susceptibility of those suffering from the effects. Some people experience temporary effects which disappear when they vacate the premises, while others may experience long-term effects (Davis, 2001).

> Certain health effects, such as those related to allergic reactions like irritation of the eyes, nose, and throat, dermatitis, exacerbation of asthma, and respiratory distress, have been proven to be associated with mold exposure. Other reported effects such as fever, flu-like symptoms, fatigue, respiratory dysfunction (including coughing up blood), excessive and regular nose bleeds, dizziness, headaches, diarrhea, vomiting, liver damage, and impaired or altered immune function have been identified in persons who have been exposed to mold via inhalation. (Davis, 2001, p.4).

These maintenance and design issues can have a serious negative effect on the learning environment for students and the working environment for teachers; it is a health hazard for all who spend significant amounts of time in the building. These effects: poor student behavior, lethargy, and apathy are some of the most consistently identified stressors for teachers (Abel & Sewell, 1999; Blasé, 1986; Dewe, 1986; Stenlund, 1995). Teacher satisfaction about their workplace environment impacts their ability to instruct students. Studies have shown that teachers are an important catalyst in student achievement. What is implied here is that poor conditions due to maintenance and design issues are adding to an already serious shortage of teachers and adversely affecting the commitment and enthusiasm they have for their profession, therefore affecting student achievement (Morris, 2003). The question is, does the physical condition of a school building affect teacher job satisfaction? Studies on this topic are not as robust as studies concerning school building conditions and student achievement correlations. Nevertheless, studies in this area are growing (Schneider, 2004).

Chapter 3

Methodology

The purpose of this study was to determine whether there is a significant relationship between school facility conditions and teacher attitudes. The purposes of this chapter are to: (a) describe the settings, (b) describe the population, (c) describe the methods of data collection, and finally d) provide an explanation of procedures used to analyze the data gathered.

Setting of the Study

The location for this study was a school division in southeastern Virginia that has a student population of over 10, 000 students. The division's per pupil expenditure is approximately $9,800.00; compared to a state average of $10,210.00 per student (Slayton, 2009). The educational program of the school division provides a curriculum founded on the basics of language arts, math, science, and social studies that are designed to meet and exceed the Standards of Learning set forth by the Commonwealth of Virginia. All schools within this division have a six hour instructional day, 180 days per year.

Population

The population of this study was all of the teachers in the two schools located in the above described school division. The schools selected for this study were both elementary schools. School A has a 2-5 grade configuration, while School B has a PreK-5 grade configuration. These buildings are the oldest and second youngest elementary school facilities in this particular school division. The youngest elementary school within this division was excluded from the study because the researcher is employed as its principal. The schools in this study were selected to provide a contrast between an old and a new building.

School A has a licensed classroom teaching staff of 25 teachers. Of the 25 licensed classroom teachers in School A, eighty percent are White and twenty percent are Black. Within the teaching staff eight percent are male and ninety two percent are female. Sixty percent of the licensed classroom teachers in School A have 10 or more years teaching experience, thirty two percent have 6-10 years of teaching experience, and eight percent have 0-5 years teaching experience. Thirty-two percent of the teaching staff in School A has earned advanced degrees. There are 8 paraprofessionals in School A, which gives the School A 3:1 teacher to paraprofessional ratio.

School B has a licensed classroom teaching staff of 63 teachers. Of the 63 licensed classroom teachers in school B, seventy five percent are White and twenty five percent are Black. Within the teaching staff twelve percent are male and eighty eight percent are female. Sixty seven percent of the licensed classroom teachers in School B have 10 or more years teaching experience, twenty percent have 6-10 years of teaching experience, and thirteen percent have 0-5 years teaching experience. Twenty-four percent of the teaching staff in School B has earned an advanced degree. There are 20 paraprofessionals in school B, which gives the School A 3:1 teacher to paraprofessional ratio. Table 2 explains the demographic makeup of both schools teaching staff.

Table 2

Demographic information for School A and School B

	SCHOOL A	SCHOOL B
Total Number of Teaching Staff	25	63
Total Number of Paraprofessional Staff	8	20
Percent of Black Teaching Staff	20 %	25 %
Percent of White Teaching Staff	80 %	75 %
Percent of Male Teaching Staff	8 %	12 %
Percent of Female Teaching Staff	92%	88 %
Percent of Teaching Staff with 0-10 Years of Teaching Experience	40 %	33%
Percent of Teaching Staff with more than 10 Years Teaching Experience	60 %	67 %
Percent of Teaching Staff Bachelor's Degrees	68 %	76 %
Percent of Teaching Staff with Post Bachelor's Degrees	32%	24 %

Demographically both schools are similar in race, gender, and years of teaching experience. Paraprofessionals in both School A and School B represent thirty two percent of the instructional teaching staff. The schools are different in the overall size of the classroom teacher population, with School B possessing 38 more teachers that School A. Both schools are proportional in size to the population of staff and students in each building. Teachers in both School A and School B are predominately White over seventy percent, predominately female with both schools over eighty five percent, and both schools have over fifty percent of their staff with ten or more years of teaching experience.

Study Sites

School A is a single story facility and is located in a suburban setting. It was opened in 1968 as a K-5 elementary school. At the time of this study School A served 379 students in a second through fifth grade configuration, and was classified as an elementary school. According to the Human Resources Department of the school division in this study, all teachers in School A were highly qualified based on state standards. School A is a non-Title I School And was fully accredited by the Commonwealth of Virginia. School A did not meet AYP for the 2011-2012 school year.

School A is located on 9.7 acres of land. The facility is 64, 100 square feet and has a roof top HVAC system. Common to schools built during this era School A has a built up roof system. School A also has a detached gymnasium which is not full size. There are currently no mobile units present on the campus and the school has never been remolded. In 2008 School A was retro fitted for high speed internet use, projection screens, and wall speakers in each classroom. The school has a program design capacity of 532 students. No information for School A's architectural design capacity could be found on record. The school has a 20:1 student to teacher ratio in grades 2-3, and a 25:1 student to teacher ratio in grades 4-5.

School B is located in a suburban setting and has a PreK-5 grade configuration. At the time of this study School B served 957 students and was classified as an elementary school. There were 63 licensed teachers within the building. All teachers in School B were highly qualified. School B is a Title I School And was fully accredited by the Commonwealth of Virginia. School B did not meet AYP for the 2011-2012 school year.

The School B is a single story facility opened in September of 2006 and is located on 18.5 acres of land in a suburban residential community. School B is a 96,000 square foot facility and has a Chiller-Boiler HVAC system. School B has a shingle roof and a full sized gymnasium which is used in conjunction the city's Parks and Recreational department. At the time of this study, three mobile units were present on the campus. The mobile units were added in 2010 to address severe student overcrowding.

Overcrowding also resulted in several teachers sharing classrooms within the building. The school has a wireless internet system and projection screens in each classroom. Wall speakers were also built into each classroom. School B has a program design capacity of 721 students and an architectural design capacity of 800 students. School B has a 22:1 student to teacher ratio in grades K-2, and 24:1 student to teacher ratio in grades 3-5. For the purposes of this study, teachers who teach in mobile units will be excluded from this study. Teacher attitudes may have been skewed by the physical differences between mobile units and permanent classrooms within the building.

Data Needed

The data needed to complete this study were: (a) a building evaluation to determine the condition of the building, and (b) an assessment of teacher attitudes. The Commonwealth Assessment of Physical Environments (CAPE) was used to determine the condition of the school building and was completed by the principals of both schools in the study. The My Classroom Appraisal Protocol (MCAP) was completed by classroom teachers in both schools in the study. This instrument produced the data needed to measure teacher attitudes in their classrooms.

The CAPE survey was derived from the Commonwealth Assessment of Physical Environment developed by Cash (1993), the State Assessment of Facilities in Education © by

Cash and Earthman (1995) and from the Assessment of Building and Classroom Conditions in Elementary Schools in Virginia by Lanham (1998). The CAPE produces a single score to indicate the total condition of the school building.

The items on the CAPE are further divided into two sections – structural and cosmetic. Structural conditions are defined as building age, external and internal noise, lighting, windows, heating and air, roof leaks, and electrical outlets. Cosmetic conditions are defined as painting, graffiti, landscaping, how often floors are swept and mopped. Structural conditions are much harder to change while cosmetic conditions can usually be changed with little expense at the site level. This division of items is to provide analysis of conditions which are related to the structural or physical environment and to the aesthetic nature of students and teachers. The cosmetic items may represent parts of the building to which students and teachers may react on a personal or aesthetic level and thereby influence attitudes. The CAPE instrument was validated by three people who had experience in the area of facility assessments. The CAPE was further field tested by eight School Administrators in the Commonwealth of Virginia and has been used extensively since its development, providing consistent and reliable results.

The CAPE was scored by using three alphabetical responses to each item to permit a gradation of assessment of building condition. Most items have three possible responses. The exceptions to the tri-part responses are items 1, 2, 10, 11, 18, 28 and 29 that ask for multiple responses reflecting choices of items. Items 22, 23, 24, and 25 require a Yes or No response. Items 3, 12, 30, 31, and 32 require a quantitative response. The remainder of the items had responses of A, B, and C. A response of A would indicate a less than desirable condition or that the element was missing. A response of B would indicate a building element might be present,

but not working properly or a limited application. A response of C would indicate the building element was present and in good working condition.

The CAPE was administered by the principals in each of the two school buildings to arrive at an evaluation of the building. Brannon (2000) assessed high school buildings using the CAPE instrument. His findings indicated that the principal had a better knowledge of the conditions of the school buildings than any other groups. This research validated principals' use of the CAPE to properly assess the condition of their buildings, which had occurred in previous research and would occur in subsequent research efforts (Earthman & Lemasters, 2011).

Teacher attitudes about their environment were obtained through the MCAP assessment instrument. This instrument provided an assessment of how teachers felt about their classroom and school building and was used to compare the response of teachers with School A and School B. Teachers also indicated their overall attitude about the condition of their building as either satisfactory or unsatisfactory by selecting the appropriate response under the section Building Assessment on the MCAP instrument

The My Classroom Appraisal Protocol (MCAP) instrument was developed by Earthman (2004) for a study of teacher attitudes in Virginia. The MCAP instrument consists of 48 items covering seven building components and conditions, such as thermal control, lighting, acoustics, condition of the furniture and equipment, space, science equipment, and the presence of graffiti. The instrument is divided into five sections: Classroom Assessment; Attitudinal Assessments; Student Learning, Building Assessment; and Demographic Data.

The first section entitled Classroom Assessment is made up of 17 questions which measures teacher attitudes about the physical classroom environment. The section contains questions such as, I can easily control the temperature in my classroom, and the ceiling in my

classroom leaks during a rain storm. Teachers must respond by placing an X one of four responses provided on the MCAP. The choices are SD - Strongly Agree, D – Disagree, A – Agree, and SA – Strongly Agree.

The second section of the MCAP is entitled Attitudinal Assessment and is made up of 14 questions which measures teacher's attitudes about the conditions of their classroom. The section contains questions such as, the condition of my classroom makes me want to leave teaching as a career, and the condition of my classroom causes me some periodic health problems. The responses to these questions can provide as assessment of how the building affects the attitudes of teachers. The third section of the MCAP entitled Student Learning Assessment is made up of 11 questions which measures how teachers felt about the physical impact of their classroom on student learning.

The fourth section of the MCAP entitled Building Assessment simply asked teachers, how they felt about the condition of their building. Teachers responded by simply placing an X beside the response Satisfactory or Unsatisfactory. The responses to this item will be used for more detailed analysis of the responses to the first three sections. This comparison could help to understand if there is a difference in the attitudes of teachers who rate their building as being satisfactory or unsatisfactory.

The last section of the MCAP entitled Demographic Data consists of five questions that asks teachers, What is their gender?, what is their highest level of academic achievement, how many years have they taught, what grade level do they teach, and how long they have been employed in their present school division? Responses to these items were used for analysis of responses to the first three sections of the instrument. The MCAP was subjected to content validity by asking teachers in three school buildings to respond and complete the instrument, in a

2008 study (Earthman and Lemasters, 2008). The composite scores of the MCAP instrument were used for comparison purposes.

The MCAP instrument was be modified by the addition of one item dealing with the presence of pests in the classroom. Modifications of the MCAP for this research study did not affect validity, because the instrument will continue to measure that which it was originally designed to measure. Joppe (2000) states, "validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are (p. 599) in other words, does the research instrument allow you to accurately assess the research objective?

Permission

Prior to conducting this study the researcher sought approval from the Virginia Polytechnic Institute and State University Institutional Review Board (IRB) and the Office of Testing and Accountability of the local school division to receive authorization to conduct research using human subjects. Upon approval from the IRB, a written request and a phone call were made to the Director of Testing and Accountability of the local school division, for permission to conduct this study. The written request contained a letter (See Appendix E) explaining the nature of the study as well as a copy of the CAPE (See Appendix B) and MCAP instruments (See Appendix A). The letter also explained that the school division would be giving the researcher permission to conduct research, with the understanding that the school division would not be identified and that all responses would be kept confidential.

During the phone call with the Director of Testing and Accountability the researcher was informed that an application had to be made to the Office of Testing and Accountability before permission would be granted to conduct research. The Director of Testing and Accountability

followed up the phone conversation by sending an email with the application as an attachment as well as the directions for completing the application. The application was completed within the week and was returned to the Office of Testing and Accountability. Permission was granted within 48 hours of submitting the application in to the Office of Testing and Accountability. The researcher was notified by email and letter (See Appendix F) that permission was granted to conduct research.

Consent

Upon receiving permission from the Virginia Polytechnic and State University Institutional Review Board (IRB) and the Office of Testing and Accountability of the local school division, the researcher secured consent from all participants involved in the study. This process assured that the researcher adhered to ethical procedures during the research process. The researcher used the Consent Form Checklist provided by the university to ensure that all required elements were present in the consent form document.

According to Creswell (1998), the participant consent form should incorporate the following information: (1) the participant will be notified that participation is voluntary and no compensation will be provided for participation, (2) the participant may withdraw from the study at any time, (3) the participant will be provided information regarding the purpose of the study and data collection procedures, (4) the participant identification will remain confidential, (5) the participant will be provided information relating to known risks associated with the study, (6) expected benefits for participation will be disclosed, and (7) a signature line exists on the form for both the researcher and participant.

Following permission to conduct the study by the school division, and the IRB, the principals of School A and School B were contacted via telephone and email by the researcher to

arrange a meeting at the respective schools. The email contained an electronic copy of the CAPE instrument so that principals could familiarize themselves with the CAPE instrument. The researcher met with the principals of both schools on alternate weeks in the month of May. During these meetings the researcher obtained signed consent from the principals (See Appendix G) of both schools which were kept in a vault under lock and key in the researchers' possession. Principals of both buildings were their schools points of contact, and were asked to provide an opportunity for the researcher to meet with the teaching staff after school.

The researcher met with the teaching staff of both schools on alternate weeks during the month of May. The meeting in School A took place in the media center. The meeting in School B took place in the music room. During these meetings the researcher obtained signed consent from teachers. Teachers were reminded that their participation was voluntary; however, it was hoped that they would take the time to endorse the study by giving consent and completing the MCAP instrument. After an overview of the study, teachers were presented with the consent form (Appendix E) at the beginning of the meeting. Those teachers, who did not wish to participate, were not classroom teachers, or who taught in mobile units were asked to leave the room before participating teachers signed the consent forms. A participating teacher was selected from School A and School B to collect the signed consent forms and seal them in an envelope provided by the researcher. Consent forms were separated from the MCAP instrument for reasons of anonymity.

Data Collection

The collection of data started after permission had been obtained from the school division, and consent forms secured from the principals of School A and School B, and all participating classroom teachers. A meeting with principals was held at the principals respective

schools on alternate weeks during the month of May. A principals packet was brought to School A and School B by the researcher. The contents of each principal's packet included: (a) a cover letter to the principal for the CAPE instrument (See Appendix D), (b) the CAPE instrument for the principal, (c) a consent form, (d) an envelope for the completed CAPE instrument and (e) a letter of permission to conduct researcher from the Office of Testing and Accountability (See Appendix F).

The principals were asked to complete the CAPE instrument within a one week time period that coincided with the after school meetings of their respective teaching staffs. The CAPE instrument was collected from principals on the same day as the collection of the MCAP instrument from their respective staff. This gave each building principal sufficient time to complete the CAPE instrument after thoroughly assessing their respective buildings. The completed CAPE instrument was kept with the researcher during the meeting with teachers and thereafter stored in a vault under lock and key for security purposes.

A school survey packet was brought to School A and School B by the researcher. The researcher met with teachers of School A and School B on alternate weeks during the month of May. The contents of each schools survey packet included: (a) cover letter to teachers explaining the MCAP survey instrument (See Appendix C) (b), distribution and collection checklist (c), copies of the MCAP survey instrument for teachers, (d) consent forms and (e), an envelope for the completed MCAP and consent forms.

During the meeting with the teaching staff the researcher explained the nature of the study and explained the consent form. Teachers were told that their participation was voluntary and that they did not have to give consent or participate in this study. Teachers, who did not wish to participate in the study, were not classroom teachers, or who taught in mobile units were

instructed to leave the room by the researcher, before participating teachers began to give signed consent and fill out the MCAP instrument. The researcher gave directions for the consent form and the MCAP instrument, and assigned a volunteer teacher to distribute and collect the signed consent forms and the completed MCAP instrument from the participating teachers during these meeting. Teachers were instructed to sign the consent form before completing the MCAP instrument. Teachers were instructed that the MCAP instrument must be completed during the meeting and that it could not be removed from the room unless sealed in the envelope by the volunteer teacher. The researcher was not present during the signing of the consent forms or the completion of the MCAP instrument. The MCAP instrument was not attached to the consent form for purposes of anonymity.

A volunteer teacher in each building participating in the research was asked to collect signed consent forms and the MCAP instrument and place them in a separate envelope upon completion by all participating teachers. The volunteer teachers sealed the envelopes in the presence of the other participating teachers. The volunteer teachers were instructed to bring the envelopes to the researcher who was stationed outside of the media center (School A) and music room (School B) respectively. The researcher then collected the MCAP instruments and consent forms from the volunteer teachers, and completed the distribution checklist on both dates. Forty-four MCAP instruments and 44 consent forms were collected from School A, and 20 MCAP instruments and 20 consent forms were collected from School B. Once the MCAP instrument and consent forms were received by the researcher they were kept under lock and key in the office of the researcher.

Data Analysis

This study had two major components. The components are: (a) the findings of the CAPE; (b) and a survey of the attitudes of teachers and how they feel about the physical conditions of their classrooms and its affect on their attitudes as measured by the (MCAP). A Cronbach's Alpha was run to measure the internal consistency of the questions in the MCAP instrument. The Cronbach's Alpha indicated a score of .955, which suggested that items on the MCAP have a relatively high internal consistency. Data about the structural and cosmetic conditions of School A and School B were derived from the administrator's assessment of the building through the CAPE.

Coding. Responses to the CAPE instrument were coded and entered into SPSS for statistical analysis. All answers that correspond with the letter A were coded as a 1. All answers that correspond with the letter B were coded as a 2. All answers that correspond with the letter C were coded as a 3 and so on. A composite score was derived for School A and School B. The composite scores were used to compare facility conditions in both School A and school B. A higher composite score on the CAPE indicated a more desirable condition in the building. An independent sample t-test was used to determine if significant differences existed between the mean principal response scores with School A and School B.

Responses to the MCAP were also coded and entered into SPSS for statistical analysis. Data responses to the first three sections of the MCAP (Questions 1-42), produced a total composite score indicating the attitude teachers have about their building. Teachers responded to questions 1-42 with the following choices; SD - Strongly Disagree, D – Disagree, A – Agree, and SA – Strongly Agree. The MCAP sections are entitled: Classroom Assessments, Attitudinal Assessments, and Student Learning Assessments. Strongly Disagree was coded a numerical

score of 1, Disagree was coded a numerical score of 2, Agree was coded a numerical score of 3, and Strongly Agree was coded a numerical score of 4. A numerical score of four would indicate the most positive response to a question on the survey, with the numerical score of one being the most negative response to a question on the survey. Questions number 5, 6, 14, 16, 18, 20, 22, 24, 27, 28, 29, 30, 31, 32, 33, 34, 38, and 39 were re-coded so that a higher teacher response choice to a question would always indicate a more positive teacher attitude. The questions were re-coded as follows: Strongly Disagree responses was re-coded as a numerical score of 4, Disagree was re-coded as a numerical score of 3, Agree was re-coded as a numerical score of 2, and Strongly Agree was re-coded as a numerical score of 1.

Demographic data (Questions 44-48) were coded as follows: In the question pertaining to gender, the response for Female was coded a numerical score of 1 and the response for Male was coded a numerical score of 2. The question that asked the participants' highest academic attainment was assigned the following codes: Bachelor's degree was coded a numerical score of 1, an advanced degree was coded a numerical score of 2. The question that asked how many years have you taught was coded as follows: One to ten years of teaching was coded a numerical score of 1, more than ten years of teaching was coded a numerical score of 2. The question which asked what grade level you teach was coded as follows: PreK-1 was coded a numerical score of 1, Second and Third grade were coded a numerical score of 2, and Fourth and Fifth grades were coded a numerical score of 3. All teachers who coded themselves as PreK-1 were eliminated from the study. Since School A had a grade configuration of 2-5, and School B a grade configuration of PreK-5, only teachers who self identified as teaching in grades 2-5 were used in this study for consistency of comparison.

Analysis. The responses of teachers on the MCAP in School A (older building), and School B (newer building) were compared to answer the research questions. Of the 44 MCAP instruments collected from School B, only 28 were analyzed for this study. Sixteen MCAP instruments were eliminated from the study because teachers indicated that they taught in grades PreK-1. Of the 20 MCAP instruments collected from School A, only 18 were analyzed for this study. Two were eliminated because the MCAP forms were not completed accurately. One teacher wrote his\her name at the top of the MCAP instrument while another teacher completed only five questions of the MCAP instrument.

Teacher responses on all items in the first three sections of the MCAP provided a total composite score for the faculty in each school building; the total composite score and the results of the data analysis answered the first research question. Composite scores were used to compare teacher attitudes in an older building with teacher attitudes in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between the mean of teacher response scores with School A and School B.

Teacher responses on the first section of the MCAP were used to compare teacher attitudes about the condition of their classrooms. Data from the Classroom Assessment section of the MCAP of teachers in School A and School B provided a composite score for both buildings. Composite scores were used to compare teacher attitudes about the condition of their classroom in an older building with teacher attitudes about the condition of their classroom in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences exist between the mean teacher response scores on the Classroom Assessment section of the MCAP with School A and School B.

The second section of the MCAP deals with teacher attitudinal assessment – how the classroom influences teacher attitudes. Data from this section of the MCAP of teachers in School A and School B provided a composite score for both buildings. Composite scores were used to compare teacher attitudinal assessments in an older building with teacher attitudinal assessments in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between the mean teacher response scores on the Attitudinal section of the MCAP with School A and School B.

The third section of the MCAP deals with the teacher's attitude about how the classroom influences student learning. Data from this section of the MCAP of the teachers in School A and School B provided a composite score for both buildings. Composite scores were used to compare teacher attitudes of student learning in an older building with teacher attitudes of student learning in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between mean teacher response scores on the Student Learning section of the MCAP with School A and School B.

Comparison of data from question 43 was not used in this study as originally planned. All but one of the 28 teachers in the newer building (School B) assessed their School As satisfactory. In contrast only one teacher in the older building (School A) assessed their building as being satisfactory. Therefore statistical analysis of both schools was not possible due to an insufficient number of teachers in the older building who assessed their building as satisfactory and an insufficient number of teachers in the newer building who assessed their building as unsatisfactory.

Data from the MCAP were also used to compare the attitudes of male teachers. Data from the responses of male teachers in School A and School B provided a composite score for both

buildings. Mean scores were used to compare male teacher attitudes in an older building with male teacher attitudes in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between the mean teacher response scores of male teachers with School A and School B.

Data from the MCAP were used to compare the attitudes of female teachers. Data from the responses of female teachers in School A and School B provided a composite score for both buildings. Composite scores were used to compare female teacher attitudes in an older building with female teacher attitudes in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between mean teacher response scores of female teachers with School A and School B.

Data from the MCAP were used to compare the attitudes of teachers with a bachelor's degree. Data from the responses of teachers with a bachelor's degree in School A and School B provided a composite score for both buildings. Composite scores were used to compare the attitudes of teachers with bachelor's degrees in an older building with the attitudes of teachers with bachelor's degrees in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between the mean teacher response scores of teachers with bachelor's degree with School A and School B.

Data from the MCAP were used to compare the attitudes of teachers with post bachelor degrees. Data from the responses of teachers with post bachelor degrees in School A and School B provided a composite score for both buildings. Composite scores were used to compare the attitudes of teachers with post bachelor degrees in an older building to the attitudes of teachers with post bachelor degrees in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between

the mean teacher response scores of teachers with post bachelor degrees with School A and School B.

Data from the MCAP were used to compare the attitudes of teachers with 0-10 years of teaching experience. Data from the responses of teachers with 0-10 years of teaching experience in School A and School B provided a composite score for both buildings. The composite scores were used to compare the attitudes of teachers 0-10 years of teaching experience in an older building with the attitudes of teachers with 0-10 years of teaching experience in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between the mean teacher response scores of teachers with 0-10 years of teaching experience with School A and School B.

Data from the MCAP were used to compare the attitudes of teachers with ten or more years of teaching experience. Data from the responses of teachers with ten or more years of teaching experience in School A and School B provided a composite score for both buildings. Composite scores were used to compare the attitudes of teachers with ten or more years of teaching experience in an older building with the attitudes of teachers with ten or more years of teaching experience in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between the mean teacher response scores of teachers with ten or more years of teaching experience with School A and School B.

Data from the MCAP were used to compare the attitudes of teachers in grades 2-3. Data from the responses of teachers in grades 2-3 in School A and School B provided a composite score for both buildings. Composite scores were used to compare the attitudes of teachers in grades 2-3 in an older building with the attitudes of teachers in grades 2-3 in a newer building,

represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between mean teacher response scores of teachers in grades 2-3 with School A and School B.

Data from the MCAP were used to compare the attitudes of teachers in grades 4-5. Data from the responses of teachers in grades 4-5 in School A and School B provided a composite score for both buildings. Composite scores were used to compare the attitudes of teachers in grades 4-5 in an older building with the attitudes of teachers in grades 4-5 in a newer building, represented by School A and School B. Independent sample t-tests were used to determine if significant differences existed between mean teacher response scores of the teachers in grades 4-5 with School A and School B.

Further analysis of the data by adding demographic information made the study more robust and added to the limited field of study. The demographic information provided more data about the attitudes of teachers by subcategories. These data indicated how teachers felt beyond those stated in the research questions. Responses to items in questions 44-48 were used for analysis of responses to the first three sections of the MCAP instrument.

Table 3 explains the components of the MCAP instrument and what data were disaggregated for the study. The left hand column indicates sections of the MCAP instrument that were scored. The right hand column indicates the comparisons of teacher responses in an older building School A to a newer building School B.

Table 3

Comparison of Variables for the My Classroom Assessment Protocol Instrument (MCAP)

Scores	School A (Older Building) & School B (Newer Building)
Composite	
Classroom Assessment	
Attitudinal Assessment	
Student Learning	
Male Teachers	
Female Teachers	
Teachers with Bachelor's Degree	
Teachers with Post-Bachelor's Degree	
Teachers with 0-10 years teaching experience	
Teachers with more than 10 years teaching experience	
Teachers who teach in grades 2-3	
Teachers who teach in grades 4-5	

Chapter 4

Findings

Introduction

Chapter 4 presents the results of data collected from the population of respondents in this study (46 teachers and 2 principals). The focus of this study was to determine if there was a significant relationship between school facility conditions and teacher attitudes. The chapter is broken down into 13 sections. In each section the 13 variables are analyzed by comparing the composite scores of School A and School B, and by comparing the means of each school by variable. An Independent Sample t-test was completed for each variable and whether or not there was a significant difference in the mean scores of teachers with School A and School B is reported.

Data Analysis

Total composite scores for building conditions were determined by coding responses to the CAPE instrument. Responses to the CAPE were coded so that a higher response choice to a question would always indicate a more desirable condition present in the building. Coded responses were entered into SPSS. Analysis of the data determined if the principal's responses presented significant differences in the condition of the buildings during the 2011-2012 academic school year. An explanation of the findings follows each set of tables.

Composite scores for teacher attitudes were determined by coding teacher responses to the MCAP instrument. Coded and re-coded teacher responses were entered into SPSS. Questions number 5, 6, 14, 16, 18, 20, 22, 24, 27, 28, 29, 30, 31, 32, 33, 34, 38, and 39 were re-coded so that a higher teacher response choice to a question would always indicate a more positive teacher attitude. Analysis of the data determined if the responses presented significant

differences in the attitudes of teachers in School A and School B during the 2011-2012 academic school year. A Cronbach's Alpha was run on the MCAP instrument that indicated a score of .955, which suggests that the items on the MCAP have a relatively high internal consistency.

CAPE. This section presents data concerning the physical condition of School A (older building) and the physical condition of School B (newer building) during the 2011-2012 academic school year. There were 32 questions on the CAPE instrument of which 27 were coded, entered into SPSS and analyzed. The composite score for School A was 57, with a mean of 2.1111. The composite score for School B was 82, with a mean of 3.0370. An independent sample t-test was conducted to analyze the responses of the principals in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that there is a statistical difference between the two means.

The principal of School A responded to question 29 on the CAPE, How would you rate the overall condition of your school, taking in to consideration all building classroom, and technology characteristics, as Needs Improvement. The principal of School B responded to question 29 on the CAPE, How would you rate the overall condition of your school, taking in to consideration all building classroom, and technology characteristics, as being in Very Good condition. Table 4.1 displays findings that focused on a comparison of the mean responses of principals for School A and School B during the 2011-2012 academic school year.

Table 4.1

A Comparison of the Mean Responses of Principals on the CAPE Assessment of Buildings for School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	57	2.1111	.763	.001*
School B	82	3.0370		

*Significance – $p<.05$

In Table 4.1 the *p* value of (.001*) indicates that there is a significant difference between the mean responses of principals with School A and School B on the CAPE instrument. School B has a higher mean than School A, which would indicate that more desirable conditions are present in School B than in School A.

MCAP Total Composite. This section presents data concerning the attitudes of teachers in School A (older building) and the attitudes of teachers in School B (newer building) during the 2011-2012 academic school year. There were 43 total questions on the MCAP instrument that were coded, entered into SPSS and analyzed. The Total Composite score for teacher responses in School A was 1522, with a mean of 84.5556. The Total Composite score for teacher responses in School B was 3363, with a mean of 120.1071.

An independent sample t-test was conducted to analyze the Total Composite responses of teachers in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 36 points between the mean of teacher response scores with School A and School B. Table 4.2 displays findings that focused on

a comparison of mean Total Composite scores in School A and School B during the 2011-2012 academic school year.

Table 4.2

A Comparison of Mean Total Composite Scores of Teachers in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	1522	84.5556	.014	.000*
School B	3363	120.1071		

*Significance – $p<.05$

In Table 4.2, the *p* value of (.000*) indicates that there is a significant difference between the mean total composite scores of teachers with School A and School B. School B has a higher mean than School A, which would indicate that teachers in School B have a better overall attitude about their classrooms physical environment and its influence on student learning than do teachers in School A.

MCAP Classroom Assessment. This section presents data concerning how teachers felt about the physical nature of their classroom in School A (older building) and how teachers felt about the physical nature of their classroom in School B (newer building) during the 2011-2012 academic school year. There were 17 questions on the Classroom Assessment section of the MCAP instrument which were coded, entered into SPSS and analyzed. Composite scores for teacher responses on the Classroom Assessment section of the CAPE for School A were 586, with a mean of 32.556. The composite scores for teacher responses on the Classroom Assessment section of the MCAP for School B were 1366, with a mean of 48.7857.

An independent sample t-test was conducted to analyze the Classroom Assessment teacher response scores in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 16 points between the mean of teacher responses on the Classroom Assessment section of the MCAP with School A and School B. Table 4.3 displays findings that focused on a comparison of the Classroom Assessment mean in School A and School B during the 2011-2012 academic school year.

Table 4.3

A Comparison of Mean Classroom Assessment Scores of teachers in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	586	32.5556	.008	.000*
School B	1366	48.7857		

*Significance – $p<.05$

In Table 4.3, the *p* value of (.000*) indicates that there is a significant difference between the mean classroom assessment attitudinal scores with School A and School B. School B has a higher mean than School A, which would indicate that teachers in School B have a better attitude about their classrooms physical condition than do teachers in School A.

MCAP Attitudinal Assessment. This section presents data concerning how the physical conditions of the classroom made teachers feel in School A (older building) and how the physical conditions of the classroom made teachers feel in School B (newer building) during the 2011-2012 academic school year. There were 14 questions on the Attitudinal Assessment section of the MCAP instrument which were coded, entered into SPSS and analyzed. The

Attitudinal Assessment teacher composite score for School A was 515, with a mean of 28.6111. The Attitudinal Assessment teacher composite score for School B was 1140, with a mean of 40.7143.

An independent sample t-test was conducted to analyze the Attitudinal Assessment scores in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicated that there was a difference of 12 points between the mean of teacher responses on the Attitudinal Assessment section of the MCAP with School A and School B. Table 4.4 displays findings that focused on a comparison of the Attitudinal Assessment mean in School A and School B during the 2011-2012 academic school year.

Table 4.4

A Comparison of Mean Attitudinal Assessment Scores of teachers in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	515	28.6111	.025	.000*
School B	1140	40.7143		

*Significance – $p<.05$

In Table 4.4, the *p* value of (.000*) indicates that there is a significant difference between the mean attitudinal teacher response scores with School A and School B. School B has a higher mean than School A, which would indicate that teachers in School B have a better attitude about how their classrooms makes them feel, than teachers in School A.

MCAP Student Learning Assessment. This section presents data concerning teacher attitudes about the physical condition of the classroom and how it affects student learning in School A (older building) and teacher attitudes about the physical condition of the classroom and how it affects student learning in School B (newer building) during the 2011-2012 academic school year. There were 11 questions on the Student Learning Assessment section of the MCAP instrument which were coded, entered into SPSS and analyzed. The Student Learning Assessment composite score for School A was 418, with a mean of 23.2222. The Student Learning Assessment composite score for School B was 857, with a mean of 30.6071. An independent sample t-test was conducted to analyze the Student Learning Assessment teacher response scores in both School A and School B The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicated that there was a seven point difference between the mean of Student Learning Assessment teacher response scores with School A and School B. Table 4.5 displays findings that focused on a comparison of the Student Learning Assessment mean in School A and School B during the 2011-2012 academic school year.

Table 4.5

A Comparison of Mean Student Learning Assessment Scores of teachers in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	418	23.2222	.073	.000*
School B	857	30.6071		

*Significance – $p<.05$

In Table 4.5, the *p* value of (.000*) indicates that there is significant difference between the mean student learning assessment scores with School A and School B. School B has a higher mean than School A, which would indicate that teachers in School B have a better attitude about their classroom and its effect on Student Learning than teachers in School A.

Male Teachers. This section presents data concerning the attitudes of male teachers in School A (older building) and the attitudes of male teachers in School B (newer building) during the 2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were two male teachers in School A and four male teachers in School B. The composite score for male teacher responses in School A was 166, with a mean of 83.0000. The composite score for male teacher responses in School B was 513, with a mean of 128.2500.

An independent sample t-test was conducted to analyze the total MCAP scores for male teacher responses in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a 45 point difference between the mean of Male teacher response scores with School A and School B. Table 4.6 displays findings that focused on a comparison of mean total MCAP scores for male teachers in School A and School B during the 2011-2012 academic school year.

Table 4.6

A Comparison of Mean Total Composite Scores of Male Teachers in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	166	83.0000	.055	.004*
School B	513	128.2500		

*Significance – $p<.05$

In Table 4.6, The *p* value of (.004*) indicates that there is a significant difference between the mean of male teacher attitudinal scores with School A and School B. School B has a higher mean than School A, which would indicate that male teachers in School B have an overall better attitude about their classroom than male teachers in School A.

Female Teachers. This section presents data concerning the attitudes of female teachers in School A (older building) and the attitudes of female teachers in School B (newer building) during the 2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were 16 female teachers in School A and 24 female teachers in School B. The composite score for female teacher responses in School A was 1356, with a mean of 84.7500. The composite score for female teacher responses in School B was 2850, with a mean of 118.7500.

An independent sample t-test was conducted to analyze the total MCAP scores for female teachers in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 34 points between the mean of female teacher responses with School A and School B. Table 4.7 displays findings that focused

on the mean MCAP scores for female teacher responses in School A and School B during the 2011-2012 academic school year.

Table 4.7

A Comparison of Mean Composite Scores of Female teachers in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	1356	118.7500	.002	.000*
School B	2850	84.7500		

*Significance – $p<.05$

In Table 4.7, the *p* value of (.004*) indicates that there is a significant difference between the mean female teacher response scores with School A and School B. School B has a higher mean than School A, which would indicate that female teachers in School B have a better overall attitude about their classroom than female teachers in School A.

Bachelor's Degree. This section presents data concerning the attitudes of teachers who have earned a Bachelor's Degree in School A (older building) and the attitudes of teachers who have earned a Bachelor's Degree in School B (newer building) during the 2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were six teachers who had earned a Bachelor's Degree in School A and 13 teachers who had earned a Bachelor's Degree in School B. The composite score for teachers who had earned a Bachelor's Degree in School A was 479, with a mean of 79.8333. The composite score for teachers who had earned a Bachelor's Degree in School B was 1605, with a mean of 123.4615.

An independent sample t-test was conducted to analyze the MCAP scores of teachers who had earned a Bachelor's Degree in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 44 points between the mean of teacher response scores with Bachelor's Degree with School A and School B. Table 4.8 displays findings that focused on a comparison of mean MCAP scores of teachers who had earned a Bachelor's Degree in School A and School B during the 2011-2012 academic school year.

Table 4.8

A Comparison of Mean Scores of Teachers Who Had Earned a Bachelor's Degree in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	479	79.8333	.609	.001*
School B	1605	123.4615		

*Significance – $p<.05$

In Table 4.8, the *p* value of (.001*) indicates that there is a significant difference of mean Bachelor's Degree teacher scores with School A and School B. School B has a higher mean than School A, which would indicate that teachers who had earned a Bachelor's Degree in School B have an overall better attitude about their classroom, than teachers who had earned a Bachelor's Degree in School A.

Post Bachelor's Degree. This section presents data concerning the attitudes of teachers who had earned a Post Bachelor's Degree in School A (older building) and the attitudes of teachers who had earned a Post Bachelor's Degree in School B (newer building) during the

2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were 12 teachers who had earned a Post Bachelor's Degree in School A and 15 teachers who had earned a Post Bachelor's Degree in School B. The composite score for teachers who had earned a Post Bachelor's Degree in School A was 1043, with a mean of 86.9167. The composite score for teachers who had earned a Post Bachelor's Degree in School B was 1758, with a mean of 117.2000.

An independent sample t-test was conducted to analyze the MCAP scores of teachers who had earned a Post Bachelor's Degree in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 30 points between the mean of teachers with a Post Bachelor's Degree responses, with School A and School B. Table 4.9 displays findings that focused on a comparison of mean scores of teachers who had earned a Post Bachelor's Degree in School A and School B during the 2011-2012 academic school year.

Table 4.9

A Comparison of Mean Scores of Teachers Who Had Earned a Post Bachelor's Degree in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	1043	86.9167	.010	.000*
School B	1758	117.2000		

*Significance – $p<.05$

In Table 4.9, the *p* value of (.000*) indicates that there is a significant difference of mean Post Bachelor's attitudinal scores with School A and School B. School B has a higher mean than

School A, which would indicate that teachers who had earned a Post Bachelor's Degree in School B have an overall better attitude about their classroom, than teachers who had earned a Post Bachelor's Degree in School A

Teachers with 0-10 Years of Teaching Experience. This section presents data concerning the attitudes of teachers who had 0-10 years of teaching experience in School A (older building) and the attitudes of teachers who had 0-10 years of teaching experience in School B (newer building) during the 2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were six teachers who had 0-10 years of teaching experience in School A and 14 teachers who had 0-10 years of teaching experience in School B. The composite score for teachers who had 0-10 years of teaching experience in School A was 541, with a mean of 90.1667. The composite score for teachers who had 0-10 years teaching experience in School B was 1705, with a mean of 121.7857.

An independent sample t-test was conducted to analyze the MCAP scores of teachers who had 0-10 years teaching experience in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 32 points between the mean of teachers who had 0-10 years teaching experience with School A and School B. Table 4.10 displays findings that focused on a comparison of mean scores of teachers who had 0-10 years of teaching experience in School A and School B during the 2011-2012 academic school year.

Table 4.10

A Comparison of Mean Scores for Teachers Who Had 0-10 Years of Teaching Experience for School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	541	90.1667	.405	.003*
School B	1705	121.7857		

*Significance – $p<.05$

In Table 4.10, the *p* value of (.003*) indicates that there is a significant difference between the mean scores of teachers with 0-10 years of teaching experience with School A and School B. School B has a higher mean than School A, which would indicate that teachers who had 0-10 years of teaching experience in School B have an overall better attitude about their classroom, than teachers who had 0-10 years of teaching experience in School A.

Teachers with More Than Ten Years of Teaching Experience. This section presents data concerning the attitudes of teachers who had more than ten years of teaching experience in School A (older building) and the attitudes of teachers who had more than ten years of teaching experience in School B (newer building) during the 2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were 12 teachers who had more than ten years of teaching experience in School A and 14 teachers who had more than ten years of teaching experience in School B. The composite score for teachers who had more than ten years of teaching experience in School A was 981, with a mean of 81.7500. The composite score for teachers who had more than ten years of teaching experience in School B was 1658, with a mean of 118.4286.

An independent sample t-test was conducted to analyze the MCAP scores of teachers who had more than ten years of teaching experience in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 37 points between the mean of teachers who had more than ten years of teaching experience with School A and School B. Table 4.11 displays findings that focused on a comparison of mean scores of teachers who had more than ten years of teaching experience in School A and School B during the 2011-2012 academic school year.

Table 4.11

A Comparison of Mean Scores of Teachers Who Had Ten Years of Teaching Experience in School A and School B during the 2011-2012 Academic School Year

School	Total Score	Mean	Sig.	Sig. (2-tailed)
School A	981	81.7500	.018	.000*
School B	1658	118.4286		

*Significance – $p<.05$

In Table 4.11, the *p* value of (.000*) indicates that there is a significant difference between the mean scores of teachers with ten or more years of teaching experience with School A and School B. School B has a higher mean than School A, which would indicate that teachers who had ten or more years of teaching experience in School B have an overall better attitude about their classroom, than teachers who had ten or more years of teaching experience in School A.

Teachers Who Taught in Grades 2-3. This section presents data concerning the attitudes of teachers who taught in grades 2-3 in School A (older building) and the attitudes of teachers who taught in grades 2-3 in School B (newer building) during the 2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were 11 teachers who taught in grades 2-3 in School A and 16 teachers who taught in grades 2-3 in School B. The composite score for teachers who taught in grades 2-3 in School A was 884, with a mean of 80.3636. The composite score for teachers who taught in grades 2-3 in School B was 1898, with a mean of 118.6250.

An independent sample t-test was conducted to analyze the MCAP scores of teachers who taught in grades 2-3 in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 38 points between the mean of teachers who taught in grades 2-3 with School A and School B. Table 4.12 displays findings that focused on a comparison of mean scores of teachers who taught in grades 2-3 in School A and School B during the 2011-2012 academic school year.

Table 4.12

A Comparison of Mean Scores of Teachers Who Taught in Grades 2-3 in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	884	80.3636	.013	.000*
School B	1898	118.6250		

*Significance – $p<.05$

In Table 4.12, the *p* value of (.000*) indicates that there is a significant difference between the mean scores of teachers who taught in grades 2-3 with School A and School B. School B has a higher mean than School A, which would indicate that teachers who had taught in grades 2-3 in School B have an overall better attitude about their classroom, than teachers who taught in grades 2-3 in School A.

Teachers Who Taught in Grades 4-5. This section presents data concerning the attitudes of teachers who taught in grades 4-5 in School A (older building) and the attitudes of teachers who taught in grades 4-5 in School B (newer building) during the 2011-2012 academic school year. There were 43 questions on the MCAP instrument which were coded, entered into SPSS and analyzed. There were 7 teachers who taught in grades 4-5 in School A and 12 teachers who taught in grades 4-5 in School B. The composite score for teachers who taught in grades 4-5 in School A was 638, with a mean of 91.1429. The composite score for teachers who taught in grades 4-5 in School B was 1465, with a mean of 122.0833.

An independent sample t-test was conducted to analyze the MCAP scores of teachers who taught in grades 4-5 in both School A and School B. The *p* value or Sig. (2-tailed) on the independent sample t-test indicates a rejection of the null and concludes that the two means differ significantly. The findings indicate that there was a difference of 31 points between the mean of teachers who taught in grades 4-5 with School A and School B. Table 4.13 displays findings that focused on a comparison of mean scores of teachers who taught in grades 4-5 in School A and School B during the 2011-2012 academic school year.

Table 4.13

A Comparison of Mean Scores of Teachers Who Taught in Grades 4-5 in School A and School B during the 2011-2012 Academic School Year

School	Composite Score	Mean	Sig.	Sig. (2-tailed)
School A	638	91.1429	.509	.001*
School B	1465	122.0833		

*Significance – $p<.05$

In Table 4.13, the *p* value of (.001*) indicates that there is a significant difference between the mean scores of teachers who taught in grades 4-5 with School A and School B. School B has a higher mean than School A, which would indicate that teachers who taught in grades 4-5 in School B have an overall better attitude about their classroom, than teachers who taught in grades 4-5 in School A.

Table 4.14

A Comparison of Mean Differences in School A and School B

Variable	School A (Mean)	School B (Mean)	Mean Difference
CAPE	2.1111	3.0370	.9259
(MCAP) Total Composite	84.5556	120.1071	35.5515
Classroom Assessment	32.5556	48.7857	16.2301
Attitudinal Assessment	28.6111	40.7143	12.1031
Student Learning Assessment	23.2222	30.6071	7.3849
Male Teachers	83.0000	128.2500	45.2500
Female Teachers	84.7500	118.7500	34.0000
Teachers who earned a Bachelor's Degree	79.8333	123.4615	43.6282
Teachers who earned a Post Bachelor's Degree	86.9167	117.2000	30.2833
0-10 Years of Teaching Experience	90.1667	121.7857	31.6190
Ten or more Years of Teaching Experience	81.4286	118.4286	36.6785
Teachers who taught in Grades 2-3	80.3636	118.6250	38.2613
Teachers who taught in Grades 4-5	91.1429	122.0833	30.9404

Table 4.14 illustrates the mean difference of variables between School A and School B. The greatest differences in variables occurred between male teachers with a mean difference of 45.2500. Male teachers were followed by teachers with a Bachelor's Degree who had a mean difference of 43.6282. The third largest mean difference was teachers who taught in grades 2-3,

where the mean difference was 38.2618. The smallest difference in mean between School A and School B occurred in Student Learning Assessment where the difference in mean was 7.3849. Student Learning Assessment was followed by Attitudinal Assessment where the mean difference was 12.1031.The third smallest mean difference was Classroom Assessment where the mean difference was 16.2301.

Chapter 5

Summary of Findings

Introduction

The purpose of chapter five is to address the research question, is there a significant relationship between school facility conditions and teacher attitudes? This chapter presents a summary of findings, and a conclusion based on the findings of the research. Chapter five concludes with implications and recommendations for further study. The population of this study was teachers who taught grades 2-5 in two schools located in the Commonwealth of Virginia. The study compared teacher attitudes in an older building (School A) to teacher attitudes in a newer building (School B). The My Classroom Assessment Protocol (MCAP) instrument was used to measure teacher attitudes in both buildings. The CAPE assessment instrument was used by principals to determine building conditions.

Summary of Findings

Two elementary school buildings were used in this study to explore the possible relationship between school facility conditions and teacher attitudes. The attitudes of teachers in both schools were analyzed over a one year period during the 2011-2012 school year. A summary of findings are as follows:

1. The CAPE instrument was used to determine the condition of both buildings. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of principals. Question 29 on the CAPE asked the principals, How would you rate the overall condition of your school, taking into consideration all building classroom, and technology characteristics? The principal of School A responded to question 29 as Needs

Improvement. The principal of School B responded to question 29 as being in Very Good condition. Analysis of the CAPE revealed that there was a difference of .9259 in the mean response of principals in School A and School B. A Comparison of the Mean Responses of Principals on the CAPE show a significant difference between the mean response of principals with a *p* value of (.001) indicating that better conditions were present in School B than in School A.

2. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of teachers in School A and School B. A Total Composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of teachers with School A and School B. A comparison of the mean responses of teachers for the Total Composite of the MCAP indicated a strong statistical difference between the mean response of teachers with School A and School B. A *p* value of (.000) suggested that teachers in School B had a better overall attitude about their school buildings physical environment than did teachers in School A.
3. The MCAP instrument was used to determine whether the classrooms physical environment influenced the attitudes of teachers in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of teachers with School A and School B. A comparison of the mean responses of teachers for the Classroom Assessment section of the MCAP indicated a strong statistical difference between the mean response of teachers with School A and School B. A *p* value

of (.000) suggested that teachers in School B had a better attitude about their classrooms physical environment than did teachers in School A.

4. The MCAP instrument was used to determine whether classroom conditions influenced teacher attitudes in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of teachers with School A and School B. A comparison of the mean responses of teachers for the Attitudinal Assessment section of the MCAP indicated a strong statistical difference between the mean response of teachers with School A and School B. A *p* value of (.000) suggested that teachers in School B had a better attitude about how their classroom made them feel than did teachers in School A. Teacher response scores indicated that classroom conditions in the older building made it difficult for teachers to teach effectively, and did cause some health problems.
5. The MCAP instrument was used to determine whether the physical condition of classrooms, influenced teacher attitudes about its affect on student learning in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of teachers with School A and School B. A comparison of the mean responses of teachers for the Student Learning section of the MCAP indicated a strong statistical difference between the mean response of teachers with School A and School B. A *p* value of (.000) suggested that teachers in School B had a better attitude about the influence of their classrooms physical condition on student learning than did teachers in School A. Teacher response scores indicated that classroom conditions in the older

building caused students periodic health problems, and made it difficult for teachers to teach effectively.

6. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of male teachers in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of male teachers with School A and School B. A comparison of the mean responses of male teachers indicated a strong statistical difference between the mean response of male teachers with School A and School B. A *p* value of (.000) suggested that male teachers in School B had a better attitude about their schools physical environment than did male teachers in School A.
7. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of female teachers in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of female teachers with School A and School B. A comparison of the mean responses of female teachers indicated a strong statistical difference between the mean response of female teachers with School A and School B. A *p* value of (.000) suggested that female teachers in School B had a better attitude about their schools physical environment than did female teachers in School A.
8. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of teachers who earned a Bachelor's degree in School A and School B. A composite score was derived for both buildings and the means of School A

and School B were compared to ascertain if there was a significant difference in the mean responses of teachers who earned a Bachelor's degree with School A and School B. A comparison of the mean responses of teachers who earned a Bachelor's degree indicated a strong statistical difference between the mean response teachers who earned a Bachelor's degree with School A and School B. A *p* value of (.001) suggested that teachers who earned a Bachelor's degree in School B had a better attitude about their schools physical environment than did teachers who earned a Bachelor's degree in School A.

9. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of teachers who earned a Post Bachelor's degree in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of teachers who earned a Post Bachelor's degree with School A and School B. A comparison of the mean responses of teachers who earned a Post Bachelor's degree indicated a strong statistical difference between the mean response teachers who earned a Post Bachelor's degree with School A and School B. A *p* value of (.000) suggested that teachers who earned a Post Bachelor's degree in School B had a better attitude about their schools physical environment than did teachers who earned a Post Bachelor's degree in School A.
10. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of teachers who had 0-10 years of teaching experience in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference

in the mean responses of teachers who had 0-10 years of teaching experience with School A and School B. A comparison of the mean responses of teachers who had 0-10 years of teaching experience indicated a strong statistical difference between the mean response of teachers who had 0-10 years of teaching experience with School A and School B. A *p* value of (.003) suggested that teachers who had 0-10 years of teaching experience in School B had a better attitude about their schools physical environment than did teachers who had 0-10 years of teaching experience in School A.

11. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of teachers who had ten or more years of teaching experience in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of teachers who had ten or more years of teaching experience with School A and School B. A comparison of the mean responses of teachers who had ten or more years of teaching experience indicated a strong statistical difference between the mean response of teachers who had ten or more years of teaching experience with School A and School B. A *p* value of (.000) suggested that teachers who had ten or more years of teaching experience in School B had a better attitude about their schools physical environment than did teachers who had ten or more years of teaching experience in School A.
12. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of teachers who taught in grades 2-3 in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses

of teachers who taught in grades 2-3 with School A and School B. A comparison of the mean responses of teachers who taught in grades 2-3 indicated a strong statistical difference between the mean response of teachers who taught in grades 2-3 with School A and School B. A *p* value of (.000) suggested that teachers who taught in grades 2-3 in School B had a better attitude about their schools physical environment than did teachers who taught in grades 2-3 in School A.

13. The MCAP instrument was used to determine whether school building conditions influenced the attitudes of teachers who taught in grades 4-5 in School A and School B. A composite score was derived for both buildings and the means of School A and School B were compared to ascertain if there was a significant difference in the mean responses of teachers who taught in grades 4-5 with School A and School B. A comparison of the mean responses of teachers who taught in grades 2-3 indicated a strong statistical difference between the mean response of teachers who taught in grades 4-5 with School A and School B. A *p* value of (.001) suggested that teachers who taught in grades 4-5 in School B had a better attitude about their schools physical environment than did teachers who taught in grades 4-5 in School A.

The findings in this study were strong and revealed statistically significant differences in all variables analyzed with School A and School B for 2011-2012 academic school year. As a means of recapitulation, t-tests were conducted to analyze the teacher response scores in both School A and School B. The threshold for statistical significance used in this study was $p<.05$. Of the variables analyzed for this study nine had a *p* value of .000. Two variables had a *p* value of .001, teachers who earned a Bachelor's degree and teachers who taught in grades 4-5. Only one variable had a *p* value greater than .001, and that was teachers who had 0-10 years of

teaching experience with a *p* value of .003. Table 5 was designed to show the areas of significant difference between the variables in School A and School B.

Table 5

A Summary of the Significance of Mean Response Scores of Teachers with School A and School B during the 2011-2012 Academic School Year

VARIABLE	p VALUE	SIGNIFICANCE
(MCAP) Total Composite	.000	Significant difference between mean scores
Classroom Assessment	.000	Significant difference between mean scores
Attitudinal Assessment	.000	Significant difference between mean scores
Student Learning Assessment	.000	Significant difference between mean scores
Male Teachers	.000	Significant difference between mean scores
Female Teachers	.000	Significant difference between mean scores
Teachers who earned a Bachelor's degree	.001	Significant difference between mean scores
Teachers who earned a Post bachelor's degree	.000	Significant difference between mean scores
0-10 years of teaching experience	.003	Significant difference between mean scores
Ten or more years of teaching experience	.000	Significant difference between mean scores
Teachers who taught in grades 2-3	.000	Significant difference between mean scores
Teachers who taught in grades 4-5	.001	Significant difference between mean scores

* Significance-$p<.05$

Conclusion

The purpose of this study was to determine whether there is a significant relationship between school facility conditions and teachers attitudes. The findings in this study indicate that there is a positive relationship between building conditions and teacher attitudes. Analysis of the CAPE instrument indicated that School B (newer school) had more building components present that related to positive student achievement than did School A (older school). The schools were rated by their principals as Needs Improvement School A (older school) or Very Good Condition, School B (newer school). Further analysis of the MCAP instrument revealed that teachers in School B (newer school) had a statistically significant better overall attitude about the condition of their classroom and its influence on student learning than did teachers in School A (older school) where more desirable building conditions were not present.

In School A where the principal's actual appraisal of the school building was more negative (Needs Improvement) the teachers' response on the MCAP instrument supported the principal's evaluation of the buildings condition. In School B where the principal's actual appraisal of the building was more positive (Very Good Condition) the teachers' response on the MCAP instrument supported the principal's evaluation of the buildings condition. Upon reviewing the data a pattern of relationships were found.

A significant statistical difference in teacher response scores were found with the newer building and the older building, which indicated that teachers in the newer school building had a better attitude towards their working environment than did teachers in the older school building. The data also revealed that classroom conditions in the newer building made teachers feel better about themselves than did their counterparts in the older building who felt that their buildings classroom conditions made it harder for them to come to work every morning. Data analysis

revealed that teachers in the older building felt that their classrooms condition caused them problems, and did not enhance their teaching. Teacher response scores in the older building indicated that classroom conditions caused them to have more emotional/mental problems than did teachers in the newer building. The data also indicated that teachers in the newer building had a better attitude about their classroom and its influence on student learning than did teachers in the older building.

Discussion

The null hypothesis of this study was that there would be no relationship between school facility conditions and teacher attitudes. Tests were conducted to determine if there were significant differences found between building conditions and teacher attitudes in an older and newer building. There was strong evidence that there is a relationship between school facility conditions and teacher attitudes. The study provided statistical results that addressed the research questions that served as the basis for this investigation. Consistently the comparison of mean teacher responses among the three sections of the MCAP instrument and the eight variables of the study revealed that teacher responses in School B (newer building) had a higher mean than teacher responses in School A (older building). Scores for teacher attitudes were determined by coding teacher responses to the MCAP instrument. Coded and re-coded teacher responses were entered into SPSS. Eighteen questions on the MCAP instrument were re-coded so that a higher numerical teacher response choice to a question would always indicate a more positive teacher attitude. Although the size of the population group in this study was smaller than the population of previous studies, the findings from the analyses were very strong.

Lemasters (1997) stated that, "building conditions influence the attitudes of both students and teachers independently of one another" (Lemasters, 1997). However, teacher attitudes

clearly influenced the learning environment. Therefore any negative or positive influence of the physical environment is compounded. Earthman and Lemasters (2009) investigated teacher perceptions of the conditions of their classrooms and how the condition of the building influenced their work. The population for that study consisted of the teachers in schools that were identified in the Crook (2006) study. Crook (2006) identified 11 high schools in which the respective principals stated the buildings were unsatisfactory. These buildings served as the population of their study and were matched with a like number of schools in which the principals rated their respective schools as being in satisfactory condition. The attitudes of the teachers in the two groups of school buildings were compared through the use of an attitudinal scale developed for the project: the My Classroom Appraisal Protocol© (Earthman, 2006) developed by the researchers. There had been other studies concerning teachers' perceptions about their classrooms, but this study was one of the first to compare the perceptions of teachers in satisfactory buildings and those in unsatisfactory school buildings. The findings indicated that building conditions can so influence teachers that there was a high rate of absenteeism and a great loss of teachers to the profession.

The present study was able to validate some of the findings of Earthman and Lemasters (2009) by exploring the influence of building conditions on teacher attitudes. This study found significant differences between the overall attitudes of teachers in an older building and a newer building when compared to each other. The MCAP instrument which was used in both studies to measure the attitudes of teachers revealed a mean difference in this study of 35.5515 for the Total Composite between the teachers of the older building (School A) and the newer building (School B). These findings were significant and supported the research of Earthman and Lemasters (2009) with even stronger results, indicating that teacher attitudes were more positive

in facilities where the physical condition of the building was in better condition. This study also found the My Classroom Assessment Protocol (MCAP) instrument to be a valid tool in measuring the attitudes of teachers. Although the sample size of this study was small the findings were significant in the comparison of every variable in this study between School A and School B.

After surveying middle school teachers in Virginia, Uline and Tschannen-Moran (2008) found that teachers in poor quality buildings show less enthusiasm for their jobs and are less likely to go the extra mile with students to support their learning. Data from this study corroborated what Uline and Tschannen-Moran (2008) found with middle school teachers in Virginia.

When comparing teacher attitudes in both buildings of this study, there was a mean difference of 12.1031 between the building rated as needing improvement (School A) and the building rated as being in very good condition (School B) on the Attitudinal Assessment section of the MCAP instrument. Teachers in this study who taught in a building (School A) rated as needing improvement indicated that the conditions of their classroom made them not want to come to work in the morning, and that they were dissatisfied in the classroom in which they taught. Teachers in the same building (School A) also indicated that the conditions of their classroom did not make them feel happy when they were in the room.

Schneider (2003) also found that the poor conditions of school facilities made it difficult for teachers to teach their students or provide an adequate education to their students, which affected teachers' health and safety. These poor conditions caused teachers to state that they would leave their schools or leave the teaching profession. Keller (2003) pointed out that

teachers were influenced by the physical conditions within the workplace, just as students' behaviors and attitudes were impacted by their physical surroundings.

This study supported the previous research that poor conditions within a building negatively affect a teacher's attitude of how the classroom influences student learning. In this study teachers in the older building (School A) indicated that classroom conditions negatively affected their students ability to learn, had an impact on student happiness, caused some students periodic health problems, and the noise from outside the classroom hindered student learning. The findings in this study concerning student learning were significant in comparing teacher attitudes in a newer building (School A) and an older building (School B). It is interesting that mean teacher response scores in both buildings on the Student Learning section of the MCAP were lower in comparison to mean teacher response scores on the Classroom and Attitudinal Assessment sections of the MCAP.

Buckley, Schneider, and Shang (2004) found that while many factors affected teacher retention, most teaching took place in a specific physical location, and the quality of that location affected the ability of teachers to teach, teacher morale, and the very health and safety of teachers. The findings of this study also supported the findings in the research of Buckley, Schneider, and Shang (2004) as well as others. In this study, teachers who taught in the older building (School A) had significantly poorer attitudes about the conditions of their classroom than did teachers in the newer building (School B). Teachers in School A (older building) indicated that their classrooms were not in good locations, and that the condition of their classrooms reflected the lack of painting, and the age of the building overall.

Teachers in School A (older building) also indicated that the condition of their classroom, caused them problems, did not enhance their ability to teach, and caused some periodic health

problems. Teachers also indicated that classroom conditions caused them to have some emotional/mental problems, and made them want to transfer to a different building within the division. While findings in this study indicated poor building conditions were factors in teachers wishing to transfer buildings within the district, it did not seem to be a factor in teachers wanting the leave the profession. There was a significant difference in the attitudes of teachers with School A (older building) and School B (newer building), which clearly supports the findings of previous research, that building conditions influence teacher attitudes towards leaving the workplace.

Ruszala (2008) investigated the relationship between the condition of school facilities and teacher satisfaction in the metropolitan school divisions of Virginia. Two survey instruments were used to answer her research questions, the CAPE and the Teacher Opinionaire of Physical Environments (TOPE), designed by Ruszala (2006) measured teacher satisfaction in relationship to specific school building conditions. Ruszala (2008) found moderate positive correlations between the CAPE and TOPE survey instruments results for age, paint, and light; a low positive correlation was found for thermal conditions. While this study found significant differences with mean teacher responses of School A (older building) and School B (newer building) on the Classroom Assessment section of the MCAP, anecdotal notes and teacher responses on Question one of the MCAP (I can easily control the temperature in my classroom) indicated that teachers in both School A (older building) and School B (newer building) felt that they had little ability to control thermal conditions in their classrooms. The response of teachers in this study would indicate that the ability to control the temperature in the classroom does influence teacher attitudes.

The present study provided an in depth look at the relationship between school facility conditions at two elementary schools in a school division in the Commonwealth of Virginia. By comparing teacher attitudes in an older building rated as Needs Improvement and teacher attitudes in a new building rated as being in Very Good Condition we see the influence that building conditions have on the attitudes of teachers and how they feel it influences the students' ability to learn within the classroom environment. The two schools in the study were selected to provide a contrast between an old and new building. The results of this study were strong and clearly supported previous research findings indicating a significant relationship between school building conditions and teachers' attitude about how those conditions affect student learning. The research also indicated that the condition of the classroom affects the attitudes of teachers towards their job.

Implications of Study

The study was limited because it focused on two elementary schools in a school division in the Commonwealth of Virginia. The findings did not represent all elementary schools in the Commonwealth of Virginia. Statistical analysis determined that there is a relationship between teacher attitudes and school facility conditions among schools that are classified as older and newer buildings. The findings in this study have implications for educators and school facility management.

1. School divisions need to earnestly monitor school facility conditions and make sure that there is an honest effort to keep classrooms clean and free of pests. Regular tests should be run on all HVAC, heating and cooling systems, particularly during the summer and winter months where temperature changes can be extreme. Custodians should be trained to recognize and remove graffiti immediately. With the rise of insurance costs for

teachers, school divisions would be wise to be preventative in their approach to school maintenance. Better maintained buildings results in fewer teachers out of the building because of sickness and health related issues caused by poor building conditions.

2. School divisions need to understand that the physical condition of a building also has a physical impact on students and teachers as well. Poor lighting and glare lead to eye strain, headaches, visual fatigue, tension, and frustration according to Leung, Chan and Wang (2006). A regular maintenance schedule that is monitored by the school division and which holds building administrators and custodial staffs accountable should be implemented in every school division. The maintenance schedule should address blown light bulbs, dirty or obstructed windows, dirty filters, broken or obsolete furniture, humidity, extreme cold or heat, and unpleasant smells.
3. School divisions should have open lines of communication with teachers about school building conditions and have an effective mechanism in place to deal with these problems and address them quickly. This will improve teacher morale by showing teachers that their comfort and well being are priority of the school division.
4. School divisions should where possible schedule activities that impair the teachers' ability to teach effectively during none instructional hours, such as mowing school grounds during instructional times. School divisions should retro-fit all classrooms with technology that is appropriate and conducive for student learning. Student survey should be provided for students to voice their concerns or comments that address their learning environment.

Recommendations for Further Study

This study was unique because it explored the relationship between building conditions and teacher attitudes in two elementary schools in a school division in the Commonwealth of Virginia. The schools were selected to contrast an older building and a newer building.

The following recommendations for further study are offered:

1. Conduct a state-wide study that would examine the relationship between school facility conditions and teacher attitudes at the elementary level. This study would consist of every elementary school in the Commonwealth of Virginia. The purpose of this study would be to determine if there is a relationship between school facility conditions and teacher attitudes across the Commonwealth of Virginia.
2. Conduct a study that would incorporate a qualitative element into the research. The study could use a mix method approach with qualitative inquires such as follow-up interviews with teachers that would strengthen the statistics gathered from the quantitative survey and analysis by providing more detailed information.
3. Conduct a state wide study that would compare teacher attitudes in metropolitan school divisions to teacher attitudes in rural school divisions. This would consist of elementary schools across the Commonwealth of Virginia. The purpose of this study would be to determine if there is a relationship between school facility conditions and teacher attitudes in metropolitan school divisions and rural school divisions. This study would also be important in looking at the influence of school size and location on teacher attitudes and comparing the results of teacher attitudes between schools in both settings.
4. Conduct a study that would explore the relationship between school facility conditions in charter schools and its influence on teacher attitudes. Most charter schools are housed in

buildings not meant for educational purposes or out of date buildings. This study would examine buildings that are purchased or leased by charter schools and its influence on teacher attitudes about how it affects student learning. This study would compare teacher attitudes in charter schools rated as unsatisfactory and charter schools rated as satisfactory to see if facility conditions influence teacher attitudes in charter schools. The results of this study could be used to help states create better avenues of funding for charter schools from the state and federal level. The results could also improve working conditions for teachers and students housed in these buildings.

5. Conduct a national study that would explore the influence school facility conditions have on teachers' physical and mental health. This study could be used to help school divisions across the nation look at what measures can be taken to lower health care costs for teachers, whereby taxpayer money could be saved. Healthier teachers would result in teachers who are at work more resulting in higher student achievement scores.

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Appendix A

MY CLASSROOM ASSESSMENT PROTOCOL

The purpose of this protocol is to find out how you feel about the classroom that you use to teach students. The physical space, which one uses to teach students, can make an important contribution to the teaching/learning process. The classroom space can help and hinder the efforts of every teacher and we would like to know how you think the classroom works or does not work for you. Please make certain you answer every question, because each item is important to provide a complete picture. If you wish to add any comments to the protocol or about the protocol itself, please do so at the end of the questions.

YOUR PRIVACY WILL BE MAINTAINED IN THIS SURVEY. ONLY GROUP RESPONSES WILL BE REPORTED. Thank you.

Please respond by placing an **"X"** in the appropriate space below the number that represents your feelings.

SD = Strongly Disagree with the statement **D= Disagree with the statement**

A = Agree with the statement **SA = Strongly Agree with the statement**

Classroom Assessment

	SD	D	A	SA
1. I can easily control the temperature in my classroom.	__	__	__	__
2. The air quality in my classroom is good.	__	__	__	__
3. The classroom is well lighted.	__	__	__	__
4. The equipment in the classroom is in good order and modern.	__	__	__	__
5. There is more graffiti in the school than I like.	__	__	__	__
6. The graffiti in the School Affects student's attitude.	__	__	__	__
7. There is sufficient wall writing surface (chalkboard\whiteboard)	__	__	__	__
8. The wall writing surface is in good condition.	__	__	__	__
9. There is sufficient space for computers in the classroom.	__	__	__	__
10. The physical attributes of my classroom are attractive.	__	__	__	__
11. My classroom is comfortable in winter months.	__	__	__	__
12. My classroom is comfortable in the fall months.	__	__	__	__
13. My classroom is comfortable in the spring months.	__	__	__	__
14. I would like to change the physical features of my classroom.	__	__	__	__
15. My school is in a very good location.	__	__	__	__
16. The ceiling in my classroom leaks during a rain storm.	__	__	__	__
17. My classroom is free of pests (mice, ants, roaches, etc.)	__	__	__	__

Attitudinal Assessment

The condition of my classroom …	**SD**	**D**	**A**	**SA**
18. …. causes me problems	__	__	__	__
19. …. makes me want to come to work every morning.	__	__	__	__
20. ….makes me want to leave teaching as a career.	__	__	__	__
21. ….is so inviting that I really feel good about the classroom.	__	__	__	__
22. ….makes me want to transfer to a different school in our system.	__	__	__	__
23. ….enhances my teaching.	__	__	__	__
24. ….makes it difficult for me to teach effectively.	__	__	__	__
25. ….makes me feel satisfied with the classroom in which I teach.	__	__	__	__
26. ….makes me feel happy when in the room.	__	__	__	__
27. ….causes some periodic health problems.	__	__	__	__
28. ….causes me to have some emotional/mental problems.	__	__	__	__
29. ….is not in a good location.	__	__	__	__
30. ….reflects the age of the building.	__	__	__	__
31. ….reflects lack of recent painting.				

Student Learning Assessment

	SD	**D**	**A**	**SA**
32. The noise level in the classroom hinders student learning.	__	__	__	__
33. The outside noise hinders student learning.	__	__	__	__
34. There are more students in my classroom than what should be.	__	__	__	__
35. There is sufficient wall space (tack board) to display student's work.	__	__	__	__
36. There is sufficient wall space in the classroom for student activities.	__	__	__	__
37. There are appropriate spaces for student interest centers.	__	__	__	__
38. My classroom hinders the students from learning effectively.	__	__	__	__
39. My classroom causes the students some periodic health problems.	__	__	__	__
40. My classroom enables students to learn effectively.	__	__	__	__
41. The classroom makes the students feel happy.	__	__	__	__
42. Student's desks and chairs are in good condition.	__	__	__	__

Building Assessment

43. How would you assess the condition of your school building? Please check the appropriate response.

Satisfactory _____ **Unsatisfactory _____**

Demographic Data

To assist us in analyzing the above data would you be kind enough to supply the following data. All data will be kept confidential and will be reported only as group data. No individual data will be released to anyone and no one will be able to be identified.

44. What is your gender? Female _____ Male _____
45. What is your highest academic achievement? Bachelor _____ Advanced _____
46. How many years have you taught? 0-10 years of experience _____ More than 10 years experience _____
47. What grade level do you teach? Pk-1_____ 2-3 _____ 4-5 _____
48. How long have you been employed in the present school division? 0-10 years _____ More than 10 years _____

Appendix B

COMMONWEALTH ASSESSMENT OF PHYSICAL ENVIRONMENT

Instructions: Please indicate the status of the school facility in each area by circling the most appropriate description for each of the following questions. You may provide additional information in the space provided after each question.

Part I – Questions relating to the school building in general:

1. What is the age of the facility? [A facility's age is your best estimate of the time period during which most of the space used by students was built].

   a. 60 years old or older

   b. 50-59 years old

   c. 40-49 years old

   d. 30-39 years old

   e. 20-29 years old

   f. 10-19 years old

   g. Under 10 years old

   Comments: _____

2. What description best fits the school building)?

   a. The building was originally designed and built as a secondary School And was not renovated before conversion to an elementary school

   b. The building was originally designed and built as a secondary school but underwent some renovations before conversion to an elementary school.

   c. The building was originally designed and built as a secondary school, but underwent major renovations before conversion to an elementary school.

   d. The building was originally designed and built as an elementary school

   Comments: _____

3. What year was the last major renovation to the school building completed? _____
   (if no renovations have ever been done, write none).

4. Are there visible indications of roof leaks in the building?

    a. Ceiling is deteriorating due to water damage and/or water falls in some areas of facility, requiring buckets for water collection.

    b. Ceiling is currently developing a few new stains due to minor leaks.

    c. No visible signs or only a few old water spots in ceiling.

    Comments: _____

5. When was the last time the interior walls, including classroom spaces, were painted?

    a. Over 15 years ago

    b. Between 8 and 15 years

    c. Less than 8 years ago

    Comments: _____

6. When was the last time the exterior walls or windows and trim were painted?

    a. Over 7 years ago

    b. Between 4 and 7 years

    c. Within the last 4 years or no exterior surface requires periodic painting

    Comments: _____

7. How would you rate the electrical service in the school building?

    a. Electrical service is not sufficient to meet current building needs.

    b. There is sufficient electrical service to meet all current building needs with little room for expansion.

    c. There is sufficient electrical service to meet all current building needs with room for expansion.

    Comments: _____

8. What kind of flooring is found in the majority of the instructional spaces?

    a. Wood floor

    b. Tile or terrazzo

    c. Carpet

    Comments: _____

9. Is the facility located near a busy, major highway, a frequently used rail line, an area where aircraft frequently pass overhead, or another loud noise producing environment?

    a. Yes, and no measures have been taken to reduce the level of noise within the facility.

    b. Yes, but measures have been taken to reduce the level of noise within the facility.

    c. No

    Comments: _____

10. How would you rate the overall maintenance of the school building? When answering this question, consider such maintenance items as general repairs, light bulb replacement, the maintenance of plumbing, electrical and similar systems, etc.

    a. Poor

    b. Needs Improvement

    c. Satisfactory

    d. Very Good

    e. Outstanding

    Comments: _____

11. How would you rate the structural condition of the school building?

    a. Poor

    b. Needs Improvement

    c. Satisfactory

    d. Very Good

    e. Outstanding

    Comments: _____

Part II – Questions relating to the school's classrooms:

12. Please provide the following information regarding your classrooms:

    Total number of classrooms in your school: _____

    Total number of classrooms located in permanent structures _____

    Total number of mobile classrooms or trailers: _____

Comments: _____

Questions 13-28 apply only to the classrooms in your permanent structure. Do not consider trailers when answering these questions.

13. Are there windows in each instructional space (classroom)?

    a. Windows are in less than 1/4th of the instructional spaces.

    b. Windows are in at least 1/4th, but fewer than 3/4ths of the instructional spaces.

    c. Windows are in at least 3/4ths of the instructional spaces.

    Comments: _____

14. Which of the following best describes the heating system in the school?

    a. Uneven heat/unable to control in each room.

    b. Even heat/unable to control in each room.

    c. Even heat/able to control in each room.

    Comments: _____

15. Which of the following best describes the air conditioning system in the school's instructional areas?

    a. No air conditioning in instructional spaces.

    b. Air conditioning in some instructional spaces, or air conditioning in all spaces, but not well regulated.

    c. Air conditioning in all instructional spaces which can be well-regulated.

    Comments: _____

16. What type of lighting is available in the majority of classrooms?

    a. Fluorescent lighting – cold

    b. Fluorescent lighting - hot

    c. Incandescent lighting

    Comments: _____

17. What color are the walls in the instructional areas?

    a. Dark colors

    b. White or off-white

    c. Pastel colors

    Comments: _____

18. What type of material is used for the majority of interior classroom ceilings?

    a. Metal

    b. Wood

    c. Plaster

    d. Acoustical tiles

    Comments: _____

19. How often are classroom floors swept (if wood, tile, or terrazzo) or vacuumed (if carpeted)?

    a. Monthly

    b. Weekly

    c. Daily or more frequently.

    Comments: _____

20. How often are the instructional area floors mopped (if wood, tile, or terrazzo) or cleaned (if carpeted)?

    a. Annually

    b. Monthly

    c. Weekly or daily

    Comments: _____

21. Which of the following best describes electrical service in classrooms?

    a. There is one outlet in each classroom.

    b. There are two or three outlets in each classroom.

    c. There is at least one outlet per wall in each classroom, or four or more outlets

    Comments: _____

22. Do classrooms have connections to a school-wide local area computer network?

    a. No

    b. Yes

    Comments: _____

23. Do classrooms have connections to a district-wide or other area computer network?

    a. No

    b. Yes

    Comments: _____

24. Do classrooms have Internet access?

    a. No

    b. Yes

    Comments: _____

25. Do classrooms have cable connections to a central television antenna or other cable television system?

    a. No

    b. Yes

    Comments: _____

26. Which of the following best describes classroom furniture?

    a. Most classrooms have furniture that is either facially scarred or functionally damaged.

    b. Though at least half the rooms may have some minor facial scars on the student desks, all of the furniture is functionally sound and looks satisfactory.

    c. All the classrooms have furniture that is functionally sound and facially attractive.

    Comments: _____

27. Which of the following best describes the structural characteristics of the school's classrooms?

    a. Classes are held in open space areas shared with other classes.

    b. Classrooms are in modified open spaces using movable partitions or furniture to identify classroom boundaries.

    c. Classrooms are self-contained spaces with a door that can be closed.

    Comments: _____

28. How would you rate the overall cosmetic conditions in the classroom?

    a. Poor

    b. Needs Improvement

    c. Satisfactory

    d. Very Good

    e. Outstanding

    Comments: _____

Part III – General questions relating to the school:

29. How would you rate the overall condition of the school, taking into consideration all building, classroom, and technology characteristics**?**

    a. Poor

    b. Needs Improvement

    c. Satisfactory

    d. Very Good

    e. Outstanding

    Comments: _____

30. What is the school's enrollment as of this date? _____

31. What percentage of the school's enrollment qualified for free or reduced price lunches as of this date? _____ percent

32. What is the approximate acreage of the school site? _____ acres

Is there any additional information you would like to provide about the condition of the school building or classrooms? If so, please use this space for that purpose.

Are there any comments you wish to make that you think might aid in the study of the role school facilities play in teacher attitudes, if so it would be appreciated.

This survey is derived from the Commonwealth Assessment of Physical Environment developed by Dr. Carol Cash (1993), the State Assessment of Facilities in Education © by Dr. Carol Cash and Dr. Glen Earthman (1995) and from the Assessment of Building and Classroom Conditions in Elementary Schools in Virginia by Dr. James Lanham, III (1998).

Appendix C

Teacher Cover Letter

May 2012

Dear Staff,

You have been selected to participate in a study that will benefit not only your school, but the educational system as a whole.

The title of this study is, School Facility Conditions and the Relationship to Teacher Attitudes. The purpose of this study is to determine whether there is a significant relationship between school facility conditions and teacher attitudes. Should you choose to participate, you will be asked to complete a survey that determines what teacher attitudes are in your building. The same survey will be given to teachers in another building during the week. Comparisons of the surveys will be made between the two buildings to determine if there is a significant relationship between teacher attitudes in both buildings.

Your identity will be kept confidential. A coding system will be used in order to compare data.

If you agree to participate, please complete the attached consent form and survey. The survey instrument used is called the My Classroom Assessment Protocol (MCAP). Completion of the consent form and survey will be considered permission to use your results in the study.

You may choose not to participate in this study. If you choose not to participate, there will be no negative consequences. There are no anticipated risks or discomfort associated with this study.

If you have any questions about this research project, please call me, Ron Leigh, at 757-923-5252. If you have any questions or concerns about your rights as a research participant in this study, they should be directed to the Office of Research Compliance at (540) 231-1835.

Thank you for taking the time to read this cover letter. I hope you will choose to participate.

Sincerely,

Ron M. Leigh, Principal
Hillpoint Elementary School

Appendix D

Administrator Cover Letter

May 2012

Dear Principal,

Your school has been selected to participate in a study that will benefit not only your school, but the educational system as a whole.

The title of this study is, School Facility Conditions and the Relationship to Teacher Attitudes. The purpose of this study is to determine whether there is a significant relationship between school facility conditions and teacher attitudes. Should you choose to participate, you will be asked to complete the Commonwealth's Assessment of Physical Environments (CAPE) which assesses the current condition of your building. The same assessment will be given to a principal in another building during the week. This instrument will produce the data needed to compare the two buildings.

I am requesting a meeting with you after school within the next week at your convenience. During this meeting your written consent will be obtained and a hard copy of the CAPE will be provided to you. You will also be asked to provide one meeting date for me to meet with your teaching staff after school to complete a survey.

Your teachers will be asked to complete a survey that determines what their attitudes are in relation to building conditions. The My Classroom Assessment Protocol (MCAP) survey will also be given to teachers in another building during the week. Comparisons of the surveys will be made between the two buildings to determine if there is a significant relationship between teacher attitudes in both buildings.

Your identity will be kept confidential. A coding system will be used in order to compare data.

If you agree to participate, you will be asked to give written consent to me at our meeting next week. Completion of the consent form and assessment will be considered permission to use your results in the study.

You may choose not to participate in this study. If you choose not to participate, there will be no negative consequences. There are no anticipated risks or discomfort associated with this study. An electronic copy of the CAPE instrument is attached in this email so that you may become familiar with the instrument.

If you have any questions about this research project, please call me, Ron Leigh, at 757-923-5252. If you have any questions or concerns about your rights as a research participant in this study, they should be directed to the Office of Research Compliance at (540) 231-1835.

Thank you for taking the time to read this cover letter. I hope you will choose to participate.

Sincerely,

Ron M. Leigh, Principal
Hillpoint Elementary School

Appendix E

Letter to Director of Assessment and Accountability

May 2012

Director of Testing and Accountability,

I am currently doing research in cooperation with the Division of Educational Administration at Virginia Polytechnic Institute and State University. My research involves a study of school facility conditions and its relationship to teacher job satisfaction.

The purpose of this study is to determine if there is a relationship among these variables. Data from this study could provide valuable information to school divisions regarding the working conditions of teachers. With funding becoming a scarce resource, and teacher retention a national concern, research that would identify important areas of concern could be of great value.

I would like to use two elementary schools in your division for my study. In order to complete this research, data on teacher attitudes, and building condition will be needed for each of these schools. The names of the participating schools will not be identified by school number, name or division in the body of the report. The intent of this study is to compare teacher attitudes in an older and newer building, while protecting the anonymity of each school's information and facility assessment.

I would appreciate your school divisions' participation in the study. The total time commitment per school should be less than one hour, while the results could be valuable in future facilities planning. I anticipate the conducting the study in mid-April and expect to complete the study by the end of the same month. A copy of the results will be made available to you upon request at that time.

If you have any questions or need further explanation of the study or procedures, please call me at Hillpoint Elementary School (757) 923-5252. Thank in advance for your cooperation in advancing this research.

Sincerely,

Ron M. Leigh, Principal
Hillpoint Elementary School

Appendix F

Consent Letter (Teachers)

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNVIERSITY

Informed Consent for Participants
In Research Projects Involving Human Subjects

Title of Project: School Facility Conditions and the Relationship to Teacher Attitudes

Investigator(s): Ron M. Leigh and Dr. Glen I. Earthman

I. Purpose of this Research/Project

The purpose of this qualitative study is to investigate the relationship between school facility conditions and teacher attitudes. A review of related research reveals that there is little research on this topic however it is growing. Towards this end, the completed study should establish a connection between the attitudes of teachers in buildings that are older and are in some state of disrepair and the implications such attitudes have on teacher satisfaction about their classroom and student learning.

II. Procedure

Teacher participants who are interested in participating in this study will identify themselves by giving written consent at a pre-arranged meeting generated by the researcher and announced by the principal of the building. Teachers willing to participate will complete a written survey (My Classroom Assessment Protocol) about their attitudes as it relates to the buildings condition.

III. Risks

There are less than minimal risks associated with this research study. The parameters of this study are limited to the completion of one survey instrument.

IV. Benefits

The benefits associated with this study will hopefully affect teachers in school buildings across the country. The final goal of this study would be to have the results of this study change the way school buildings are built, renovated, and maintained. This would hopefully also have the added benefit of providing a better learning environment for students and staff alike.

V. Extent of Anonymity and Confidentiality

Every effort will be made to keep your information confidential. The names of the participating schools or teachers will not be identified by school number, name or division in the survey instrument or in the body of the study. Information will be kept in a vault under lock and key with the researcher at all times. "It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The IRB is responsible for the oversight of the protection of human rights involved in research."

VI. Compensation

There are no researcher-initiated incentives or compensation for participating in this study.

VII. Freedom to Withdraw

You may refuse to participate in this study without penalty. If you choose to participate in this study you may discontinue participation at anytime without penalty. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

VIII. Subject's Responsibilities

I voluntarily agree to participate in this study.

IX. Subject's Permission

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

_____ Date _____
Subject Signature

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

_____ _____
Investigator(s) Telephone/e-mail

_____ _____
Faculty Advisor Telephone/e-mail

_____ _____
Departmental Reviewer/Department Head Telephone/e-mail

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

Appendix G

Consent Letter (Administrators)

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNVIERSITY

Informed Consent for Participants
In Research Projects Involving Human Subjects

Title of Project: School Facility Conditions and the Relationship to Teacher Attitudes

Investigator(s): Ron M. Leigh and Dr. Glen I. Earthman

I. Purpose of this Research/Project

The purpose of this qualitative study is to investigate the relationship between school facility conditions and teacher attitudes. A review of related research reveals that there is little research on this topic however it is growing. Towards this end, the completed study should establish a connection between the attitudes of teachers in buildings that are older and are in some state of disrepair and the implications such attitudes have on teacher satisfaction about their classroom and student learning.

II. Procedure

Administrators who are interested in participating in this study will identify themselves by giving written consent at a pre-arranged meeting generated by the researcher. Administrators willing to participate will complete an instrument (Commonwealth's Assessment of Physical Environment) that assesses the condition of a school building.

III. Risks

There are less than minimal risks associated with this research study. The parameters of this study are limited to the completion of one assessment instrument.

IV. Benefits

The benefits associated with this study will hopefully affect faculty, staff, and students in school buildings across the country. The final goal of this study would be to have the results of this study change the way school buildings are built, renovated, and maintained. This would hopefully also have the added benefit of providing a better learning environment for students and staff alike.

V. Extent of Anonymity and Confidentiality

Every effort will be made to keep your information confidential. The names of the participating schools or administrators will not be identified by school number, name or division in the survey instrument or in the body of the study. Information will be kept in a vault under lock and key with the researcher at all times. "It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The IRB is responsible for the oversight of the protection of human rights involved in research."

VI. Compensation

There are no researcher-initiated incentives or compensation for participating in this study.

VII. Freedom to Withdraw

You may refuse to participate in this study without penalty. If you choose to participate in this study you may discontinue participation at anytime without penalty. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

VIII. Subject's Responsibilities

I voluntarily agree to participate in this study.

IX. Subject's Permission

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

_____ Date _____
Subject Signature

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

_____	_____
Investigator(s)	Telephone/e-mail
_____	_____
Faculty Advisor	Telephone/e-mail
_____	_____
Departmental Reviewer/Department Head	Telephone/e-mail

David M. Moore
Chair, Virginia Tech Institutional Review
Board for the Protection of Human Subjects
Office of Research Compliance
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, VA 24060

540-231-4991/moored@vt.edu
Telephone/e-mail

Appendix H

IRB Approval Letter

VirginiaTech

Office of Research Compliance
Institutional Review Board
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24060
540/231-4606 Fax 540/231-0959
e-mail irb@vt.edu
Website: www.irb.vt.edu

MEMORANDUM

DATE: April 24, 2012

TO: Glen Earthman, Ronald Leigh

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires May 31, 2014)

PROTOCOL TITLE: The Relationship Between School Facility Conditions and Teacher Attitudes

IRB NUMBER: 12-409

Effective April 23, 2012, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the new protocol for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at http://www.irb.vt.edu/pages/responsibilities.htm (please review before the commencement of your research).

PROTOCOL INFORMATION:
Approved as: **Expedited, under 45 CFR 46.110 category(ies) 7**
Protocol Approval Date: **4/23/2012**
Protocol Expiration Date: **4/22/2013**
Continuing Review Due Date*: **4/8/2013**
*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:
Per federally regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

*Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

cc: File