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Facilitators and Barriers of Performing the Duties of Facilities Director in Public School Systems in Tennessee: A Study of Perceptions

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ABSTRACT

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Public education in the United States has changed remarkably in the last 200 years. The buildings that house students and teachers have also gone through a dramatic evolution in that same time. The buildings in use today are far more complex in design and thus require considerable expertise to operate and maintain. Although a good deal of scholarly literature has addressed the growing demand for dedicated facilities management, very little of that research is focused on that need within public education systems or the individuals who fulfill the duties associated with that need. The purpose of this research was to evaluate the perceptions of facilities directors of public school systems. A qualitative collective case study was conducted to evaluate the perceptions of six facilities directors from public school systems in Tennessee. Analysis of transcriptions from in-depth interviews as well as document review helped identify factors those individuals perceived as facilitators or barriers to performing their duties. Findings indicated participants perceive communication, autonomy, employees, and access to resources as facilitators of their success. Participants identified communication, purchasing, funding, the age of facilities, and lack of understanding as the primary barriers to their success. This research adds to the literature related to the topic, has implications for future research and practice, and could serve as a model for research among other support service areas of public education.

DEDICATION

I am reminded daily of how much God has blessed me with such an amazing family. I would not be the man I am without their influence in my life, and I certainly would have never been able to complete this project without their support and encouragement. This study, and the years of work it represents, is lovingly dedicated to my family.

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To my brother, Travis: I am always proud to tell people about my big brother and all you have accomplished – your own accomplishments have motivated me more than you can know.

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CHAPTER 1

INTRODUCTION

Public education in the United States has evolved dramatically since the first settlers began to establish permanent residence in North America. Contemporary school facilities are also markedly different from the earliest structures used for education. Since the beginning of the Industrial Revolution, small one-room community schoolhouses have been quickly replaced by larger facilities; school districts composed of multiple schools and many buildings have become the standard organizational structure of the American public education system (Tanner & Lackney, 2006). This process was the result of efforts to meet the need of changing populations, emerging educational theories, and evolving societal needs. As the organizational structure of public education became more intricate in design and governance, so too did the facilities that housed students and teachers. In comparison to one-room schoolhouses, today school buildings are large, have complex operational systems (e.g. lighting, heating and cooling, network, ventilation), and are purposefully designed to serve as spaces for learning (Earthman, 2009).

The evolution of school design can be attributed to two major motivations: 1) efforts to meet the demands of larger student bodies and 2) a better comprehension of the physical environment in the educational process. School district administrators have become increasingly aware of the strategic value of school facilities (Tanner & Lackney, 2006). Not only do school facilities represent large capital investments for school districts (Earthman, 2009), but they have also been increasingly linked with educational outcomes. According to the 21st Century School Fund (2010) 19 research studies reported positive correlations among facilities conditions and educational quality between 2000 and 2009.

As a result of the evolution of public education and school facilities and an increased understanding of the strategic value of school facilities, facilities management has emerged as a necessary function of public education administration (Tanner & Lackney, 2009). Furthermore, Tanner and Lackney also pointed out that school districts often need to employ an individual dedicated to overseeing the facilities management needs of the organization. Over the past 50 years that role has emerged as a legitimate profession in both private and public sector organizations (IFMA, n.d.).

Statement of the Problem

Tennessee public school districts spent more than 1 billion dollars on school facilities maintenance, operation, construction, and renovation in 2015. That expenditure constituted 11.5% of total expenditures for Tennessee public schools (State of Tennessee, Tennessee Department of Education, 2015). Furthermore, Earthman (2004) indicated facilities conditions showed an impact on student achievement scores by as much as 17% in some studies. The literature is replete with other discussions of the fiscal and educational implications of school facilities. There is also a great deal of literature related to individual aspects of performing the duties of facilities director.

Although, according to Tanner and Lackney (2006), educational administrators have become increasingly aware of the importance of school facilities, there are still gaps in the research related to facilities management in public school systems. Two sources noted an apparent dissonance that still exists between the overall organization of public education systems and the facilities management functions within those organizations (Kok, Mobach, & Onno, 2011; Tanner & Lackney, 2006). Barnes (2010) speculated that such discrepancies might be fueled by a perception that support services, such as facilities management, are

ancillary to the overall mission of the organization. Facilities departments and their leaders face many challenges, and their responses to those challenges often impact the rest of the organizations they serve. In a time in which all facets of public education are scrutinized and calls for accountability are louder than ever, facilities management is one area in which research and literature is still inadequate. One obvious deficiency in the literature is the absence of the voices, or perceptions, of facilities directors themselves. The overall purpose of this qualitative collective case study was to allow facilities directors of Tennessee public school systems to help close this gap by sharing their perceptions of facilitators as well as identifying barriers of performing their duties.

Research Questions

The central question for this study was: What factors do facilities directors of public school systems in Tennessee perceive to be facilitators or barriers to performing their duties? In order to study this question, the researcher selected a qualitative collective case study research design and conducted in-depth interviews and document reviews. Participants were asked to respond to predetermined questions based on the phenomenological inquiry framework outlined by Patton (2015). Specifically, the interview questions were drafted in an effort to collect data related to the following guiding questions:

1. What are the duties of the facilities director position within the organization of the school system?
2. How do facilities directors perceive the impact of their role within the overall organization?
3. What is the nature of facilities directors' relationships or interactions with other portions of the organization?

Significance of the Study

This study is significant to the field of educational research in three ways. First, the study contributes to the growing body of research-based literature related to the facilities management function within public education systems. Second, it adds to the understanding of the topic from the lens of facilities directors, and in that regard will help close the gap in scholarly research that currently exists. Third, this study could potentially serve as a model for further research of other educational support services (e.g. student transportation services).

This study is significant to the practice of public education in two ways. First, the study may aid policy makers and administrators of Tennessee public school systems by furthering their understanding of how policies and practices are perceived by facilities directors. Second, the study may help reduce some of the perceived dissonance between the overall organization of public schools and support services such as facilities management.

Definition of Terms

Several terms and acronyms germane to the field of facilities management are used throughout this study. Unless otherwise indicated, the terms and acronyms are defined as:

1. *Deferred Maintenance*: "Maintenance that was not performed when it should have been or was scheduled to be but was put off or delayed until a future period" (Cotts & Rondeau, 2004, p. 261).

2. *Facilities department*: This term was not widely used or defined in the literature, but for the purpose of this study it is defined as the department under the supervision of the facilities director within the organizational structure that provides support services to the organization consistent with the functions outlined in the competency areas defined by the IFMA (n.d.).

3. *Facilities director*: The title "facilities director" is interchangeable with similar titles (e.g. facilities manager) in the literature. Furthermore, the singular "facility" and plural "facilities" is often used interchangeably. For the purpose of this study, "facilities director" is used to refer to the person within the organization who manages, oversees, and executes the fulfillment of the duties outlined under the competency areas defined by the IFMA (n.d.).

4. *HVAC*: "Heating, ventilating, and air-conditioning systems. Those systems that control and maintain the temperature, humidity, and air quality" (Cotts, Roper, & Payant, 2010, p. 629).

5. *IAQ*: Indoor air quality. "The state of air pollutants (presence or absence) within a building" (Cotts et al., 2010, p. 629).

6. *IFMA*: "International Facility Management Association" (Cotts et al., 2010, p. 629).

7. *Maintenance*: "Work that is necessary to maintain the original, anticipated useful life of a fixed asset. It does not prolong the life of the property or equipment or add to its value" (Cotts & Rondeau, 2004, p. 264).

8. *Operations*: "Work that keeps the facility performing the function for which it is currently classified. This commonly includes the cost of utilities, work reception and coordination, moving, and work associated with building systems" (Cotts & Rondeau, 2004, p. 264).

9. *Outsourcing*: "The provision of a bundle or a full range of services by a single contractor, so that the facilities staff is responsible only for managing the relationship with the contractor and monitoring the contractor's performance" (Cotts & Rondeau, 2004, p. 264).

10. *Stakeholders*: Kamarazaly, Mbachu, and Phipps (2013) identified stakeholders of facilities as the users of facilities, including staff members, students, and visitors.

Delimitations and Limitations

All research studies have weaknesses; some weaknesses arise from decisions made in the design of the study. The collective case study methodology employing purposeful sampling of typical cases is a delimitation of this study. The methodology and sampling strategy were chosen in order to investigate cases that could provide rich descriptions of the central phenomenon to be studied. While this is a strength in regard to achieving the

purpose of the study, it simultaneously constitutes a weakness in terms of the generalization of findings. McMillan and Schumacher (2010) said qualitative research provides "context bound summaries" (p. 13). In other words the generalization of findings of this study will be limited to similar cases with similar participants. Furthermore, the selection of in-depth questioning using an interview guide represents another delimitation of this study. The purpose of this study was to allow facilities directors to provide their perceptions to further the understanding of the topic, in that regard collecting data through in-depth interviews is an appropriate strategy. However, the use of an interview guide with predetermined questions could potentially restrict participants from including information in their responses that would be relevant to the central phenomenon. Most authors agreed that qualitative data collection is typically an emergent process and may require changes to the instrumentation or procedures throughout the course of data collection (Creswell, 2012; McMillan & Schumacher, 2010; Patton, 2015). In order to mitigate this delimitation as much as possible, the researcher approached the collection of data from this emergent design standpoint. Specifically, the researcher conducted a pilot interview prior to data collection in order to clarify questioning (McMillan & Schumacher, 2010). Furthermore, the researcher contacted participants after interviews were conducted to collect or clarify data as the need emerged throughout the data collection process.

While some research limitations are the result of decisions made in the design of a study, others are inherent to the topic or methodology and thus are beyond the control of the researcher. The primary data collection method for this study was in-depth interviews of participants. Although measures were taken to mitigate this limitation, the degree of

truthfulness of participants' responses was beyond the control of the researcher and was the most prominent limitation of the study. Patton (2015) said a researcher's own familiarity and experience with a topic of study qualifies as a strength in relation to this concern because it helps researcher build rapport with participants. Patton proposed that researchers who could empathize with a participant based on personal experience with the topic are more likely to establish trust among participants and thus more likely to elicit truthful responses. Beyond building rapport with participants, the researcher also followed an ethical protocol to assure the protection of participants' anonymity. Pseudonyms were assigned to all participants, their respective school districts, and any proper nouns they used throughout the course of interviews. Furthermore, prior to beginning interviews, participants were assured that the researcher's purpose was not to evaluate or judge the merit of participants or any practices or procedures they described. Finally, relevant documents were reviewed after interviews were completed to triangulate the data through corroboration of participant statements. No direct quotations from reviewed documents were used in the final manuscript in order to avoid the possibility of compromising the anonymity of participants or the school districts they serve.

Overview of the Study

This study is reported in five chapters; the following is a brief description of the chapters and their contents. Chapter 1 serves to introduce the topic and establish the need for this study. Chapter 2 is a review of literature related to the development of facilities management in public education, the common duties associated with the title facilities director, how facilities conditions impact education, and challenges faced by facilities directors. Chapter 3 outlines the methodology and procedures for selecting the sample,

collecting and analyzing data, reporting findings, and ethical considerations for the study. Chapter 4 includes the report of findings based on data analysis. Chapter 5 consists of a discussion of conclusions drawn from the findings as well as a discussion of implications for practice and future research topics that emerged as a result of the study.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this study was to examine the role of facilities directors and their perceptions related to departmental impact and relationships with the overall school system, as well as explore what facilitators or barriers exist when fulfilling their duties. The literature review investigated and reported on literature related to the following topics: the historical background of public school facilities and the resulting development of the need for facilities management, the common duties associated with the title facilities director, the impact facilities have on education, and common challenges faced by facilities directors.

Historical Overview of School Facilities and Facilities Management

The design of school facilities has changed remarkably over the past three centuries. A myriad of variables are responsible for the design evolution exhibited in modern public school buildings. Educational theory, shifts in societal needs, population and demographic changes, and changes in roles of governance account for many of the observable differences in school buildings and the students they serve. The current composition of public education systems in the United States is quite different today than it was when the country was founded. Community-based schoolhouses have been, in most areas, consolidated into school systems made up of multiple schools and many buildings. Similarly, funding for education and school buildings has also become more centralized through the creation of state and local school boards. As a result of this consolidation and

centralization, facilities management has become a legitimate and necessary role in the field of public education.

Consolidation of Community Schools into School Systems

The one-room autonomous schoolhouses that were common in the colonial and post-revolution era have, in most cases, been replaced by school districts that serve entire counties or municipalities and include multiple buildings (Citizens Research Council of Michigan, 1990; Danielson, 2002; Cremin, 1970; Cremin, 1980; Kirst, 2010). The origin of this consolidation can be traced back to multiple factors; economic shifts, population changes, and emerging educational theories account for the majority of this change. The economic landscape of the United States is vastly different today than it was in the colonial era; the focus has shifted from an agrarian-based to an industry-based economy, changes which occurred with advances ushered in by Industrial Revolution (Tanner & Lackney, 2006). This change, and the impact it had on the population, spurred changes in educational facilities.

As the economy became more industrialized, populations surrounding centers of industry grew exponentially. Furthermore, massive waves of immigration led to fast-paced population expansion. Kim (2007) noted that more than 33 million people immigrated to the United States between 1820 and 1920. These families tended to gravitate toward urban areas which offered more job opportunities. Additionally, these population shifts often left rural community schools nearly empty as citizens migrated to urban areas, and led to overcrowding of urban community schools. In some areas, new schools were built to accommodate more students. Tanner and Lackney (2006) reported that more than 200

schools were built in New York City during the 1920s to keep up with the rapid population growth due to immigration.

In the midst of the Industrial Revolution, and in the decades preceding it, many reevaluated the purpose of education. It was during this time that Horace Mann developed the vision of the Common School (Baker, 2012; Editorial, 2013; Tanner & Lackney, 2006), and many states began codifying compulsory attendance legislation (Editorial, 2013; Lleras-Muney & Shertzer, 2012). Mann and other prominent theorists demanded more of public education. The professionalization of teaching, demands for expanded curricula, and increasing numbers of students required more teachers and more spaces for teaching. According to Bomier (2014), many new schools were built during the Common School Movement. These schools were larger and more intricate in design than their predecessors.

The legal system also helped solidify the creation of larger school systems. The Michigan Supreme Court ruled in *Stuart v. School District No. 1 of Village of Kalamazoo* (1874) that taxation for the purpose of public education, including high schools, was legal (Russo, 2008). With the ability to fund the expansion of public education, many counties and municipalities built high schools (Baker, 2012). Graves (1993) reported that the number of high schools in the United States increased from 300 in the 1860s to over 6,000 by 1900. Improved methods of transportation (i.e. automobiles and school busses) also allowed school districts to cover larger geographical areas (Bomier, 2014; Sims, 2014). The federal government also contributed to the expansion of the public education infrastructure during the years following the Great Depression. Under Roosevelt's Public Works Administration, hundreds of public schools were built across the nation (Weisser, 2006).

Demands for vocational education and high school attendance increased, and in some areas middle schools were created (State Historical Preservation Office, 2003; Tanner & Lackney, 2006; Weisser, 2006). By the end of the Second World War, schooling by district was the norm in the United States. Additionally, school districts were required to build even more facilities as a result of the Baby Boom. Several authors pointed to this era as the time when public school facilities construction was at a critical point. School districts faced massive financial burdens due to the need for new construction. As a result, many newly-constructed schools were built as cheaply as possible, and had life expectancies of thirty to fifty years (Bomier, 2014; Tanner & Lackney, 2006). Many of those same schools are still standing and in use today, at or beyond their life expectancy (U.S. Green Building Council, 2013). Finally, a more recent trend in public school system organization is the consolidation of smaller schools within school systems, a strategy based on the economies of scale premise that smaller schools are less efficient to operate (Hyndman, Cleveland, & Huffman, 2010; Young & Green, 2005). This trend was similar to earlier trends of building larger buildings; the resulting facilities were often more complex by design, and as a result required more expertise to operate and maintain (Tanner & Lackney).

Centralization of Budgeting

The governance of schools in the United States has also gone through great changes since the founding of the country. In relation to this study, the topic of governance is worthy of separate discussion because it significantly impacts the current profession of facilities management. State and local school boards proliferated in public education for many of the same reasons that school districts were formed. DeYoung (1989) said

community schoolhouses found prior to consolidation often were governed and funded by local churches, boards of selectmen, or parents. Although school boards did not exist in their current form until the last part of the nineteenth century (Dahill-Brown, 2010; Feuerstein, 2002; Kreassig, 2007; Robinette, 2011), governing bodies did exist in the early days of school districting. Kirst (2010) described the earliest versions of modern school boards as groups of individuals elected to represent geographic factions of consolidated school districts. However, Kirst, and Feuerstein (2002) also noted that these groups were often viewed as corrupt bodies of individuals who sought to serve their own purposes more frequently than their constituencies. Feuerstein and Miller (2008) outlined the historical context of school boards that most would recognize today. Both authors noted the tradition of local control in public education. Kreassig (2007) said the phenomenon of local control was perpetuated by an inherent reluctance to relinquish control to central government bodies. The U.S. Constitution did not specifically mention public education; as a result its governance was relegated to individual states through the Bill of Rights (U.S. Const. amend. X). In many states, governance of school districts was passed on to local governing bodies, usually elected school boards, almost entirely until the middle of the nineteenth century (DaHill-Brown, 2010; Kreassig, 2007).

As multibuilding school systems were formed in the early days of school district creation, the budgeting of public education expenditures became a primary function of school boards. Kreassig (2007) outlined the duties of modern school boards which, by and large, are charged with developing policies and overseeing the implementation of that policy through a chief officer (superintendent or director of schools) and her or his expert staff. Along with the development of policy and oversight of administration, school boards

also help develop and approve budgets for school districts. However, Kreassig posited that recent research of school board activity evidenced a proclivity among school boards to micromanage daily operations of school districts in addition to adopting policies and budgets.

The governing structure of public school systems and the financing of public education have become increasingly at odds over the last few decades. DaHill-Brown (2010) described the paradox of this situation: although governance has remained primarily at the hands of local school boards, financing public education has become increasingly centralized through state and federal funding measures. Several authors indicated the same assessment, and discussed how local school boards have maintained some basic authority but have been increasingly limited in making financial decisions concerning funds, litigation, and educational reform movements due to a burgeoning reliance on state and federal funding (Guthrie, 2006; Kessinger, 2011; Kreassig, 2007; Robinette, 2011; Strunk & LeCompte, 2004; Verstegen & Jordan, 2009).

Strunk and LeCompte (2004) conducted a review of historical finance problems in Tennessee's public schools. The authors posited that the first major financing initiative from the state government resulted from an inability to adequately fund public schools from local sources. However, the authors were careful to note that this first state infusion of funding did not occur until 1854, 58 years after Tennessee became a state, and even longer since people had settled the territory that would eventually become Tennessee. Nevertheless, the provision of funds generated through taxation marked the beginning of state level government in Tennessee affecting local school boards. Similar patterns of state intervention exist in states across the nation (Verstegen & Jordan, 2009).

Verstegen and Jordan (2009) traced a pattern of increased state involvement in school finance. In their study of school finance policies in the United States, they asserted that additional state funding derived from litigation over academic inequities. Poorer schools could not provide the same quality of education as schools in affluent districts. Strunk and LeCompte (2004) outlined how such litigation resulted in increased state involvement of school funding in Tennessee. The authors described the creation of the Education Improvement Act of 1992 and also explained how the development of the Basic Education Program funding formula was a result of the *Tennessee Small School Systems v. McWherter* suit of 1988. Both initiatives sought to eliminate funding inequities in Tennessee public schools. Verstegen and Jordan (2009) delineated the various funding formulae that states currently use; the authors identified 44 additional states which use similar funding strategies.

Finally, multiple authors cited state and federal education reform initiatives as evidence of further centralization of public education funding (DaHill-Brown, 2010; Guthrie, 2006; Kessinger, 2011; Kreassig, 2007; Robinette, 2011). Guthrie (2006) pronounced the release of *A Nation at Risk* in 1983, a report from the National Center for Education Excellence, as the pivotal point in time when the federal government most notably began influencing educational policy and funding. However, as Robinette (2011) pointed out, reform movements on the national scale existed prior to *A Nation at Risk*; specifically, Robinette cited the National Defense of Education Act of 1958, the Elementary and Secondary Education Act of 1965, the Rehabilitation Act of 1973, and the Education for All Handicapped Children Act of 1975 as examples of national reforms preceding the report. Nevertheless, Guthrie (2006) posited *A Nation at Risk* changed the paradigm of

thinking related to school finance to an outcome-based model that demanded accountability. He declared the report led to unprecedented state reforms and mandates. Kreassig (2007), Guthrie (2006), and Robinette (2011) all focused on the No Child Left Behind Act of 2001 as one of the most prominent examples of this paradigm shift. The end result for local school boards, according to Kreassig (2007), was increasing limitations on financial decision-making due to stipulations and mandates attached to federal and state funds.

According to Kena et al. (2015), the federal government supplied 10% of public education funding in 2011. Furthermore, Kena et al. noted that contributions made to public education by state governments can vary. In Tennessee, for example, the state government supplies funding based on an equitable funding formula known as the Basic Education Program. According to the formula, the State of Tennessee provides funding to local school districts at a rate of 70% for instructional costs, 75% for classroom costs, and 50% for non-instructional costs. The remainder of the funding burden is passed on to local funding bodies for school districts in Tennessee (State of Tennessee, State Board of Education, 2015). This formula uses various demographics (e.g. average daily attendance, number of schools, size of buildings) to calculate the total funding provided by the state government. One stipulation to the formula is that only one school system is mandated per county; therefore, if a municipal or special school district exists in addition to a county school system, those districts must share the funding on a prorated basis (State of Tennessee, State Board of Education, 2015). Krause (2010) delineated the true breakdown of funding sources in Tennessee public schools more thoroughly. Krause reported that in

2008 federal funding to Tennessee schools accounted for 10.9%, state contributions equaled 47.8%, and local contributions accounted for the remaining 41.3%.

The structure of governance and funding of public education systems is important to this study because those factors have the potential to significantly affect the facilities directors of public schools through both policy and budget-related decisions. Multiple sources outlined the importance of adhering to organizational policy related to financial practices such as competitive procurement, and practices related to human resources (Atkin & Brooks, 2009; Cotts & Rondeau, 2004; Cotts, Roper, & Payant, 2010). The United States Department of Education (USDOE)(2003) and Kopochinski (2012a) both highlighted the tendency of school districts to cut facilities-related funds in an effort to reduce overall budget figures. Facilities directors of public school systems must be prepared to work within the confines of local school board oversight, and be able to work with other administrators in an effort to carry out the policies created by the school board.

Facilities Management as an Emerging Profession

The history of facilities management as a professional aspect of public education is not easily traced. Although a need for concerted facilities management efforts seemed appropriate for the time when school districts began to form, there was little writing on the subject before the last few decades. Research and writing on the design of school buildings is abundant, but there is little mention of the management of these facilities after initial construction. The reason for this gap in the literature is not entirely clear. Kok et al. (2011) pointed out that physical plant management often seems removed from the larger educational organization. It is possible that some of the gap in literature surrounding the emergence of facilities management in public education is due to the disparate nature of

the job in comparison with the function of more clearly associated areas of education management (e.g. curriculum). Barnes (2010) reinforced this notion; he asserted that facilities management is often thought of as being ancillary to the primary goals of the organization even though there is a growing body of literature to refute that perception. In any event, one can examine the emerging need for facilities management in public education through study of the evolution of school building design and school system creation.

There is very little writing to suggest facilities management was a concern in one-room community-based schoolhouses. This is not surprising; in many cases these buildings were not dedicated to serve solely as schools. Community churches and private homes often served as schools, and where dedicated school buildings existed, they were also used for community functions (State Historical Preservation Office, 2003; Tanner & Lackney, 2006). The operation and maintenance of these facilities was usually left to the owner of the building. Teachers, too, performed much of the daily operation and maintenance functions in small community schools. In addition to instructing pupils, teachers were also responsible for stoking the fire, sweeping the floors, and arranging for general repairs to be made (Tanner & Lackney, 2006).

While the structure of public education evolved during the Industrial Revolution, a need for facilities management became clearer. Although much of it is related to pedagogical theory, there was a fair amount of writing that chronicled the design and construction of school buildings in the late nineteenth and early twentieth centuries. During this time, architects and planners became more sensitive to existing and emerging educational theory. As school districts were formed, school buildings transitioned from

shared and repurposed spaces to dedicated, stand-alone facilities for education. Because of this, and in response to educational theory and research, school buildings became more intricate by design. The previous requirement of four walls and a roof no longer sufficed; planners and architects began to incorporate dedicated heating and ventilation systems, attempted to optimize natural lighting, and carefully planned classroom and corridor layout (Baker, 2012; Bomier, 2014; Tanner & Lackney, 2006; Weisser, 2006). Although there is little mention of facilities management in the writing surrounding this new direction in school construction, it is not hard to see that the need was beginning to form.

The expansion in school construction following the Second World War resulted in the clear need for concerted facilities management. The literature pointed to this era as the time when facilities management became a permanent appendage to public education management structures. This swift increase in construction placed many school districts in a precarious financial dilemma. Many districts could not afford to build ornate architectural schools reminiscent of the early twentieth century on the scale needed to accommodate population increases. Instead, as Brubaker (1998) pointed out, school systems began constructing schools at the lowest possible cost, which often resulted in poor quality final products. Hille (2011) noted a decreased life expectancy for this type of school as compared to schools constructed earlier in the century. Although these decisions were made out of necessity, they carried problematic implications for the operation and maintenance of these buildings going forward. Rose (2007) remarked that school districts, then and now, often fall into the trap of fixating on initial construction cost, without regard for long-term maintenance and operational costs of buildings. Tanner and Lackney (2006) also underscored this phenomenon,

> When life-cycle costs of operating a school are considered (including staff salaries in addition to the maintenance and operations of the facility), the initial cost of the school facility may be less than 10 to 15 percent of the life-cycle costs over a thirty-year period. (pp. 186-187)

Although school governing bodies often overlook this fact, the need for continued care and maintenance of facilities beyond original construction remains.

Today, authorities on school facilities design and operation agree that facilities management, and a dedicated facilities director or the equivalent, is a necessity for school systems. Atkin and Brooks (2009) affirmed that facilities management has become a requirement among organizations that previously did not have unified strategies to deal with facilities operation. The USDOE (2003) said, "School facilities maintenance affects the physical, educational, and financial foundation of the school organization and should, therefore, be a focus of both the day-to-day operations and long-range management priorities" (p. 2). Cotts et al. (2010) highlighted the fast-paced evolution of the profession based on societal changes. The authors cited the creation of multiple professional organizations centered on facilities management. They also argued that facilities management is no longer simply a caretaker role, but has become a profession with multiple ties to business management.

Common Duties of Facilities Directors

Although there is a gap in the literature related to facilities management in public education systems (Tanner & Lackney, 2006), there is an abundance of recent literature related to the broader profession of facilities management. Analysis of that body of literature, as well as the literature related specifically to facilities management in school systems, can illuminate the common duties of facilities directors or their equivalents.

There is little consensus among the literature as to when facilities management emerged as its own discipline. Nor, Mohammed, and Alias (2014) pointed to multiple discrepancies in prior research related to the origin of the discipline. They discussed the apparent need for facilities management in railroad organizations as early as 1850, the often-cited confusion with the development of information technology services outsourcing in the 1960s, or even from real estate services in the 1970s. Taschner and Clayton (2015) claimed facilities management in the United States was first identified as a needed profession in the 1950s in private business and manufacturing. The true origin of the discipline may never be identified or agreed upon by modern facilities management scholars.

The difficulty in tracing the origin of the profession has also resulted in ambiguities and disagreements regarding the scope of duties related to the job. Nor et al. (2014) underscored this fact by thoroughly comparing the various definitions of facilities management that have developed over the past 40 years. They went on to say, though, that in spite of the variety of definitions for the term, a common mission and vision was articulated in most. Although there are many disagreements about the first need for facilities management, most sources agree that the profession ultimately was legitimized in the 1980s with the formation of several professional organizations (Atkin & Brooks, 2009; Barnes, 2010; Cotts et al., 2010; Nor et al., 2014; Tanner & Lackney, 2006; Taschner & Clayton, 2015). Although there are several such organizations, the International Facility Management Association (IFMA) is the organization referenced most commonly. Furthermore, the IFMA is the most comprehensive organization referenced based on its international status, whereas the other organizations referenced are local or regional in nature, and several of those organizations are subsidiaries of the IFMA.

The IFMA was originally named the National Facility Management Association when it first convened in Texas in 1980, but the name was changed in 1981 to International Facility Management Association to reflect the inclusion of the newly-added Canadian chapter. Today there are more than 24,000 members in over 100 countries around the word (IFMA, n.d.). Because the IFMA is such a prolific organization, and is the most commonly referenced, the definition of facilities management given by the IFMA will be used for the purpose of this study. The IFMA defined the profession as follows: "Facility management is a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology" (IFMA, n.d.). Again, there have been many attempts to define facilities management in the past, but as Nor et al. (2014) claimed, the IFMA definition shares a common mission and vision with the others.

The definition given by the IFMA (n.d.) is broad in nature, and does not provide much insight into the actual duties of a facilities director. In order to clarify the duties associated with facilities management, the IFMA developed 11 competency areas, and various competencies for each area. The competency areas, according to the IFMA, are:

- Communication
- Emergency Preparedness and Business Continuity
- Environmental Stewardship and Sustainability
- Finance and Business
- Human Factors
- Leadership and Strategy
- Operations and Maintenance
- Project Management
- Quality
- Real Estate and Property Management
- Technology

Several authorities on educational facilities and facilities management referenced and discussed the importance of each of these competency areas (Atkin & Brooks, 2009; Cotts et al., 2010; Earthman, 2009; Tanner & Lackney, 2006). Even more literature is available that relates to one or more of the individual areas. The remainder of this section will examine literature related to each of these competency areas and the associated competencies as identified by IFMA.

Communication

As with any managerial or leadership position, the ability to communicate effectively is an important skillset for success. There is an abundance of literature related to the importance of communication, and a variety of methods and strategies associated with it. The body of literature related specifically to facilities management is small in comparison, but the topic of communication is present within. From the perspective of leadership studies, authorities such as Fullan (2001), and Northouse (2013), agreed that communication is vital to the success of a leader. Fullan (2001) emphasized the importance of leaders effectively communicating the intricacies of change initiatives, while Northouse (2013) discussed communication as a key variable in the emergence of leadership itself. Experts in the field of educational leadership also demonstrate an appreciation for the importance of communication. Glover (2013) advocated the use of open-inquiry and dialogic leadership among educational leaders. Sergiovanni (2007) implied communication skills are important for meeting the basic competencies of school leadership. Wiggins and McTighe (2007) and Schlechty (2011) both discussed the importance of effectively communicating the mission and vision of a school or school

system. Hall and Hord (2001) also noted the importance of communication within the framework of change initiatives in schools.

Literature explicitly related to communication in facilities management is also available. In a research study conducted by Sullivan, Georgoulis, and Lines (2010), communication skills were identified as the second most important competency area for future facilities directors to develop. This skill was ranked second, behind leadership. Fraser, Gunawan, and Goh (2013) reported that organizations identified communication as the most important skillset related to human factors within facilities management. The IFMA (n.d.) described articulating facilities-related plans and effectively reporting facilities-related information as competencies of the communication competency area. Among the constant references to competencies, Earthman (2009) most clearly emphasized the importance of articulating facilities-related plans. He outlined the importance of communication in all of the steps related to both new facilities planning and strategic planning for existing assets. Bull and Brown (2012) conducted a study examining communications among facilities directors; the authors reported ineffective communication in relation to change initiatives as a common complaint of end users. Atkin and Brooks (2009) and Cotts et al. (2010) continually referenced the necessity of effectively communicating facilities department needs to the larger administrative organization.

Emergency Preparedness and Business Continuity

Nor et al. (2014) identified emergency preparedness as a competency area that has grown rapidly in importance since the attacks on the World Trade Center in 2001. Indeed, the inclusion of the topic in the IFMA competencies, and the many references to it in the

literature related to facilities management indicates that it has become firmly established as a duty of today's facilities directors. Hardy, Roper, and Kennedy (2009) confirmed the existence of emergency preparedness and business continuity in duties of facilities directors in a research study investigating emergency planning procedures of facilities directors. The authors reported 78% of organizations identified facilities departments as the entity responsible for planning evacuation procedures. They also posited that 71.4% of organizations identified facilities departments as the primary author of emergency plans. However, the authors noted that there was less evidence to suggest facilities departments organized regular drills of these plans, or had workable continuity plans.

The literature related to facilities management implied the facilities director is one individual who should have a vast amount of relevant knowledge in emergency planning due to the nature of the job. Because facilities directors are familiar with building blueprints and work to ensure regulatory compliance with various local, state, and national codes, these individuals should, either singularly or in cooperation with others, create and evaluate emergency plans, procedures, and policies (Atkin & Brooks, 2009; Cotts et al. 2010; Earthman, 2009; Tanner & Lackney, 2006; USDOE, 2003). School system facilities directors may have a slightly different role in emergency preparedness and business continuity than other organizations. Because many school systems cover large geographical areas and are made up of multiple campuses and many buildings, the facilities director may not be completely responsible for these plans. Instead, facilities directors for school systems may work in conjunction with other district leaders and site administrators to create and evaluate such plans. The New Schools Venture Fund (2008) outlined one such example of this arrangement in the publication *Facilities Management and Maintenance*.

Emergency preparedness and continuity were described as a collaborative effort; although, the ultimate responsibility to ensure adequate planning and preparation was ascribed to district-level administrators.

Environmental Stewardship and Energy Management

Several sources noted environmental stewardship and energy conservation as an area of emerging need ascribed to the duties of facilities directors (Atkin & Brooks, 2006; Earthman, 2009; Tanner & Lackney, 2006; USDOE, 2003). Cotts et al. (2010) summarized this emergence most succinctly,

> Rapid change in the interest and acceptance of green or sustainable buildings and building operations has occurred over the last decade. The perceived ability to reduce costs, improve employee satisfaction, and help to "save the earth" has given facility managers a dramatic new area of focus.
>
> It is a natural fit for facility managers to understand and embrace the concepts of sustainability and lead the effort to create long-range savings and implement sustainable practices for their organizations. (p. 167)

Facilities directors are indeed in the position to significantly impact the environmental sustainability and energy consumption of an organization based on their knowledge of building systems and influence on operational settings.

The need for sustainability and reduced energy consumption stems from multiple motivating factors; recent research suggests that improved sustainability can have positive impacts on the working environment, For example, improved energy efficiency can lead to financial benefits. The USDOE (2003) cited "improved occupant health, motivation, and productivity" as benefits to pursuing environmental stewardship and sustainability in schools (p. 61). Durmus-Pedini and Ashuri (2010) listed several other environmental benefits of such efforts, such as the reduction of carbon emissions, fresh water waste, solid waste, and the conservation of other natural resources as environmental benefits. They

also asserted that improvements in occupant health and satisfaction led to statistically significant reductions in absenteeism and employee turnover.

Financial issues related to sustainability and energy conservation efforts are more paradoxical; while some efforts have proven to produce cost reductions, the means to those ends sometimes constitute financial burdens. Earthman (2009) pointed out that "green building" in new construction has historically cost between 2% and 5% more than traditional construction (p. 262). Although that is a small percentage, when considered on the scale of modern school construction costs, that seemingly insignificant amount can constitute increases in the millions of dollars range. Unfortunately the desire to reduce final construction costs often overshadows the need for improved sustainability methods and features. As Rose (2007) stated, up-front costs seem to be the main point of focus for funding bodies. Durmus-Pedini and Ashuri (2010) also noted that environmental concerns and social needs generally did not prevail over financial concerns when planning for new schools. There are, however, methods of improving sustainability and reducing energy consumption that facilities directors can implement without dramatic financial investment. Behavioral change initiatives have been shown to radically reduce energy consumption, resulting in both environmental and financial benefits (Cotts et al., 2010; Nielsen, Jensen, & Jensen, 2012).

Despite the financial hurdles to improving sustainability, many organizations and facilities directors are being forced to make changes. Facilities directors must ensure organizational compliance with regulatory codes and legislative mandates for improved sustainability (Atkin & Brooks, 2009). Elmualim, Czwakiel, Valle, Ludlow, and Shah, (2009) said, "Governments at both the national and international level are using regulation to

reduce carbon emissions and manage energy demand" (p 95). They discussed the increasing demand for facilities directors to oversee the implementation of strategies and programs to comply with such regulations. Atkin and Brooks (2009) also pointed out that organizations are facing new demands from the general public to be good stewards of the environment and both natural and fiscal resources.

Although some sustainability efforts are financially burdensome and legislative mandates have been necessary to force the hand of organizations in the past, recent literature suggested that trend might be changing. Based on observed improvements in occupant health, attendance, and turnover, as well as marked reductions in energy costs, facilities management in large organizations has garnered more attention in the recent past. Nor et al. (2014) said organizations with expansive facilities are beginning to appreciate the strategic value and importance of facilities as well as the job facilities directors perform. Several authorities asserted that total life-cycle cost of facilities is slowly becoming part of strategic planning conversations (Atkin & Brooks, 2009; Cotts et al., 2010; Durmus-Pedini & Ashuri, 2010; Earthman, 2009; Elmualim et al., 2009; Tanner & Lackney, 2006). Cotts and Rondeau (2004) remarked that utilities cost is often one of the largest expenditures of facilities department budgets. Cotts et al. (2010) cited evidence of financial paybacks of 20 times the initial sustainability improvement investment over the projected life of a building. Because of these possibilities, many organizations have voluntarily initiated active sustainability campaigns within their facilities departments through partnerships with external entities and behavior-based programs (Hightower & Highsmith, 2013; Nielsen et al., 2012; New Schools Venture Fund, 2008).

Finance and Business

Finance and business operations are key areas of any organization that must be thoughtfully executed if the organization is to remain intact beyond initial start-up. In his book *Good to Great*, Collins (2001) reported findings of a study that investigated common denominators among companies that transformed marginal performers to industry leaders. Collins's book focused heavily on leadership, but practical, disciplined finance and business decisions were also discussed frequently. Although his focus was primarily for-profit entities, the importance of financial and business practices is important in public education systems as well. The IFMA (n.d.) identified three key competencies for facilities directors under the competency area of finance and business: budgeting, contract management, and procurement management.

According to the IFMA (n.d.), facilities directors should be skilled in the development, articulation, and assessment of budgets. Cotts and Rondeau (2004) reported that facilities department budgets are often the second or third largest budgets within an organization. These budgets are often diverse in their content, have immediate and future needs aspects, are affected by regulations, and contain funds for reactionary needs. Lavy (2008) conducted a study in which facilities management students analyzed and assessed college facilities for evidence of focus on key competency areas in the field of facilities management. Lavy's report concluded that facilities management budgeting for the building in question required a detailed life-cycle cost analysis and thorough forecasting of future operational needs. In addition to budgeting for the operation of multiple buildings, school system facilities directors also must be able to budget for capital projects,

department staffing, equipment and supplies, training, and other overhead items (Cotts et al., 2010; Cotts & Rondeau, 2004).

Most authorities on facilities management agreed that budgeting must be tied to strategic planning of the organization (Atkin & Brooks, 2009; Cotts & Rondeau, 2004; Cotts et al., 2010; Earthman, 2009; Tanner & Lackney, 2006). Facilities directors must be able to articulate the financial needs related to the physical infrastructure for the organization. Atkin and Brooks (2009) and Cotts et al. (2010) wrote that facilities directors must be intimately aware of the current state of the physical assets they manage in order to accurately forecast the amount of funding needed to operate and maintain them. They also asserted that facilities directors must be able to assess the current physical needs of the organization for the purpose of budgeting for expansions or new construction. Detailed audits of all facilities and equipment, historical operating and maintenance data, and end user needs assessments are all recommended by the authors as the prerequisites to accurate planning and budgeting. Accurate articulation of budget needs requires facilities directors to report this information in a concise manner. Earthman (2009) posited that facilities directors are often required to work in conjunction with other departments within the school system administration to compile facilities' plans and budgets. He emphasized the importance of projecting changes in future educational program offerings as well as enrollment numbers, and advised that facilities directors should seek input from relevant experts throughout the process.

Facilities directors are also required to assess the state of their current budgets on a continuous basis. Cotts and Rondeau (2004) said, "Facility managers manage a cost center, a large cost center. This means facility management costs will be constantly under

scrutiny" (p. 92). Furthermore, facilities directors, along with other school system personnel, should be aware of scrutiny from outside stakeholders and be committed to being good stewards of appropriated funds (Kreassig, 2007). Because a large portion of a facilities department budget is set aside for costs that result from emergency repairs or replacement, or are otherwise not fixed or easily anticipated, facilities directors have to prioritize spending in other discretionary areas within the constraints of their current budgets. Careful monitoring of spending for contracted services and procurement is also a necessity (Cotts et al., 2010; Tanner & Lackney, 2006; USDOE, 2003).

Contract management is the second competency identified by the IFMA (n.d.) under the finance and business competency area. Some school systems contract the entirety of facilities management operations as a cost-saving measure, a method of maximizing funding for instructional use; the New Schools Venture Fund (2008) outlined one such example of this practice. However, the USDOE (2003) cautioned that although contracting facilities management in part or in full is an option for school systems, the report recommended that the impact of such decisions on the work environment should be carefully considered. Additionally, the report recommended that even if all facilities management operations are contracted, the school district should still employ a dedicated facilities director to oversee operations.

In school systems that do employ a dedicated facilities director, that person is generally charged with managing facilities-related contracted services. The IFMA (n.d.) described contract management as the negotiation, monitoring, assessment, and resolution of conflicts of contracted services. School systems that do not contract the entirety of facilities management services often contract for some facilities-related services. These

services vary among individual school systems, but some commonly-referenced services contracted by school systems include: general construction, landscaping and mowing, preventative maintenance, cleaning services, and large-scale installation of equipment (Tanner & Lackney, 2006; USDOE, 2003). Jensen (2011) argued the responsibility of analyzing possible risks of contracting services falls on facilities directors. When associated risks are deemed acceptable, the facilities director must negotiate the terms of the contract, including specific agreements regarding quality of service expectations. The service provided by the contractor should be monitored and assessed regularly by the facilities director. Finally, facilities directors must communicate with service providers to express inadequacies of service and resolve any contract disagreements (Atkin & Brooks, 2009; Cotts et al., 2010).

The final competency of the finance and business competency area identified by the IFMA (n.d.) is related to procurement management. Facilities directors are tasked with procuring equipment and supplies needed for facilities management services. In this effort, facilities directors must exercise careful planning to determine needed supplies, as well as good communication in the articulation of what is necessary to operate and maintain facilities (Tanner & Lackney, 2006). This portion of the competency area involves aspects of budgeting and contract management. Careful monitoring of available funding, and regulations for the use of that funding, are important aspects of procurement of supplies and equipment. Furthermore, procurement of some supplies may involve contracts, and to that end requires facilities directors to exercise the contract management skills described above.

Human Factors

The IFMA (n.d.) identified two main competencies within the human factors competency area: first, to support the performance and goals of the overall organization; second, support the performance of the facilities department. Within this competency area, facilities directors must exercise judgment and decision making skills related to staffing, staff needs, and professional development of staff. In a public school system, the first competency in this area requires facilities directors to support the overall mission and vision of the school system through meeting the facilities-related needs of system stakeholders. Fraser et al. (2013) outlined the importance of the human factor competency area in their study on facilities management teams. Pitt (2008) said, "'Facility management is very much a people business and yet still the majority of the research papers that we receive focus upon place and process rather than people and process'" (as quoted in Fraser et al., 2013, p. 254).

The IFMA (n.d.) recommended the use of staff needs assessments as a tool to aid facilities directors in meeting the requirements of the first competency. Lavy and Bilbo (2008) also approved of this recommendation. The authors argued that end user needs are too often overlooked, and should be an integral portion of facilities-related planning and operational procedures. Lavy and Bilbo reported that only 57% of participants in their study included teachers in long-range facilities planning, and even less include parents and students in the process. They argue that failure to include these space users constitutes a gross oversight on the part of the planning team. The USDOE (2003) claimed that including stakeholders from all levels is important in facilities planning so that all stakeholders felt their input was valued. The guide went on to suggest that the planning process could, in

fact, be more important than the actual implementation of the plan in terms of supporting the goals of the school. Earthman (2009), as well as Tanner and Lackney (2006), also emphasized the importance of end user needs for facilities planning and operation purposes. Cotts et al. (2010) said facilities directors should strive to align their departments with the goals of the organization, and advised facilities directors to make use of end user needs assessments on a recurring basis. Finally, multiple sources also discussed the responsibility of facilities directors to ensure the safety and security of building occupants, as well as the accessibility of facilities related to legislation such as the Americans with Disabilities Act of 1990 (Atkin & Brooks, 2009; Cotts et al., 2010; Earthman, 2009; Tanner & Lackney, 2006).

The second competency in this area addresses facilities department staffing issues. The IFMA (n.d.) indicated facilities directors should be skilled in staffing their departments. Cotts et al. (2010) noted that in many large organizations, facilities directors often act as a stand-alone human resources department for their staff. Several authors argued that facilities directors should have the most influence on who is employed in their departments based on the diversity of skills needed for adequate staffing, as well as the dissonance between the functions of their department as compared to the purpose of the overall organization (Atkin & Brooks, 2009; Cotts et al., 2010; USDOE, 2003). Outsourcing facilities department staff is also an option discussed in the literature, but as previously mentioned that function falls under the contract management competency. In outsourcing scenarios the facilities director is still the recommended individual to manage the contracted staff (Atkin & Brooks, 2009; Cotts et al., 2010; USDOE, 2003).

Providing training and professional development for department staff is also an area of this competency (IFMA, n.d.). The USDOE (2003) outlined the importance of the ability to train employees by highlighting that it is often difficult or impossible to find individuals already possessing necessary skills for work in facilities departments. Furthermore, the guide declared professional development is required to remain in compliance with several federal, state, or local regulations such as asbestos awareness or hazardous materials use and disposal. Fraser et al. (2013) advocated team building training as a means of increasing productivity within facilities departments. For example, team cleaning has been shown to increase efficiency and quality of custodial services, but does require specialized training (Campbell, 2005; USDOE, 2003). Costs of training and professional development were also discussed in the literature. Some activities might require special materials or outside consultation, and many training or professional development activities require employees to give up time-on-task, which results in labor costs. The USDOE (2003) outlined several strategies for facilities directors to keep these costs as low as possible. For example, training costs can be shared through partnerships with other organizations, or reduced through developing streamlined training courses. The report also recommended performing on the job training to reduce losses to time-on-task. Nevertheless, some financial cost must be expected; Cotts et al. (2010) declared facilities directors should strive to set aside at least 2% of the total departmental personnel budget for training and professional development.

Staff and department evaluation is the final component of the second competency in the human factors area. The IFMA (n.d.) and the literature argued that facilities directors should rely on data and observation in conducting evaluations. Specifically, the literature

suggested using benchmark data, needs assessment data, and space user satisfaction survey data as sources for supplementing observation of employee performance for evaluation purposes (Atkin & Brooks, 2009; Cotts et al., 2010; USDOE, 2003). Other types of useful evidence referenced included facilities assessments and financial records (Earthman, 2009; Cotts & Rondeau 2004). All of these records and recorded notes of observations can be used to compare an employee's performance to job specific performance standards. Although conducting evaluations and delivering results to employees is sometimes an undesirable task for facilities directors (USDOE, 2003), formal performance evaluations can aid employees in improving their performance, and in turn move the department closer to meeting the needs of the overall organization (Cotts et al., 2010).

Leadership and Strategy

The IFMA (n.d.) identified three broad competencies for this competency area: providing leadership to the facilities department, providing leadership within the overall organization, and planning strategically. Literature related to leadership in professional organizations and educational settings is abundant. Likewise, the literature related to facilities management is replete with references to the importance of leadership skills. Strategic planning is also a commonly referenced theme in the literature related to facilities management. This competency area is so broad in scope that it overlaps with each of the other competency areas in some way.

An exhaustive review of literature related to leadership and strategy in general, or in the field of education would be a monumental task. Several of the authors who have already been mentioned in the communication competency area have published

authoritative works on leadership, and many also addressed strategy. Collins (2001) devoted an entire chapter to what he called "level 5 leadership" which chronicled the trajectory of companies that developed into industry leaders (pp. 17-40). He also routinely referenced strategic planning for organizational optimization. Northouse (2013) explored the many approaches and theories of leadership that were developed in his book, and described planning and strategy as traits of managers and leaders. Hall and Hord (2001) and Fullan (2001) expounded on the intricacies of leading an organization through a change initiative. Sergiovanni (2007) and Glover (2013) both addressed aspects of leadership in education.

Literature related specifically to leadership among facilities directors is not nearly as available, but most authoritative works discuss the topic within the context of facilities management. Furthermore, leadership and strategic planning are often discussed concurrently in facilities management sources. Cotts et al. (2010) argued that facilities management has evolved to require leadership; they claimed simple technical and managerial skills no longer suffice in today's facilities departments. The growing need for business leadership skills among facilities directors was cited as evidence of the evolution of the profession. Whereas in years past, facilities directors may have been able to perform their duties without much business leadership skill, the recent increase in appreciation of facilities as an organizational asset has increased the demand for leadership ability among facilities directors (Atkin & Brooks, 2009; Cotts & Rondeau, 2004; Cotts et al., 2010). Barnes (2010) supposed the profession is becoming increasingly linked with corporate-level leadership of organizations based on the strategic value that competent facilities directors bring to the pursuit of achieving organizational goals.

The growing requirement for leadership abilities in the profession is also evidenced in the literature by various authors underscoring the woefully insufficient numbers of facilities director degree and certification opportunities, and deficiencies among those available. Sullivan et al. (2010) conducted an empirical study of the profession of facilities management. The authors cautioned that large numbers of facilities directors in the United States are approaching retirement, and the current number of developmental programs for the profession will not be sufficient to overcome attrition. They asserted that leadership was identified as the single most important competency area for facilities directors. Hightower and Highsmith (2013) also warned a shortage of competent facilities directors is imminent due to forecasted retirement numbers and limited training programs. They authors concluded by issuing recommendations for future research aimed at reducing the dissonance between training curricula and real world application of facilities management competencies. Although some authors criticize available training programs, there are examples of collegiate degree programs in facilities management, and evidence of leadership and strategy studies within their curricula. Lavy (2008) and Lavy and Bilbo (2009) reported results of studies conducted by facilities management students; both projects included leadership and strategy aspects.

Two authorities specifically addressed leadership and strategy competencies in the field of educational facilities. Both Earthman (2009) and Tanner and Lackney (2006) developed their entire text around the planning aspect of educational facilities. Earthman's work consisted of a systematic description of the planning process for constructing new schools and maintaining existing schools. Within his work, he implied the importance of leadership skills related to the facilities portion of strategic planning in school systems.

Each of the other competency areas was discussed as areas for attention within the process, as well as the responsibilities of the various departments of a school system while completing these plans. While Earthman did not specifically address the leadership of this process, his description of the process echoed themes found in Fullan's (2001) work on change processes, as well as themes from Glover's (2013) articulation of inquiry based discussion as a leadership tool. Tanner and Lackney (2006) outlined the leadership aspect of facilities management more directly in their work. The authors noted that the overall facilities plan may be lead by the Superintendent, but is often delegated to the facilities director. They also pointed out that facilities director is a title appearing more frequently in school district administrative organizational charts as school systems grow and managing facilities becomes more complicated.

Some might contend that managing school facilities does not constitute leadership, but rather serves as a function of management. However, Tanner and Lackney (2006) asserted that facilities management requires "strong leadership" to advocate for departmental needs and to execute departmental functions (p. 183). Cotts et al. (2010) boldly declared, "Facility management is a contact sport and only dynamic leaders will ever truly be successful" (p. 61). Although the necessity of competent leadership among facilities directors was often mentioned, no particular leadership style or philosophy was specified in the literature reviewed for this study.

Operations and Maintenance

Barnes (2010) explained that individuals outside the profession often perceive facilities management as an ancillary function of the organization. He theorized, and cited evidence to support his notions, that such false perceptions have been perpetuated by a

sole concentration on operation and maintenance functions of facilities departments. The IFMA (n.d.) list of competency areas and related competencies validated his assertion that operation and maintenance functions are among the most common duties of facilities directors. The operation and maintenance competency area includes more specific competencies than any of the other areas. The five competencies identified by the IFMA in this area were: assessing facilities, managing operations and maintenance, managing occupant services, managing maintenance contracts, and operational planning.

Assessing the conditions and needs of facilities is a common theme in the literature related to operation and maintenance, as well as several other competency areas. Planning for new facilities or renovations to existing buildings requires accurate assessment of facilities (Earthman, 2009; Tanner & Lackney, 2006). Creating and implementing emergency preparedness and disaster recovery plans requires facilities assessment (Hardy et al., 2009; Nor et al., 2014). Many sources advised facilities directors to use data from building and systems assessments to create life-cycle cost analyses to inform budget decisions and locate areas for cost reduction such as energy consumption or contracted services (Atkin & Brooks, 2009; Cotts & Rondeau, 2004; Cotts et al., 2010). The USDOE (2003) identified regulatory compliance, end user satisfaction, and work order efficiency as three other areas facilities directors should monitor through facilities assessments. Lavy and Bilbo (2008) underscored the importance of facilities assessment in simply keeping facilities operational through appropriate maintenance.

Cotts et al. (2010) identified several aspects that make up facilities operations. Plant operations, energy management, waste management, supply management, renovation management, relocation management, furniture and equipment management, disaster

recovery, maintenance and repair, security, and fire and life safety are among the areas they identified, and discussed in the other literature. Within the area of plant operations, Cotts et al. listed heating, ventilation, and air-conditioning (HVAC), facility transportation (i.e. elevators, escalators, etc.), electrical infrastructure, emergency power generation, and plumbing systems. According to the IFMA (n.d.) facilities directors must be skilled in managing the procurement, installation, operation, maintenance, and disposal of facilities elements to reach this competency. Fraser (2014) conducted a literature review of maintenance strategies and identified thirty-seven distinct strategies, but determined only four were widely used based on available literature. Several sources pointed to maintenance funding and practices as one of the most crucial areas for organizations (Atkin & Brooks, 2009; Cotts et al., 2010; Lavy & Shohet, 2010). Cotts et al. (2010) described maintenance funding as "an area of crisis for the profession" (p. 346).

Managing occupant services varies more than managing facilities operations and maintenance depending on the nature of the organization. Some commonly referenced occupant services are food, transportation fleet, currier, custodial, communications, copy, records management, concierge, and security services (Atkin & Brooks, 2009; Cotts et al., 2010; IFMA, n.d.). Cotts et al. reported there is a growing trend in facilities management to outsource occupant services; however, as noted above, the management of such contracts is also a competency identified by the IFMA (n.d.). This competency overlaps with other competencies even further; the description given by the IFMA indicated assessment is necessary to determine required contracted services, while evaluation of those contracted services are also within this area.

In addition to outsourcing occupant services, maintenance services were also identified in the literature as an area that is commonly considered for outsourcing (Atkin & Brooks, 2009; Cotts et al., 2010, USDOE, 2003). When maintenance services are contracted, the IFMA (n.d.) specified the same general contract management performances as discussed above within this competency. Careful management of maintenance service contracts is important for maintaining budget control and quality of service (Cotts & Rondeau, 2004; USDOE, 2003). Several sources indicated that the decision to outsource occupant or maintenance services is generally made on the basis that contractors can provide organizations with superior service while also offering the benefits of economies of scale (Atkin & Brooks, 2009; Cotts & Rondeau, 2004; Cotts et al., 2010; Tanner & Lackney, 2006). However, some literature refuted this theory; Ikediashi, Ogunlana, Boateng, and Okwuashi (2012) conducted a study to determine what facilities directors perceived as risks in the practice of outsourcing. The study challenged the supposition that service quality is improved, and underscored the importance of contract management competency as defined by IFMA (n.d.). Ikediashi et al. reported "poor quality of service" as the highest ranked perceived risk, and "inexperience of client" was the third highest ranked perceived risk (p. 306). Furthermore, DeLuca (2013) conducted a study to examine the financial impact of consolidating non-instructional services among multiple school districts on the assumption costs could be reduced based on economies of scale. DeLuca found no empirical evidence to support the assumption, and even cited slight cost increases among business functions of school districts as a result of consolidating services.

The final competency in this area also largely overlaps with other competency areas and individual competencies. According to the IFMA (n.d.), facilities directors must

monitor end user satisfaction, monitor use and performance of facilities, produce accurate life-cycle cost data, and develop procedures governing the operation and maintenance of facilities. Each of these areas was discussed in the literature related to strategic planning (Atkin & Brooks, 2009; Cotts et al., 2010; Earthman, 2009; Tanner & Lackney, 2006). Furthermore, literature relating to finance, facilities assessment, sustainability, contract management, and human factors is also relevant for this competency.

Project Management

The project management competency area defined by the IFMA (n.d.) included two broad competencies; planning projects and managing or overseeing the execution of projects. Again, these competencies are broad, and overlap to some degree with others already discussed. Other literature relevant to this competency includes: literature related to finance, contract management, procurement management, strategic planning, occupant services, maintenance contracting, and operational planning. However, there are portions of this area that are exclusive. According to the IFMA description, the project management and oversight competency includes executing or overseeing construction and renovation projects.

Beyond assisting with forecasting future facilities needs and developing capital expense plans (Earthman, 2009; Jensen & Maslesa, 2015; Tanner & Lackney, 2006), the literature suggested competent facilities directors are well-suited to coordinate or oversee the execution of construction or renovations based on relevant knowledge (Atkin & Brooks, 2009; Cotts et al., 2010). Taschner and Clayton (2015) reported that 70% of facilities directors they surveyed managed or oversaw projects on a daily basis. Coordinating and executing such projects often requires facilities directors to exercise competency in many

areas. Jensen and Maslesa (2015) presented a model for the evaluation of sustainability within construction and renovation projects. They outlined the model in response to the emerging importance of the sustainability competency area (Atkin & Brooks, 2009; Cotts et al., 2010; Earthman, 2009; Taschner & Clayton, 2015). Kamarazaly et al. (2013) identified ensuring building functionality as an important duty of facilities directors. Based on that assertion, facilities directors should constantly evaluate projects with end user requirements in mind, and suggest changes or alterations to ensure the final product will be functionally effective while aligning with organizational goals (Atkin & Brooks, 2009; Cotts et al., 2010; Earthman, 2009; Tanner & Lackney, 2006).

Quality

The IFMA (n.d.) identified four competencies in the quality competency area. Each of the competencies in this area is broad in nature, and are present in aspects of the other areas discussed above. According to the IFMA, facilities directors should demonstrate competency in quality in the following ways: the development of standards for the facilities organization; evaluation of services provided; implementation of work improvement; and, ensuring regulatory compliance. As noted above, Kamarazaly et al. (2013) said facilities directors should work to ensure the functionality of buildings in terms of meeting the needs of organization users. The four competencies in this area are closely aligned with the goal of ensuring functionality of the built environment.

The first two competencies ascribed to this area can be linked with literature related to human factors, leadership and strategy, and operations and maintenance. Assessment and evaluation of facilities and processes has been discussed multiple times in this review. The USDOE (2003) recommended the creation of service standards as an

important prerequisite of accurate assessment and evaluation of quality of services. Lavy and Bilbo (2009) argued that effective strategic planning could not occur without accurate facilities assessments, and that accurate assessments are established by creating benchmarks for facilities conditions. They went on to discuss the importance of creating standards for storing assessment and evaluation data so that it is easily accessible to those who need the information to make decisions. Atkin and Brooks (2009) and Cotts et al. (2010) advised facilities directors to make use of user needs assessments to evaluate the quality of service provided by facilities departments and outside contractors. The IFMA (n.d.) also recommended analyzing utility, work order, and work history data for consideration in quality evaluations.

The third competency of this area, implementing work improvement, is correlated with literature related to leadership and strategy, and human factors. Both Earthman (2009) and Tanner and Lackney (2006) discussed the importance of planning for educational facilities. Both works emphasized increased functionality and serviceability of educational facilities as a result of thoughtful planning and careful project execution. Related leadership texts are also relevant to discussions related to work improvement implementation. Northouse (2013) outlined several leadership philosophies that have been shown to increase organizational improvement. Likewise, Collins (2001) discussed leadership philosophies and strategies for improvement practiced by very successful private sector businesses. Literature related to effectively implementing change initiatives is also strongly associated to work improvement initiatives (Fullan, 2001; Hall & Hord, 2001). Multiple sources advocated the use of work tracking and prioritization systems to assist facilities directors in increasing productivity (Atkin & Brooks, 2009; Cotts et al.,

2010; USDOE, 2003). Those same authors pointed to the use of technology, and computer-aided facilities management (CAFM) as specific tools for facilities directors to use. Finally, research related to professional development and training applies to work improvement. Regular training and professional development was advocated by the USDOE (2003). Cotts et al. (2010) advised facilities directors to set aside 2% of their staffing budget to provide training and development to their staff as a means of increasing work efficiency, quality, and safety.

The final competency of this area, regulatory compliance, overlaps with several other competency areas. Barnes (2010) noted the duties of facilities directors are often equated with operations and maintenance; in that vein, literature related to human factors, operations and maintenance, and project management is applicable to regulatory compliance concerns. However, there are also finance and business related functions associated with regulatory compliance. Taschner and Clayton (2015) reported that 90% of facilities directors they surveyed monitored and ensured regulatory compliance on a regular basis.

In relation to human factors, operations and maintenance, and project management, facilities directors were tasked with keeping facilities and users in compliance with many codes, regulations, and policies stemming from the federal, state, and local level. The Occupational Safety and Health Administration (OSHA) published detailed guidelines for helping ensure the safety and health of employees; however, according to OSHA (n.d.) those regulations do not govern public school buildings. The USDOE (2003) pointed out facilities directors must monitor and train employees in occupational safety procedures such as asbestos abatement and hazardous waste disposal. One trend lately emerging in

custodial services is the use of "green cleaning," or cleaning facilities using environmentally-friendly products in place of harsh chemicals that can be dangerous to workers, occupants, and the environment (Graebert & Fischer, 2014; Hodges, 2005; Sawchuk, 2009). Beyond occupational codes and regulations, facilities directors must also monitor and ensure compliance with other building safety measures. Building codes, fire codes, and compliance with accessibility regulations such as the Americans with Disabilities Act of 1990 all fall within the scope of this duty. Earthman (2009) pointed out that the Rehabilitation Act of 1973, and the Education for All Handicapped Children Act of 1975 (commonly referred to as the Individuals with Disabilities Education Act or IDEA) were both precursors to the Americans with Disabilities Act. Earthman noted these acts were all influenced by accessibility standards created by the American National Standards Institute in 1961. Indoor air quality (IAQ) compliance based on standards as prescribed by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) is also a common theme in the literature (Atkin & Brooks, 2009; Cotts et al., 2010; Earthman, 2009; Tanner & Lackney, 2006). Elmualim et al. (2009) said facilities directors are increasingly responsible for monitoring and ensuring compliance with regulations and codes related to carbon emissions. The IFMA (n.d.) tasked facilities directors with ensuring the safety and functionality of facilities by complying with regulations through assessing facilities, training employees, monitoring building operation and maintenance, and overseeing construction and renovation projects.

Although facilities directors are often witnessed monitoring and ensuring regulatory compliance with the human and physical aspects of an organization, they also have to consider regulatory compliance within the framework of the finance and business

competency. Cotts and Rondeau (2004) detailed several facets of compliance within financial operations of facilities departments in their work *The Facilities Manager's Guide to Finance & Budgeting*. The authors discussed competitive procurement procedures that many public organizations must adhere to, they outlined models of executing purchases within organizations for auditing compliance, and they articulated the importance of adhering to accounting standards. Cotts and Rondeau also noted facilities department budgets often contain multiple accounts earmarked for specific purposes (e.g. Capital Improvement), and facilities directors must be aware of and abide by policies and regulations for fund transfers within the budget. This is particularly important for facilities directors of public schools. Federal and state regulations related to finance and business practices also affect public education facilities directors. Vincent and Monkkonen (2010) conducted a study that analyzed how regulations influenced school construction costs. Their research concluded that various state regulations and prevailing wage laws such as the Davis-Bacon Act of 1931, which set minimum labor rates for public projects, increased school construction costs by as much as 30%.

Real Estate and Property Management

The real estate competency area identified by the IFMA (n.d.) had two specific competencies for facilities directors; to develop and implement a master plan for all organizational real estate assets and to manage and oversee real estate assets. This area overlaps with the environmental stewardship and sustainability, finance and business, human factors, leadership and strategy, operations and maintenance, and quality competency areas. The wording of the IFMA performances within the two competencies of this area suggests that the competency area is most related to property management

beyond the built environment of facilities management. The first competency is very much related to strategy and planning competencies and the literature discussed in those sections is applicable; therefore, that literature will not be reiterated. The second competency, though, does include functions that are beyond the scope of what has been previously discussed in this review.

The IFMA (n.d.) specified property management beyond the built environment as the focus of the second competency in this area. Specifically, the IFMA identified property needs assessment, acquisition and disposal, and management of property portfolios as duties that fall within this competency. Acquisition and disposal of property, though, is a function unique to this competency. Earthman (2009) outlined the importance and challenges of site selection and acquisition. He cited limited property availability, high costs of property, and unsuitable conditions of available property as the primary challenges in selecting a site for possible acquisition. He also noted there are several options for acquiring property, such as outright purchase, receipt of donation, exercising eminent domain, or obtaining government surplus property. Some smaller school districts and special purpose schools such as charter or magnet schools have reported success with leasing property (New Schools Venture Fund, 2008). However, Earthman (2009) pointed out that leasing property for special purpose schools often results in logistical challenges for transportation. When new construction is required, several factors must be considered before a site can be selected. Tanner and Lackney (2006) and Earthman (2009) advised school systems to partner with architects and engineers to help determine the suitability of a site based on factors such as drainage capability, accessibility to utilities, earth moving and grading needs, and several other considerations.

Proper disposal of property is equally as important to facilities directors. Several sources noted the importance of accurately forecasting property needs and usability for strategic and long-range planning; identifying property that can be disposed of falls within that function (Atkin & Brooks, 2009; Cotts et al., 2010; Lavy, 2008). Facilities directors must exercise competency in complying with various regulations, codes, policies, and financial procedures (Cotts & Rondeau, 2004). Cotts et al. (2010) cautioned that property disposal has become more difficult recently due to environmental concerns. They discussed the possibility of long closing procedures on properties disposed of through sale because of increased investigation of possible environmental or legal issues attached to the property.

According to the IFMA (n.d.) facilities directors must oversee and manage the property portfolio of the organization they serve. This task includes managing property that is owned or leased by the organization, or owned in part by the organization. In cases where facilities management services are outsourced, the facilities director is considered to be managing a portfolio of contract managed properties (IFMA). This portion of the competency includes the acquisition and disposal of properties as discussed above, but also included the management of all existing properties. Cotts and Rondeau (2004) discussed the importance of complying with financial regulations and appropriate tax legislation for property management. Ameyaw (2014) conducted an extensive literature review related to the real estate and property management competency; in his report, Ameyaw, described real estate as an asset of organizations that required careful fiscal management. Cotts et al. (2010) advised facilities directors to keep detailed records of any and all dealings with

lease agreements, services procured through contract (e.g. landscaping service), and payment and tax documents.

Technology

The IFMA (n.d.) said facilities directors should be competent in planning for, directing, as well as managing and overseeing technology related to facilities management. Multiple sources discussed the emerging trend of incorporating advanced technology into facilities management (Atkin & Brooks, 2009; Cotts et al., 2010; Cotts & Rondeau, 2004; Tanner & Lackney, 2006; USDOE, 2003). However, Cotts et al. (2010) warned facilities directors to be sure technology was used to help increase efficiency and productivity. They supposed that many facilities directors allow technology to simply become one more layer to their duties, and thus a burden rather than an assistance tool. Collins (2001) claimed that technology is best used as a tool for improvement of processes that are already efficient and productive, not as a way to transform poor planning and execution into good results. Cotts et al. (2010) supported the use of work order and work tracking software, bar coding systems, regulatory compliance software, analytical software, energy management software, and predictive maintenance software in addition to computers and cellular telephones as means of facilities management improvement.

One of the key benefits of technology to facilities directors outlined in the literature is the ability to improve the various documentation tasks associated with the job (Atkin & Brooks, 2009; Cotts et al., 2010). Assessment and evaluation are topics that have been discussed many times in this review; the appropriate use of technology can greatly assist facilities directors in completing accurate assessments of facilities and processes. Cotts et al. discussed the importance of annual facilities assessments in the pursuit of continually

improving processes and results: "…properly maintained facilities normally are well-documented facilities" (p.457). Work history tracking software can help facilities directors determine when equipment should be replaced rather than repaired; energy use analytical software can help facilities directors pinpoint poorly performing buildings for tune-ups; and bar coding systems can help facilities directors keep accurate consumable product and replacement parts inventories (Cotts et al.).

Another technology referenced in the literature was building automation systems. Building automation systems connect operational features of a facility (e.g. HVAC, lighting, secured entry systems) to computers and networks to allow users to control those systems remotely (Atkin & Brooks, 2009; Cotts et al., 2010; Tanner & Lackney, 2006). Building automation systems have allowed facilities directors to closely monitor operating conditions of equipment, manage operating schedules to match building occupancy, and locate and troubleshoot failing equipment more quickly than in the past (Cotts et al., 2010; Tanner & Lackney, 2006). Tanner and Lackney contended that intelligent buildings, or facilities with building automation systems, have allowed facilities directors to capture large amounts of wasted funding through reduced energy consumption. Although building automation systems are not new, they are mentioned in the literature related to the emergence of technology in the field of facilities management.

In summary, these eleven competency areas, and the competencies represented within each, provide a general overview of the duties of a facilities director. Although each competency area has aspects of exclusivity, there are many situations in which one overlaps with others. Particularly skills in communication, leadership, financial concerns, and issues of maintenance and operations seem to overlap most frequently. Although they

may not exercise skills in each area in their day-to-day duties, each area is important and facilities directors need to be proficient in them all (Taschner & Clayton, 2015).

Impact of Facilities Conditions on Education

Although it is beyond the scope of this study to determine which, if any, facilities-related variables affect education, it is important to review research related to this topic for two reasons. First, the human factors, operations and maintenance, and quality competency areas outlined by the IFMA (n.d.) charged facilities directors with the duty of supporting the mission of the organization through ensuring facilities conditions aid, or otherwise do not hinder the pursuit of organizational goals. Therefore, facilities directors of public school systems play an active role in any relationship between facilities conditions and education. Second, the researcher plans to explore facilities directors' perceptions in relation to how their conduct, and the facilities departments they supervise, impacts the mission and vision of the school systems they serve. In regard to exploring these perceptions, the researcher anticipated discussion of how education is affected by facilities-related variables. The remainder of this section will consist of a brief review of literature related to prior research that studied the impact of facilities conditions on educational achievement. Additionally, literature related to specific facilities conditions that affect education commonly referenced in prior research will be discussed in regard to connections with the duties of facilities directors.

Overview of Prior Research

For many years, scholars and administrators have examined the correlation between school facilities and academic outcomes. Smith (2008) reported that scholars

have conducted research on this topic intermittently since the 1920s. Multiple authorities in the field of educational facilities claimed links exist between facilities conditions and education (Earthman, 2004; Tanner, 2009; Tanner & Lackney, 2006); however, some have criticized the body of research on the topic for various reasons. Smith (2008) suggested the relevant research should be considered with caution based on contradictory findings, methodological concerns, and the relative infrequency of verification through study replication. Medyn (2010) and Stewart (2010) also expressed concerns about the methodology of prior studies. The common criticism among these three authors was the vagueness of research implications. Two factors that contribute to the ambiguity of results are poorly defined variables and poorly defined or inconsistent measurement instruments. Furthermore, the authors identified several inconsistencies of variables and instruments between studies. Smith (2008), and Stewart (2010), also cautioned that previous studies contained inconsistencies of data analysis, and in some cases weak forms of statistical analysis. Medyn (2010) argued prior researchers struggled with this topic based on a difficulty of quantifying educational outcome variables. Medyn also noted that several previous studies relied on self-reporting of facilities conditions from teachers and principals, and as a result could be tainted with excessive bias. Nevertheless, prior research should still be considered for informative purposes. Inasmuch as it does not represent the core purpose of this study, but is useful for informative purposes, the researcher did not intend for this section to be construed as an exhaustive review of research on this topic, but rather an overview of common themes.

Several scholars have attempted to identify relationships between the condition of school facilities and various aspects of education (Smith, 2008). Studies focused on a broad

range of dependent variables such as instructional delivery (Duyar, 2010), academic achievement (Lumpkin, 2013; Tanner, 2009), student behavior (Bowers & Burkett, 1989), and teacher retention (Buckley, Schneider, & Shang, 2004b). According to Duyar (2010), many studies focused on specific independent facilities condition variables. Lemasters (1997) also noted a variety of independent facilities conditions variables among prior research. Duyar (2010) characterized the focus on specific facilities conditions in prior research as a limiting factor for policy makers and educational administrators. He contended that research studying multiple independent variables would be more useful, and based his own study on that model. However, in relation to the scope of this study, prior studies measuring both multiple and single independent variables are useful for consideration.

Duyar (2010) conducted the most recent study discovered that included multiple independent variables. He designed his study based on the approach of two prior studies he admired for their inclusion of multiple independent variables. Duyar described the study carried out by Buckley, Schneider, and Shang (2004a) as one worth imitating. Buckley et al. (2004a) studied the relationship between compliance with health and safety regulations (14 separate variables) and the academic performance of students in the Los Angeles Unified School District. The authors reported a statistically significant correlation between levels of regulatory compliance and academic performance. Duyar (2010) also referenced Lewis' (2001) study that examined the impact of facilities conditions on standardized tests scores in Milwaukee public schools. Duyar (2010) praised Lewis (2001) for adding into his study controls for variations among students (i.e. ability, race and ethnicity, attendance, discipline, socioeconomic status). Lewis reported that up to 16% of

academic performance could be attributed to facilities conditions. Furthermore, Lewis contended that in his study, facilities conditions accounted for more variation in academic achievement than any of the control factors except student ability. Although Duyar (2010) complimented both studies for their methodologies, he claimed his study was warranted based on the limited samples analyzed by Buckley et al. (2004a) and Lewis (2001). In response, Duyar (2010) sampled principals from all 50 states and the District of Columbia.

The studies carried out by Buckley et al. (2004a) and Lewis (2001) could not be replicated on the national scale due to the local exclusivity of measurement instruments used. Duyar (2010) credited works authored by Castaldi (1994) and Schneider (2002) for their influence on the conceptual framework for his study. Schneider's work identified six of the most commonly referenced facilities variables in prior literature. According to Schneider, indoor air quality (IAQ), ventilation and thermal comfort, lighting, acoustics, building age and quality, and school or class size were the most frequently-referenced variables of facilities conditions in research conducted prior to 2002. Duyar (2010) also included restroom cleanliness and maintenance based on suggestions in Castaldi's (1994) work. The final framework for Duyar's (2010) study included the following eight independent variables: maintenance of restrooms, artificial light, natural light, thermal comfort, IAQ, acoustics and noise reduction, the physical appearance of surfaces (i.e. ceilings, floors, walls), and the size and configuration of learning spaces. Data related to these eight variables was measured using a rating instrument developed by the National Center for Education Statistics; school principals in 1,037 schools used the instrument to rate the conditions of their schools. The framework also included the following three control variables: size of school, locale of school (i.e. rural, urban, suburban), and

percentage of students who received free or reduced-price lunch. The dependent variable was instructional delivery, which was measured with a rating instrument similar to the instrument used to assess facilities conditions.

Duyar (2010) conducted multivariate correlational analysis of data collected. The author reported that there was a statistically significant relationship between six of the eight facilities conditions variables measured and the delivery of instruction. According to his analysis, up to 43% of the variation in the quality of instructional delivery could be attributed to facilities conditions with the exception of artificial light and maintenance of restrooms. More specifically, Duyar reported the analysis suggested quality of instructional delivery would increase by the following percentages for every increase of one unit in facilities conditions rating: 22% for classroom size and configuration, 20% for thermal comfort, 17% for physical condition of surfaces, 14% for indoor air quality, 11% for natural lighting, and 11% for acoustics or noise reduction. Duyar claimed these results supported earlier research that found satisfaction with school facilities conditions were generally below average. He also asserted that the study reinforced the notion that certain facilities conditions do have an impact on the quality of instructional delivery and by extension educational outcomes. However, he also noted that the data collection method, and the measurement instruments were limitations to the study. Data was collected through self-reporting, and consisted of subjective ratings of satisfaction with building conditions and the quality of instructional delivery.

Some criticisms of earlier research related to this topic are applicable to the study Duyar (2010) conducted. As discussed above, Medyn (2010) was skeptical of some prior research because of the self-reporting data collection method, and the possibility of

introducing excess bias associated with that method. Duyar (2010) himself identified this as a limitation of his work. Furthermore, Medyn's (2010) criticism also seemed to question perceptual data because of its subjective nature. Smith (2008) suggested prior research should be considered with caution based on the lack of verification through replication; Duyar (2010) attempted to mimic certain aspects of prior research, but according to Smith's (2008) assertion, replication of Duyar's (2010) results are also needed. The study also focused exclusively on one of the identified dependent variables studied by other scholars (i.e. instructional delivery); further research would be required to make specific claims in regard to other areas of the relationship between facilities conditions and educational outcomes. Nevertheless, the findings reported by Duyar are applicable within the scope of this study based on the link between facilities directors and the facilities conditions variables studied.

Facilities Conditions Compared to Duties of Facilities Directors

In prior research, various examinations explored how specific facilities conditions impacted education. In the scope of this study, the discussions of these specific conditions are relevant based on their connection to the duties of facilities directors as outlined by the IFMA (n.d.). Compiling a litany of commonly referenced facilities conditions was challenging because of variations among operational definitions, or general ambiguity of variables found in prior research (Medyn, 2010; Schneider, 2002; Smith, 2008; Stewart, 2010). The researcher carefully compiled specific facilities conditions, although it should be noted that certain aspects of facilities conditions could arguably be classified in more than one area or with a different label. This list should not be construed as exhaustive, nor

should individual items be considered mutually exclusive. The commonly referenced facilities conditions identified by the researcher are (alphabetically):

- Acoustics
- Design
- General Facilities Conditions
- Indoor Air Quality
- Lighting
- Thermal Comfort

The remainder of this section will consist of a discussion of each of these conditions and will include an operational definition, discussion of relevant literature, and discussion of the link between the condition and the duties of facilities directors as defined by the IFMA (n.d.).

Acoustics. Tanner and Lackney (2006) warned educational facilities planners to thoroughly consider acoustical implications during the design of proposed facilities. The authors referenced prior research that reported detrimental health and educational affects among occupants of buildings with poor acoustical qualities. Acoustics was defined by Merriam-Webster as "the qualities that determine the ability of an enclosure (as an auditorium) to reflect sound waves in such a way as to produce distinct hearing" (Acoustics, 2003, p. 11). Tanner and Lackney (2006) discussed the importance of planning to minimize the negative effects of both interior and exterior noise. For the purpose of this study acoustics is defined as: The qualities of a facility that affect noise that originates from within the facility, or exterior noise that infiltrates the facility and is audible to occupants.

The literature is replete with studies that investigated the effects of noise on educational outcomes (Tanner & Lackney, 2006). Woolner and Hall (2010) cautioned that prior research in this area found inconsistent results; scholars such as Smith (2008),

Stewart (2010), and Medyn (2010) asserted that inconsistencies among methodology and tested variables might account for some of the inconclusiveness. Lemasters (1997) reviewed two studies conducted in the 1980s that reported significant findings, albeit inconsistent with one another, in regard to the effect of acoustics on education. She discussed the findings of Cohen, Evans, Krantz, and Stokols (1980), who reported no significant findings in relation to achievement when students were exposed to aircraft noise, but their report did note elevated blood pressures and increased likelihood of task abandonment. However, Hyatt (1982) found significant effects among achievement scores when he compared students exposed to aircraft noise with students who were not exposed. Lowe (1990) reported that teachers ranked noise as one of the facility variables that impacted instructional delivery the most.

More recent research reported a similar pattern of inconsistent results. Maxwell and Evans (2000) found that academic performance improved when noisy classrooms were altered with noise-reducing materials. Hygge, Evans, and Bullinger (2002) reported significant effects between both short and long-term memory, as well as speech perception among students exposed to varying levels of noise. Mondal and Ghatak (2014) linked excessive traffic noise with increased stress levels among students and teachers; Papanikolaou, Skenteris, and Piperakis (2015) reported significant differences in math and reading achievement scores between quiet and noisy schools. However, Xie, Kang, and Tompsett (2011) reported no relationship between noise level and academic achievement existed. Xie et al. did note an apparent relationship between average classroom noise levels and student attendance, but speculated that the relationship might have been a

reflection of a larger classroom environmental quality issue including air quality and other unnamed variables.

Woolner and Hall (2010) argued educators should still attempt to mitigate negative effects of acoustics in spite of the inconsistent findings of prior research. The authors concluded that noise impacts the quality of education, but due to the difficulty of isolating variables for study, the degree of impact could not be definitively determined, Woolner and Hall agreed with Tanner and Lackney (2006) and advised educators to focus their efforts on minimizing acoustical deficiencies in the design phase of facilities, but also cautioned stakeholders to be flexible in terms of altering existing facilities to improve acoustics. Shield, Greenland, and Dockrell (2010) also recommended thoughtful post-construction alterations to improve the acoustics of learning environments. Specifically, Shield et al. recommended careful consideration of materials such as ceiling tiles, flooring materials, and space partitions to help improve learning spaces that are too noisy for occupants.

The role of facilities director includes handling the responsibilities of facilities acoustics. The human factors and quality competency areas identified by the IFMA (n.d.) require facilities directors to ensure the functionality of the built environment through meeting the needs of facilities occupants. In comparison with the acoustics research reviewed, facilities directors can help ensure acceptable acoustics in a number of ways. Tanner and Lackney (2006) and Woolner and Hall (2010) indicated acceptable facilities acoustics are most influenced through careful planning. There was no indication in the literature that facilities directors are expected to possess expertise in the science of acoustics. Most school systems employee architects and engineers with expertise in many relevant areas to design new facilities (Earthman, 2009; Tanner & Lackney, 2006).

However, the literature related to facilities management consistently indicated that facilities directors should provide input on design features and the construction process to ensure organizational goals were addressed in the ultimate functionality of the space (Atkin & Brooks, 2009; Cotts et al., 2010). The IFMA (n.d.) addressed this in the leadership and strategy and project management competency areas.

Facilities directors also contribute to facilities acoustics beyond new construction and renovation projects. Two recent studies advised that adjusting conditions to provide optimal conditions should be an ongoing process after construction (Shield et al., 2010; Woolner & Hall, 2010). Facilities directors were charged with managing and overseeing modifications to facilities under the operations and maintenance competency area identified by the IFMA (n.d.). Shield et al. (2010) recommended the use of materials manufactured with the intent of reducing noise in spaces where noise levels were deemed unacceptable. The literature related to facilities management suggested the facilities directors oversee this type of alteration as a function of operations and maintenance duties (Atkin & Brooks, 2009; Cotts et al., 2010; USDOE, 2003).

Design. Beyond acoustics, there are other fundamental design features of facilities often referenced in the literature, which were previously reported to impact education. Square footage and occupancy density, layout and maneuverability, and furniture or equipment were common topics among studies of conditions of facilities design. For the purpose of this study design is defined as: The qualities of facilities that impact the overall density of occupants, occupants' abilities to maneuver within and among facilities, occupants' ability to use a space for its intended purpose.

Numerous researchers investigated the impact of facilities design on education, although the core subject of available studies varied greatly. School and class size have often been studied as suspected variables of educational efficacy (Schneider, 2002). Lemasters (1997) reported mixed results among earlier studies of this topic; she cited two studies in particular as evidence of inconsistent results. Pritchard (1986) concluded there was no relationship between student density and achievement. However, Rivera-Batiz and Marti (1995) refuted Pritchard's (1986) findings. Earthman (2004) argued that school and class size was important, but ranked those two variables last in comparison with other facilities-related variables that have been studied for their impact on education. Research related to space and student preference was more consistent. Burgess and Fordyce (1989) claimed younger students preferred more space than older students. Cotterall (1984) concluded that open floor plan schools caused more anxiety than traditional classrooms; Heubach (1985) reached the same conclusion. Peatross and Peponis (1995) observed that older students often created makeshift visual barriers to enhance personal privacy.

Cohen and Trostle (1990) conducted a study that found ease of mobility was important to students. Tanner (2009) conducted a study of the effects on academic achievement of three school design factors, including movement and circulation. Tanner found significant correlations between movement and circulation conditions and achievement scores in reading, language arts, math, and science. In general, according to Tanner, student scores were higher in schools with design factors that allowed adequate mobility. He also surmised that mobility and class size were often related, and indicated the results of his study also confirmed research that advocated designing buildings to improve occupant density (Schneider, 2002; Tanner & Lackney, 2006). Duyar (2010)

found that classroom configuration was the facilities design variable that influenced instructional delivery the most.

Lowe (2010) said teachers identified classroom equipment and furniture condition and availability as a variable that significantly influenced their instruction. Ibota (2008) and Healy (2014) discussed the effects of furniture on students in terms of behavior and attention. Ibota (2008) noted that early educational theorists such as Dewey and Montessori were distressed by the lack of availability of properly-sized furniture for young students. He went on to argue that student furniture was usually smaller versions of adult-sized furniture; Ibota pointed out that adults and children do not have identical body proportions and concluded that student furniture should be designed around child proportions. Knight and Noyes (1999) reported a significant correlation between behavior and the amount of time students spent in their desks. Healy (2014) reported similar findings in a more recent observational study. Healy said students spent more time on task when they were seated in ergonomic furniture which promoted good posture. According to her report, administrators cited excessive cost as the main barrier to replacing poorly designed furniture in their schools. Healy advocated for the creation of a system of regulations to govern this aspect of facilities conditions; she argued that workplace regulatory governing bodies (e.g. OSHA) would not allow such deficiencies in the business and industry sector.

Tanner and Lackney (2006) pointed out that the cost of operating a school over its entire usable life exceeds the initial cost of constructing a school, including planning, materials, and labor. Earthman (2009) discussed the importance of projection models for student populations and educational programs during the planning stage of new facilities.

His advice underscored the reality that most educational facilities are altered multiple times throughout their usable life spans. Earthman advised planning for alterations or modifications to both individual spaces and whole buildings for the purpose of forecasting long-range financial needs. Rose (2007) was critical of school systems for being financially short-sighted in terms of facilities budgeting and noted that maintenance and operations costs for facilities are often overlooked.

While the IFMA (n.d.) did not indicate that facilities directors should design schools, the operations and maintenance of schools was clearly defined as a duty of the profession. Monitoring user needs and correcting facilities deficiencies were key performances outlined in this area for facilities directors. Therefore, facilities directors must manage and oversee facilities alterations and renovations aimed at improving space usability. Earthman (2009) warned administrators to prepare for inevitable building alterations that result from changes in the way a space is used. Many school buildings that were originally open floor plan facilities have been renovated with interior walls to separate classrooms as a result of studies such as that of Peatross and Peponis (1995). Tanner (2009) discussed the importance of maintaining maneuverable spaces, both inside and outside of facilities. Older facilities often need modifications for handicapped accessibility and other regulatory compliance measures (Cotts et al., 2010). Furniture often needs to be assembled, moved, repaired, or disposed of on occasion. Facilities directors are charged with overseeing such projects by the human factors, operations and maintenance, and quality competency areas.

General Facilities Conditions. Several very specific facilities conditions variables were identified in the literature; however, some variables such as facility age, state of maintenance, level of cleanliness, and conditions of grounds were often combined under

the heading of "general facilities conditions" (Duyar, 2010; Earthman, 2002, 2004; Schneider, 2002). To be clear, some studies investigated individual variables, but often described those individual variables as part of a broad category of generic conditions. Earthman (2004) said there was sufficient evidence in prior research to conclude that general facilities conditions had a significant impact on education. For the purpose of this study general facilities conditions is defined as: The qualities of a facility such as facility age, state of maintenance, level of cleanliness, and condition of grounds that are observable to occupants.

Multiple researchers claimed that correlations exist between the general condition of facilities and the quality of instruction and learning (Duyar, 2010; Earthman, 2002, 2004; Lumpkin, 2013; Schneider, 2002). Among the research reviewed, Lumpkin (2013) was the only author who reported significant results related specifically to the age of a facility; his conclusion indicated students' scores increased by 6.56% and 3.03% respectively on mathematics and reading assessments when they moved from older schools to newer schools. Lumpkin claimed his study corroborated prior research, which suggested that overall facilities conditions influenced the quality of education, but also conceded that age was not the only variable among overall facilities conditions. Duyar (2010) argued that the age of a facility is often apparent to occupants based on cosmetic appearance, and implied that the facility's perceived quality could have an impact on the quality of instructional delivery. More specifically, Duyar found that the maintenance and conditions of restrooms significantly influenced occupants' perception of the quality of facilities. Schneider (2002) cautioned that the historical maintenance of facilities, or lack thereof, was crucial in relation to estimating the effect of general facilities conditions. Overall cleanliness was also

identified in the literature as a variable that was related to perception of quality (Stewart, 2010).

Earthman (2002, 2004) discussed the importance of using a standardized measurement instrument when investigating this variable. He asserted that researchers should quantify the condition of facilities using an assessment tool that considered all relevant factors such as age, maintenance, and appearance. Earthman noted that studies conducted using this methodology, including his own, have evidenced correlations ranging from 5-17% between facilities conditions and student achievement. Earthman also reported that facilities conditions have been conclusively linked to teacher effectiveness, although he did not quantify the degree of influence.

The impact of the condition of school grounds on education was not discussed as frequently as the factors discussed above, but it was a variable discussed and linked with general facilities conditions. Pleasant views and inviting outdoor environments were discussed as one of the aesthetic or cosmetic factors of facilities. Tanner and Lackney (2006) and Tanner (2009) urged school facilities planners to incorporate these design principles. Both works argued that well maintained school grounds were linked to significant improvements in student achievement scores. Multiple studies related to the importance of natural light in educational facilities have been conducted, and will be discussed in more detail. These studies, though, are important to consider in comparison with the discussion of school grounds because of the nature of incorporating more natural light. Tanner (2009) highlighted the importance of incorporating natural light with windows, but cautioned that unpleasant views (of buildings, parking areas, or poorly maintained grounds) could reduce some of the benefit of incorporating natural light.

Facilities directors have a duty to maintain the general conditions of facilities most clearly under the operations and maintenance competency area (IFMA, n.d.). As several authors indicated, occupants' perceptions of the general condition of a facility are often a conglomerate of several variables (Duyar, 2010; Earthman, 2002, 2004; Schneider, 2002). Although facilities directors do not have any control over the age of a facility, they do have significant control over the level of maintenance, cleanliness, and condition of grounds. Aside from the operations and maintenance competency area, facilities directors can impact the general conditions of facilities through efforts to meet the human factors, quality, leadership and strategy, finance and business, and project management competency areas identified by the IFMA (n.d.). According to the IFMA, maintaining adequate facilities conditions is an aspect of the human factors competency area; furthermore, assessments and evaluations of conditions as well as occupant needs and satisfaction were outlined in the quality competency area. The results of assessments and evaluations should be used to drive facilities directors' decision making in selecting an appropriate strategy to address general facilities condition maintenance and improvement. Finally, implementing facilities conditions improvement strategies could often include contracting outside service providers (Cotts et al., 2010; USDOE, 2003) and would require facilities directors to exercise competency in the finance and business, and project management areas through contract management.

Indoor Air Quality. Earthman (2004) declared, "Ample research evidence strongly indicates that poor air quality results in poor performance by students and workers" (p. 32). Operational definitions of IAQ used in prior research were very diverse. Some authors linked IAQ and thermal comfort and called the resulting variable indoor environmental

quality (IEQ) (Schneider, 2002). However, IAQ and thermal comfort, although related in some ways, do consist of exclusive factors (Earthman, 2004). Most sources agreed that IAQ is related to airborne contaminants within a building (e.g. Carbon dioxide, Carbon monoxide, Radon, mold spores, etc.). Cotts et al. (2010) defined IAQ as, "The state of air pollutants (presence or absence) within a building" (p. 629). This definition is broad, but represents the root factor of IAQ concerns. For the purpose of this study indoor air quality is defined as: The qualities of a facility that affect the presence or absence of air pollutants.

Schneider (2002), and Swail (2014), claimed IAQ issues were an unintended consequence of improved construction methods aimed at reducing energy costs by increasing the integrity of building envelopes (i.e. limiting air infiltration or escape). According to OSHA, school buildings often have poor IAQ due to the density of occupancy as compared to more sparsely occupied facilities (OSHA, n.d.). The Environmental Protection Agency (EPA) listed several health problems that have been linked to poor IAQ such as coughing, headaches, eye irritation, fatigue, and nausea. These symptoms, and others linked with poor IAQ, have often been referred to as "sick building syndrome" (EPA, 2000).

Several studies have investigated the impact IAQ has on building occupants and on education. Unlike some other facilities conditions variables, the research on IAQ has been more consistent and conclusive. Earthman (2004) reported that IAQ was shown to have significant impacts on student attendance, productivity, health, and comfort. Wyon (2004) claimed work performance was reduced by 6-9% in facilities with poor IAQ. Rahman, Putra, and Nagapan (2014) concluded that poor IAQ and resulting sick building syndrome symptoms increased lethargy among facilities occupants by as much as 75%. Swail (2014)

conducted a study investigating perceptions of IAQ among school district personnel. She reported that 96% of study participants indicated they worked in what they considered poor IAQ conditions, and among those respondents, 79% demonstrated symptoms of sick building syndrome.

Proper ventilation was identified as a key factor that most often influences IAQ (Cotts et al., 2010; Earthman, 2004; EPA, 2000; Rahman et al., 2014; Swail, 2014; Schneider, 2002; Wyon, 2004). Earthman (2004) said IAQ improvement efforts in schools should be initiated first from proper use of HVAC equipment. According to OSHA, school buildings generally have large numbers of HVAC units, and as a result, school maintenance staffs often struggle to keep all equipment properly serviced for optimal IAQ conditions (OSHA n.d.). Cotts et al. (2010) said IAQ concerns often constitute major issues for facilities directors, and could be an "Achilles heel" for them (p. 376). According to Cotts et al., many buildings were constructed in ways that make improving IAQ difficult, and when improvement is possible, it often results in dramatically increased operating costs. Multiple authors indicated IAQ could be improved through increasing the amount of fresh air (outdoor air) through ventilation, but introducing fresh air increased energy costs due to the need to condition the air for thermal comfort and moisture control (Cotts et al., 2010; Rahman et al., 2014; Swail, 2014).

Facilities directors should be concerned with IAQ based on its connection to the human factors, operations and maintenance, and quality competency areas identified by the IFMA (n.d.). The human factor competency area charged facilities directors with creating and managing healthy work environments conducive to productivity. Facilities directors should actively monitor factors such as IAQ in their pursuit of satisfying the

quality competency area. According to OSHA (n.d.) no federal regulations for IAQ exist; however, organizations such as the EPA and ASHRAE have outlined standards and best practices for IAQ. Finally, as pointed out by Earthman (2004) and OSHA (n.d.), proper operation and maintenance of HVAC equipment is necessary to ensure adequate IAQ, and to improve poor IAQ. Facilities directors have a duty to maintain and improve IAQ under the operations and maintenance competency area by overseeing the operation and maintenance of HVAC equipment.

Lighting. Earthman (2004) ranked lighting as the second most important facilities condition variable in terms of impact on education. However, Earthman also indicated more studies have investigated lighting than any other single facilities condition that might have an impact on education. In the research related to lighting, studies aimed to measure the effect of natural light (daylight); furthermore, studies have also been conducted to investigate the impact that different types of artificial lighting have on education. For the purpose of this study lighting is defined as: The qualities of a facility that impact illumination of the space through both natural and artificial means.

Several authors who discussed facilities conditions impact on education since 1999 mentioned a report issued by the Heschong Mahone Group as definitive evidence of the positive influence of daylight in schools (Benya, 2001; Buckley et al., 2004b, Earthman, 2004; Schneider, 2002; Tanner, 2009; Tanner & Lackney, 2006). Heschong (1999) conducted a study to investigate how student achievement was affected by natural light, or the lack thereof. Heschong found that student achievement in classrooms with adequate amounts of daylight improved more efficiently than students in classrooms without adequate amounts of daylight. Specifically, Heschong reported achievement improvement

efficiencies of 20% in mathematics and 26% in reading. Beyond achievement, researchers have noted other positive effects of daylighting such as reduced illness, improved attendance, increased time-on-task behavior, and other general health improvements (Buckley et al., 2004b; Earthman, 2004; Tanner, 2009). Earthman (2004) claimed lighting quality has been proven to impact physical and mental health. Blood pressure, melatonin levels, fatigue, and circadian rhythms were some of the health issues linked to natural lighting in the literature (Tanner, 2009; Tanner & Lackney, 2006). Stewart (2010) conducted a meta-analysis of prior research related to the impact of lighting on education and concluded that there was sufficient evidence to suggest natural light has a positive effect on achievement. Stewart also noted a positive effect on behavior appears to exist, although the significance of correlation was not as strong.

Although most literature indicated daylighting is preferable whenever feasible, artificial lighting is a requirement in school facilities, and its impact on education has been studied frequently. Two reports noted that quantity of light, measured in foot-candles, is an important factor in the impact light has on education (Bruin-Hordijk & Groot, 2004; Earthman, 2004). Earthman claimed that, in general, when the quantity of light was insufficient student performance suffered. Tanner and Lackney (2006) advised educational facilities planners to incorporate windows in classroom designs whenever possible, and argued that windows on two sides of classrooms was preferred. However, Tanner and Lackney conceded that incorporating adequate amounts of daylight is not always possible, and advised that artificial lighting systems should be carefully designed to supplement natural illumination. Most research related to the effects of lighting on education investigated differences between types of artificial lights. In general, lights that

mimic daylight such as full-spectrum fluorescent lights have been found to be preferable (Earthman, 2004; Tanner & Lackney, 2006). Stewart (2010) concluded that prior research was inconclusive in regard to the impact of artificial light on achievement; however, he did report that artificial light appeared to be significantly linked to student behavior. Tanner and Lackney (2006) claimed full-spectrum fluorescent lighting has been shown to reduce fatigue and hyperactivity.

A small amount of research was discovered related to the impact of lighting and color perception, and how that relationship affected education. Lemasters (1997) reviewed four studies that fell into this category and reported significant findings related to achievement or student health. However, Schneider (2002) cautioned that research in this area has not been sufficient to claim any definitive impacts on education. Furthermore, he cautioned that this area of study was particularly difficult due to individual preferences of color schemes. Schneider concluded that further research was needed before accurate assumptions could be made.

According to the competency areas identified by the IFMA (n.d.), facilities directors' duties are correlated to lighting in four specific areas. As with the other facilities conditions variables, the human factors, operations and maintenance, and quality competency areas are applicable to lighting; furthermore, lighting considerations are also associated with the sustainability and environmental stewardship area. Facilities directors were tasked with ensuring facilities were healthy and conducive to productivity in the human factors area. This area also included a requirement for facilities directors to ensure facilities were secure; Cotts et al. (2010) discussed the importance of lighting systems in reference to security concerns. According to the authors, strategic placement of security

lighting has been proven to deter potential building intruders. The IFMA (n.d.) charged facilities directors with monitoring facilities conditions and user satisfaction in both the quality, and operations and maintenance competency areas. Duyar (2010) underscored the importance of monitoring user satisfaction in lighting; he reported that lighting quality was the facility condition ranked least satisfactory in his nation-wide study. Facilities directors were also tasked with operating and maintaining facilities equipment and systems. Benya (2001) noted the importance of proper maintenance for lighting systems; he discussed the importance of properly maintaining existing lighting systems as well as considerations for new lighting systems. According to Benya, poor lighting maintenance such as neglecting to clean fixtures or replace expired lamps reduces the quality of light provided. Furthermore, Benya argued that careful planning and consideration should precede any lighting retrofit to ensure the final result was satisfactory, energy efficient, and required as little maintenance as possible. Buckley et al. (2004b) also noted the connection of lighting to the sustainability and environmental stewardship competency area. Facilities directors should, according to the IFMA (n.d.), investigate and implement measures to increase sustainability such as high efficiency lighting and window glazing and films to reduce added heat load while maximizing the use of available natural light (Benya, 2001; Buckley et al., 2004b).

Thermal Comfort. Earthman (2004) said thermal comfort and IAQ were the two most influential facilities conditions variables in terms of impact on education. Thermal comfort, although related to IAQ, is an exclusive variable discussed in the literature. Earthman identified temperature, relative humidity, and air circulation as the factors that influence the perceived thermal comfort of facilities occupants. For the purpose of this

study thermal comfort is defined as: The qualities of a facility that impact occupants' perceptions of space temperature, relative humidity, and air circulation.

Multiple studies indicated thermal comfort had a significant affect on education (Buckley et al., 2004b; Duyar, 2010; Earthman, 2004; Malikov & Kaczmarczyk, 2012; Rahman et al., 2014; Schneider, 2002). Some research found that teachers' ability to control thermal comfort settings in their own classrooms was positively correlated with job satisfaction and morale (Buckley et al., 2004b; Schneider, 2002). Malikov and Kaczmarczyk (2012) found that air circulation levels could be used as accurate predictors of satisfaction with IAQ and thermal comfort; Rahman et al. (2014) also reported the velocity of air circulation was significantly related to occupant performance and productivity. Other studies, though, reported more specific results. Earthman (2004) claimed research evidenced 3-12% decreases in student achievement scores among students in classrooms with no air conditioning. The most desirable temperature range for teaching and learning, according to Earthman's report, is between 67 and 73 degrees Fahrenheit. Furthermore, Earthman indicated that relative humidity levels should remain near or below 50%. Research has shown that work efficiency and productivity decreases when thermal conditions fall outside these parameters.

The same competency areas identified by the IFMA (n.d.) that are related to IAQ are also related to thermal comfort. The human factors competency area requires facilities directors to ensure facilities provide healthy work environments that are conducive to productivity. The quality competency area recommended the use of facilities assessments as well as stakeholder needs and satisfaction data to monitor the efficacy of operations and maintenance strategies for meeting stakeholder needs. Facilities directors most clearly

influence the thermal comfort of facilities occupants through exercising competency in the operations and maintenance area. Nearly all literature related to thermal comfort and facilities management discussed the importance of optimized HVAC operation and maintenance for both IAQ and thermal comfort (Atkin & Brooks, 2009; Cotts et al., 2010; Duyar, 2010; Earthman, 2004; Malikov & Kaczmarczyk, 2012; Rahman, 2014; Schneider, 2002; USDOE, 2003). HVAC equipment, when properly operated and maintained, can control thermal comfort through temperature control and relative humidity management.

In summary, there is an abundance of research related to the influence facilities conditions can have on education. Although some research has been less conclusive than others, there is sufficient evidence to suggest that certain aspects of facilities conditions are related to the quality of instruction and learning (Earthman, 2004; Schneider, 2002). Most authors agreed that further research is warranted in order to more clearly understand which specific conditions have the most impact on education, and how those conditions might be improved. It might also be prudent for future researchers to investigate this topic through the lens identified by Herzberg, Mausner, and Snyderman (1959). Herzberg et al. concluded that changes in physical work conditions did not lead to more or less productivity, but could be linked to overall satisfaction. Although some evidence can be cited in arguments for increased facilities funding (Buckley et al., 2004b), some authors were hesitant to fully endorse that tactic before further research solidified earlier findings. In lieu of arguing specifically for increased funding, some authors issued more generic recommendations that advocated the pursuit of facilities improvement through unspecified efforts (Duyar, 2010). With or without increased funding, facilities directors are surely key players in plans and efforts to improve the qualities of educational facilities.

Challenges Faced by Facilities Directors

There is a substantial body of research devoted to specific themes relevant to facilities management; however, very little investigation of barriers to performing the duties of facilities director was discovered. Kamarazaly et al. (2013) conducted the only study in the review or research related to barriers. Kamarazaly et al. asked facilities directors to identify and rank internal and external challenges they faced in performing their duties. The authors discovered that facilities managers perceived finance and economic conditions, stakeholder needs, maintenance issues, and sustainability concerns as the most pressing challenges they faced. The remainder of this section will include discussion of literature related to these four themes. Discussion of literature related to these themes is relevant to this study because the researcher plans to investigate barriers to performing the duties of facilities director in public schools.

Finance and Economic Issues

Kennedy (2011) and Kopochinski (2012b) reported lack of funds was one of the largest obstacles facing facilities directors in schools today. School budgets have been frozen or cut in many systems since the economic downturn in 2008; facilities department budgets are no exception. Cotts and Rondeau (2004) implied that facilities department budgets are common targets for cuts based on the comparatively large portion of facility costs to other sections of the organizational budget. Kennedy (2011) said facilities directors are fortunate to avoid budget cuts, even if it means operating on the same budget as previous fiscal years. Freezes or cuts are often compounded by rising prices of materials and services central to the operation of school facilities. In many cases, a freeze can result

in a net cut of 2-3% annually based on increases in price for materials and services (Kopochinski, 2012b).

Even when budgets were adjusted to accommodate inflation, funding shortages were still common among facilities departments. The U.S. Green Building Council (2013) projected budget shortages for facilities care of more than 500 trillion dollars by 2023. Kamarazaly et al. (2013) indicated that facilities directors continually returned to the subject of funding inadequacies while discussing the other challenges identified by the study. Indeed, references to poor economic conditions and subsequent funding shortages permeated the literature related to stakeholder needs, maintenance issues, and sustainability concerns. Cotts et al. (2010) described finance and budget deficiencies as an area of crisis as it relates to facilities directors carrying out their duties.

Stakeholder Needs

Kamarazaly et al. (2013) outlined the challenge of meeting stakeholder needs in terms of ensuring that the facility was functional for the staff, students, and visitors of a campus. A substantial body of research related to meeting the needs of stakeholders in educational facilities exists. Several themes were present in the available research – custodial services, infrastructure needs, general facilities upgrades, and new building needs were common topics related to meeting stakeholder needs.

Duyar's (2010) study of the impact of facility conditions on instructional quality has implications in this area; Duyar confirmed earlier research findings and claimed cosmetic appearances and general cleanliness of facilities have an impact on instruction and learning. Several sources suggested custodial and janitorial services were areas to be potentially outsourced as a cost saving measure (Atkins & Brooks, 2009; Gay & Essinger,

2000; Ikediashi et al., 2012). Facilities directors of public schools have to address the need for custodial services based on its importance to instruction and learning while simultaneously trying to reduce costs where possible. While outsourcing custodial services may be one possible cost cutting solution, facilities directors must also consider the risks associated with outsourcing services. Ikediashi et al. (2012) concluded poor quality of services was the most significant risk of outsourcing facilities management services. Furthermore, as noted above, DeLuca (2013) argued that consolidating support services among many organizations for cost cutting attempts has not been evidenced as an effective strategy.

Infrastructure needs are also an important aspect of meeting the needs of stakeholders in a building. Current trends in public education have created a difficult situation for facilities directors of public schools. The average age of public schools in the United States in 1999 (most recent comprehensive study) was 42 years old (U.S. Green Building Council, 2013). To be sure, that average is no longer accurate due to time lapsed since the original study as well as renovations and new construction that have taken place. Nevertheless, schools constructed over 50 years ago simply were not designed to support the amount of electronic equipment found in today's schools. According to the Partnership for Assessment of Readiness for College and Careers (PARCC)(n.d.) more than 75% of summative testing will be administered electronically in the 2014-2015 school year. Electrical and network systems often have to be expanded, or in some cases completely replaced to support the demands of a 21st learning environment (Kopochinski, 2012a).

These infrastructure needs, and other general building upgrades such as roof repair and replacement, HVAC upgrades, and general repairs of existing equipment are all factors

that must be considered by facilities directors and other school system administrators when considering renovating an existing building or constructing a new facility. As noted in the previous section, some authors cited evidence that would support arguments for renovating existing schools, or constructing new schools (Buckley et al., 2004b; Duyar, 2010). While renovation of existing facilities or construction of new facilities would be likely to improve educational outcomes (Bullock, 2007; Crampton, 2009; Duyar, 2010; Earthman, 2004), facilities directors identified budget shortages that extinguish any renovation or construction plans as a challenge they faced (Kamarazaly et al., 2013).

Maintenance Issues

Kamarazaly et al. (2013) identified maintenance as one of the most challenging aspects of facilities management. Within the category of maintenance, Kamarazaly et al. included topics already discussed such as caring for aging infrastructures and making decisions about repairing or replacing existing assets. Maintenance strategies, and dealing with the problem of deferred maintenance, were also included in the category of maintenance challenges. A substantial body of research related to maintenance strategy exists. The problem of deferred maintenance is also mentioned frequently in the literature, though it was generally included as part of the discussion related to different maintenance strategies. These issues, and decisions made in reference to them, also fell under the larger topic of financial problems identified by Kamarazaly et al. (2013).

Khazraei and Deuse (2011) identified twenty-three different types of specific maintenance, but organized them all under two standard categories of strategy – reactive maintenance and preventative maintenance. The USDOE (2003) identified preventative maintenance as one of the most important, but also most overlooked aspects of school

maintenance and operations. Because of the nature of preventative maintenance, which includes replacing and repairing equipment before problems arise, it is often one of the first areas of maintenance budgets to be cut. The USDOE (2003) and Kopochinski (2012a) both highlighted the tendency of school districts to slash preventative maintenance funds in an effort to reduce overall budget figures. Many facilities departments have been forced to operate under a reactionary maintenance model, in which equipment and facilities are not repaired until problems occur (Fraser, 2014; Lavy, 2008; Lavy & Bilbo, 2009). Kopochinski (2012a) declared it was nearly impossible for maintenance directors to persuade funding bodies to consider the importance of preventative maintenance and adequate funding.

Even when facilities departments have and implement a strategic preventative maintenance plan (Fraser, 2014; Lavy & Bilbo, 2009), larger projects such as construction or renovation must be deferred from time to time. In the absence of proper preventative maintenance, those projects stack up more quickly. Deferring projects is often necessary for funding reasons (Kaiser, 2009; Kamarazaly et al., 2013), but is occasionally necessary and prudent for other reasons as well. Kennedy (2014) pointed out that quickly evolving design concepts are important to consider when selecting which projects need to be tackled immediately and which can be put off for a later time. He implied that the demand for added technological ability and the rapidity with which available technology evolves are reasons enough to carefully study the plan for new construction or renovation of schools. Furthermore, careful consideration for enhanced security systems and energy efficient facilities were common reason cited for delaying capital projects (Agron, 2009; DeAngelis, Brent, & Ianni, 2011).

Sustainability Concerns

Sustainability of buildings is a trend that has become popular in the recent years; Kamarazaly et al. (2013) reported facilities directors ranked sustainability as one of the most important challenges they faced. Facilities directors of public schools face several challenges related to sustainability. First, facilities directors must find a way to improve the sustainability of existing structures. Here again, outdated buildings with infrastructures that are already struggling present a serious problem (Lavy & Bilbo, 2009). Facilities directors have two options to increase sustainability – implement behavioral change programs (Kemp, Glick, & Cross, 2014; Schelly et al., 2010) or invest in equipment repair and upgrades (Roper & Pope, 2014; Lavy & Bilbo, 2009). Nielsen et al. (2012) underscored the importance of proper equipment maintenance in terms of sustainability; the authors advised funding bodies to consider possible improvements to sustainability through adequately funding of maintenance efforts that optimize existing equipment. Both of these options have been shown to have positive effects on sustainability efforts, and helped reduce the financial burden of a facility through utility cost reduction (Lavy & Bilbo, 2009).

Facilities directors face a different challenge when attempting to improve sustainability in renovation and new construction projects. Energy efficient equipment and design options that offer marked improvements over older technologies and methods are available, but generally at a higher front-end cost (Earthman, 2009). As noted above, Rose (2007) claimed that funding bodies often become so fixated on the initial cost of a project, that long-term implications are often forgotten. Cotts et al. (2010) cited this as a deficiency and posited that investing in sustainability projects ultimately resulted in net financial

gains as a result of cost reduction over the life-cycle of a facility. Nevertheless, facilities directors perceived the need to balance the desire to increase sustainability of a facility within their own financial and economic realities as a challenge (Kamarazaly et al., 2013).

Chapter Summary

This chapter provides an overview of literature relevant to this study in four parts. The first section reviews literature related to the historical background of public schools and the development of a need for facilities management in public education. The second section reviewed literature related to the common duties of facilities directors. The third section reviews literature related to the impact facilities conditions have on education. Finally, the fourth section discusses common challenges facilities directors face.

CHAPTER 3

RESEARCH METHODS

The purpose of this study was to investigate the perceptions of facilities directors employed by public school systems in Tennessee in regard to what facilitators and barriers exist in relation to performing their duties. Furthermore the researcher sought to identify themes among the recorded perceptions. The purpose of Chapter 3 is to outline in detail the research plan for this study. Specifically, this chapter outlines the following topics in relation to the study: the qualitative methods used, guiding research questions, the role of the researcher, the potential for bias, the sample selection process, data collection methods, data analysis methods, credibility and trustworthiness of data, and ethical considerations. A brief summary of Chapter 3 follows the discussion of the topics listed above.

Qualitative Methods

McMillan and Schumacher (2010) described qualitative research as an investigation that assumes reality is constructed by individuals and is based on their perceptions. Patton (2015) said qualitative research could help researchers understand why things happen by exploring individuals' perceptions within the context of their lives. A qualitative collective case study research design was chosen because the researcher sought to improve and expand understanding of the roles of facilities directors by examining their perceptions. Furthermore, a phenomenological inquiry framework was selected because this study was centered on analysis of participants' perceptions in an effort to identify emergent themes.

Research Questions

McMillan and Schumacher (2010) said qualitative studies have a central question that drives the creation of the research study. According to the authors central questions should be centered on the phenomenon of study, should be phrased to keep the focus on the participants' understandings, and worded so that research participants and site contexts are clear to the reader. McMillan and Schumacher cautioned qualitative researchers in regard to the focus of the central question,

> A central question that is too general or broad will not give sufficient direction to know what methods will be used. If the central question is too narrow, the researcher may be limiting and focusing so much that important information will not be gathered. This essentially is inconsistent with the goal and strength of qualitative research. (p. 65)

In following the advice of McMillan and Schumacher, the researcher composed the following central question to guide this study: What factors do facilities directors of public school systems in Tennessee perceive to be facilitators or barriers to performing their duties? This inquiry was consistent with the recommendations of McMillan and Schumacher by centering on the phenomenon to be studied, maintaining the focus on participants' understandings, and indicating who participants were and what sites they were selected from. The question was also broad enough so as not to limit useful data collection, but was adequately focused to provide sufficient direction to address the phenomenon to be studied. In addition to this central question, the following research questions guided this study:

1. What are the duties of the facilities director position within the organization of the school system?
2. How do facilities directors perceive the impact of their role within the overall organization?

3. What is the nature of facilities directors' relationships or interaction with other portions of the organization?

Researcher's Role

Qualitative research differs in many ways from quantitative research. One of the most profound differences is that the researcher is often considered the measurement instrument in qualitative research (McMillan & Schumacher, 2010; Patton, 2015). McMillan and Schumacher said, "In qualitative studies the investigator usually acts as an observer in the setting that is being studied, either as the interviewer, the observer, or the person who studies artifacts and documents" (p. 322). My role in this study was consistent with the role described by McMillan and Schumacher; I served as the measurement instrument by conducting in-depth interviews and document reviews.

Potential Bias

Patton (2015) indicated that personal experience with the phenomenon to be studied is useful in qualitative research because the researcher is in essence the "instrument of qualitative inquiry" (p. 46). Patton said that familiarity with the topic is important so that the researcher can empathize with participants, or understand what they mean when they describe their own realities. According to Patton this is beneficial in studies employing in-depth interviews because it can help the researcher build rapport with the participant and provoke responses of greater detail as a result. However, Patton also emphasized that to truly capture the meaning of a phenomenon as it is understood by participants, the researcher must exercise neutrality in addition to empathy. In other words, being familiar with the topic of study is useful for understanding the minutia of context and putting a participant at ease during the interview, but researchers must

constantly remove their own perceptions and prejudgments from consideration when analyzing the meaning of a phenomenon as participants construct it. Both Patton and McMillan and Schumacher (2010) discussed the importance of reflexivity in qualitative research. McMillan and Schumacher described reflexivity as "critical self-examination of the researcher's role throughout the entire research process" (p. 12). Patton (2015) differentiated phenomenological inquiry framework by highlighting the importance of capturing the experiences of participants through their own views. My own prior experience with the topic was useful for practicing empathy; however, I was required to bracket or set aside my own perceptions in order to practice empathetic neutrality (McMillan & Schumacher, 2010; Patton, 2015).

Before conducting this research I acknowledged my own ties to the topic being studied and the potential for bias those ties posed. For the past 2 years I have worked as the Energy Manager for the Hawkins County Board of Education. In my current position I work closely with the facilities director and facilities department staff on a regular basis. Because of this experience, I possess perceptions of my own in regard to what factors act as facilitators and barriers to facilities directors performing their duties. I also have some perceptions in regard to how the facilities director and facilities department interacts with the remainder of the school system organization and how those interactions impact the pursuit of the mission of the organization. While conducting this study this personal experience was useful for my own understanding of the context and ability to empathize with participants; however, I had to practice reflexivity and bracket my own perceptions in order to capture the meaning of the phenomenon as it is constructed by the participants.

Selection of Participants

The sample selection for this study was purposeful and followed the typical case sampling strategy. Patton (2015) suggested that the purposeful selection of participants who can "offer useful manifestations of the phenomenon of interest" is the preferred method for qualitative research (p. 46). Patton described typical case sampling as the selection of "several cases that are average to understand, illustrate, or highlight what is typical, normal, and average" (p. 268). The State of Tennessee recognized three types of public school districts in 2015: countywide school districts, municipal school districts, and special school districts (Tennessee Code Annotated 49-1-201). During the 2014-2015 academic year in Tennessee, there were 94 countywide, 33 municipal, and 14 special school districts (State of Tennessee, Tennessee Department of Education, 2015). Participants for this study were purposefully selected from countywide and municipal school districts based on the typicality of those types of districts within the total population of cases. Special school districts were excluded based on the atypical nature of that division of school districts within the state (i.e. total number of districts and number of schools within districts as compared to countywide and municipal districts).

Patton (2015) said, "there are no rules for sample size in qualitative inquiry" (p. 311). He argued that researchers should select sample size based on the purpose of the study and the particular methods employed. The primary data collection method for this study was in-depth interviews based on the use of the phenomenological inquiry framework. Creswell (2012) argued that a sample size of up to 10 individuals is appropriate for studies employing in-depth interviewing as the primary means of data

collection. The researcher selected participants from a total of six school districts, three countywide districts and three municipal districts.

Data Collection Methods

McMillan and Schumacher (2010) said, "Most [qualitative data] are in the form of words rather than numbers, and in general the researcher must search and explore with a variety of methods until a deep understanding is achieved" (p. 23). The researcher conducted in-depth interviews using a predetermined interview guide with semistructured questions (see Appendix A) as the primary means of data collection. Interviews for this study lasted approximately one hour and were recorded and accurately transcribed. Patton (2015) said in-depth interviews are the standard data collection technique for studies using a phenomenological inquiry framework. Patton also praised the use of interview guides as a method of increasing the systematic nature of qualitative data collection. McMillan and Schumacher (2010) said semistructured questions are open-ended and are "phrased to allow individual response" (p. 206). Using a predetermined interview guide with semistructured questions helped the researcher avoid omitting important topics. McMillan and Schumacher (2010) recommended piloting interview guides through practice interviews before actual data collection begins. The researcher tested the interview guide in a pilot interview with a participant who met the criteria for selection; the data collected during the pilot was not included in the data analysis for this study. After conducting in-depth interviews, the researcher secured copies of documents that might corroborate or refute data collected in participant interviews. Specific documents included formal job descriptions, school board policy, school board or district procedures or handbooks, and minutes from school board meetings.

Data Analysis Methods

McMillan and Schumacher (2010) said, "Qualitative data analysis is primarily an inductive process of organizing data into categories and identifying patterns and relationships among the categories" (p. 367). Transcriptions from the interviews were analyzed following this inductive model. Specifically, transcriptions were read in an iterative fashion in order to find patterns and assign codes to the data. Patton (2015) described this process as "open coding" (p. 542). Following the initial coding of transcriptions, the researcher sorted the data into emergent themes and subthemes. The researcher reported the findings of the study through discussion of emergent themes present within and among cases; that is to say the report included a discussion of emergent themes specific to countywide school district cases, municipal school district cases, as well as emergent themes that were present in both.

Several authors of qualitative research methods texts indicated qualitative findings are stronger when the researcher triangulates, or uses multiple sources of data, to reach conclusions (Creswell, 2012; McMillan & Schumacher, 2010; Patton, 2015; Yin, 2014). Although in-depth interviews were the primary source of data for this study, document review was also employed for triangulation purposes. The researcher reviewed documents collected to corroborate or refute participant descriptions; however, because these documents are generally accessible to the public, no specific quotations were used in the report of findings in order to protect the anonymity of the participants and their respective school districts. Instead, the researcher indicated that specific data from the interviews either was or was not supported by the documents reviewed. An outside auditor was

asked to confirm the reasonableness of the final report by examining it alongside coded transcriptions and documents.

Trustworthiness of the Study

Scholarly research is meant to be informative and to that end it is important that researchers satisfy specific measures taken to ensure that data collection, analysis, and interpretation are appropriate. Most contemporary quantitative research includes discussion of validity and reliability of the study methods and findings. However, qualitative scholars have expressed discontent with the traditional approach of ensuring validity and reliability based on the fundamental difference in the types of data collected and analyzed in qualitative research. Patton (2015) said, "No straightforward tests can be applied for reliability and validity [in qualitative research]" (p. 521). Instead, as Trochim, Donnelly, and Arora (2016) asserted, many qualitative scholars approach this issue with an altered framework meant to prove the trustworthiness of methods and findings. Trochim et al. described four measures qualitative scholars use to prove trustworthiness: credibility, transferability, dependability, and confirmability.

According to Trochim et al. (2016) credibility means that the findings of a study would be accepted as accurate from the view of participants. Patton (2015) claimed systematic fieldwork is one strategy of enhancing credibility. McMillan and Schumacher (2010) recommended participant review as another method of increasing credibility. Both of these methods were employed in this study through the use of a predetermined interview guide and by allowing participants to review transcriptions of interviews to confirm accuracy. Transferability, in the words of Trochim et al. (2016), is "the degree to which the results … can be generalized or transferred to other contexts or settings" (p. 72).

Qualitative samples, in general, are not meant to be representative of the overall population. The transferability of results from this study is limited due to the nature of qualitative sampling; however, Trochim et al. affirmed that sufficient and accurate description of the settings and context could allow for careful transferability. The researcher provided descriptions of the settings and contexts of this study in as much detail as possible while also protecting participants' anonymity. Dependability, according to Trochim et al., is related to the researcher's responsibility to report the details of emerging design decisions that occur throughout the study. McMillan and Schumacher (2010) said this could be accomplished through keeping notes of any changes to questions or procedures throughout the process and reporting those changes clearly. The researcher recorded and reported any changes to the design, methodology, or procedures of the study that emerged throughout the process. Finally, confirmability is, "The degree to which the results could be confirmed by others" (Trochim et al., 2016, p. 72). Patton (2015) recommended researchers ask a "disinterested" party to audit their findings by reviewing coded data and final findings reports. An outside auditor with no direct interest in the study was asked to review the coded transcriptions and documents reviewed for triangulation to corroborate or dispute the findings. The researcher reported any refutations and steps taken to resolve those refutations, and asked the auditor to provide a written statement of confirmability to be included as an appendix to the final manuscript (see Appendix B).

Ethical Considerations

Prior to collecting any data the researcher obtained IRB approval for the study methodology and procedures. The researcher initiated the selection of participants by

requesting written permission from the director of schools of each school district selected for potential inclusion. Approval provided permission and access to each facilities director and allowed the researcher to perform data collection. The letter to gain permission included a brief description of the nature of the study including the topic, the data collection process, the plans for reporting data, and assurances anonymity and confidentiality. A generic copy of this letter can be found in Appendix C. After permission to contact facilities directors was received, the researcher contacted prospective participants to explain the nature of the study and requested their participation. The researcher contacted facilities directors who elected to participate in order to schedule interviews at a time and place of their convenience. Prior to beginning interviews the researcher again explained the nature of the research, and that participation was voluntary. Furthermore, the researcher obtained signed informed consent agreements from all participants (Sieber & Tolich, 2013). A copy of the informed consent document can be found in Appendix D.

This study posed no obvious physical or health-related risks to participants. Pseudonyms were assigned to all participants, their school districts, and to any proper nouns they referenced during interviews to protect the anonymity and confidentiality of all participants and their respective school districts (Creswell, 2012; Patton, 2015; Sieber & Tolich, 2013). Participant interviews were recorded and accurately transcribed to enhance credibility (Patton, 2015). The recordings and transcriptions were maintained securely within the home office of the researcher throughout the duration of the study, and will remain secured for an appropriate length of time following the completion of the study as determined by the dissertation committee.

Chapter Summary

Chapter 3 outlined the methods and procedures for the study. The researcher outlined the rationale and justification for the selection of the qualitative collective case study using the phenomenological inquiry framework. The design was chosen based upon the nature of the central phenomenon and the guiding research questions previously identified. The researcher outlined his role and potential for bias within the study. A purposeful sample of typical cases was outlined for the sampling strategy to select six facilities directors to participate in in-depth interviews. The researcher outlined the methods of data collection based on the use of a predetermined interview guide with semistructured questions as well as collection of related documents for review. The data analysis procedure was outlined and included open coding to discover emergent themes and triangulation through document review. Issues related to the reliability of the study and strategies to enhance trustworthiness were outlined. Finally, ethical considerations were addressed through the explanation of measures that the researcher used to ensure ethical conduct throughout the study.

CHAPTER 4

FINDINGS

The purpose of this study was to examine the perceptions of facilities directors of public school systems in Tennessee in regard to what factors they perceive to be facilitators or barriers to performing their duties. Kok et al. (2011) as well as Tanner and Lackney (2006) noted an apparent dissonance between the overall organization of public education systems and the facilities management functions within those systems. The absence of the perceptions of individual facilities directors was one noticeable deficiency in the related scholarly research. This study was designed to allow facilities directors to express their perceptions and help close the gap in scholarly research and literature.

This study was designed as a qualitative collective case study based on the phenomenological inquiry framework. Participants were purposefully sampled following the typical case sampling strategy and included three facilities directors of countywide public school systems in Tennessee and three facilities directors of municipal public school systems in Tennessee. Data were collected through in-depth interviews based on semistructured, open-ended questions from a predetermined interview guide with the six participants. The interview guide was tested through a pilot interview with a volunteer; the data collected in the pilot interview was not included in the findings of the study. Publically accessible documents were reviewed as a means of data triangulation to increase trustworthiness of the study. Interviews were recorded and accurately transcribed by the researcher. The researcher read the interview transcriptions in an iterative fashion to identify emergent patterns and themes among participant responses. Study participants were asked to review the interview transcriptions to ensure accuracy. An external auditor

reviewed the interview transcriptions and evaluated the study findings to corroborate the reasonableness of the findings.

Description of Participants

Six participants were purposefully sampled for this study to represent typical cases of facilities directors of public school systems in Tennessee; the sample was comprised of three participants from countywide systems and three participants from municipal systems. Special school districts were excluded from the sample on the basis of the atypical nature of that type of district among public school systems in Tennessee. Each participant, as well as any proper nouns they referenced, was assigned a pseudonym to ensure confidentiality. Table 1 is a summary of participant demographic information.

Table 1

Participant Demographic Information

Name (Pseudonym)	System Name (Pseudonym)	Number of Certifications	Number of Professional Organizations	Prior Field of Work	Years of Relevant Experience
Mr. Adams	Countywide 1	5	3	Construction	28
Mr. Brown	Countywide 2	3	1	Business	40
Mr. Carter	Countywide 3	3	2	Construction	36
Mr. Smith	Municipal 1	3	2	Construction	40
Mr. Taylor	Municipal 2	15	3	Electrical Contractor	27
Mr. Wilson	Municipal 3	12	2	Plant Management/ Quality Assurance	30

Note. "Number of Certifications" column includes college degrees and trade certifications.

Mr. Adams is a facilities director of a countywide public school system. He holds five certifications and belongs to three professional organizations. Mr. Adams previously worked in the commercial construction field and has 28 years of relevant work experience.

He described his profession as “a very diverse job,” and also said “You never get the same thing every day.”

Mr. Brown is a facilities director of a countywide public school system. He holds three certifications and belongs to one professional organization. Mr. Brown previously worked in private business and has 40 years of relevant work experience. He said those in his position were not actually facilities directors, but rather had to be “a problem solver – constantly – a problem solver.”

Mr. Carter is a facilities director of a countywide public school system. He holds three certifications and belongs to two professional organizations. Mr. Carter previously worked as a construction contractor and has 36 years of relevant work experience. He said of facilities directors, “You can get a lot accomplished by being one who listens to all concerns and by being open minded to speak to anyone; but you can make decisions based on facts and reality rather than perceptions.”

Mr. Smith is a facilities director of a municipal public school system. He holds three certifications and belongs to two professional organizations. Mr. Smith previously worked in the commercial construction field and has 40 years of relevant work experience. He characterized the profession by saying, “This is project management, that is what it is.”

Mr. Taylor is a facilities director of a municipal public school system. He holds 15 certifications and belongs to three professional organizations. Mr. Taylor previously worked in the electrical contracting field and has 27 years of relevant work experience. He said to be a facilities director “you have to have the patience of Job in this job.”

Mr. Wilson is a facilities director of a municipal public school system. He holds 12 certifications and belongs to two professional organizations. Mr. Wilson previously

worked as a plant manager and quality assurance supervisor and has 30 years of relevant work experience. He said it is important for facilities director to "be able to see a process for improvement."

Researcher's Notes of Emergent Issues

Throughout the course of data collection and analysis I encountered emergent issues that needed to be addressed. Two questions that were not listed on the interview guide also surfaced in the course of data collection, and one question had to be modified. I asked each participant the questions; the questions were asked either at the time of the interview, or in a follow up telephone interview. The first question that emerged that was added to the interview protocol was: "Do you think the Facilities Director position is a leadership position, or is it a management position?" The second question that emerged that was added to the interview protocol was: "If a person was seeking a position like yours, what skills or traits would you tell them are important in order to be successful?" One question that was listed on the original interview guide required modification. When participants were asked, "What challenges do you encounter in terms of sustainability?" all requested clarification. I allowed them to provide any answer that came to mind, and then rephrased the question to ask about energy conservation and environmental sustainability challenges.

During the course of data analysis it became apparent that in at least one instance the pronouns used to refer to a director of schools mentioned by a participant could compromise that participant's confidentiality. In an effort to eliminate that threat I have standardized all pronouns used to refer to a director of schools among the responses quoted in this dissertation. No editorial notation has been given for those changes.

In an effort to report enough information about participants so the study could be replicated in the future, I asked participants to provide answers to several basic demographic questions. Two categories of demographic data were collected, but subsequently omitted from the report of findings due to the potential of compromising participant confidentiality. I requested an approximate amount of square feet managed, and a number of buildings managed by each participant. The data collected were varied to the degree that it could not be reported in a way to add to the efficacy of findings without potentially reporting identifiable information. The data could have been reported in ranges; however, the ranges would have been too broad to serve a meaningful purpose to the study and therefor I chose to omit that data.

The final issue also emerged during the course of collecting demographic data from participants. One participant indicated that he had prior work experience as a vocational education teacher. In an effort to protect his confidentiality I did not report this finding in Table 1 or under the heading "Introduction to Participants." However, because he was the only participant that had experience working in both the core service and support service areas of public education, I decided to ask him if he thought that prior experience helped him be successful in his current position. This particular participant happened to be the first participant I interviewed; therefore, I subsequently asked the remaining participants a version of the same question. I asked the five participants whose prior work experience had been entirely outside of public education if they thought it would be a good decision or a poor decision for school districts to fill facilities director positions with a candidate with work experience in public education. Some of the data collected through this question could have potentially been included under the headings "Facilitators" and "Barriers," but

doing so would risk compromising the participant's confidentiality. In the paragraph that follows I have summarized the responses to these questions, but have not used any participant identifiers.

The participant who told me he had prior work experience as a vocational education teacher believed his prior experience in the core service area of public education was beneficial to him in his current role. He stated, "I can see both sides of it. I can see the student side," He went on to tell me, "By me being in the school with students and seeing their needs as a faculty member, I can relate to them, and to be able to relate to somebody means a lot." Four of the five participants who did not have prior work experience in public education told me they thought it could be a good decision or a poor decision depending on the individual. One of those four participants told me, "I am sure there are people who can do it from the inside, but the technical side is so much different than what you would get from spending 25 years in education." Another of those four participants told me, "If you were promoting a teacher into this position, who had no aptitude or understanding of some mechanical abilities, it might be a little more difficult. You could take a shop teacher, and they might do well." One participant told me he thought it would be a poor decision to seek a former educator for the position. I asked him to elaborate and he replied, "[On] the education end of it, you have a different mindset." He went on to say, "I do not know everything, and I do not need to come in here thinking I do."

Analysis of Data

The central question of this study was: What factors do facilities directors of public school systems in Tennessee perceive to be facilitators or barriers to performing their duties? To answer this question, I collected data through in-depth interviews using a

predetermined interview guide. The interview guide included semistructured, open-ended questions based on the following guiding questions:

1. What are the duties of the facilities director position within the organization of the school system?
2. How do facilities directors perceive the impact of their role within the overall organization?
3. What is the nature of facilities directors' relationships or interaction with other portions of the organization?

The remainder of this chapter consists of participant perceptions as recorded through their responses to interview questions related to the research questions.

Duties of Facilities Directors

I explained the purpose of the study to each participant, and began each interview by asking them to describe, in their opinion, the common duties of a facilities director for a public school system in Tennessee. Some participants began listing specific duties immediately, while others gave a broad answer at first and began to be more specific as I asked follow-up questions. Four themes related to the common duties of facilities directors of public school systems in Tennessee emerged throughout the analysis of interview transcriptions. The themes were constant in both countywide and municipal districts; no distinct themes related to common duties were identified as mutually exclusive to either countywide or municipal districts. The four themes identified were: 1) maintenance and operations duties, 2) regulatory compliance duties, 3) contract and project management duties, and 4) personnel management duties.

Maintenance and Operations Duties

Each of the six participants indicated that maintenance and operations were the primary responsibilities of the departments they supervise; all but one participant referenced those duties first when they were asked what they understood to be the common duties of a facilities director in a public school system.

Mr. Adams discussed the focus on maintenance and operations duties in his role by stating,

> The main duty of a facilities director is to make sure all facilities are properly maintained and are readily available for any purpose the district sees fit. That goes for anything from plumbing, floors, HVAC – it is just to maintain the buildings for the purposes they are needed.

Mr. Wilson answered in a similar manner; he indicated that supervising maintenance and operations efforts was his primary responsibility and went on to give examples of specific areas of maintenance and operations. He said,

> In my opinion [the duties] are to direct the work of the maintenance crew to help make the schools safe and accommodating for a learning environment; whether that be the plumbing working properly, the roof not leaking, doors working and locking, [or] the security of the facility.

He went on to discuss how his maintenance and operations duties included evaluation and assessment of programs; specifically, he mentioned recent research linking facilities conditions to educational outcomes. When I asked if he made use of that type of research he replied,

> We do show research with cleaning and the products that we use. We have gone through and standardized our products from school to school. We have chosen from trial and error, products that disinfect and help with attendance, and have used some records of comparing cleanliness to attendance, and how it helps with the learning environment.

Mr. Wilson also gave an example of how his duties include influencing the operational procedures of the organization through drafting a policy for energy conservation. Document review of public records corroborated the consideration and acceptance of the drafted policy.

In each of the interviews, participants associated the maintenance and operations duties they perform to student learning. Mr. Carter said facilities directors "coordinate and prioritize what needs to be done so that our facilities are number one in the realm of student learning." Mr. Taylor summarized the entirety of his duties as the responsibility to "make sure these facilities are in appropriate shape for student learning." Mr. Smith discussed the importance of maintenance and operations as it relates to teachers and testing; he said,

> If they are doing TN Ready tests today, if they lose the cooling tower during TN Ready, then you have an irregularity that can affect you greatly. We know that, and we are working toward making sure we do not have those catastrophic failures that would come about as the result of a lack of maintenance. We are doing maintenance in the middle of June thinking of testing in May.

Regulatory Compliance Duties

Again, all six participants discussed regulatory compliance as a common duty of their position. Mr. Brown was the only participant who did not reference maintenance and operations duties first when I asked him what he thought the common duties were. Although he did later mention duties related to maintenance and operations, Mr. Brown first described his responsibility to ensure that the school system maintained regulatory compliance with various regulating bodies. He said,

> Basically my duties are to ensure the kids are educated in a facility that is up to code – the state requirements, health department requirements – and is the best

> environment they can learn in. That has been our goal ever since we have been here.

I asked him what kind of things he was talking about when he said "up to code." His response was,

> Everything from health codes, the height of water fountains, restrooms, the temperature of the water, repair of the doors – that all goes under health safety requirements.
>
> Fire marshal codes; we have to meet those and go through the fire marshal inspections. The last thing we want is for our facilities to be shut down because we violated fire codes in certain ways.

I followed up by asking, "In terms of meeting those codes, what is your particular responsibility?" Mr. Brown laughed and said,

> My responsibility is to ensure we meet them all. I have to stay on top of it; I attend as many meetings as I can because the codes constantly change. Some codes we get grandfathered in on, but then sometimes they adopt a code and there is no grandfathering in. It is my responsibility to see that these codes are met and that we do not get blindsided by, say a fire watch, or a disruption to the school day.

All five of the remaining participants discussed regulatory compliance as a prescribed duty of theirs at some point in the interviews. Mr. Adams and Mr. Wilson both transitioned directly from discussing maintenance and operations to regulatory compliance. Mr. Adams followed his response of supervising maintenance and operations by saying, "I also have to keep up with any regulations that are placed on us by the fire marshal, the state environmental conservation [agency], or any other state or federal agency." Mr. Wilson said he felt he had a duty to

> Be a resource for the principals and other administrators in the system, to be able to help them address issues that may pertain to fire marshal questions, that may pertain to OSHA questions, that may pertain to the EPA, may pertain to Right to Know training.

I told him those sounded like regulatory compliance issues and asked if he agreed, to which he responded, "Yes." I then asked if there were any other regulatory compliance efforts he conducted on a regular basis and he said,

> Yes, you have other things that go into that. You have to be able to work with sprinkler systems, sprinkler companies that come and do inspections. You have abatement companies that come to get rid of asbestos, you have to have an abatement 6-month inspection program and you have to do a 3-year plan. You have to have sprinkler systems inspected every 5-years, plus we do them quarterly.

He went on to say, "You get audited by the state and, or the EPA for those compliances."

Mr. Smith said, "We have ADA responsibilities, to make sure we keep things ADA as much as we have and to make sure that we bring new projects to us that are ADA compliant as much as possible." He also added that the school system he is employed by owns a swimming pool, which added to his list of regulatory compliance efforts. I asked him to elaborate on what agencies regulated swimming pools; he said,

> It is a variety of people, mostly the health department. There are some random TCA laws that affect us. Of course, over all of this is our insurance carrier, who has kind of an obligation to make sure we are doing what we are supposed to be doing. So they will come in and maybe require us to do some things that nobody else is requiring us to do.

Mr. Taylor was discussing asbestos compliance training when he said, "I just went and took a refresher course as part of my large job description." I asked him what other regulatory compliances he was responsible for as part of his job description. He laughed and said,

> We all need a list to hang on the wall. We have asbestos, we have air pollution, how many particulates do our boilers put into the air, we have playground inspections – here we have not only the insurance company inspecting our playgrounds, but the head start agency does as well, we also have the… their name slips my mind, but it is another agency that inspects our playgrounds and they each require certain things – we have fire marshal inspections, fire sprinkler inspections, we have range hood inspections, our inspections on our fire extinguishers, we have inspections for our back flow devices, those have to be inspected. Those are just some of the top ones.

Document review of Mr. Taylor's formal job description confirmed his statement of being responsible for those duties.

Contract and Project Management Duties

Contract and project management are other duties that emerged as a theme in interview transcriptions. All participants discussed contract management and project management responsibilities during their interviews; furthermore, document review of formal job descriptions corroborated contract and project management duties. Again, there were no clear mutually exclusive themes between countywide and municipal public school systems; however, in this case a subtheme did emerge between participant responses when participants self-identified their school district, and subsequently their department's workforce, as either large or small. Specifically, participants who commented that their district or workforce was larger than others indicated they contracted less work than participants who commented that their district or workforce was smaller than others.

An example of this subtheme can be found in the comparison of Mr. Carter's words with those of Mr. Brown and Mr. Taylor. Although I did not ask participants to provide the number of workers they supervised, all of them volunteered that information; however, I chose not to report the size of participants' workforces in order to avoid the loss of their confidentiality. Mr. Carter had the largest workforce of any participant I interviewed, while Mr. Brown and Mr. Taylor had the smallest workforce among the participants. I asked each of them how much in-house work their department did compared to how much work they contracted. Mr. Carter, with the largest workforce, said, "We are pretty well self-sufficient… the only contracting out we do is something that is maybe required by the state, but we are

mostly an in-house organization here." Whereas Mr. Brown told me, "We contract all of our HVAC, which it is local, now we have a local company under a service contract." I asked Mr. Brown a series of follow-up questions about his experience with that particular contracted service; he expressed some drawbacks from his perspective, but ultimately told me it was beneficial because in his words, "I do not have to deal with it; we do not have the staff to deal with it." Mr. Taylor described a similar situation he faces, he said,

> We probably do more, here, contracting than most school districts because we have such a small team. Larger school districts typically have entire crews that are able to do small remodels – the can go in and build walls – whereas my team is small enough that we do not have time to stop working on work orders to build a wall for a teacher. Not necessarily that we do not have the skillset, we just do not have the time or the manpower.

Although that subtheme did emerge, there were exceptions to it among other participant responses. For example, Mr. Smith, who has a workforce that is larger than Mr. Brown's or Mr. Taylor's, said,

> We do a lot of contracting, in other words we contract with a lot of people to do work, mostly HVAC, mechanical, controls, electrical, and some smaller projects that could be architectural or structural. It depends on – we do not have the in house staff to really do big projects without shutting down all of our maintenance activities.

However, Mr. Smith did point out that more than one third of his workforce is dedicated to grounds-keeping, and that among the remaining staff only a few are skilled technicians or craftsmen.

Among the participants who indicated that they did a lot of contracting, they all indicated they were heavily involved in the management of those contracts. I asked Mr. Brown how involved he was in managing the HVAC service contract he told me about. He said,

> 100%. I presented it to the Board of Education. I sat down and laid out the guidelines of the contract. We send it out and I get the quotes from all the vendors we have dealt with in the past. I get the quotes and present them to the Board.

I asked if he was responsible for evaluating the success of the contract as well, to which he replied, "Yes." I asked Mr. Smith the same questions about a custodial contract that he told me about; he replied,

> I have actually written the contracts, done the requests for proposals, and then do the interviews and been the primary person in choosing. Of course, I get a lot of other peoples' input, but primarily it comes down to me.

He went on to explain that the administrative structure in his district also left him responsible for evaluating that contract.

All six participants discussed project management duties during their interviews. Two subthemes emerged among discussions of project management: participants discussed duties related to both planning for capital projects, as well as purchasing procedures for projects.

Several participants mentioned project management in general terms when they were not discussing planning for capital projects or purchasing procedures. One of the more common issues participants discussed was that they were responsible for coordinating with other departments within the organization in regard to projects they were managing, or would need to be involved with. For example, when I asked Mr. Adams to tell me about his interaction with other departments within his district, he said,

> All supervisors for all departments are at our monthly meeting. So we do have a monthly meeting where we speak about projects that are going on and if anyone needs help with a project, say technology needs something from facilities – they need a closet built for a server – they will let us know ahead of time, usually, that they need that.

Several other participants discussed similar experiences when coordinating with others in relation to projects; however, the bulk of those discussions were centered on communication and what facilitators or barriers the participants experienced related to communication. Those themes will be explored further under the "Facilitators" and "Barriers" headings. Nevertheless, it is important to note that coordinating with others within the school system about upcoming or ongoing projects was mentioned with some frequency.

The first emergent subtheme associated with project management was that facilities directors considered capital projects planning a common duty of their profession. Mr. Smith said,

> I have some responsibility in capital improvement projects. My duties, my responsibility is to develop the capital improvement plan. So I am looking at the buildings and [making] plans and looking at the property and looking at future uses and future projects.

I asked Mr. Smith how far ahead he planned the capital improvement projects he was talking about, to which he replied,

> When I got here there was really no capital improvement plan, it was just whenever someone sent some money. It has evolved to where we have a rolling deferred maintenance list. Generally it is a look ahead of about 5 or 6 years but in reality we are only planning the projects 1 or 2 years ahead as we see the funding coming solid. Right now I think we probably have a 5-year plan.

Mr. Brown described his duties in a similar way; he told me he makes presentations to the Board of Education in workshop sessions about upcoming projects. He said, "I am about to present a roof analysis, which has a big price tag on it. That is just an information meeting for us to let them know what is down the pike so we can look ahead." I followed up by asking him how far ahead he normally looks at those types of projects, to which he responded,

> Probably 2 years max. I know where we want to be in 2 years and what we want to accomplish. I met with the roof analysis contractor and explained what we can and cannot do, and we created a 2-year plan. We actually have a 5-year plan but we concentrate on a 2-year plan.

Mr. Taylor and Mr. Wilson described similar responsibilities, but both also pointed out that they did not make the final decisions as to which projects were sent to the board of education for final approval. Mr. Taylor was discussing capital projects when he told me,

> It is my job to let the Director of Schools, my boss, know what I feel is a priority. It is the principals' job to let them [the Board of Education and Director of Schools] know what their priority is. Then it is up to [the Board of Education and Director of Schools] to decide if they are going to fund what I deem is necessary or what the principals deem as necessary.

Likewise, Mr. Wilson said,

> What I do is go through and make up a list of capital items that I see that are needed at the schools. I am just talking building envelope, I am not talking about them needing a computer lab, or we need to make the faculty restroom better – unless I am thinking they need a new sink or counters – but I say, "This one needs a new roof, we need to change the boiler here, we need a new cooling tower."

He went on to say,

> I make those lists and sit down with my boss, who [reports directly to the Director of Schools], and say, "here is what I see" – I know there is $4 million there and I know that it is not all coming – "but we really need to replace this cooling tower, it is done. This roof is a mess."

I asked him who made the final decision on which projects were presented to the Board of Education for funding; he replied,

> I will send it to my boss and say, "here is what I see as a priority." He may be getting lists as the schools do their budget, he will be getting lists of capital requests from them that I may never see. He is getting it from both ends, and trying to balance that ball of "we have so many dollars so where do we need to spend?" Some principal may be saying they really have to have something to meet some educational needs and I do not know anything about that. My boss may say it is a priority, and maybe we can get another year out of this cooling tower. So then he and the Director of Schools end up making that call.

The second emergent subtheme associated with project management was that facilities directors have responsibilities related to executing purchases for projects. This particular subtheme is closely correlated to one of the primary barriers identified by the participants. When discussing the execution of purchases each participant linked that duty with frustrations they experienced with purchasing requirements; that theme will be explored further under the heading "Barriers." None of the participants directly identified purchase execution as one of their duties, but each participant described performing aspects of that task. For example, Mr. Adams said, "If I get above a $5,000 purchase I have to take it to the Board of Education (for approval)" and later told me, "If it goes over $10,000 it has to be bid." Mr. Smith went into more detail of the purchasing process for projects; he explained to me,

> If we are over $10,000 we have to get three prices. Anytime you want to put in a new unit, or do any type of work that is in that price range, you have to figure out a specification, then you have to figure out what format to put the specification in. Can you do it verbally, can you do it in email, do you have to write it out, and are you going to have to have plans drawn up? Then you have to get people interested in the project or the materials. You have to call venders and figure out who is going to bid, and have them give you a price, not really a bid just a proposal. Then you have to evaluate those things; you have to determine which is the best value, and if can you justify not taking low price if you need to. Then you have to document all of that stuff. Then you have to write the purchase order. Then you have to tell them they can go ahead.

Several other participants discussed that same process throughout the course of their interview.

Personnel Management

The final theme that emerged related to the common duties of facilities directors was related to personnel management. Several participants identified responsibilities in this area. Responses related to personnel management were general in most cases;

however, staff relations and training of staff were two distinct subthemes that emerged. Staff recruitment emerged as another theme, but participants spoke of recruitment as a barrier; that theme will be explored further under the heading "Barriers."

Each participant discussed managing or supervising departmental staff as one of their responsibilities. For example, when I asked Mr. Wilson what he thought the common duties of a facilities director were, he began his response by saying, "In my opinion they are to direct the work of the maintenance crew." Mr. Adams first told me his duties were to ensure facilities were "properly maintained," and when I asked him to elaborate on his specific role toward that effort he said, "I am the manager of the staff that performs those duties." Mr. Carter characterized his duties as "coordinating and prioritizing" the work his department was responsible for performing. When I asked him to elaborate on what he meant by that he told me about the staffing structure of his department and how he delegated work to the appropriate personnel.

Staff relations emerged as a subtheme among responses related to personnel management. Most responses were focused on building trust and improving staff relations. Mr. Carter was discussing productivity and the morale of his department when he said,

> If you respect them they will go more out of their way. It may start today, but as of yet I have not had one say, "no, I'm not doing that" or "that's not my job." My philosophy is, if you are an electrician but you see something else that needs to be done, do it. Nobody is any better than anybody else. I am no better than anybody here that I do not get in a hole [perform undesirable labor]. It is just respect – that is what it boils down to.

Mr. Adams made similar remarks after discussing his responsibility of managing personalities that sometimes clash. He told me,

> You very seldom get a plumber, an HVAC technician, or a carpenter who is not outspoken and who will not let you know if they are unhappy about having to clean out a sewer line, or are not happy about – there are just some very strong attitudes

> and personalities in this field. You have to have some pretty thick skin because they will tell you exactly what is on their mind and it is usually not in a very gentle way that they go about it. You have to be able to manage that. You have to be able to diffuse that situation and get them back on the right track. That just takes a lot of time working with them and a lot of trust on their part. It takes a lot of time to earn their trust.

I followed up by asking him how he went about earning the trust of those he supervised; his response was similar to the one Mr. Carter gave me, Mr. Adams replied,

> I am not saying I have complete trust from them, but when I walked in the first day, my first statement was, "I will never ask you to do something I would not do myself." I do that, daily. If there is something that has to be done and someone does not think we can do it, I do not care to go out and get dirty and actually perform the work. I think it is only fair that if you ask someone to do something that you are willing to do it yourself.

Mr. Wilson told me that he felt he was fortunate to have a great staff that did a very good job. I asked him, "Is that something you have to be fortunate enough to inherit, or are there things you can do to try and continue that?" He said,

> It certainly helps to inherit some of that, but I think there are several things people in this position can do to grow that. I think what you go through and do is you get these folks involved; you get ownership into what they are doing. You do that by asking their opinion, by getting them involved in the situation. If you are going in to make renovations at a school, to build a new school, or to build an addition, once the architect's plans have been drawn up, you get these guys to take a look at the electrical, the HVAC, the plumbing and as that construction is going, you make sure they have time to go by there and take a look at what is being done. "What do you see happening with the HVAC as they are installing?" Or "what do you see with the plumbing?" "Get familiar with it because we are going to have to take care of it when they are done." Everybody there is going to walk away and it is going to be ours to maintain and take care of.

He finished explaining his approach to maintaining positive staff relations by saying, "You have to respect their opinion, and you go back to the simple things like the Golden Rule, you just treat them like you would like to be treated."

Several participants discussed their responsibility to either provide their staff with training, or to ensure they had access to training outside of the organization when it was available or needed. Mr. Wilson said,

> The other part of that duty, going back to directing the work of the guys, or ladies, in the shop is to be able to support them and give them the tools to do the job properly and safely; to make sure they are trained to do their job safely – whether it is operating equipment safely, or just doing lifting, accessing a ladder – it is giving them the tools they need to do the job properly.

Mr. Carter mentioned training when he was describing the importance of respecting his employees; I asked him to elaborate on what kinds of training he was referencing. He said,

> Anything that comes up; I have one at an asbestos training right now. Anything that comes up related to the fire marshal or fire line. I have a guy that is our safety guy and he inspects our playgrounds and things like that. Anytime I get a notice of training or that someone is offering classes, through the Tennessee School Plant Managers' Association or through other organizations, I have a line item in my budget. To me there is always something new coming; we may not do it the best way, even if we think we do, there might be another way it can be done more efficiently and better. Anytime I see any training that can help any of my men do their job and perform their duties I am willing to send them to that training.

Mr. Smith also discussed providing his staff with training to improve the skills they needed to perform their jobs. His discussion of training staff was centered on a barrier he told me he encountered with retaining and recruiting employees; that barrier will be discussed further under the heading "Barriers." Nevertheless, Mr. Smith's discussion pointed to his involvement in providing training opportunities to his staff. He said, "We train them quite a bit throughout the year. As a matter of fact my locksmith, we are sending him this year to become a certified locksmith."

Mr. Taylor described how he provided training to system employees who were not part of his department. He was explaining some of the issues he regularly discusses with

principals in the monthly principals' meeting that occurs in his district when he told me about taking a refresher course in asbestos management. He then said,

> As I was listening to the instructor I started thinking all of my principals know about it, but they do not know all of the history about asbestos and how it got in the school and why it is dangerous, so in one of my upcoming meetings I am going to do a little fifteen minute training, sort of a refresher course if you will, to let them know why it is so regulated in school systems and how it impacts them as principals.

Impact of the Role of Facilities Directors Within the Organization

The second research question asked how facilities directors of public school systems in Tennessee perceived the impact of their role within the organization. To study this research question, I asked participants to describe what they understood to be the mission or the purpose of their school system. After listening to their responses I followed up by asking the participants to discuss how important they thought their work, and the work their department was responsible for, was in terms of achieving the goals of the school system. Responses to the two interview questions were similar in each instance. Again, with this research question there were no mutually exclusive themes that emerged among countywide school systems as compared to municipal school systems. Two themes emerged among the responses of participants to these questions: 1) facilities directors identified student learning as the primary mission and purpose of the school system, and 2) facilities directors believe the mission and purpose of the school system is impacted by the work they perform and the work their departments perform.

Mission and Purpose

The first emergent theme among responses was that participants identified student learning as the primary mission of the school system. In some instances participants

responded to the question about the mission and purpose of the system by quoting the actual mission statement of the system; in order to protect the confidentiality of participants those responses are not included in this manuscript. Others, though, responded by simplifying the mission and purpose of the school system and putting it into their own words. In each case the participant referenced students and education immediately. For example, when I asked Mr. Brown what he understood the mission and purpose of the school system to be, he responded, "To educate students number one." Mr. Taylor gave a similar response. He stated firmly, "To teach students." Mr. Carter, also gave a firm response. Without hesitation he stated, "Focus on the learner, or the student, plain and simple." The same theme was also present among the responses of participants who quoted the formal mission statement of the school system. At other times throughout their interviews participants summarized the purpose of public school systems in similar ways. Mr. Smith, for example, quoted the mission statement but then rephrased it to tell me, "You can educate kids a hundred different ways, but you have to have a path that prepares them for college [or a career]. We have done a lot for college, and they are working on [doing that] for career."

Impact of Facilities Directors

The second theme that emerged was that participants perceived their duties and the work their departments were responsible for as crucial to achieving the mission and purpose of the school system. Two subthemes also emerged in this area, they were: 1) participants perceived the condition of facilities to be correlated to student learning, and 2) participants perceived the work their department performs as support services.

The primary theme that emerged among participant responses was that participants consider the duties of their position and their department to be linked to fulfilling the mission and purpose of the school system. Mr. Wilson told me, "I think it is critical." Without being asked for elaboration he added,

> I think it is a critical element to it [fulfilling the mission] because if we do not have the school in good shape, the building envelope in good shape and in good repair, looking nice, and comfortable, then I think the learning environment will be atrocious not only for the students, but for the faculty as well. They will not feel good about coming into this place if it is filthy, if needs painting, if it is not clean. So I think our role is extremely vital to the mission.

Mr. Smith also said "I think it is critical" when I asked him the same question. Mr. Taylor told me,

> I would rank it right behind the actual education part, because there are studies that prove students cannot learn effectively when they are cold, or when they are hot, or when the schools are so unhealthy that the students miss.

Mr. Carter said,

> We are just about the axle that drives the wheel! We had a call this morning, our high schools are doing testing, and I have one that is hot [HVAC not working] so if we do not go and get on it right now… We have got to maintain those buildings, like I said, for student learning. We have got to be right on top of it.

Several participants mentioned specific facilities conditions when responding to the question that asked about the importance of their work in terms of fulfilling the mission of the school system. A subtheme emerged among the responses when I followed up with the participants and asked them to tell me about how important they thought the condition of facilities was in terms of student learning. For example, Mr. Smith told me.

> It is definite; we know the environment affects the way kids learn. Before we did the performance contract and changed out a lot of equipment we had window air conditioners. I documented [high levels of carbon dioxide] in the classroom. At [the levels documented] in the classroom, I do not care what you do to a kid, he is not going to learn!

I asked Mr. Wilson "How much weight do you and your employees put on the condition of facilities in terms of meeting the mission?" He responded,

> I think, from our end, we probably put the weight on the condition and the whole building envelope at 75%. It is that important to me toward meeting the mission because if the school is not clean and students are absent then they cannot learn. If the teachers are absent then they cannot teach and the students are not going to learn. If the HVAC is not running and it is too hot or too cold, it is very distracting to pay attention and to learn. I think it is a very highly important aspect of the mission.

Mr. Taylor mentioned a research study related to facilities conditions in his response to my question; Mr. Brown also cited research as his reasoning for considering facilities conditions to be associated with student learning. He told me,

> There was a study that came out, I think 3 years ago, [that showed] there are certain foods the kids need to eat to perform well and certain environments they need to perform well. [It listed] the ideal temperatures, and lumens on the lights so we went through and took light readings to make sure the light was not too bright, or that we were not using too high wattage of bulbs. We tried to check to make sure we were within the boundaries.

The second subtheme that emerged was that participants perceived the work their department performs as support services. Some participants discussed this as an area of frustration in performing their duties; that theme will be explored further under the heading "Barriers." Nevertheless, the subtheme did emerge as a result of several statements made by the participants. When I asked Mr. Adams about the importance of the work he and his department performed he explained, "By keeping the facilities in an orderly fashion, it provides a more welcoming environment for the kids." He went on to add, "What we do is really behind the scenes, but it is an intricate part in making the district more inviting." In response to the same question, Mr. Brown told me,

> I think it is very important. Nobody knows you are there until it goes wrong. If we can stay on top of things, and the less disruptive in the schools we can be the better. Preventative maintenance is our number one goal.

Mr. Smith gave a similar response in terms of being preventative. He said, "The better we do, the less they know we are here, and the less they are impacted by our stuff." I later asked him to elaborate on what he meant by that statement; he responded,

> Their job has nothing to do with facilities…. So if things were the way I think they should be done, they would do their stuff and I would do my stuff; therefore, they would not have to stop and call and say, "this has gone to crap on me."

He went on to add, "There is no point to having them have to deal with facilities issues, it is not what they do. If we do our job they do not know." I asked him if he meant that if his department did a good job that the educators would not think of them because they would be able to simply show up and concentrate on their own duties. He responded, "That is the goal."

On the opposite side of being preventative, several participants discussed providing support services in reactive situations. Mr. Wilson, for example, told me, "Most of the time nobody communicates with me unless they have something that is broken." He laughed and then added, "They are not generally calling maintenance to ask, 'how is your day going?'" Mr. Taylor made similar remarks,

> The reality of the person who sits in this chair is, day in and day out you hear complaints – "my unit is broken," "it is too hot," "it is too cold," "the roof is leaking," "we have cockroaches," "a mouse has chewed through the snacks" that should not be in the classroom, "the fish aquarium" that should not be in the classroom "has leaked and created a moldy mess in the carpet" – you are always hearing complaints.

He told me that in his experience, those sorts of occurrences tend to increase as the school year goes on because, in his words, "They are burned out. It is human nature to lash out at somebody when you are fed up." I followed his answer with the question, "So is your department a whipping post sometimes?" to which he responded, "Sometimes, but we are

here to serve, so by nature, we do our dead level best to help our people here and sometimes that is just the by-product of what we do."

Relationships and Interactions Within the Organization

The third research question was designed to investigate the nature of interactions and relationships between facilities directors and other portions of the organization. To investigate this I asked participants questions about their interactions and relationships with the director of schools, the board of education, and other departments among the system by which they were employed. In most cases the participants reported positive interactions and relationships with those groups, although some exceptions were discussed, but generally those were discussed as barriers to performing the duties of facilities director. Two main themes emerged in the data related to this research question, one that was present in both types of systems, and one that highlighted a difference between countywide public school systems and municipal public school systems.

Direct Reporting to the Director of Schools

One theme that emerged that was not mutually exclusive to countywide or municipal facilities director was that most participants report directly to the director of schools. Four of the six participants told me they report directly to the director of schools and have regular communication with that individual. Mr. Adams told me,

> Our offices are separated; we are not in the same building, so I do not physically see him every day. I usually speak to him of the morning or the afternoon at least every other day - usually every day. He will tell me any concerns and wants an update on anything we might be doing, or will ask general questions about what is going on. Sometimes a parent or Board member has called and voiced a concern and he will ask if I have any ideas, or he will tell me the concern and ask me how we are going to go about fixing the problem.

Mr. Brown gave a similar response,

> Our Director now, I have been through three and they were different types, but the Director is great. They have all been great, but the one I have now, we talk to each other once or twice a day. I call him or he calls me; usually he is calling me. He relies on me on the maintenance end of it. I give him the facts and tell him the reasoning and he will help me out.

Two participants told me they do not report directly to the director of schools, but rather to another individual who in turn reported to the director of schools. Mr. Wilson had already explained this before I asked him about his relationship with the Director of Schools and how often they interacted. He told me,

> Communication with him is mostly done by text or email. I send a monthly update to him of, not every work order that has gone on since the last Board meeting, and I do it just before the Board meeting, but just some of the highlights.

He went on to add,

> Also any time we have an issue I will text him or email him, most of the time I will text him because I am at the school to say, "hey, the alarm went off and we have some smoke in this area but things are OK" and I will text him later and say, "here is what my investigation of that alarm issue was."

I asked him if he felt like that level of communication was reciprocal to which he replied, "From him, yeah I do, and a lot of times if I am getting communication from him…" and he laughed as he continued to say, "it is better for me not to get communication [from him]." Mr. Taylor also told me he did not report directly to the Director of Schools. I asked how he felt about that situation, to which he expressed some frustration, but later told me that he could in fact contact the Director of Schools directly if he felt he needed to.

Type of Contact with Board of Education

One theme that emerged and showed a marked difference between countywide and municipal systems; that subtheme was related to the level of communication participants

have with the board of education. Each of the three countywide system facilities directors told me they spoke directly to one or more school board member on a regular basis. Mr. Brown told me, "Comparing myself with some other [facilities directors], they rarely have contact with board of education members, I have at least one who calls me once a week." Mr. Adams told me,

> All of the Board of Education members have my personal contact information and if they have any concern they will call. If they have a question regarding use of a facility or rules and regulations they will call and ask.

Conversely, each of the three municipal system facilities directors said they have very little, if any, direct communication with school board members. When I asked Mr. Taylor to tell me about his relationship with the School Board in terms of frequency and mode of communication, he responded, "With this school system the Board of Education works directly through the Director of Schools. So, outside of a Board of Education meeting I have almost zero contact with School Board members." I followed up by asking if it would be unusual for a School Board member to call him directly; he said, "Most definitely, yes. I will not say it is out of the realm of possibility, because it has, but you can count on one hand how many times it has happened." Mr. Smith described his interaction with the School Board by saying,

> Whenever they have an issue, it is generally communicated from them to the Director of Schools, and he decides how he is going to address it. He may do nothing, or he may throw it completely into one of our laps or whatever.

I asked if it would be out of the ordinary for him to receive a phone call from one of the School Board members to ask about something they noticed, to which he replied,

> It would not be unusual; it generally does not happen, and they also know that as soon as we hang up I am calling the [Director of Schools] and letting him know they had that question and there were concerns raised.

Facilitators

The central question of this study was related to identifying factors facilities directors of public school systems in Tennessee perceived to be facilitators and barriers to performing their duties. I asked participants multiple times throughout the interviews if they could identify factors that they considered as facilitators in terms of fulfilling their duties. In general, participants seemed to want to focus on barriers rather than facilitators, in fact, most participants identified nearly twice as many barriers as they did facilitators. Nevertheless, four main themes and some subthemes emerged among the participants' responses to questions regarding factors that facilitated their success.

The main themes that emerged within the findings were:

1. Participants indicated that good communication was a facilitator for their success.
2. Participants indicated that autonomy was a facilitator of their success.
3. Participants indicated that their employees were facilitators of their success.
4. Participants indicated that access to various resources was a facilitator of their success.

Communication

Communication was identified by most participants as both a facilitator and a barrier depending on the nature of specific situations. Several participants identified good communication in general as a facilitator of success; for example, when I asked participants to identify skills or traits that they thought were important for someone in their position to be successful, communication was a common theme. Mr. Brown said, "Communicator is the main one; you have to be able to communicate." When I asked Mr. Adams the same question he replied, "You need to be able to talk to people in a way that not only shows

them respect, but will also earn you respect with them." Mr. Smith said facilities directors need to have the "ability to communicate with people, to get your point across, but also to hear their point." Beyond general discussions of communications two subthemes emerged. Most discussion of communication as a facilitator of success was related to either 1) working with staff that was receptive to communication, or 2) having open channels of communication among departments and system administrators.

The first subtheme that emerged in discussion of communication as facilitator of success was that participants perceived working with staff that was receptive to communication was a facilitator of success. Mr. Taylor told me about attending principals' meetings and discussing topics of importance with those in attendance. I asked him if he thought that audience valued his input, to which he replied, "Most definitely, yes they do. I am fortunate in that all of the principals I work with have respected – I am at a loss for words – but they are interested in what I have to say." Mr. Adams was explaining a barrier he encountered as a lack of understanding among teachers when he told me, "When you go into the explanation of why it is there and why it is important it generally alleviates the problem." Mr. Smith told me,

> You know, around here, I guess we have a good bunch of people, the principals, almost all hold Ed.Ds, so they realize how that process works, but they also have a common sense component to them that will allow you to work with them.

I asked him to elaborate on what he meant by "allow you to work with them." He responded by sharing an example of a problem he encountered and how it was solved; he said,

> For example, one of the biggest things we had problems with was the fact that everybody got into electrical panels and they would flip breakers, and a lot of damage was being done, and a lot of our problems were being camouflaged – they were having problems we did not know about and they did not want to tell us about

> it because they felt we would do something to make it harder for them to do what they wanted to do – I was able to convince them by saying, "look, we are going to lock the panels, and when you have a breaker pop you will get immediate attention, and we are going to fix the problem." Rather than getting all defensive and concerned they said, "OK, we will see how that works." It worked out well for them because they do not have the problem with electrical that they did, and they will do that on just about everything.

The second subtheme that emerged was that facilities directors considered open channels of communication to be facilitators of their success. I asked each participant to tell me about the relationships and interactions they had with the director of schools, the board of education, and other departments within the school system where they were employed. In most cases participants told me about the methods of communication, and the success or failure of those efforts with each group. When discussing the success of communications with those groups, and how that was a facilitator of success in terms of performing their duties, several participants discussed examples of opportunities to communicate and keep those individuals informed or stay informed about things that might be pertinent to them.

Each of the four participants who told me they reported directly to the Director of Schools described their communication with that individual as being agreeable to them. Mr. Adams said he spoke with the Director of Schools by telephone on a regular basis; he said,

> I usually speak to him of the morning or the afternoon at least every other day - usually every day. He will tell me any concerns and wants an update on anything we might be doing, or will ask general questions about what is going on. Sometimes a parent or Board member has called and voiced a concern and he will ask if I have any ideas, or he will tell me the concern and ask me how we are going to go about fixing the problem.

Mr. Smith described a his communication with the Director of Schools in a slightly different way; he said,

> We have a series of meetings and workshops for the Board of Education and administrative staff meetings that we are always preparing for, so you have sort of a formal structure there that says, "OK, these are the topics we are investigating or working on." There is a lot of communication as to what the focus is or how the project needs to be done. A lot of it is we set a time frame in a meeting that says, "this is what we want and when we want to be there." Then you just communicate informally as you follow that project. If he has a specific concern I will get a text, an email, or a phone call.

The two participants who said they reported directly to another individual who in turn reported to the director of schools also indicated they had open communication channels with the director of schools. Mr. Wilson told me he generally sends the Director of Schools updates via text message and email. Mr. Taylor told me that although he reported directly to another individual he could still contact the Director of Schools directly if he felt the need to do so.

Several participants discussed communicating with the board of education in work sessions or other information sharing settings. Mr. Carter said, "We have a work session once a month where things are brought up. They have issues they get calls on and I get calls and questions from them on that. They want updates especially on renovations." Mr. Brown made similar comments, he said, "They have started doing work sessions, which we are going to try to do every other month. " He went on to add, "That gives me an opportunity to present anything to them that they need a heads up on." Although facilities directors of municipal public school systems told me they had little or no contact with the board of education outside of regular meetings, they too identified opportunities to communicate with the school board to share information as a facilitator of success. Mr. Wilson explained,

> Usually my direct supervisor addresses most issues with the Board of Education. I will go usually in September and do a presentation, with pictures and PowerPoint, with some of the major work we have done since the last time I was there. Whether

> we have replaced a cooling tower, HVAC units, or some bigger water heaters. I will go through and give them a condensed version of what has happened.

He also added, "I think the monthly update that I send the Director of Schools, he shares with the Board of Education, so there is that communication in an indirect manner." Mr. Taylor's description of his communication was similar, he told me,

> We have an arrangement where we meet with the Board of Education and sort of give them the down low on everything – what our plans are for facilities, what we have accomplished, our concerns – and we do that through a PowerPoint presentation.

I asked Mr. Taylor how often those meetings occurred, to which he replied, "It has varied from twice per year to one time per year."

Participants also discussed the opportunities they have to communicate with other supervisors within the organization. Another difference between countywide and municipal public school systems emerged in this area; participants who work for countywide systems told me they attended staff meetings with the director of schools and all other department supervisors at least one time per month. Participants who work for municipal systems said they did not attend those types of meetings; however, two of the three participants from a municipal system told me they had an opportunity to communicate with those individuals in some other setting.

Mr. Adams and Mr. Brown both indicated that they attended a staff meeting once every month, and that supervisors had the opportunity to communicate and coordinate with one another at that time. Mr. Carter said he and other department supervisors attended a staff meeting each week. When I asked him to tell me about his interaction with other supervisors he told me,

> They are involved in the Monday staff meetings with the director. Even going through the testing coordinators and those who are over the curriculum. To make

> room for them, you know we had the ACT testing last week in certain schools and had to make sure the facility is right.

I asked him if he thought that meeting helped keep people on same page; he replied, "It does, it keeps everyone on the same page. They relay their schedule of what they are doing, that way I can know what is happening and if there are any requests we can work together." Mr. Smith explained his interaction with other supervisors by saying,

> We are a small system so we are pretty much intertwined. Right now the personality of all the people involved is such that you see the benefits of cooperation and you see the benefits of not overburdening someone else. Most of the time, as a matter of fact the majority of the time, everybody is trying to help each other.

He later added, "For the longest time we have done retreats and that has been helpful because it gives you time to know the person personally." According to Mr. Smith, school administrators also attend those retreats. Mr. Taylor also noted that he had an avenue of communication with other supervisors via proximity; he said,

> Speaking for myself, and comparing myself with other school districts, I would say that my district probably has the best communication between departments among any school system I know of here locally. A good example is, I am in the same suite with [title omitted to protect confidentiality]; when she has a problem she is literally two doors down. We speak daily about stuff that is happening. The [department name omitted to protect confidentiality] is in the same building as my office, so we rub shoulders daily. If there is an issue, I usually know about it.

Autonomy

The second major theme that emerged among participant responses was that participants indicated that they perceived having autonomy over their department as a facilitator of success. Within this theme there were no emergent differences between responses from facilities directors employed by countywide or municipal public school system. There was, however, one significant outlier among responses related to autonomy and relationships with boards of education. In general participants indicated the director

of schools and the board of education gave them autonomy. Several participants indicated they did not perceive the director of schools or the board education as micromanaging their departments. Several participants also pointed out that they felt the members of board of education knew their duties and did not overreach.

Each participant that indicated they reported directly to the director of schools discussed the amount of autonomy present in that relationship. When I asked Mr. Adams if there were any factors he would consider facilitators in his relationship with the Director of Schools he said,

> I guess the way he helps is he does not really tell me how he wants it fixed, he does not tell me how to go about it. He asks how I think I will go about it, so I tell him and if he has any concerns he will voice them back.

In a follow-up interview Mr. Adams added,

> Our director is great to work with, usually if he has a problem he will ask first. I actually value his input because he may see things different ways than I see them. But he never goes directly to my personnel. Any time he needs us to perform a task, it comes directly to me and then goes on.

Mr. Smith explained his situation by telling me,

> He (Director of Schools) has been through the service side of it, the fact that you are doing a support for another group of people; he understands the issues with that. He is also the kind of person who delegates; he will set the parameters and ask questions, then how you get there is your own. I think people in general work better that way. The micromanaging that I see in a lot of other districts, I could not live with; it just is not my personality. It makes a big difference in how you are able to do what you need to do.

Mr. Brown and Mr. Carter both told me the director of schools placed a lot of trust in them. Mr. Brown stated, "He relies on me on the maintenance end of it." Mr. Carter told me his Director of Schools told him, "'Now, there are times you may have to tell me to back off, or that something cannot be done. I am not a builder, so if that happens you just tell me.'" He

later added, “He is not a micromanager, he has his own duties. He does not [scrutinize] every dollar.”

Participants also discussed being given autonomy by the board of education for the district they are employed by as a facilitator of success. It has already been pointed out that there was a marked difference in the amount of communication between school boards and facilities directors of the two types of systems sampled for this study. Several participants indicated they were allowed autonomy by the board of education; some participants expressed that through telling me the members knew their role, other participants told me directly that the school board did not micromanage their department. There was one significant outlier among the responses related to this theme; one participant reported having regular direct communication with the board of education, and feeling as though that resulted in micromanagement. That participant’s response will be explored further under the heading “Barriers.”

Mr. Taylor and Mr. Wilson both indicated they had limited contact with the Board of Education beyond the occasional communication meetings discussed above. Mr. Smith, told me, “We are lucky in the fact that this Board of Education really understands what their duties are and what their duties are not.” I asked him what he meant by that statement, to which he replied,

> They are very good about looking and seeing what they are to do; they are responsible for policy, for hiring the director, and for the budget… primarily. They are not responsible for managing a particular personnel situation, or any type of situation, that is not their responsibility. They feel like they have a responsibility to represent the people who voted for them – and they do that – but they do it in a way that comes through the chain of command.

He later added, "Everybody is respectful of the chain of command and what their jobs are, so it makes for a good professional relationship. Mr. Brown also told me that the Board of Education "knows their boundaries." Without being prompted he continued to say,

> They know we have a Director of Schools who runs the daily operations. They never have told me they wanted me to do something, or needed me to do something. If they want me to perform a task they go through the Director of Schools.

Mr. Carter told me, "They (Board of Education) are not at the point of doing any micromanaging; they leave it wide open and trust us, my department, with what we have done."

Employees

Another theme that emerged among responses to facilitators of success was participants indicated that employees and resources were facilitators of their success. Several participants explained that the people that worked in the department they supervised were facilitators of their own success. Mr. Wilson told me, "Another factor that helps me be successful is having a good group of folks here in the shop, that know what they are doing and do a very good job, that is a huge key." Mr. Taylor echoed that sentiment; he said, "Having great coworkers, and knowing that you have their support. That mutual support can help a whole lot; it can make my job go more smoothly." Mr. Adams and Mr. Brown both complimented their custodial staff. Mr. Adams said they had been helpful in making the district's energy management program a success, and Mr. Brown praised his custodians as "some of the hardest working employees we have in the system." Mr. Carter was explaining to me how much he valued showing his employees respect and the level of confidence he has in them when he said,

> I do not micromanage, if I need to step in I can, or if I need to make a decision I can, but what seems to be successful is giving them the encouragement that they can do it, and they have proved that.

Finally, Mr. Smith bragged on the dedication of his staff by telling me,

> The guys who are here, they take pretty good ownership in their job. They are the ones who are thinking about what they are doing, planning what they are doing for the next week on Sunday afternoon, and stopping by the schools at 10:00 P.M. to check on something.

Access to Resources

The final theme that emerged as a perceived facilitator of success was having access to various resources. All participants told me that they used online work order submission programs. When I asked Mr. Brown what kind of work order system he used, he told me the name of the software and then said,

> It is great. When I first came to the department the supervisor would come in with work orders that had been faxed in and throw them on the table and say, "go do these." The guys would scamper and pick through them and a lot would be left on the table for the next day, and nothing was really dated. Now I can tell you exactly when it got to me, who I assigned it to, and when I closed it out. If anybody has complaints I can pull it up and see what is going on.

Mr. Smith made similar remarks after telling me which software his department used, he said,

> We went to it probably about 2 years after I got here, or maybe less. It has really given us a lot of control, the ability to plan - it has been beneficial – it has given us records, some metrics so we can see how we do. It has been beneficial. When I came here there were sticky notes flowing into the floor and no accountability – whoever made the next phone call, or whoever was the next highest up and made a phone call was what got taken care of.

Several participants also discussed various methods of project financing as facilitators of success. Mr. Adams was discussing the challenge of managing large amounts of aging equipment when he made the remark, "We have been lucky in the fact that we

have been able to – through bonds and low interest loans – replace some of that aging equipment." Mr. Taylor told me about an energy conservation incentive program that he thought was useful, though he added some recommendations for improving the program in the future. He said, "The state has created a great program, the Energy Efficient Schools Initiative, which was a wonderful thing. I would like to see that program broadened to provide more funds for energy upgrades, including more efficient [HVAC units]." Finally, Mr. Smith referenced a contract his system had with a provider that allowed him to finance facilities related equipment through the energy savings they generated. He said that resource also helped him fund upgrades to buildings that had previously been neglected. He explained,

> The performance contract really let us take out the brunt of the cost, either by actually paying for our part of it, or by reinvesting the energy savings, and take care of some buildings that would not have been taking care of.

Barriers

Most participants identified nearly twice as many barriers as they did facilitators. Furthermore, most participants gave detailed explanations of their perceived barriers, and in some cases offered suggestions for improving those barriers without being prompted to do so. Throughout the course of the interviews and follow-up conversations, five distinct themes surfaced among the factors participants discussed with me. Some subthemes also emerged within these main themes. Finally, one response related to autonomy emerged as a notable outlier to other responses reported under the heading "Facilitators." That response was identified as a barrier and has been included in this section.

The main themes that emerged within the findings were:

1. Participants indicated that communication is a barrier to performing their duties.

2. Participants indicated that purchasing is a barrier to performing their duties.

3. Participants indicated that funding is a barrier to performing their duties.

4. Participants indicated that the age of their facilities is a barrier to performing their duties.

5. Participants indicated that stakeholder understanding of facilities issues is a barrier to performing their duties.

Communication

Most participants described communication as a factor they perceived as a facilitator but also, at times, a barrier. When discussing communication as a barrier to performing their duties, many participants identified a breakdown of communication as the root of several other barriers they encounter. Some comments related to communication as a barrier were very general in nature; for example, when I asked Mr. Taylor what factors he perceived as barriers to performing his job he said, "Communication, at times can be that way. We have always said you cannot communicate enough. Communication can be a barrier." Although other participants made similar statements, most discussions of communication as a barrier were accompanied by specific examples. As with several other themes that emerged throughout data analysis, this theme was not exclusive to one type of system. No distinct subthemes emerged within this theme; most responses simply highlighted the frustrations participants encountered as a result of communication breaking down.

Mr. Adams told me that he had a good relationship with his Director of Schools and that their communications were typically productive; however, he pointed out that at times he experienced a barrier in the form of access to the Director of Schools. He said,

> The unfortunate part with the Director of Schools is they have many hats to wear. They have technology, food services, the education part of it, and then they have to report to the state. Time with him is very limited. Sometimes when you are doing a job and you think you are doing the right thing, you are always nervous that it is not the right thing. There is not that communication that – I guess just verification – that you are doing what he wants done; because in the grand scheme of thing he is your boss.

He went on to add,

> That is not by choice – as I said he has a lot of hats to wear – he has to oversee more than just our department. Either way I am not going to stop doing the job, but I would hate to use a resolution that I think is best and then have to go back and redo the work we did in the first place.

Mr. Wilson made similar remarks when I asked him if there were any barriers in his relationship with the Director of Schools; he said, "I guess sometimes he is such a busy guy, and I am at an offsite location which is probably normal for a lot of maintenance folks, but sometimes getting a face to face with them." He also added, "Sometimes it is the same way with my direct supervisor, I have a harder time getting answers from an email sometimes than I think I would in a face to face." Mr. Taylor discussed how he once reported directly to the Director of Schools, but that had since changed and he now reports to another individual. He described that as a scenario he finds to be problematic at times; he said, "It is sometimes hard to convey everything that needs to be conveyed, the way it needs to be conveyed, through another individual."

Mr. Smith told me he had a good relationship with his Director of Schools and the rest of the district administration, but he said communication had been a problem in the past for him. I followed-up by asking him to elaborate on how it had been a problem in the past, to which he replied,

> Part of it came from the fact that the people who were here had been doing their job for a long time. They had never had a problem. It was not that they were the type of people who would not communicate; they did not need to communicate.

Mr. Wilson made a similar comment about a barrier he encounters in his district. He was discussing a barrier he encountered in fulfilling purchasing duties when he said, "Sometimes getting the feedback of if we are clear to spend money on something, and getting that direction once that priority has been set to tell me when to start, is a challenge." I asked him if he thought that was a breakdown in communications, to which he responded, "I think it has been a lack of communication." He echoed Mr. Smith's words when he later told me why he thought that happened sometimes. Mr. Wilson explained, "Part of that may be, these guys have been in the system for [a long time], and I am fairly new, so maybe I was not asking the right question or did not know to ask."

Several participants also discussed a barrier they experienced when coordinating with other departments for ongoing projects that they attributed to breakdowns in communication. Mr. Adams told me that supervisors within his district tried to communicate about projects and needs at the monthly staff meeting, but he indicated that sometimes that did not happen. He said,

> One of the hindrances we have is sometimes communication does break down. The [Technology Department] will get a call that something needs to be fixed right away and maybe they run wires through a fire corridor and do not fire caulk, or something similar to that, and that ends up falling back on the facilities department. So we have to go back and actually repair what they have done to the building.

Mr. Wilson gave me a similar example. While describing his duties to monitor regulatory compliance he told me other departments were supposed to check with him before making changes to the facilities. I asked him if that usually happened, to which he responded,

> I see that it generally does not happen. The [Technology Department] will have outside contractors come in, and they will drill a hole through a fire wall and not caulk it with fire caulk… either because they do not know, do not check – the contractor – or do not care; I do not know which it is. A lot of times nobody calls and checks or looks at those things. A lot of times we do not even know [Technology]

> has been there, or has had somebody there, until we go through when the fire marshal is doing an inspection and we will say, "hmm, who drilled that hole through the wall?"

Mr. Brown also gave me an example of communication breaking down between his department and the Technology Department in terms of project coordination. I asked him how he thought that situation could be improved; he told me, "Communication; mainly communication. It probably goes from the top, all the way from the Director of Schools down; we need to communicate about projects we have planned and ask for others to sit in on the proposals." I asked him if he had the opportunity to communicate with other supervisors in that way; he told me they all had that opportunity at the monthly staff meetings. I followed up on that statement by asking him if that type of communication took place during the staff meetings, to which he responded

> It does sometimes, but it is up to me to present things. Sometimes I go in there just wanting to get out, so sometimes we fail to bring things up, and sometimes I think they are not interested in this stuff. Sometimes it is my fault. We try to communicate as much as possible about projects we have going.

I asked him if he ever encountered situations in which a project was not discussed and it was not his fault; he said, "It does happen, and it irritates me because usually it is the last minute and they want you there right now." He later added, "We are all busy, I understand that, it is just part of it. It will probably always be like that."

Purchasing

Each participant identified aspects of executing purchases as a barrier to performing their duties. In every interview participants expressed frustration with both the process of meeting purchasing procedures, as well as the amount of time that task took them to complete. In some instances participants alluded to this barrier as an encroachment on

their autonomy, although many of the same individuals commented that they understood the need for following purchasing procedures when dealing with public funding. Although participants shared frustrations with carrying out the procedures themselves and some indicated that process hindered their autonomy, in each case participants identified the time involved in the process as their primary barrier to performing their duties.

Mr. Carter identified purchasing procedures and timelines as the primary barrier he faces in his position. When I asked him what barriers he faced he told me,

> As far as things that hinder you, as with any government entity that is looking for the best value for the taxpayer's dollar, the process of bidding – and it is a good thing that we have to go through the bidding process, but it is not like industry or manufacturing in that you just go ahead and make a decision – you have to plan ahead to go through the process of bidding and outside entities have to be contracted, so you cannot just go ahead and do it or pick up the phone and have somebody do it.

He went on to tell me,

> If we see a big need we have to go through that bidding process and sometimes there is a delay in the school and the people out in those schools and the parents cannot understand why, but we have guidelines we have to follow.

Mr. Wilson made similar remarks. He said, "Barriers in terms of doing the job – there is such a – coming out of the manufacturing environment there is such a progression of people having to approve things that it just blows my mind." He went on to discuss how that was not the case for most private sector facilities directors. He finished by expressing his frustration with the amount of time the process takes; he said,

> It can take you literally – three months is a fast track – I have done projects before that, when I look at it from a manufacturing mindset and think it is a no-brainer and it took me nine months to get it through, I am thinking "you have got to be kidding me."

Mr. Taylor also expressed frustration with the amount of time involved in the process. He indicated that he understood the purpose of the requirements, but still found the amount of

time involved to be a barrier; he told me, "There is a great deal of work in getting the best contractor for the lowest possible price; not that it is a bad thing, but it takes an inordinate amount of time." Mr. Smith also acknowledged the purpose adhering to purchasing procedures. I asked him where he thought that challenge originated; he responded by saying,

> State law, Board policy, it is good business practice, it is the simple fact that we are still a public entity. You get held accountable to people and things who really probably have not had any direct relationship with you for a long time. You have to have that transparency to be able to make sure – if you are a public entity - there is some supervision over you making sure you do what you are supposed to do. That could be in the form of a newspaper, in the form of a Board member who is seeing something that they are concerned about; you just have a layer of responsibility that you just have to be doing things in the right way and the proper way, more so than if you were in the private industry.

He later summarized his point by saying,

> You have to be able to pull out a piece of paper and show your path, so when the TV station calls or the newspaper calls; that way the people in the public who pay taxes feel like you are taking care of business and not doing something underhanded.

Some participants also made recommendations for how to improve the frustrations they experienced with executing purchases. Mr. Brown told me about the frustration he experienced with the purchasing procedure to replace a piece of HVAC equipment that failed beyond repair. He told me he did not think the requirements took into account that students would be using a classroom without HVAC until the purchase was complete. I asked him if he had any suggestions for improving that barrier, to which he replied,

> If the auditors or the purchasing agents would understand. There is such thing as an emergency purchase, but it is still a slow process. If we could expedite that it would be great. If somebody could say, "Here are the qualifications of emergency purchase," and make it clear-cut. They do not necessarily classify that [HVAC unit replacement] as an emergency purchase; I classify it as an emergency purchase. We just need more standards to go by, I think, in that area.

I asked him if he could give me a comparison of the amount of time it normally took him to execute a normal purchase versus an emergency purchase. He explained that a normal purchase generally takes him 3 to 4 months to complete, whereas an emergency purchase could still take up to 3 weeks to complete. Mr. Adams also offered his opinion for improving the problem; he told me purchasing requirements were a barrier he encountered due to the current purchasing limits. He said,

> Even though we have a budget that has been reviewed and passed, and I may have $100,000 to spend on custodial supplies – if I get above a $5,000 purchase I have to take it to the Board of Education. Very few things we run across in facilities that we purchase are under $5,000. Where that comes in as a hindrance is they only meet once a month, so if I have something I need to purchase and it happens right after the monthly meeting, I have to wait another 30 days before I can get that approved.

I asked him how he thought things could be improved; he replied,

> Increased limits. We should not have to go before the BOE with every small purchase. Like I said, there is not much we do that is less than that limit. I should not have to wait a month before I can repair something that needs to be repaired rather quickly.

Funding

Several issues related to funding emerged as a theme among participant responses to what factors they perceived as barriers to performing their duties. In general participants indicated they were hindered by a lack of funding or by a lack of access to available funding. During analysis a subtheme emerged related to the type of funding challenges faced among participants employed by countywide districts as compared to municipal districts. Another issue emerged as a clear subtheme common among both types of system; most participants indicated that they encountered a barrier in recruiting qualified personnel for employment because of a lack of funding to keep pay scales competitive with similar jobs in the private sector.

Participants described several ways in which funding manifests itself as a barrier to them performing their duties. Responses were varied in terms of specificity. Mr. Taylor, for example, told me funding was a challenge by saying, "Definitely funding, that is a big one, it is hard to carry out maintenance without – it is hard to put a new roof on the building without money." Whereas Mr. Brown simply said, "Budget… Money" when I asked him what barriers he encountered in performing his duties. Some participants told me they struggled alongside the whole school system because of a lack of funds as the result of a flat tax base and increasing inflation. Some participants indicated that they felt as though they were competing with other parts of the school system for the funds that were available. Mr. Carter even told me funding presented a challenge to him because he needed to renovate some schools but those schools might very well be closed and consolidated in the near future. He said that was a barrier because he felt like he had to remain accountable to the public, he said,

> So, why put the taxpayers investment in it if we are going to do that? So you are hindered in that way, in that there are things you want to do but you have to hold back and look at the big picture.

The first subtheme that emerged concerning funding barriers was that participants from countywide districts identified lack of funds in general as their primary barrier, whereas participants from municipal districts identified a lack of access to available funds as their primary barrier. In each case there was one exception; those exceptions have been noted in the findings. Mr. Adams and Mr. Brown both told me they struggled to perform their duties because they had to work with budgets that had been frozen for several years. Mr. Adams responded to my question about what barriers he encountered by saying,

"Funding is probably one of the, well it is the top as far as what keeps me from doing my duties." I asked him to elaborate and he told me,

> You have a set amount of money. Your funds are never going to increase; in our county, especially, because you depend on tax dollars. Our tax dollars are not increasing, yet the products and labor is increasing in cost. We are working off of the same budget that was put in place 9 years ago.

He made the same point later in the interview when I asked about economic challenges he encountered; he said,

> The biggest economic problem we have is that we are in a rural county. We do not have a lot of monies coming in. We do not have a lot of revenue. Our tax base has been stagnating for some time; it stays level.

Mr. Brown made the same point; he told me, "It all goes back to finances and nobody wants to be responsible for raising tax rates, which is where the finances come from." I asked him to elaborate on that statement and he replied,

> If they raise the tax rate, it will more than likely be because the school system needs the money. You understand maintenance of effort? The County Commission meets the maintenance of effort every year, and they have for the last 10 years. We cannot do with what we were doing with 10 years ago and do it the way it should be done.

I asked him if he meant his budget had been frozen for the last 10 years, to which he replied, "My budget has been the same for 15 years, period." Mr. Carter was the only participant employed by a countywide district who did not identify a lack of funding as a barrier; however, he did say it had been a problem in the recent past. He explained that the district he was employed by had recently been given more funding from the County Commission. I asked him if he thought that money had been distributed among the district departments in an equitable way, to which he responded, "Yeah, I really do."

Mr. Smith and Mr. Wilson both characterized the funding barrier they encounter as a scenario of competing for the funds that are available to the school district. Mr. Smith told

me that he was fortunate because his district did a good job of fiscal management, and in his words, "There has never been the attitude that the easiest place to cut money is maintenance." However, he also told me that he does struggle with securing additional funding when it is needed. He said, "We are lucky in the respect that the administration, and I am including principals in administration, understand what they get; but there still is a resistance to putting the resources into maintenance." He continued, "That mindset is still there, it is an educational group – out of our budget, I am probably less than 2% - so it is a very small bit, but anything that adds to me takes away from them." Mr. Wilson described his challenges similarly; he told me, "The challenges are, where do you go spend the money and get the biggest bang for the buck? I want to spend it on fixing a roof, and other people may want to buy iPads for students." I followed-up by asking him if he felt like he had to compete for funding. He responded, "Sometimes – if you are looking to [spend $200,000 on an extra curricular project] – I could do a lot of roof work with that, so yeah you are competing for dollars." Mr. Taylor was the only participant employed by a municipal district who did not directly identify competing for funding as a challenge when discussing funding barriers. He indicated that he perceived the root of the barrier he faced as the structure of Tennessee's BEP funding formula. He said, "Tennessee needs to earmark money for facilities only. Just like they earmark monies for Title I." I asked him if he thought there was anything that he thought could be changed at the local level to reduce his funding barrier. He replied,

> No, I have great faith in my Board of Education and the leaders. They only have a certain size pie, and number one is educating students, so that comes first, you have to do that. That is going to take up a lot of that pie, and it gives you a small piece to do other things – transportation, maintenance, staff development, and on and on. I do not think, in my situation here, there is anything more the Board of Education or administrators can do, it is more money earmarked from the state.

Although initial responses related to funding barriers were varied, a subtheme emerged among responses related to finance when participants explained the challenges they encounter with recruiting qualified employees to fill vacancies in their departments. Mr. Smith broached the subject of competitive pay while discussing the funding challenges he encounters, he told me,

> The other issue that is beginning to be a disadvantage is the pay rate, the rate of pay. I have probably half of my guys who earn less than $25,000 per year. The craftsman are probably in the $40-$50,000 range, but that is with overtime. If you have a person who has a good work ethic and wants to work – it is nice to say you pay for the health insurance and you pay for it – but if you can make five dollars more per hour you can buy those things and still come out ahead; that is a disadvantage.

Mr. Adams made a similar statement, I asked him if his staff had salaries that would be competitive with the private sector; he said,

> That poses a huge challenge because no they are not competitive with the private sector. By the end of their career, when they top out on the pay scale, they are pretty competitive, but it takes 20 years to get there and as these guys look at it, in 20 years that will not be competitive.

I asked both Mr. Smith and Mr. Adams if they experienced a high level of turnover or problems with recruitment because of those pay levels. Both men indicated that turnover was not as much of a barrier as recruitment. Mr. Smith told me finding employees who possess the necessary skills is a barrier. He said, "I really want to bring in a person who has all of the skillsets we need. It is a detriment because most of the classifications we have now need to be adjusted to reflect what the market is." I posed a hypothetical scenario and asked him to respond; I asked if he were to lose his HVAC technician and try to hire a person who was newly certified if he thought the pay his district offered would be competitive with the private sector. He responded by saying,

> I think we would be at the bottom end of the range, especially because of the requirements that we have. We have, like I said, the mechanical side and the

> controls side. We would be looking at an upper-end technician; our pay rate for an entry level HVAC mechanic would be too low to get what I would want I think.

Mr. Taylor made the same point, but in a concrete manner, he told me about a challenge he faced with competing with private employers in his area. He said,

> I can only speak from my situation here, but when you look at the pay scales for all school systems, at least in this area, the pay has not necessarily kept up with the trades. So if I compare what we pay versus the hospitals in the area, we are way lower. I have the same facilities that those hospitals have, so I am trying to fight for that very shallow pool of workers, but yet I cannot stay competitive from a pay scale to other commercial systems around me.

When Mr. Brown was explaining his duties to me I asked him if he managed the custodial staff, to which he replied, "Unfortunately, yes" as he laughed. I asked why he said "unfortunately," and he told me, "Custodians are the lowest paid and some of the hardest working employees we have in the system. It is hard to keep them. It is really hard to keep them; we hired five in the last month." I later asked him if pay for employees other than custodians was also a challenge. He responded by telling me it was a problem with all employee pay scales. He then explained that any time a raise was given within his district that it was given to all employees and that all employees received the same health care benefits, and in his own words, "that is good for morale." However, when I asked him to elaborate on the challenge it posed for his department he told me how the equitable raise practice he described had contributed to his challenge of keeping custodians. He said,

> They all realize the custodians need more money. It was one of the subjects that came up. "Where are we going to get more money? If we give the custodians more money then we have to give everyone else more money." It is just a challenge.

Mr. Wilson described a different scenario. He brought up compensation while speaking about the mission and purpose of his school district. He originally quoted the

formal mission statement of his school district, but when I asked him to explain that mission in his own words, he said,

> My perception of the mission is that we want to do things right, do them right the first time, we want to give folks – from my standpoint – if we want to be the best in the state we should be paying people the best in the state, in a competitive environment.

I asked him if his district offered competitive pay, to which he replied, "I do not think we offer the competitive salary to the maintenance folks, I think they do to the certified end of the spectrum; I do not think they necessarily do to the maintenance department." I followed up by asking, "Do you think that is something they are aware of; is it on their radar?" He replied,

> I think they are aware of it, but I do not think it is on their radar. I think the focus is more towards the instructional end of the educational system, which those people are very vital and are an important part of it, no doubt. But when you go and look at, if you really want to be the best in the state, I have guys who do HVAC and electrical work and they could be making quite a bit more out in the general public than they do, we are extremely fortunate to be able to keep them.

Age of Facilities

Another theme emerged among participant responses when I asked them what kind of challenges they faced in terms of facilities maintenance. Three of the six participants identified the age of their facilities as the primary challenge they faced in this area, and one other explained related challenges at a different time. Some responses related to this barrier were general in nature. When I asked Mr. Adams what maintenance related challenges he faced he said, "Our facilities are rather aged." He later told me that most of the facilities in his district were constructed between 1950 and 1980. I asked him to elaborate on how the age of a facility posed challenges, to which he responded,

> The age poses a challenge from simple wear and tear. When you have [thousands of] kids a year going through the buildings, they take a lot of abuse and a lot of wear. When you multiply that by as much as 60 years – it is very hard to keep a building in good shape when your foundation is 60 years old.

Mr. Brown told me the average age of facilities in his district was between 40 and 45 years old. Mr. Wilson did not provide an average, but told me that there was one building in his district that was less than 10 years old, and the next newest building was more than 20 years old. Mr. Carter reported that there was one building in his district nearing 100 years old. Beyond the general responses related to facilities age, two subthemes emerged within this area. Participants said older facilities: 1), pose a challenge because of deteriorating or obsolete infrastructural components (e.g. roofs, plumbing, electrical), and 2) pose a challenge for them when they tried to locate parts to carry out repairs or routine maintenance.

The first subtheme that emerged within this barrier was related to the challenges older facilities pose as a result of deteriorating or obsolete infrastructural components. Mr. Adams and Mr. Brown both mentioned the appearance of buildings when they discussed challenges related to aging facilities. Mr. Adams indicated that public perception of a facilities appearance was sometimes a challenge and Mr. Brown told that me his staff could stay on top of cosmetic items, but infrastructural components were often more difficult to maintain. Mr. Wilson discussed how cosmetic factors can be, and sometimes are, used to camouflage an aging infrastructure. He told me, "You just have old stuff in a building that – you can paint it and make things look as new as you want – but a lot of your infrastructure is just old." He later added,

> A lot of times, and it does not matter if you have a brand new building or not, you can have pipes burst, but there are more challenges to having older structures in

> that, when renovations happen they have been fixed so that things look pretty and you do not get into the infrastructure because it is costly.

After telling me that older buildings pose a challenge because of "simple wear and tear," Mr. Adams added, "Older buildings take a lot more money to maintain." I asked him why that was; he replied,

> Just from simple deterioration. I mean, in a 60 year old building you have aging pipes; unfortunately when they were built the pipes that were put in were galvanized steel lines. Those lines deteriorate and there is no way to slow it down.

Mr. Brown also discussed plumbing issues with older facilities. He said,

> That is something nobody thinks about but the galvanized water lines close up – simple things you take for granted, like a sink will not drain. It is because the galvanized water line keeps closing up; eventually we are going to have to try to re-plumb the building, which would be expensive.

Mr. Carter also told me there was a lot of expense involved in upgrading infrastructural components. He explained that when renovations took place, even if only in one area of a building, the whole building had to pass regulatory inspections. He said that even extended to ADA compliance; he told me,

> Even handicapped facilities, that is a big issue we have in our schools, when they were built elevators were not required or ramps did not have to have landings, so we have had to make a lot of changes. Once you start modifying that the whole section has to be brought up to code.

Mr. Carter later added, "I think sometimes it is easier to build a new one than to re-code that building for new upgrades."

Aside from expenses related to maintaining a facility with deteriorating infrastructural components, participants also noted a challenge posed by electrical systems that were obsolete due to an increase in building contents that require electricity. Mr. Brown told me,

> Thirty years ago, nobody would have ever believed you would have 30 computers sitting in a classroom, or Smart Boards in every classroom. The electrical load in these classrooms has gone sky high, and nobody ever planned for it. On some of our services, we will have to add panels if they keep adding on.

He later added, "Sometimes we have to run power all the way across a school and put in a small sub-panel just to get 30 computers going." Mr. Adams described the same challenge, but also pointed out that in many of the buildings in his district that this problem is not isolated to single classrooms, but that it has an effect on multiple classrooms because of the original design of the electrical system. He explained, "Buildings that are 60 years old had one, or maybe two, outlets in a single room and you might have four or five rooms on a single circuit." He went on to tell me that adding HVAC to schools that were not originally designed with that in mind also contributed to overburdening the electrical system.

The second subtheme that emerged among responses related to the barrier posed by older facilities was that participants indicated they often encountered a challenge locating parts to repair old equipment. Mr. Wilson remarked, "You have hand wash stations in schools that are twenty five or thirty years old that you cannot get parts for anymore, so when they tear up you have to change them out." Mr. Adams made a similar statement but followed it by also pointing out that he often encountered a challenge in keeping enough funding available to replace equipment when repair parts could not be located. I asked Mr. Brown if he ever encountered problems locating repair parts, to which he replied, "We have had that happen several times. HVAC is a good example of it. We have rebuilt some squirrel cage [fans] and their [housings], but then you turn around and the compressor goes out, and the compressor does not exist anymore." He also told me he encountered the same problem with some plumbing parts; he said, "Plumbing, circulating pumps go out, and we can replace circulating pumps in 20 minutes, but to do complete re-

plumbing it could take you half of a day." Before I could ask him why they had to be re-plumbed he added, "You cannot replace apples with apples, you have to get another brand, and everyone has unique fittings; it is a challenge on that end of it."

Stakeholder Understanding

The final theme among responses related to barriers was that participants identified a lack of understanding among stakeholders as a barrier they encountered in performing their duties. This theme emerged throughout the interviews during responses to several questions. In many cases participants linked a lack of understanding among stakeholders with barriers related to communication; however, it emerged as an exclusive theme among responses with two subthemes within. Here again in some instances responses related to a lack of understanding were general at times. For example, Mr. Brown told me, "You would not believe some of the things, they just call and ask, but they do not understand, they just want it their way." Other participants made similar remarks, but the majority of discussions related to understanding were focused on one of the two subthemes that emerged. Those subthemes are: 1) participants indicated they encountered a barrier with a lack of understanding among stakeholders who had no background or experience with facilities management, and 2) participants employed by municipal districts identified a dissonance among the core service employees' understanding of the role and importance of facilities departments.

The first of the two subthemes emerged more frequently, and was common among responses of participants employed by both types of systems. Each participant, at various points during interviews, indicated that they encountered a challenge at times because many of their stakeholders did not have any background in facilities management. Mr.

Adams pointed this out at three different times and among three different groups of stakeholders. While he was discussing the barrier he faced when communication breaks down he told me he believed that it stems from a "lack of understanding of regulations." He continued, though, to tell me that it was not reasonable to expect teachers and other non-facilities department staff to have that knowledge. While in that instance he did not specifically identify the lack of understanding as a barrier, he did in two other instances. He told me,

> Our funding body is the County Commission; that is where we run into the most problems, with actually explaining things. The commissioners are elected officials. Most of them may have no background in any kind of facilities; it may be that they were just active members of the community, so it is hard to get them to understand that there is a process and an order in which things need to be done.

He later made the same point about the Board of Education and then told me,

> It poses a problem, and it is a barrier, trying to get across that some things – if the fire marshal required – it is not an option, it has to be done then. It is not something we can get around to next year it is an immediate concern. That does not always come across to the Board of Education, and unfortunately we are bound to them in the fact that I have to get permission to do certain projects if they are over a certain monetary amount, so that is a hindrance.

He also added to his discussion of explaining process and order to the County Commission, "One thing you battle with getting that done is that they see visual things, so if the gym floor is bad they do not think about the roof because that is out of sight and out of mind."

Mr. Wilson's remarks followed a similar progression. When I asked him what challenges he faced in meeting the needs of the system's stakeholders he told me,

> Just trying to explain to them that some of these things take time. You have a roof leak in December; they do not understand why it is March until the roof is patched… Well, it is hard to get up there in 10 degree weather and patch a rubber roof.

He later echoed the point Mr. Adams made about "visual things" when he told me,

> Nobody likes to spend money on a roof, because, it does not show – it is not a laptop you can take home with you, it is not a new pretty front façade of a building that you can show off, or a library people can come into and see.

Both Mr. Wilson and Mr. Adams also transitioned into a challenge they face when trying to make decisions related to the life-cycle costs of buildings and equipment to stakeholders who do not have a background in facilities management. Mr. Wilson gave me an example of how he once recommended changing to a new type of HVAC equipment because the infrastructural components of the old system were in poor condition and would likely not be improved. He said,

> I can put in a boiler and cooling tower with a little less expense, but all of the old piping – I do not change any of that – so you still have the fail rate of the critical part of that, it is still there.

He later told me his recommendation was dismissed because he was told the HVAC system he proposed would be an eye sore on the exterior of the building. Mr. Adams gave me an example of a challenge he encountered trying to replace a piece of equipment that was very old and costly to maintain. He said if he had a hard time conveying the long-term benefit of paying an extra $3,000 to replace the equipment as opposed to repairing it. When I asked him if he thought that challenge stemmed from a lack of understanding he replied,

> I think it is definitely a lack of understanding of how things work. Most people, and it is human nature not to look past the initial costs, but they do not see that that extra $3,000 might save us $12,000 in the next year because we are not there everyday working on it.

He continued by saying that this lack of understanding was the result of not having experience with maintaining facilities; he said, "It is hard to educate those people because they have no grasp or understanding of what it takes to run a building."

The second subtheme that emerged was isolated to responses from those participants employed by a municipal district. Each of the three participants discussed a

perceived dissonance among the core services employees' understanding of the role and importance of facilities departments. Two participants employed by a countywide district indicated during their interviews that it was not a barrier they encountered. I followed up with the other participant employed by countywide district to ask if it was a barrier for him; he also indicated he did not perceive it to be a barrier. It should be noted that although the subtheme emerged among responses from municipal district facilities directors, the degree to which participants indicated the barrier was present varied from case to case.

Mr. Taylor's responses related to this subtheme were the least extreme in comparison with the other two participants' responses. When I asked Mr. Taylor if there was a dissonance within his system between the core services and the support services he replied by saying, "I think this system is better than most. I would imagine if you polled most of our [support staff] they would feel their job is inferior to that of the classroom teacher." I asked him a series of follow-up questions about where he thought that feeling originated from. He told me he thought the district administration did a good job of recognizing the importance of support staff through recognition, but added "Unfortunately some of our teaching staff looks down on our [support] staff." Mr. Taylor indicated that although he felt that was true, that it was not true of all teachers. When he answered the first question he said to me,

> When it comes to actions, how do you show a custodian that they are just as valuable as a teacher? Do you provide the same insurance to that custodian that you do to the classroom teacher? Do you provide – not the same level of pay, obviously – but if as a district your teachers are the highest paid around, are your custodians and bus drivers the highest paid around?

While discussing this Mr. Taylor also told me that although the district administration did a good job of organizing activities to improve morale, he believed support staff pay and benefits should be reviewed.

Mr. Smith also discussed a dissonance he perceived to exist within his district. While discussing the challenge he has with recruitment he told me he thought there was still reluctance among the core services employees to provide more funding to his department. He said,

> Part of it is because right now our head is above water, so to take the level of service higher, I am not sure they understand what it does and what the benefits are. So if we get through a year without any big HVAC failures, plumbing leaks, or fire marshal inspections that are bad, they kind of believe "why do we really need to go higher; if you are doing OK with what you have got, what is the benefit of going higher?"

He continued by reiterating that the reluctance was palpable and summarized by saying, "That is kind of a hurdle – I run into that – it is kind of an unspoken wall sometimes." I began to ask him if there was a dissonance between the core service employees understanding of the impact of facilities, but before I could finish the question he answered. He said, "That is right. They do not have a good understanding of what the benefits of making us better would be for them in the long run."

Mr. Wilson indicated that he perceived a dissonance between the core services and the support services when he was discussing the mission and purpose of the school system. He quoted the formal mission statement of the district in his interview, but in a follow-up conversation he characterized the main goals of the mission as being "the best in the state" and "focused on the learner." He told me that in his mind that meant his district should be offering the best pay in the state, and when I asked if that was the case he said it was on the instructional side but not in his department. I then asked him if he saw a dissonance

between the core services and support services in relation to the mission of the system. He responded, "I can only speak from the maintenance end of it, and I do see that. I think the other side of the mission, focused on the learner, I think maintenance is there." He went on to tell me that in addition to the uneven pay situation, he had encountered some difficulties while trying to improve his department because he could not get the needed approvals from his superiors. He summarized his perception of that dissonance by saying, "It tells me that my department is not important. We are important when they tell us we are; when they need us to do something, then we are important."

Autonomy

Several participants identified autonomy as a factor they perceived as a facilitator of successfully performing their duties. In several cases participants discussed their relationships and interactions with the director of schools, board of education, and other departments within their district of employment. In most instances responses indicated that those relationships and interactions were not considered to be barriers, and in many cases participants said they were facilitators. One pattern that emerged among the descriptions of relationships and interactions with boards of education was that those participants employed by countywide districts all indicated they had regular direct contact with individual school board members. I asked each of those participants if that type of interaction caused them any problems or otherwise hindered their ability to perform their duties. Mr. Brown and Mr. Carter both told me that they considered their relationship with that group to be good and that the direct contact was not a barrier to their success. They both pointed out that they felt as though the boundaries were respected and that they were not micromanaged through that direct contact. Mr. Adams, though, described his

experience with direct communication with individual School Board members in a different way; he told me it was a barrier for him.

In his original interview Mr. Adams told me that he had regular contact with individual members of the Board of Education in his district of employment. He did not discuss the nature of that contact to the same degree of detail that other participants did so I conducted a brief follow-up interview with him to supplement his original response. I asked him if he thought the direct contact he experienced was a facilitator or a barrier. He first stated,

> It can somewhat be a hindrance because all of the Board members represent a district, they are elected in their districts, so they represent certain schools, so you have certain Board members that may deem projects for their school more important than a project for another school. At some point they do try to push their projects toward the front, so it can be a hindrance.

He then immediately added,

> It can be a facilitator as well, in the fact that if the community at large has a problem, they usually contact the Board members, so you know about the concerns or the questions rather quickly.

I asked him to tell me how individual members went about pushing for specific projects, to which he replied, "Most of the time it is a phone call, or direct contact with them. They typically do not bring it up in a Board meeting." He later added,

> I mean they are not going to come to me and say, "Look, if you value your job you will do this project." It is not like that. It is strongly suggested, you know, "we really need to get this project done," "they need this."

I asked him to tell me how he felt about that happening. He told me, "I personally do not care for it. I think we should go through the proper channels." I asked him if he thought it was a form of micromanagement; he responded,

> It is micromanaging because they are circumventing the whole process of going to the Director of Schools, and the Director of Schools coming to me. They are actually

> trying to take what is his responsibility and put it upon themselves, which should not happen, but it frequently does.

Mr. Adams had previously told me in his original interview that his Director of Schools generally allowed him autonomy concerning facilities-related issues. In the follow-up interview he went on to tell me that if the proper procedures were followed he felt as though the Director of Schools would still allow him the autonomy he discussed before. He said,

> In most circumstances I truly believe he would come to me first and ask what our budget was, what we had plans for doing, and if I thought one was more important than the other. Then we would talk about it. It may very well happen that the project does get pushed to the front if we discuss it and he deems it more important, but as I said, normally he analyzes every bit of data before he makes a decision. He is very thorough in research before he ever makes a decision.

Chapter Summary

Chapter 4 includes the findings of the study. The researcher conducted six in-depth interviews with participants who were purposefully sampled based on the typical case sampling strategy. The participants were selected from three countywide public school systems and three municipal public school systems in Tennessee. Participant interviews were audio recorded and accurately transcribed by the researcher. The researcher read the transcriptions in an iterative fashion to locate patterns among responses and identify emergent themes and subthemes. The researcher also reviewed publicly accessible documents to corroborate specific statements made by research participants during interviews. In some instances the researcher contacted participants after the initial interview in order to clarify or supplement previously collected data. The researcher reported the findings under headings derived from the central and guiding questions. The

findings were reported through the use of quotations from participant interviews that were illustrative of the emergent themes and subthemes.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this qualitative collective case study was to investigate the perceptions of facilities directors employed by public school systems in Tennessee in regard to what facilitators and barriers exist in relation to performing their duties. Tanner and Lackney (2006) asserted that educational administrators have become increasingly aware of school facilities; however, there are still gaps in the literature related to facilities management in public school systems. Two sources noted an apparent dissonance between the overall organization of public education systems and the facilities management functions within those organizations (Kok et al., 2011; Tanner & Lackney). Barnes (2010) speculated that the dissonance might be fueled by a perception that support services, such as facilities management, are ancillary to the overall mission of the organization. Among the gaps in the literature related to this topic, one of the most obvious was the absence of literature detailing the perceptions of individuals who carry out the facilities management duties within public school systems. The goal of this study was to help close that gap by allowing facilities directors of public school systems in Tennessee to share their perceptions of what factors are facilitators and barriers in their efforts to perform their duties. Chapter 5 includes a summary of the findings as well as conclusions and recommendations for both practice and further research.

This study was designed as a collective case study and is based on the phenomenological inquiry framework. Participants were purposefully sampled following the typical case sampling strategy. The sample was made up of three participants from countywide public school systems in Tennessee, as well as three participants from

municipal public school systems in Tennessee. Special school districts were excluded from the sample on the basis of the atypical nature of that type of school district among public school systems in Tennessee. Participants met the criteria for inclusion in the sample for this study by being a facilities director, or person within the school system who was responsible for the facilities management functions, and being employed by either a countywide or a municipal public school system in Tennessee. I developed an ethical protocol and obtained approval from the IRB before any data were collected; a detailed description of that protocol can be found in Chapter 3 under the heading "Ethical Considerations."

Data were collected through in-depth interviews with each of the six participants. I asked participants a series of predetermined questions and followed those questions with probing questions. The central question of the study was: What factors do facilities directors of public school systems in Tennessee perceive to be facilitators or barriers to performing their duties? Based on the limited research available specifically focused on facilities management in public education, a guiding question was also drafted that asked what the duties of the position were within public education systems. To investigate the central question and the first guiding question I asked participants to respond to the first three questions on the interview guide (see Appendix A).

The second and third guiding questions were drafted to investigate the dissonance pointed out by Kok et al., (2011) as well as Tanner and Lackney (2006). The guiding question asked how facilities directors perceived the impact of their role within the overall organization. To investigate this question I asked participants to respond to questions four and five on the interview guide. The third guiding question asked what the nature of

facilities directors' relationships and interactions was with other portions of the organization. To investigate this question I asked participants to respond to questions six, seven, and eight on the interview guide. Only one similar study was discovered during the review of extant literature, though that study was carried out among university level facilities directors, and it was not qualitative in design. I asked participants to respond to the last four questions on the interview guide based on the top four barriers identified in the study carried out by Kamarazaly, Mbachu, and Phipps (2014).

The interviews were audio recorded and accurately transcribed. After transcriptions were produced I asked each participant to review that document for accuracy. I read the transcriptions in an iterative fashion to search for patterns among participant responses; Patton (2015) described this process as "open coding" (p. 542). I also analyzed publicly accessible documents to corroborate or refute specific statements made by participants during their interviews and to add validity to the findings through triangulation of data (Creswell, 2012; McMillan & Schumacher, 2010; Patton, 2015; Yin, 2014). In some instances I contacted participants after the initial interview to supplement or clarify data that were previously collected.

The findings were reported in Chapter 4 through the discussion of themes and subthemes that emerged throughout analysis. Those themes and subthemes were reported under five headings related to the central and guiding questions of the study. An external auditor reviewed the report of findings alongside the data to confirm the reasonableness of the findings reported in Chapter 4. A letter indicating the outcome of that audit can be found in Appendix D. Throughout data collection and analysis some issues emerged to required modification to the interview guide or changes in the reporting of data. A detailed

description of those emergent issues was provided in Chapter 4 under the heading "Researcher's Notes of Emergent Issues."

Summary and Conclusions

Several themes and subthemes emerged throughout the process of analyzing the data. Those themes and subthemes were reported in Chapter 4 under headings organized around the central and guiding questions of the study, and extensive evidence from the data was presented to support the existence of themes and subthemes that were identified. The central question for the study was: What factors do facilities directors of public school systems in Tennessee perceive to be facilitators or barriers to performing their duties? The three guiding questions were:

1. What are the duties of the facilities director position within the organization of the school system?
2. How do facilities directors perceive the impact of their within the overall organization?
3. What is the nature of facilities directors' relationships or interactions with other portions of the organization?

The remainder of this section consists of a summary of those themes and subthemes as well as conclusions drawn from the findings; this section is reported under the same headings used in Chapter 4.

Duties of Facilities Directors

Four main themes related to the duties of facilities directors emerged among participant responses. The themes were: 1) maintenance and operations duties, 2) regulatory compliance duties, 3) contract and project management duties, and 4) personnel management duties. Each of the four themes that emerged among participant

responses as a core duty of the position of facilities director was supported by literature reviewed in Chapter 2 of this study. When comparing the duties identified by participants to the competency areas identified by the International Facilities Management Association the categories that emerged were consistent with the competency areas identified. Although the emergent themes were not identical to the 11 competency areas outlined by the IFMA (n.d.) the themes did encompass aspects of each competency area. Furthermore, as it was noted in Chapter 2 of this study, several of the competency areas identified by the IFMA overlap to varying degrees; the findings of this study support that observation.

The four themes that emerged within responses related to the common duties of facilities directors are also consistent with the findings of Taschner and Clayton (2015). The authors polled facilities directors to determine which of the 11 competencies outlined by the IFMA (n.d.) facilities directors' common duties fell within. Taschner and Clayton reported that facilities directors exercised duties that fell under one of the 11 competency areas at least sometimes. The study indicated facilities directors' common duties most often fell under on for the following competency areas: communication, quality, leadership and strategy, human factors, or project management. Taschner and Clayton also noted that emergency preparedness and business continuity, real estate and property management, and technology were the three competency areas facilities directors' common duties fell under least frequently. The four themes that emerged among participant responses related to common duties of facilities directors each fell under one or more of those competency areas as outlined by the IFMA.

Three subthemes emerged within the theme of contract and project management. The first of those subthemes was that participants who identified their workforce as large

reported contracting less outside work than participants who identified their workforce as small. This subtheme was unexpected and was not identified in the review of literature for this study; therefore, that subtheme should be considered inconclusive and further research is warranted. The second subtheme that participants identified was planning for capital projects as a duty they performed. The third subtheme that participants identified was aspects of executing purchases for projects as a duty they performed. Both the second and the third subthemes were supported by the literature. Duties related to these two subthemes fall under one or more of the five most commonly used competency areas as reported by Taschner and Clayton (2015).

The findings were also supported by Taschner's and Clayton's (2015) report of the three competency areas identified as the least frequently occurring. Only two participants reported aspects of emergency preparedness within their duties, and when they were reported it was indicated the duty was marginal. For example, Mr. Smith told me, "Luckily I do not have a lot of involvement in the written emergency responses." He went on to tell me that the extent of his involvement with emergency preparedness was to provide keys and take care of any facilities related issues that were unresolved by those who were responsible for that task. Taschner and Clayton also identified real estate and property management as a competency area in which facilities directors reported few common duties. Mr. Brown was the only participant who discussed duties that would fall under the real estate and property management competency area. He told me he has some duties in arranging custodians for outside groups using school facilities. The final competency area Taschner and Clayton reported as being used infrequently was technology. They said, "The only technology that the majority of respondents use is maintenance, repair, and

operations technology" (p. 8). The findings for this study were consistent with that statement; each participant reported using online work order software.

Impact of the Role of Facilities Directors Within the Organization

Two main themes emerged among responses related to the impact of the role of facilities directors within the organization. Those themes were: 1) participants identified student learning as the primary mission and purpose of the school system, and 2) participants indicated they believe the mission and purpose of the school system is impacted by the work they perform and the work their departments perform. There was no literature located or reviewed that was directly related to perceptions of facilities directors of public schools; however, the perceptions that emerged as themes were valid when compared to the literature related to general facilities management and among the literature related to the impact of facilities conditions on education.

The first theme that emerged among responses was that participants identified student learning as the primary mission and vision of the school system. Document review of formal mission statements corroborated the claims of participants. Those findings were also supported in the literature related to leadership and strategy. According to the IFMA (n.d.) facilities directors should align the strategy of facilities to align with the requirements of the overall organization. Earthman (2009) and Tanner and Lackney (2006) outlined the importance of strategic planning within the facilities management portion of the organization. Participant responses indicated student learning was the primary mission and purpose of the school system; furthermore, several participants followed that assertion by describing how they contributed to the fulfillment of the mission.

The second theme that emerged among responses was the firm belief that the work facilities directors perform positively impacts the success or failure of achieving the mission or purpose of the school system. Two subthemes also emerged among the responses: 1) participants indicated they believe the condition of facilities impacts education, and 2) participants indicated they perceived the work of their departments as support services. In each case the perceptions that emerged as that theme and those subthemes were valid when compared to the literature.

The main theme was supported by the same literature that supported the theme that emerged among responses indicating student learning was the primary mission and purpose of the school system. Recognizing the needs of the organization and aligning the facilities strategy to meet those needs were documented as necessary skills and common functions of facilities directors. The participants' belief that facilities conditions correlated with the quality of education was an emergent theme supported by the literature. According to the 21st Century School Fund (2010) 19 research studies reported positive correlations among facilities conditions and educational quality between 2000 and 2009. Earthman (2009) reported that facilities conditions could impact student achievement by as much as 19%. Participants seemed to be aware of these types of studies. Two participants specifically referenced prior research, and the remaining participants made remarks that demonstrated an understanding of how the condition of facilities impacted education. The second subtheme that emerged was that participants indicated they perceived the work their departments were responsible for were support services. Here again the literature related to the five competency areas outlined by Taschner and Clayton (2015) as the area most common duties fell under supported the findings. For example,

Taschner and Clayton pointed out that managing custodial services was one of the most common duties performed by facilities directors. Custodial services fell under the human factors as well as the operations and maintenance competency areas as outlined by the IFMA (n.d.). Furthermore within the operations and maintenance competency area, Cotts et al. (2010) described several support services that fall within the duties of facilities directors and the departments they manage.

Relationships and Interactions Within the Organization

Two main themes emerged among responses related to participants' relationships and interactions within the organization. The first theme present throughout the interviews was the administrative structure which dictated that participants report directly to the director of schools. This theme was not supported by any of the literature reviewed for this study beyond the point made by Kreassig (2007). Kreassig noted that the common structure of public education governance is arranged so that a chief executive (superintendent or director of schools) manages the daily operations of public school districts through a network of expert staff. Because Kreassig did not explore the common chain of command among the expert staff included in his research, this point is only marginally supportive of the current study. Thus, further research is warranted to determine the common chain of command among public school districts in Tennessee and what level the position of facilities management is within that structure.

The second theme that emerged was related to the type of contact facilities directors have with the board of education. In this instance there was a marked difference among responses from participants employed by countywide districts and municipal districts. Each participant employed by a countywide district indicated that they had regular direct

contact with members of the board of education outside of regularly scheduled school board meetings and workshops, whereas each participant employed by municipal school districts indicated they had little to no direct contact with members of the board of education outside of those meetings.

Here again, the work of Kreassig (2007) was the only literature related to this theme and reviewed for this study. As noted above, Kreassig said the common structure of public education governance is arranged to allow a chief executive to manage daily operations of the school district. Kreassig outlined that the chief executive generally answered directly to the board of education and was responsible for implementing policies set by that same body. This point supports the findings related to responses from participants employed by municipal school districts. Each of those participants indicated the board of education worked through the director of schools and respected the chain of command. Two of the three participants employed by countywide school districts told me that although they had regular direct contact with individual school board members, they felt as though that contact was made for informational purposes and those school board members never overstepped their bounds or tried to manage daily operations. One participant, though, reported that individual school board members regularly micromanaged daily operations within the school district through direct contact with individuals, including himself, other than the director of schools. Kreassig supports that particular finding as well. He claimed that recent research of school board activity illustrated a proclivity to micromanage daily operations.

Because the findings were markedly different between the types of school districts, and because the literature reviewed could be construed to both support and refute

particular responses, this subtheme is worthy of further research. More research is needed to investigate the frequency of direct contact with individual school board members among facilities directors and other organizational staff who are not directors of schools. More research is also needed to investigate the frequency of those types of direct communication being perceived as micromanagement among those same individuals.

Facilitators and Barriers

The main purpose of this study was to determine what factors were perceived to be facilitators and barriers to successfully performing the duties of facilities director within public school systems in Tennessee. Tanner and Lackney (2006) said educational administrators were becoming increasingly aware of the strategic value of educational facilities, but that there are still gaps among the research related to facilities management in public education. Two sources noted an apparent dissonance that exists between the overall organization of public education systems and the facilities management functions within those organizations (Kok et al., 2011; Tanner & Lackney, 2006). One clear deficiency in the available research was the absence of the voices, or perceptions, of facilities directors themselves. This study was designed with the intent of allowing facilities directors to provide missing perceptions and remedy the gap that exists among scholarly research.

The final two sections consist of a summary of the themes and subthemes that emerged among participant responses related to factors that they consider facilitators or barriers to performing their duties. The sections also include discussion of the relevant research that was reviewed.

Facilitators

Four themes emerged among participant responses related to factors they perceived as facilitators of successfully performing their duties. Those themes were: 1) participants indicated that good communication was a facilitator of successfully performing their duties, 2) participants indicated that autonomy was a facilitator of successfully performing their duties, 3) participants indicated that the competency of employees was a facilitator of successfully performing their duties, and 4) participants indicated that access to various resources was a facilitator of successfully performing their duties.

Communication. Communication emerged as a theme among factors that participants perceived as a facilitator and a barrier to performing their duties. Several participants discussed communication as a facilitator in a general way, and in those cases the focus was usually on their own ability to communicate. In that regard, the literature related to the competency areas outlined by the IFMA (n.d.) is relevant. The first competency area identified by the IFMA was communication. Taschner and Clayton (2015) said communication was the only competency area that 100% of facilities directors surveyed reported as being a common function of their position. Furthermore Sullivan et al. (2010) claimed communication skills were the second most important skill for aspiring facilities directors to develop. Fraser et al. (2013) reported that communication was the most important skillset identified within the human factors competency area identified by the IFMA.

Two subthemes also emerged among the responses. First, participants indicated that working with staff that was receptive to communication was a facilitator of successfully performing their duties. Second, participants indicated that having open

channels of communication was a facilitator of successfully performing their duties. There was no literature located or reviewed that could corroborate or refute these findings. However, the literature reviewed did indicate the importance of effective communication and thus it could be considered supportive of the findings in a marginal sense (Fraser et al., 2013; Sullivan et al., 2010; Taschner & Clayton, 2015).

Autonomy. The second theme that participants perceived as a facilitator of successfully performing their duties is having autonomy over the departments they supervise. Each participant who reported to the director of schools indicated that he did not feel micromanaged by that individual. All participants but one indicated that they did not think the board of education micromanaged their department. No research was uncovered or reviewed that could corroborate or refute this finding; however, the literature reviewed in relation to the competency areas identified by the IFMA (n.d.) could be considered indicative of the importance of autonomy. There is an inherent need for at least a basic level of autonomy within several of the competency areas outlined by the IFMA.

Employees. The third theme that emerged among participant responses was that participants perceived their employees as a facilitator of successfully performing their duties. Participant responses centered on the dedication of their employees as well as the skills of those employees. Again, no literature specific to the perception of employees as facilitators was located or reviewed. Some sources discussed within the literature reviewed under the human factors competency area outlined by the IFMA (n.d.) is marginally related to this perceived facilitator. Three sources advised organizations to allow facilities directors to have the most influence on departmental employment decisions

because of the diversity of skills required and the general differences between the functions of the facilities department among the remainder of most organizations (Atkins & Brooks, 2009; Cotts et al. 2010; USDOE, 2003).

Access to Resources. The final theme that emerged among participant responses was that participants perceived having access to various resources as a facilitator of successfully performing their duties. Specifically, participants referenced online work order management software as a resource that facilitated performing their duties. Several participants also discussed various methods of project financing as a resource that facilitated performing their duties. Several sources outlined benefits and recent trends of incorporating technology as a tool to increase efficiency and effectiveness within the realm of facilities management (Atkin & Brooks, 2009; Cotts et al., 2010; Cotts & Rondeau, 2004; Tanner & Lackney, 2006; USDOE, 2003). Atkin and Brooks, as well as Cotts et al. described facilities management technology as a useful tool for documentation and record keeping. No literature was located or reviewed related to methods of project financing; however, literature related to funding barriers can be used to highlight the importance of taking advantage of opportunities to finance costs associated with large projects. Several works reviewed in Chapter 2 identified challenges related to funding as one of the most prominent barriers facilities directors face (Cotts & Rondeau, 2004; Cotts et al., 2010; Kennedy, 2011; Kopochinski, 2012b).

Barriers

Five themes emerged among participant responses related to factors they perceived as barriers of successfully performing their duties. Those themes were: 1) participants indicated that communication was a barrier of successfully performing their duties, 2)

participants indicated that purchasing was a barrier of successfully performing their duties, 3) participants indicated that funding was a barrier of successfully performing their duties, 4) participants indicated that the age of facilities they managed was a barrier of successfully performing their duties, and 5) participants indicated that stakeholder understanding was a barrier of successfully performing their duties. Two subthemes emerged within responses related to each of the following barriers: funding, age of facilities, and stakeholder understanding. Finally, one notable outlier emerged within responses related to the facilitator of autonomy.

Communication. Each participant discussed communication as both a factor they considered to be a facilitator and a barrier depending on the particular situation. No distinct subthemes emerged within these responses. Participants discussed communication as a barrier in a variety of ways, and generally gave specific examples of instances in which they believed they were hindered in their ability to perform their duties due to communication issues. Although no specific subthemes emerged and responses were varied in nature, the findings were supported by the literature. Kamarazaly et al. (2013) surveyed facilities directors of universities to determine what challenges they faced. Although communication was not directly identified within the results of that study, the authors pointed out that many facilities directors indicated that they did not have an available outlet to adequately communicate department needs to the organizational management, and thus identified that as a challenge. Two participants indicated that they perceived a lack of access to the director of schools to be a barrier at times.

Bull and Brown (2012) said failure to communicate facilities-related change initiatives was the highest ranked complaint among facilities end users. That point

supports the frustration participants shared when discussing communication breakdowns among organizational departments when coordinating ongoing projects. Works by Hall and Hord (2001) and Fullan (2001) also underscored the importance of communication while carrying out change initiatives, although those works were focused on educational administration. Other participant responses indicated a general frustration and perception of a barrier when communication either did not take place or was not effective.

Purchasing. All participants expressed frustrations and barriers they faced related to executing purchases. In each case participants identified both the process of executing purchases, and the time involved in carrying out that process as a barrier. It could be argued that those topics were independent subthemes within responses; however, I chose not to separate the responses because in most instances the two were discussed concurrently and separation would have resulted in the disruption of continuity among participant voices. Some participants discussed their frustration with the process of executing purchases in a way that indicated that they perceived the process to be an encroachment on their autonomy. Three participants pointed out that the purchasing process within public school systems was frustrating to them because of the marked differences between that process and the purchasing processes within the private sector. Those participants also indicated that they understood why the process was different within the public education system; each of them told me they understood the need for accountability and transparency when expending public monies. While the frustrations they expressed cannot be supported by any of the literature reviewed, the need for transparency and accountability can be supported. Cotts and Rondeau (2004) said facilities directors should expect to be held accountable in terms of the use of funds due to

the costs associated with facilities operation and maintenance. Kreassig (2007) also noted that facilities directors, as well as other school system employees, should be aware of scrutiny from outside stakeholders and be committed to being good stewards of appropriated funds.

All participants discussed how the amount of time required for purchase execution was a barrier that they encountered in performing their duties. Participants told me that the amount of time absorbed by these tasks kept them from making repairs as quickly as they thought they should be made, and they also expressed frustration with the amount of time they had to devote to the process that could have been spent elsewhere. The frustrations expressed in relation to the amount of time required to execute purchases was not addressed by any of the literature reviewed for this study; however, the literature did indicate that deferred maintenance backlogs and funding challenges have made it increasingly difficult for facilities directors to carry out preventative maintenance. Several sources noted that as preventative maintenance activities are decreased, facilities departments are required to operate under reactive models wherein facilities and equipment are not repaired until they fail. This literature is relevant within this theme because it underscores a side effect of operating under reactive models; facilities users may be required to do without needed spaces or equipment when those items fail and their repair or replacement is delayed by purchasing requirements.

Funding. Issues related to funding emerged among all participants' responses as a perceived barrier to performing their duties. Each participant indicated funding was a challenge they encountered in general terms, but when I asked for elaboration, two distinct subthemes emerged. The first subtheme that emerged was that facilities directors of

countywide school districts identified lack of funds and general economic conditions as the barrier they encountered. Facilities directors employed by municipal school districts indicated that their main funding challenge was in the form of competing for the funds that were available within the school system. The second subtheme that emerged was common to both types of systems; participants perceived funding to be the root cause of a challenge they encounter in recruiting qualified individuals for employment. In each case the findings are supported by the literature.

The general responses that indicate funding is a factor that manifests itself as a barrier to performing the duties of facilities director is strongly supported by the literature. Kamarazaly et al. (2013) noted that not only was funding the most commonly cited challenge, but that it was also perceived to be the root of several other challenges identified by facilities directors they surveyed. Cotts et al. (2010) said funding was an area of crisis for facilities directors. Both aspects of the first subtheme are also supported by the literature. Facilities directors employed by countywide school systems described the barrier they encountered as a general lack of funding, and two of the three participants pointed to stagnant tax bases and inflation as the root of that problem. Kennedy (2011) and Kopochinski (2012b) both noted that this same problem was common among facilities directors in general. The authors said it had become common practice for facilities departments to operate under budgets that had either been cut or frozen since the economic downturn of 2008. The two participants who specifically identified frozen budgets and inflation as barriers said their budget had been frozen for several years. Kopochinski (2012b) asserted that operating with a budget that has been frozen could result in a net loss of 2-3% of available funds due to inflation.

The subtheme that emerged related to challenges recruiting qualified employees because of funding issues was also supported by the literature. Within the study conducted by Kamarazaly et al. (2013) facilities directors who were surveyed indicated that they experienced multiple challenges related to their workforce, one of which was difficulty recruiting qualified employees due to inadequate rates of pay. Participants told me they encountered a barrier in recruiting workers with the level of skills they needed because the pay rate was not competitive with the private sector. Several participants indicated they had to provide extensive training to their employees to meet the needs of their department. Cotts et al. (2010) emphasized a funding challenge as it is related to training; the authors advised facilities directors to set aside at least 2% annually of total funds for personnel to provide training. One participant specifically pointed to this scenario as another layer to the barrier of funding and recruitment; he indicated it was a challenge to pull funds from an already insufficient personnel budget to provide training.

Age of Facilities. Another theme that emerged among responses as a factor perceived as a barrier was the age of the facilities within the school district. Several participants discussed the age of facilities as challenge they faced in general ways, but when I asked for elaboration, these two subthemes emerged among the responses. The first subtheme was that facilities directors encountered challenges related to the age of the facility in terms of maintaining and repairing old or obsolete infrastructural components. The second subtheme was that participants indicated locating repair and replacement parts was a challenge due to the age of facilities and facilities equipment.

Several participants mentioned the age of the oldest facility they maintained, or otherwise estimated an average age of the facilities under their care, while discussing the

challenges they face related to the age of facilities. The general comments related to age were related to simple deterioration and natural aging of structures. The U.S. Green Building Council (2013) reported that the average age of public school facilities in the United States was 42 years in the most recent comprehensive study of school facilities conducted in 1999. I did not ask participants to provide exact ages of the facilities they managed, and the averages they reported were estimated at the time of the interviews, but their responses are consistent with the age reported by the U.S. Green Building Council.

The first subtheme that emerged was supported by the literature. When I asked for elaboration on how age presented a barrier several participants discussed the challenges they face with operating facilities that have very old and in some cases obsolete infrastructural components. Two participants pointed out challenges they faced with making electrical systems that were designed in the 1950s or 1960s functional with the dramatically increased electrical needs of today. Brubaker (1998) pointed to the Baby Boom era, and the time when those children began to be enrolled in public schools, as a critical moment in history in regard to school facilities. He pointed out that the rapid population increase left many public school systems in a difficult position of needing to build several new facilities within a short amount of time. Brubaker said the end result was that lots of buildings constructed during that time were constructed as quickly and cheaply as possible, and as a result had life expectancies of only 30 to 50 years. Kopochinski (2012a) noted that aged infrastructural components such as electrical systems often have to be updated or replaced altogether to meet the needs of today's students and teachers.

Discussions related to that subtheme often progressed directly into the second subtheme that emerged. While participants described the challenges they faced with old

and obsolete infrastructural components several of them told me they routinely encountered challenges locating repair or replacement parts for those old systems and facilities. There was very little research located or reviewed that was directly related to this subtheme. The study carried out by Kamarazaly et al. (2013) did include a marginal reference to this issue within the category of maintenance related issues; however, the results of that study did not clearly indicate to what degree parts procurement was considered a challenge by survey respondents.

Stakeholder Understanding. The final theme that emerged among responses as a perceived barrier was that participants encounter challenges related to stakeholder understanding. This theme emerged throughout the interviews within various contexts. The barrier was often closely associated with challenges related to communication. In some instances participant responses indicated that lack of communication or ineffective communication resulted from a lack of understanding among stakeholders of facilities issues. Conversely, in some instances participant responses indicated a lack of understanding among stakeholders existed because the process of communication had broken down. Nevertheless, the frequency with which participants discussed stakeholder understanding in relation to challenges they faced in performing their duties was sufficient to classify that issue as an emergent theme in this section. As with some other perceived barriers, a deficiency in understanding emerged as a theme in both a general sense, as well as in more specific contexts when participants were asked to elaborate on particular responses. Two subthemes emerged within the responses when participants were asked to elaborate on particular responses, which were: 1) participants pointed to stakeholders with no background or formal facilities training when discussing the perceived barrier, and

2) participants employed by municipal districts indicated they perceived a dissonance among the core service employees' understanding of the role and importance of facilities departments.

A lack of understanding among stakeholders in relation to facilities issues was supported by the literature. Tanner and Lackney (2006) outlined the evolution of school facilities in the United States and indicated that school facilities today are far more complex than ever before. Atkin and Brooks (2009) claimed organizations that previously did not have unified facilities management strategies have become increasingly required to seek individuals with specialized knowledge and training to supervise those functions. Based on the literature that outlined the specialized nature of facilities management, the finding that facilities directors encounter stakeholders with little or no understanding of facilities issues is not surprising. The same points can be referenced to support the first subtheme. Each participant indicated that they encountered challenges in performing their duties because many of the stakeholders they worked with had a lack of understanding due to inexperience with facilities management. Participant responses indicated that they believed someone with no background or training was not likely to appreciate the intricacies of complex facilities such as were discussed by Tanner and Lackney (2006). The responses also indicated that a background or training related to facilities management was needed to understand the strategies and processes required to properly operate and maintain a facility. The point made by Atkin and Brooks (2009) also supports this finding.

The second subtheme that emerged was mutually exclusive to responses from participants employed by a municipal school district. Those participants indicated to varying degrees that they believed there was a dissonance between core service

employees' understandings and the role and importance of facilities departments. As was noted in Chapter 4, the degree to which participants indicated the perception of this dissonance varied. In each case the topic emerged within discussions of funding, pay, and recruitment. Two participants told me that they felt they competed with the rest of the organization for funds that were available. Those two participants as well as another also told me they encountered challenges with employee recruitment because the pay offered by their respective districts was not competitive with the private sector. I asked each participant if those facts represented a dissonance among the understandings of the core service employees and the role and importance of the facilities departments. The two participants who indicated they competed for funding within the organization said they did think the dissonance existed. The third participant did not respond definitively but told me that he thought support service employees within the district probably felt they were inferior to core service employees. When I asked him to elaborate he again discussed wages that were not competitive and told me that the district should try to improve that.

The three participants employed by countywide school districts did not indicate a perceived dissonance. Two of those participants told me they that felt as though the whole organization struggled with funding and pay. They also either told me directly without prompting, or in response to my question that they did not perceive the dissonance described by the participants employed by municipal districts. I also asked the third participant employed by a countywide district the same question in a follow-up interview; he also did not indicate a perceived dissonance.

The literature reviewed for this study would support a finding of a perceived dissonance; however, because the findings were inconsistent when responses from

participants employed by different types of system are compared, that finding should be considered inconclusive. Kok et al. (2011) noted that facilities management functions are often overlooked within the context of the larger educational organization. Barnes (2010) asserted that facilities management is often perceived as ancillary to the primary goals of the overall organization. The reasons for those phenomena are not clearly understood, but both authors speculated that it could be, in part, related to the disparate nature between the duties of facilities management and most organization's duties. No research was located or reviewed that addressed the issue of core service employees' understanding of the role and importance of facilities departments or any other support service. Further research is warranted to investigate this topic.

Autonomy. One notable exception emerged among participant responses related to the facilitator of autonomy. As noted above, each of the three participants employed by countywide public school systems indicated that they had regular direct communication with individual school board members. Two of the three told me that they did not perceive that contact as a barrier because it was informational in nature and they did not feel as though the contact was an attempt to micromanage daily operations within the school system. Those participants also believed that school board members were cognizant of their role and respectful of the proper chain of communication when they had requests. Each of the three participants employed by municipal public school systems told me that they had little to no direct communication with individual school board members outside of regularly scheduled board of education meetings or workshops. Those participants also said they too felt as though school board members were aware of their role and respectful of the proper chain of communication.

One participant employed by a countywide public school system indicated he had regular direct contact with individual school board members, and that he perceived that as an effort to micromanage daily operations within the district. The participant indicated that this type of contact was both frustrating to him and was also a barrier he encountered while trying to perform his duties. The work by Kreassig (2007) was the only literature reviewed for this study that was related to the theme of autonomy and this notable exception. Kreassig's work could be construed to support both the findings of the theme discussed under the heading "Facilitators" as well as this exception. Furthermore, this exception is notable based on the degree of difference when compared to other responses. However, because this was the only example within the findings of this study, and because the literature that was reviewed could be support or refute both sides of the issue, these findings should be considered inconclusive.

Recommendations for Practice

Throughout the process of conducting this study several recommendations for practice emerged. Research participants made recommendations for practice. Other recommendations surfaced throughout the review of literature and analysis of findings. Those recommendations are:

1. It is recommended that purchasing procedures be reviewed and revised to reduce the amount of time required to execute one-time purchases needed for emergency repair.

2. It is recommended that district level administrators ensure that adequate outlets of communication are available for the purpose of coordination among different departments.

3. It is recommended that district level administrators and governing bodies review and revise support staff compensation plans to ensure compensation is competitive with similar occupations within the private sector.

4. It is recommended that the equitable funding formula used to determine state contributions to local education agencies be reviewed and revised to include funding earmarked for capital projects.

5. It is recommended that local education agencies commit to develop or review and revise existing strategic facilities plans to include strategies to identify, fund, and execute the completion of capital projects.

Recommendations for Future Research

The purpose of this study was the investigate the perceptions of facilities directors of public school systems in Tennessee in regard to what factors they consider facilitators or barriers to successfully performing their duties. Very little research existed that investigated facilities management functions or the duties of facilities directors within public school systems. Future study in these areas is warranted. Other issues also emerged throughout the course of conducting this study that warrant further research:

1. Further research is needed to investigate the practices of contracting facilities related services. Specifically, quantitative research is needed to investigate the frequency of contracting facilities related services among facilities departments with workforces of various sizes.

2. Further research is needed to investigate the structure of the chain of command among public school systems in Tennessee. As that need relates to this study, additional research is suggested to investigate the command structure in terms of which position facilities directors report to; however, the same research would be useful for other positions within the organization as well.

3. Further research is needed to investigate the frequency and nature of direct communication between individual school board members and individuals within the organization other than the director of schools. As that need relates to this study, additional research is suggested to investigate the frequency and nature of direct communication between individual school board members and the facilities director.

4. Further research is needed to investigate the existence or absence of a dissonance among the understandings of core service employees and the role and importance of support services. As that need relates to this study, additional research is suggested to investigate the conflicting findings among

responses of participants employed by countywide public school districts as compared to participants employed by municipal public school districts.

Chapter Summary

The overall purpose of this qualitative collective case study was to allow facilities directors of public school systems in Tennessee to help close some of the gap that is present in scholarly research related to the facilities management functions in public education through sharing their perceptions. Six facilities directors were purposefully sampled to participate in in-depth interviews for the purpose of sharing their perceptions of their common duties and what factors they perceive as facilitators or barriers to performing those duties. The findings of the study were organized and reported by themes that emerged among the participants' responses. Those findings were reported through the "voices" of participants by providing extensive evidence through the use of statements made by participants during the interviews. The themes that emerged were summarized and compared to extant literature in this chapter and recommendations for practice and future research were made based on the findings and conclusions.

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APPENDICES

APPENDIX A

Interview Guide

1. In your opinion, what are the common duties of a facilities director of a public school system? (Can you elaborate on _____? What do you mean by _____? What does _____ consist of?)

2. What factors help you to be successful in performing the duties you described to me? (How does _____ help? Can you elaborate on what you mean by _____?)

3. What factors hinder you from being successful in performing the duties you described to me? (How does _____ get in your way? Can you elaborate on what you mean by _____?)

4. What do you understand to be the mission or purpose of the school system? (Can you tell me more about how you came to this understanding?)

5. How important is the work you do, and the work your department does to the purpose of the school system? (Can you elaborate on _____? Can you give me an example of what you mean by _____?)

6. Tell me about your relationship with the director of schools. (What sort of interaction do you typically have? How frequently does that interaction occur? How does the director of schools help you/hinder you in performing your duties?)

7. Tell me about your relationship with the board of education. (What sort of interaction do you typically have? How frequently does that interaction occur? How does the board of education help you/hinder you in performing your duties?)

8. Tell me about your relationship with other departments of the school system. (What sort of interaction do you typically have? How frequently does that interaction occur? How do other departments help you/hinder you in performing your duties?)

Questions Derived from Extant Literature

1. What challenges do you encounter in terms of finance and economic conditions? (What do you think causes these challenges? How do you navigate these challenges?)

2. What challenges do you encounter in terms of meeting the needs of stakeholders? (What do you think causes these challenges? How do you navigate these challenges?)

3. What challenges do you encounter in terms of facilities maintenance? (What do you think causes these challenges? How do you navigate these challenges?)

4. What challenges do you encounter in terms of sustainability? (What do you think causes these challenges? How do you navigate these challenges?)

APPENDIX B

Auditor's Letter

Dr. Rebecca C. Hunley
Biology Teacher, Jefferson County High School
115 W. Dumplin Valley Rd
Dandridge, TN 37725

June 2, 2016

Brandon M. Williams
Doctoral Student, East Tennessee State University
1451 Wolfe Lane
Mount Carmel, TN 37645

Dear Brandon:

Thank you for the opportunity to read and review the documents and transcripts regarding your research with East Tennessee State University in which you are working in your doctoral program. The thoroughness of your writing and detailed explanations of several components within the maintenance and facilities within public school systems was well written. The research outlines perspectives of building and facilities managers and several of the challenges and benefits of the jobs they perform. Along with support staff expectations are discussed from the vantage point of several stakeholders such as director of schools, parents, teachers, and community members and the challenges that can pose. In my view, this research is imperative as a future administrator to outline several key challenges I, and others can face in administrative positions. Because of this research I believe many school systems can benefit from hearing from the perspective of maintenance and facilities employees which are often an underrepresented population in key decision making opportunities.

In addition, I would like to complement both you and your advisory committee on the breadth and depth of this study as it takes a look at six schools systems and allows several angles on often overlooked issues. The design and implementation of this study is well organized and lends itself for additional and future research in other districts in other states.

My observations on the results of your study include the documentation you have provided (transcripts from six participant interviews as well as examination of your dissertation). I have no doubt that members of your dissertation committee have guided and made suggestions appropriately as you began, conducted the research, and are now reporting the results in the dissertation. Reviewing your research questions, the methodology of your research design, and the discussion of emergent ideas indicates a thorough research study was conducted and results were analyzed appropriately.

In your results you triangulated your data and explained how you came to the conclusion. In your writing you mention several emergent ideas and offered thoughts on the analysis which you referenced in previous literature review and research. Having completed a qualitative research dissertation myself, I feel that you have met the requirements and recommend the acceptance and approval of your study for the purpose of granting you the appropriate degree.

The experience upon which I draw in making these judgments include the following:

1. Bachelor of Science in Biology from Carson-Newman University, Jefferson City,
2. Masters of Teaching from Tusculum College, Greeneville, Tennessee.
3. Ed.D. Degree from East Tennessee State University, Johnson City, Tennessee in Educational Leadership and Policy Analysis.
4. High School Biology Teacher at Jefferson County High School for twelve years and serving as data team coach and mentor.
5. Summer School Principal for approximately 150 students and four teachers, Jefferson County High School and Patriot Academy.

With these experiences and with the recent completion and awarding of a doctoral degree, I have had exposure to a plethora of research and literature with qualitative research which you have written about in great detail and thoroughness in your dissertation.

Best wishes as you complete your graduate doctoral work.

Sincerely,

Dr. Rebecca C. Hunley

APPENDIX C

Letter to Request Permission

Dear Director of Schools,

My name is Brandon Williams; I am a doctoral student at East Tennessee State University in the Educational Leadership and Policy Analysis Department. I would like to ask for your permission to contact the individual within your school district that supervises facilities management functions to request his or her participation in a research study.

I am interested in interviewing these individuals in order to get their perceptions in regard to what they understand their duties to be, what factors act as facilitators or barriers to performing those duties, and how they perceive their relationships and interactions with other aspects of the overall school system organization. I hope this study will help close some of the gap in the literature related to this topic, and will serve to inform administrators and policy makers about how these individuals perceive the impact of their within public school systems.

Data collection for the study will be in the form of personal interviews. Interviews will be scheduled at a time and place convenient to the participant, and will not be scheduled during their regular working hours. Interviews will be audiotaped so that accurate transcriptions can be produced for data analysis purposes. I will also review relevant documents that are accessible to the public for the purpose of corroboration during data analysis. All interview recordings and transcriptions will remain confidential. The school district and the participants will remain anonymous throughout the reporting of the study. I will assign pseudonyms for the name of the school district, the participant, and any proper nouns they reference. Furthermore, no quotations from publicly accessible documents will be used in the study manuscript. Finally, participants will be asked to sign an informed consent document before any data are collected.

If you have any questions or concerns about my request please feel free to contact me by phone at (XXX) XXX-XXXX or by email at xxxxxx@goldmail.etsu.edu. Please respond to this email to express or deny your consent for me to contact the individual.

Sincerely,

Brandon Williams
Doctoral Student
East Tennessee State University

APPENDIX D

Informed Consent Form

Title of Research Study: Facilitators and Barriers of Performing the Duties of Facilities Director in Public School Systems in Tennessee: A Study of Perceptions

Principal Investigator: Brandon M. Williams

Principal Investigator's Contact Information: (423) 367-1434 zbmw25@goldmail.etsu.edu
Organization of Principal Investigator: East Tennessee State University

INFORMED CONSENT

This Informed Consent will explain about being a participant in a research study. It is important that you read this material carefully and then decide if you wish to voluntarily participate.

A. **Purpose:**
The purpose of this research study is to investigate the perceptions of Facilities Directors of public school systems in Tennessee in regard to what factors they identify as facilitators or barriers to performing their duties. The purpose of this study is not to evaluate or judge the merit of participants or any practices or procedures they describe.

B. **Duration:**
Participants in this study will be asked to participate in interviews lasting approximately one hour. The researcher may also contact you by telephone after initial interviews for the purpose of clarifying or supplementing data as needs emerge.

C. **Procedures:**
The procedures, which as a participant in this research will involve you, include participating in an audio-recorded interview. I will ask you predetermined open-ended questions. The interview will be scheduled to occur at a time and place of your convenience, and scheduled to avoid interfering with your normal working hours. Following the interview, I may need to contact you by telephone to clarify or supplement any prior responses as the need emerges. I will also ask for your assistance in identifying relevant documents that are accessible to the public that may be used to corroborate information provided in the interview.

D. **Alternative Procedures/Treatments:**
There are no alternative procedures/treatments available to you if you elect not to participate in this research study.

E. **Possible Risks/Discomforts:**
Participation in this study should not pose any risks or cause any discomfort. The purpose of this study is not to evaluate or judge the merit of you or any policies or procedures you describe. Your confidentiality will be protected throughout this study and in the final manuscript. Your responses will not be shared with any supervisors or other coworkers directly; although, those individuals will have access to the final manuscript which will be published electronically. Pseudonyms will be used in that document to replace your name, the name of the school district you are employed by, and any other proper nouns you refer to during your interview.

Title of Research Study: Facilitators and Barriers of Performing the Duties of Facilities Director in Public School Systems in Tennessee: A Study of Perceptions

Principal Investigator: Brandon M. Williams

F. Possible Benefits:
Participants will receive no direct benefit as a result of participating in this research study. This study has the potential to add to the understanding of how Facilities Directors perceive their duties and roles within the public school system organization. In that regard participation in this study might influence future policy or procedural decision of educational administrators.

G. Compensation in the Form of Payments to Participant:
No compensation in the form of payments is being provided to participants in this research study.

H. Voluntary Participation:
Your participation in this research study is voluntary. ***You may choose not to participate.*** If you decide to participate in this research study you can change your mind and quit at any time. If you choose not to participate, or change your mind and quit, the benefits or treatment to which you are otherwise entitled will not be affected. You may quit by calling Brandon Williams, whose phone number is (423) 367-1434. You will be told immediately if any of the results of the study should reasonably be expected to make you change your mind about continuing to participate.

I. Contact for Questions:
If you have any questions, problems or research-related medical problems at any time, you may call Brandon Williams, whose phone number is 423.367.1434. You may also call the Chairperson of the ETSU Institutional Review Board at 423.439.6054 for any questions you may have about your rights as a research participant. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423.439.6055 or 423.439.6002.

J. Confidentiality:
Every attempt will be made to see that your study results are kept confidential. A copy of the records from this study will be stored in in a secure file in the home office of the researcher for at least 5 years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a participant. Although your rights and privacy will be maintained, the ETSU IRB, and Brandon Williams and his research team have access to the study records. Your records will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as described in this form.

APPROVED
By the ETSU IRB
APR 18 2016
By: _____
Chair IRB Coordinator

DOCUMENT VERSION EXPIRES
APR 17 2017
ETSU IRB

Title of Research Study: Facilitators and Barriers of Performing the Duties of Facilities Director in Public School Systems in Tennessee: A Study of Perceptions

Principal Investigator: Brandon M. Williams

By signing below, I confirm that I have read and understand this Informed Consent Document and that I had the opportunity to have them explained to me verbally. You will be given a signed copy of this informed consent document. I confirm that I have had the opportunity to ask questions and that all my questions have been answered. By signing below, I confirm that I freely and voluntarily choose to take part in this research study.

Signature of Participant	Date
Printed Name of Participant	Date
Signature of Principal Investigator	Date

APPROVED
By the ETSU IRB

APR 18 2016

By: _____
Chair IRB Coordinator

DOCUMENT VERSION EXPIRES

APR 17 2017

ETSU IRB

VITA

BRANDON M. WILLIAMS

Education:

Ed. D. Educational Leadership
East Tennessee State University, 2016
Johnson City, Tennessee

M. Ed. Curriculum & Instruction
Lincoln Memorial University, 2012
Harrogate, Tennessee

B.S. History
East Tennessee State University, 2009
Johnson City, Tennessee

Professional Experience:

Hawkins County Board of Education, 2014 – Present
Rogersville, Tennessee
Energy Specialist

Volunteer High School, 2012 – 2014
Church Hill, Tennessee
English Teacher

Meadowview Middle School, 2010 – 2012
Morristown, Tennessee
Social Studies Teacher