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EMPLOYEE BELIEFS REGARDING AN ENERGY MANAGEMENT COMPANY'S TRANSFORMATIONAL PROGRAM IN DEVELOPING ENERGY EFFICIENT PRACTICES IN PUBLIC SCHOOLS

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A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL LEADERSHIP AND POLICY STUDIES

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DEDICATION

This dissertation is dedicated to the memory of my grandmother, Irene (Brock) Tucker. "You" will never truly know how much you were loved and appreciated. Thank you for always believing in me and for your examples of what hard work and perseverance will overcome.

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But those who hope in the Lord will renew their strength.
They will soar on wings like eagles;
they will run and not grow weary,
they will walk and not be faint.
Isaiah 40:31

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ABSTRACT

Public schools throughout the United States of America are experiencing financial hardship (Oliff, Mai, & Leachman, 2012), and due to the turbulence and fluctuation of state budgets, sound funding and competent budgeting practices are essential assets needed in operating a school system (Maguad, 2007). During times of financial hardship, school boards and district administrators will need to assess where monies can be conserved. Utility expenditures are an expense for public schools that many stakeholders do not take into consideration. A typical school district will spend $400,000 annually on utility bills, while those in large metropolitan areas may spend $20 million or more (USDOE, 2002). Although energy costs to run a public school district are high, energy consumption and costs can be managed intelligently (USDOE, 2008). To assist public school districts in implementing an energy conservation program, an energy management company may be needed; and if so, a viable company will need to be assessed as to their qualifications to lead an energy initiative. In Oklahoma, several public schools have or are in the process of using energy companies. The purpose of this exploratory study was to determine the effectiveness of one such company to determine if the company's transformational energy program was successful in changing employee behavior and beliefs, therefore contributing to the conservation of energy. Utilizing a descriptive survey and means testing procedures, the study assessed whether there were statistically significant differences in employee energy conservation behaviors and beliefs between elementary school and secondary school employees, the type of heating, ventilation, air conditioning (HVAC) control system within an employee's work space, and the years of employment of an employee

within the district. This study also investigated if specific factors need to be in place for employees to support and sustain their district's energy conservation program. Using organizational learning as a theoretical framework, this nonexperimental quantitative study found that learning did occur within the organizations and the company did have an impact on employees' behaviors and beliefs. When comparing employees' prior and after survey responses, the results for employees' behavior and beliefs showed statistically significant differences. However, when testing for the independent variables, the majority of the results indicated that there were no statistically significant differences. Some of the statements that did show statistically significant differences indicated that employees with manual thermostats were more concerned with the energy being consumed by their HVAC system during unoccupied times. Additionally, some statements indicated there were some statistically significant differences between first year employees and employees with four or more years of employment. Finally, this study concluded that the three most popular reasons why employees supported and will continue to support their district's energy conservation initiative is if the program continues to save the school district money, is communicated on a regular basis, and monitored for compliance.

CHAPTER 1

Introduction

Schools are known for vast amounts of energy consumption due to the fact that they are in operation from morning to night, a hub for community activities, and they have heating and air conditioning units that may run continually (Laine, 2010). The typical U.S. school district will spend $400,000 each year on utility bills, while those in huge metropolitan areas may spend $20 million or more (U.S. Department of Energy (USDOE), 2002). Despite the necessity for public schools to be more energy efficient, few school districts have successfully incorporated energy conservation practices into their organizational culture (Schelly, Cross, Franzen, Hall, & Reeve, 2011). According to Ehrhardt-Martinez, Laitner, and Keating (2009), energy professionals are increasingly interested in applying behavioral change strategies to help in energy conservation.

Mark Frankel, the Technical Director for the New Buildings Institute (NBI), stated, "if the occupants don't turn off the lights, the building doesn't do as well as expected" (Navarro, 2009). This quote makes a very bold statement about the people that occupy buildings. Regardless of the building design, if the occupants do not do their part toward energy conservation at work, the building does not perform as intended. To get the full effect of Frankel's quote, one must first understand that the NBI is a non-profit organization that focuses on improving energy performance of commercial buildings. This organization works to remove barriers to energy efficiency through promoting advanced design practices, improved technologies, public policies and programs that improve energy efficiency, and develop and offer guidance to

organizations on designing and constructing energy-efficient buildings (NBI, 2012). The significance of Frankel's quote is no matter how well designed the buildings may be for energy efficiency; one cannot overlook the behavior of its employees.

Normally, organizations have utilized structural or operational changes to suffice in energy conservation; however, another significant approach involves the energy conservation behaviors of an organization's employees (Scherbaum, Popovich, & Finlinson, 2008; Siero, Bakker, Dekker, & Van Den Burg, 1996). Behavioral approaches to energy conservation can save energy and money (Finlinson, 2005; Woodroof, 2011). Eggink (2007) states that individual behavior can have a profound effect on the amount of energy consumed. The more energy consumed, the more money that is spent by the organization on utility costs. For public schools, this can directly affect a district's budget, which may already be in decline.

Background of the Study

Public schools throughout the United States of America experience financial hardship (Abshier, 2010; Eger & Archer, 2012; Lav & McNichol, 2007; McNichol, Oliff, & Johnson, 2011; Oliff, Mai, & Leachman, 2012). Static or declining revenues have become a dreaded event for school systems (Maguad, 2007). The most recent decline in funding started in late 2007; due to the deepest recession states have seen in 70 years (Oliff et al., 2012). Young and Fusarelli (2011) note "the Great Recession has led to severe declines in tax revenues for state and local governments" (p. 211). This decline in state revenues adversely affected public schools. According to Oliff et al. (2012), funding for schools has fallen sharply because of the decline in state revenues.

For the 2012-2013 school year, 26 states allocated a smaller budget for public schools than they did for the 2011-2012 school year, and 35 states' budgets were below 2008 levels (Oliff et al., 2012). Due to budget reductions, school leaders must decide whether to increase class sizes, reduce the number of certified and non-certified positions, determine the existence of educational programs, and whether other areas and needs can be maintained or cut (Laine, 2010; Lav & McNichol, 2007). According to Oliff et al. (2012), budgetary reductions at the state level directly impact public schools and will force them to "scale back the educational services they provide" (p. 2). Public schools in Oklahoma were not immune to the financial difficulty affecting the nation's public schools.

As far back as 2001, Oklahoma has dealt with state budget shortfalls. In a February 13, 2001, press release, Oklahoma Senator Kelly Haney, chairman of the Senate Appropriations Committee, stated "the unexpected budget shortfalls in as many as 15 states should send a message of caution to Oklahoma policy makers" (Oklahoma Senate Communications Division, 2001, p. 1). According to the release, the main reason for revenue shortfalls in the states identified were the results of a decline in sales taxes. Senator Haney noted, "a cautious approach isn't just prudent; it's a necessity" (Oklahoma Senate Communications Division, 2001, p. 1). For the 2003 fiscal year, Oklahoma state agencies were ordered to reduce their spending at an annualized rate of 6.5% (Oklahoma 21st Century, 2003). In a 2012 news report, Eger and Archer (2012) state that Oklahoma schools received funding from state aid at the 2004 level, regardless if student population had increased. Crawford (2013) noted, "Oklahoma schools have never before faced four continuous years of flat or negative state funding

with increased enrollment" (p. 4). According to Oliff et al. (2012) and the Oklahoma Policy Institute (OPI) (2013), Oklahoma has reduced per-pupil funding to K-12 school districts by more than 20%. For the 2013-2014 fiscal year, Oklahoma public schools will have less revenue to pay for educational services than they did for the 2008 fiscal school year (OPI, 2013). From the literature, budget shortfalls in Oklahoma, as well as other states, appear to be an issue that states, lawmakers, and public school administrators must address repeatedly.

Due to the turbulence and fluctuation of state budgets, sound funding and competent budgeting practices are essential assets of operating a school system (Maguad, 2007). As state and national trends show, public school budgets rise and fall with government budgets, so it is imperative for district administrators to establish sustainability in their funding. Laine (2010) notes that "school budgets across the United States are incredibly tight, a situation that is exacerbated by the nation's current economic condition" (p. 1). The funding cuts that are happening to public school budgets are occurring at a time when schools are facing greater demands and accountability from stakeholders (Oliff et al., 2012). During times of financial hardship, school boards and district administrators will assess where monies can be conserved. The result could be in program or personnel cuts, transportation issues, athletics, and larger class-sizes, (Laine, 2010; New York State Association of School Business Officials (NYASBO), 2005; Oliff et al., 2012).

Public schools depend on their state governments for funding (Guthrie & Reed, 1991; Hoy & Miskel, 2008; Pfeffer & Salancik, 2003; Slosburg, 2010; Verstegen, 2011). State aid is a major source of funding for public schools (Burrup, 1977; Maiden

& Paliotta, 2001; Oliff et al., 2012). Appropriations by the legislature are the largest single revenue source for almost all public schools in Oklahoma (Oklahoma State Department of Education (OSDE), 2009, p. 11). In Oklahoma, the basic funding for public schools is a state supported mechanism formula (Maiden & Stearns, 2007; OSDE, 2009; Slosburg, 2010). Because Oklahoma public educational budgets are based primarily on state allocated funds, and these funds are based solely on state revenues, Oklahoma schools may need to have in place policies and programs to help in conserving their finances and seek means within their own environment in order to maintain quality services during periods of financial hardships.

Public schools depend on their environment for needed resources. Dependence is defined by the extent of need for a resource and its availability in the environment (Pfeffer & Salancik, 2003). Schools must view the environment as a place to secure needed resources. Four general types of environmental resources exist, and one of these environmental resources is fiscal means (Hoy & Miskel, 2008). According to Burrup (1977), "allocating economic resources to education is one of the primary responsibilities of local, state, and federal lawmaking bodies" (p. 12). When this monetary resource becomes scarce due to state allocations being cut, then the public school needs to examine other ways to secure or control the monies that it does have if it is to survive.

Barnard (1966) states, "if an organization is to continue to exist, it will depend solely on its ability to carry out its purpose" (p. 91). If needed resources are lacking that are crucial to the existence of the organization's purpose, then the organization may need to look for areas to supplement the lost resources. Barnard (1966) states that the

organization can survive only as it secures by exchange, transformation, and creates a surplus of utilities in its own economy (p. 245). According to Pfeffer and Salancik (1978), "the key to organizational survival is the ability to acquire and maintain resources" (p. 2). They state:

> If the resources needed by the organization were continually available, even if outside their control, there would be no problem. Problems arise not merely because organizations are dependent on their environment, but because this environment is not dependable. Environments can change…and the supply of resources becomes more or less scarce. When environments change, organizations face the prospect either of not surviving or of changing their activities in response to these environmental factors. (Pfeffer & Salancik, 1978, p. 3)

An organization such as a public school system may not control the resources it needs, and resource acquisition may be unstable. The changes that occur in the environment can significantly impact an organization (Krishna, 2008). Because of these changes, superintendents and school administrators must be able to direct their school systems and procure needed resources. According to Maguad (2007), additional sources of revenue must be found or planned expenditures reduced.

Ordinary and insignificant as it may seem, utilities are an expense for public schools that many stakeholders do not take into consideration. Reports by the USDOE (2008) and the National Center for Education Statistics (USDENCES) (2003) note that schools spend $8 billion a year on energy costs. In most U.S. school districts, the cost of energy consumption is second only to salaries (Riedel, 2008; Schelly et al., 2011;

U.S. Environmental Protection Agency (USEPA), 2011). As noted earlier, a typical school district will spend $400,000 annually on utility bills, while those in large metropolitan areas may spend $20 million or more (USDOE, 2002). According to the USDOE (2008), energy costs to run a public school are high, but can be managed intelligently.

Statement of the Problem

Funding for public school districts depends primarily on state allocation of tax monies, among other factors (Adams, 2010; Burrup, 1977; Guthrie & Reed, 1991). Pfeffer and Salancik (2003) note the government is a substantial provider of resources to a number of industries and educational systems. Public schools face financial hardship because of the reduction in state budgets and since public schools are dependent on state funding, districts must ensure that an appropriate level of funds will be set aside for utility costs. With superintendents trying to maintain a workable budget to meet both educational and utility expenses, it is advisable that public school administrators consider energy conservation.

Purpose of the Study

The purpose of this study is to explore the beliefs and behaviors of Oklahoma public school employees concerning the ability of an energy company hereinafter referred to the pseudonym "Company A" to instill energy behavior practices in its clients' organizations. Company A prides itself on being a people-based energy management company and assists organizations in changing employee behavior through a transformation process. Company A creates and assists with the implementation of a customized and comprehensive energy plan for K-12 school districts, higher education

institutions, large churches and organizations through a transformation energy conservation program. The program focuses exclusively on organizational and behavioral change.

In Oklahoma, several public schools have or are in the process of using Company A. This study looked at schools that have utilized Company A during a certain time span to determine if Company A's transformational program has been successful in changing employee behavior and beliefs, therefore contributing to conservation of energy. By doing so, school leaders may have a better approach to offsetting funding losses by a conservation of energy through employee behavioral changes. This study also assessed the extent to which those beliefs and behaviors varied based on the classification of an employee's work space as secondary or elementary, the type of heating, ventilation, air conditioning (HVAC) control system within the employee's work space, the years of employment of an employee within the district, and possible specific reasons for such a behavioral and attitudinal change.

Research Questions

This study was guided by the following research questions:

- Research Question 1 – What is the level of success that Company A's transformational program has had in changing employee behavior towards energy conservation?
- Research Question 2 – What is the level of success that Company A's transformational program has had in changing employee beliefs towards energy conservation?

- Research Question 3 – Are there significant differences in energy conservation beliefs and behaviors between elementary and secondary school employees?
- Research Question 4 – Are there significant differences in energy conservation beliefs and behaviors between employees based on whether their heating, ventilation and air conditioning (HVAC) thermostat is controlled through an energy management system or controlled manually?
- Research Question 5 – Are there significant differences in energy conservation beliefs and behaviors between employees based on the years of employment within the district?
- Research Question 6 – What factors of school board policy, compliance monitoring, communication, or self-efficacy may have contributed to Company A's program in transforming employees to exhibit energy conservation behavior?
- Research Question 7 – What factors of school board policy, compliance monitoring, communication, or self-efficacy will need to be maintained so organizational learning knowledge does not depreciate and energy conservation behavior is sustainable?

Significance of the Study

This study reported on the effectiveness of Company A and its transformational program as it related to behavioral changes in its client Oklahoma public schools. This is important for local school boards and superintendents considering a low-cost approach to becoming more energy efficient through a change in behavior of its employees to assist in energy conservation. The study will also assist Company A,

public school districts, and energy managers/directors on knowing where more of an emphasis might need to be placed in order to improve employee behavior upon implementation of the transformational program. The study will also assist Company A, public school districts, and energy managers/directors in determining if the transformational program is changing employee behavior regardless of whether the employees' HVAC thermostat within their workspace is controlled by a computerized energy management system or controlled manually by the employee. This is important if the company and the district are focused on energy conservation beyond the organizational setting and/or considering energy-retrofits as a way to conserve allocated utility funds. The question of how many years an employee has been employed with the district will assist superintendents and energy managers in determining if energy conservation behaviors only relate to those who were employed during the transformational process or part of the district's culture. By addressing certain factors, such as board policy, compliance monitoring, communication, and self-efficacy, the findings can be used to determine sustainability of energy conservation behaviors within an educational setting.

Limitations of the Study

Data collected for this research study came from a selected sample of Oklahoma public school districts that are clients of Company A. Because these districts were selected based on set criteria, generalizations from this study are limited to that population. Gay, Mills, and Airasian (2006) state that a weakness in utilizing purposeful sampling is "the potential for inaccuracy in the researcher's criteria and resulting sample selections" (p. 113). Oklahoma districts that are newer or older clients

of Company A, as well as Oklahoma career technology centers that are clients of Company A were not included in this study. Findings from this study may also not be generalizable with other organizations that utilize Company A, such as churches and higher educational institutions.

The data collected for this study was generated through a self-reporting questionnaire. The data reported from the survey was subject to the clarity and honesty of the participants responding to the survey questions. Cook and Cook (2008) note that "survey responses are self-reported by participants and do not always accurately describe reality or participant's actual behavior" (p. 104). In addition to the clarity and honesty of employee's responses, a limitation will exist within the survey instrument itself. The questions used will need to be clear and unambiguous since the opportunity to directly explain a question or meaning will not be available from the researcher (Gay et al., 2006). Chen (2011) notes that participants can carelessly mark responses without fully understanding the meaning of the question, which can result in useless survey results.

Another limitation associated with the self-reporting survey will be in the number of participant responses received. According to Gay et al. (2006), lack of survey respondents makes it difficult to interpret findings. Also, a low participant response may not accurately reflect the views of the population; therefore contributing to response bias (Creswell, 2005; Gay et al., 2006).

The researcher conducting this study is an employee of one of the districts that utilize Company A. He is a district administrator in charge of curriculum and is responsible for the energy conservation program within the district. Creswell (2009)

defines this as backyard research, which involves the researcher studying one's own organization or practices. To address this, the findings in the report will be directly taken and supported from the data, and will not have personal comments or input from the researcher.

Overview of Theoretical Framework

The theoretical framework for this study was organizational learning. Learning occurs in every organization (Rebelo & Gomes, 2008) and change efforts have become recurring themes within the field of education (Evans, Thorton, & Unsinger, 2012). Organizational learning is defined as a change in the organization's knowledge that occurs as a function of experience (Argote, 2013); and this experience can happen both individually and collectively to obtain organizational goals, which helps the organization to adapt in a changing environment (Akhtar, Arif, Rubi, & Naveed, 2011).

An organization's survival and growth will depend upon its ability to foster new learning as it adapts to its environment (Krishna, 2008). With current monetary resources that are in decline or that fluctuate over time, public schools will need to change their energy efforts and learn new knowledge through experience in order to lessen their monetary dependency. Organizational learning will need to occur and produce new knowledge through procedures and employee routines. Argote (2013) states knowledge can be both declarative and procedural. Procedural knowledge includes the employee's skill and routines.

Three important facets with organizational learning are knowledge acquisition, knowledge depreciation and knowledge transfer (Argote, 2013). Company A's program is a transformation process that teaches organizations to apply new procedures to

achieve organizational goals for energy conservation and/or monetary savings. Using organizational learning as a theoretical lens, this study explored whether knowledge was gained through the implementation of Company A's program, if knowledge was transferred from the work place to a home environment, and what factors may be needed to prevent knowledge depreciation. The following pages present a more detailed view of organizational learning.

The Organizational Learning Theoretical Framework

Schools and organizations are complex, diverse, and surrounded by constant change (DellaNeve, 2007). Probst and Büchel (1997) state that in terms of an organization, "we live in a world of accelerated change" (p. 1). This changing environment and future uncertainty is placing organizations under constant pressure to develop new solutions in order to survive (Probst & Büchel, 1997).

One way to assist in understanding this changing landscape and developing new results is through understanding certain theories of change. According to Evans et al. (2012), using theories of change to direct organizational development is not new, but being grounded in "change theory can provide educational leaders with an opportunity to orchestrate meaningful organizational improvements" (p. 155). They go on to emphasize that an appropriate framework can provide a platform for studying complex interactions and assumptions. One of the methods for bringing about organization change and improvements is organizational learning (DellaNeve, 2007). Evans et al. (2012) note that organizational learning is emerging within the educational field and may be adapted to school systems.

An organization's ability to learn will facilitate organization-wide improvements and change adeptness (Scott-Ladd & Chan, 2004). Organizational learning is considered the process by which an organization learns (Perkins, et al., 2007), and according to Dixon (1994), organizations are going to have to increase their rate of learning if they are to survive during unprecedented change. Probst and Büchel (1997) state:

> If social systems want to be able to cope with change and to master new and complex problems, they must adapt and think ahead of developments. Change takes the forms of new discoveries, new technologies, and political changes, as well as of new structures that evolve within the organization itself. Learning processes must go beyond simple quantitative increase of the competence of an organization. Surface adaptations are not enough: learning must involve the underlying structure of the organization and bring general changes in codes and philosophies. (p. 9)

Learning and change will reinforce each other and the knowledge that is created through learning allows organizations to change their environment by reframing it and/or physically altering it (Dixon, 1994). Learning will occur when the organization achieves what it intended to achieve, which means there is a match between the action and the outcome (Argyris, 1992).

Argyris and Schon introduced organizational learning theory and stated organizations do possess the capacity to learn and grow (Evans et al., 2012). As cited by Perkins et al. (2007), Argyris and Schon stated organizational learning occurs when a member of the organization acts to resolve a problematic situation (Perkins et al.,

2007). An example of this could be a superintendent wanting the district to become more energy efficient to offset lost funding and/or rising utility costs.

DellaNeve (2007), in his evaluation of the relationship between organizational learning and organizational change success, showed significant positive correlations between organizational learning and organization change success. DellaNeve's results are aligned with multiple studies on organizational learning leading to successful organizational change. Jashapara (2003) notes that there are multiple studies that conclude that organizational learning can lead to organization change and enhanced competitiveness.

There are multiple definitions of organizational learning within the literature (Probst & Büchel, 1997). Argote (2011) defines organizational learning as a change in the organizational knowledge that occurs as a function of experience. Dixon (1994) defines organizational learning as "the intentional use of learning processes at the individual, group and system level to continuously transform the organization in a direction that is increasingly satisfying to its stakeholders" (p. 5). According to Probst and Büchel (1997), organizational learning is the "ability of the institution as a whole to discover errors and correct them, and to change the organization's knowledge base and values so as to generate new problem-solving skills and new capacity for action" (p. 167). Yukl (2009) states organizational learning is "collective learning by members of the organization" (p. 49). Yukl (2009) goes on to state that organizational learning's essential processes include the discovery of relevant new knowledge, the diffusion of this new knowledge to members of the organization who need it, and finally the application of the new knowledge to improve internal processes and external adaptation.

Different theorists and scholars have identified different processes or subsystems that are central to organizational learning (Krishna, 2008). Through these processes, organizational learning occurs over time and is an ongoing cycle in which experience is converted into knowledge and brings about changes in the organization's context (Argote & Miron-Spektor, 2011; Dixon, 1994). According to multiple scholars, the organizational learning process consists of four major steps: knowledge acquisition, knowledge sharing, information interpretation, and memorizing (Aslam, Javaid, Tanveer, Khan, & Shabbir, 2011). Within the organizational learning framework, Argote (2011) describes organizational learning as being conceived of having three sub-processes: creating, retaining, and transferring knowledge. These three sup-processes are defined as follows:

- Knowledge creation occurs when new knowledge is generated in organizations.
- Knowledge retention involves embedding knowledge in a repository so that it exhibits some persistence over time.
- Knowledge transfer is evident when experience acquired in one unit affects another. (Argote, McEvily, & Reagans, 2003, p. 572)

These sub-processes are discussed more thoroughly in the following pages and are used to frame the study.

Organizational learning occurs as organizations acquire experience (Argote, 2011). Experience grows within the organization as the organization performs its desired tasks (Argote, 2013). When organizations learn from experience, then "new knowledge is created by the organization" (Argote, 2011, p. 440). When experience is converted into knowledge, then changes may occur that affect the organization's

context and future (Argote & Miron-Spektor, 2011). Knowledge is defined as the outcome of learning and can manifest itself in both cognition and behavior (Argote, 2011, 2013). Knowledge can be both declarative knowledge, or facts, and procedural knowledge, or skills and routines (Argote, 2013). Argote and Miron-Spektor (2011) emphasize that routines can be explicit such as the standard operating procedures of an organization.

What an organization learns will depend heavily on its environment, which goes back to the cause-effect relationships (Cangelosi & Deal, 1965). According to Argote (2013), "the most effective timing of experience depends on the extent to which cause-effect relationships are understood and the knowledge base in an area is developed" (p. 38). When there is an understanding of the link between cause and effect, then learning occurs more readily in organizations (Bolman & Deal, 2008). Organizational learning is not just a process of adapting to problematic environmental situations, but also a process of adapting to the needs, motives, and interests within the organization (Probst & Büchel, 1997). When looking at the financial situation and rising utility costs that public schools and superintendents are working to overcome, these two former ideas stress the need for public schools to become more energy conscious through organizational learning.

Organizational learning occurs in a context that includes both the organization itself, as well as the external environment in which the organization is embedded (Argote, 2013). According to Argote (2013):

> The environmental context includes elements outside the boundaries of the organization such as competitors, clients, educational establishments, and

> governments. The environment can vary along many dimensions, such as volatility, uncertainty, interconnectedness, and munificence. The environmental context affects the experience the organization acquires. (p. 33)

To problem solve internal and external disturbances, it may be important to define learning not just as an innovation, but also as an idea or behavior that is new to the organization (DellaNeve, 2007). If behavioral changes in individuals within the organization are the desired outcome, then according to Heimlich and Ardoin (2008), "teaching skills must involve interrupting one routine of behavior and replacing old skills that occur within that routine with new skills" (p. 225) and "those new skills must be embedded in either a modified or a new routine" (p. 225). For this to occur, organizations must employ strategies that will systematically integrate individual and collective learning into skills and knowledge that will bring about organizational change (Evans et al., 2012).

Fitzpatrick (2005) conducted a study on how organizations learn through participation in environmental assessments and what systems contributed to organizational learning. He focused on information distribution, information interpretation, and organizational memory. Information was distributed through a variety of means to the individuals within the organizations. Information dissemination emphasized included both verbal and written means. Fitzpatrick (2005) noted that the research participants did not identify a variety of ways information was interpreted. A majority of the interpretation occurred through discussions and participants were able to develop shared meanings. Fitzpatrick (2005) noted that organizational memory is critical to organizational learning, and identified several receptacles for organizational

memory, particularly human memory, records of assessment activities, organizational culture, standard procedures, manuals, and external individuals. Fitzpatrick (2005) noted that additional methods through which an organization can build learning into organizational memory include participating in conferences, peer reviewed journals, and operational manuals. Through the study, research participants identified certain activities that were most conducive to learning. Respondents noted activities that encouraged interaction among participants, such as written documentation and the continuous exchange of information. Fitzpatrick (2005) noted that participants "unanimously acknowledged that environmental assessments provide a vehicle for learning" (p. 182), and the results from both case studies showed that organizational learning took place through participation in environmental assessments. In a similar study on participation, Salaway (1987) stated that the value of organizational learning could positively impact the behavior of not only trained employees, but of others who have not been trained. These two studies demonstrate that what an organization learns may depend greatly on its employees and their actions.

The Fitzpatrick (2005) and Salaway (1987) studies show that an important component of organizational learning is the organization's members. Russ (2006) stated that organizational change is dependent upon the most basic yet essential component, which is people. Organizations will not automatically change; however, change will take place through implemented and sustained learning by individuals and the collective whole (Russ, 2006). For an organization to learn, individual learning is a prerequisite (Probst & Büchel, 1997). Argyris (1992) stated, "organizational learning is produced through the behavior of individuals acting as agents for the organization" (p.

149). An organization has not learned until the members make sense of the information, thereby gaining new knowledge (Dixon, 1994). According to Dixon (1994), an individual comes to knowledge through direct experience, verbal transmission of information, and the reorganizing of existing meaning into a new configuration.

Learning occurs through the individuals in the organization. However, for organizational learning to occur, Argote (2013) states:

> The individual would have to embed the knowledge in a repository such as a database, routine or transactive memory system. By embedding the knowledge in a supra-individual routine, the knowledge would persist even if the member who acquired the knowledge left the organization and other members could access the knowledge. (p. 20)

It is important to note that individual learning does not equate to organizational learning; but when what individuals learn is documented and followed, the organization has gained knowledge (Probst & Büchel, 1997). According to Probst & Büchel (1997), this knowledge then exists independently of the individual and the knowledge exists within the organization's context or culture.

An organization's context can be both active and latent. The active context is embedded in the members, tools, and tasks and their networks (Argote, 2013). The latent context can be described as the organization's culture (Argote & Miron-Spektor, 2011). It is important for the organization to ensure newly learned knowledge is in the organization's context. The organization must have in place structures to promote

organizational learning (Evans et al., 2012). If only one individual is applying learned knowledge, then organizational learning did not take place (Evans et al., 2012).

A context or culture where employees trust each other and have specific processes enables the organization to retain learned knowledge (Argote, 2013). According to Probst & Büchel (1997), "when information is stored in organizational 'knowledge systems', operational patterns are preserved" and "the behaviors and actions of individuals are transformed into lasting, replicable knowledge possessed by the organization" (p. 16). Dixon (1994) refers to these knowledge systems as "collective meaning structures" (p. 39). Organizational guidelines and practices are examples of what can be stored in an organization's knowledge system, collective meaning structures, or what Argote (2013) calls "retention facilities" or "repositories" (p. 79). According to Fitzpatrick (2005), without any structures or repositories established for organizational memory, "learning is a moot point" (p. 160).

Once organizational knowledge is established, it allows the organization the capacity to act competently (Pentland, 1992). By learning to act competently, the organization is able to learn by what can be called adaptive learning (Probst & Büchel, 1997) or single-loop learning (Argyris, 1992). Adaptive learning is "the process of adjusting effectively to given goals and norms by mastering the environment" (Probst & Büchel, 1997, p. 33). Single-loop learning occurs when learning identifies and corrects errors to get the action done within guiding parameters that do not challenge the validity of existing norms (Argyris, 1992; Choo, 2006). According to Jashapara (2003), it is simply "doing things better" (p. 44).

Learning in organizations may occur for various reasons or needs (Aslam et al., 2011; DellaNeve, 2007)). Most learning processes within an organization will occur due to unsolved problems that may be related to internal and external disturbances (Probst & Büchel, 1997). Aslam et al. (2011) cite three primary reasons learning in organizations may occur. The first occurs when there is a need for system change development when learning is necessary for the introduction of new organizational developments in behavioral change and action patterns, which will lead to greater productivity and competitiveness (Aslam et al., 2011). Bolman and Deal (2008) state that certain situations, particularly ones that require urgent action, encourage organizations to learn better and faster. The second occurs when there is a need for the organization to implement strategies, ethics, policies, rules, and regulations (Aslam et al., 2011). Organizations must use their own learning capacity to determine the specific processes it will need (Dixon, 1994). The third reason is for team building, such as when the organization wants its employees to function as a system that instills a collaborative working culture (Aslam et al., 2011).

Although organizations can gain new knowledge, they can also forget knowledge that they have learned (Argote & Miron-Spektor, 2011). Organizational forgetting can have a major impact on how an organization performs, and if an organization does forget, it will not be as productive (Argote, 2013). An organization that is better at retaining knowledge, according to Argote (2013), will typically have a faster productivity growth rate than one in which knowledge depreciates.

Organizations will vary to the extent that knowledge depreciates (Argote & Miron-Spektor, 2011). However, organizations can deploy strategies to minimize

forgetting (Argote, 2013). As mentioned earlier, one way for knowledge to be retained is for the organization to store knowledge in repositories. Such examples of a repository in the organization may be in its routines and standard operating procedures, rules, processes, structure, and in its culture and norms (Argote, 2013).

By becoming more sustainable through knowledge retention, public schools and organizations can maintain energy efficiency through employee behavior. This is important due to the fact that if forgetting occurs, then forecasts based on previous situations will be affected. Argote (2013) states, "the gap between an organization's actual performance and predicted productivity can cause major problems for the organization" (p. 79). If procedural knowledge of energy conservation behaviors depreciates within the organization, then it is more than likely that energy usage may increase, which will cost the district more money. When this becomes a common practice, this can be problematic for district budgeting, especially if the district is developing a budget based on previous years' savings from energy conservation.

As noted, knowledge depreciation is a major concern with organizations. Personnel turnover contributes to knowledge depreciation (Argote, 2013). With personnel retention functioning as a key factor in preventing knowledge depreciation, Krishna (2008) examined whether organizational learning can predict affective commitment of employees. Krishna centered his study on four organizational learning subsystems: environmental interface, action/reflection, memory and meaning, and dissemination and diffusion of information. Krishna's findings concluded that organizational learning was found to significantly predict affective commitment of

employees and that the four subsystem variables were found to be statistically significant in predicting affective commitment.

Several factors have been discussed that affect organizational learning. One such noted factor is improvements in the organization's routines (Argote, 2013). The knowledge learned by an organization should be retained in repositories at the organizational level so the organization can avoid repeating mistakes from the past or reinventing solutions already implemented (Argote, 2013). Also, research on organizational learning has identified cultural aspects that can facilitate learning (Bapuji & Crossan, 2004). These aspects are openness, transformational leadership, a participative decision-making culture, learning orientation, and positive supervisory behavior and organizational support (Bapuji & Crossan, 2004).

Organizational learning is central to the organization's success (Argote, 2011; Yukl, 2009). However, organizational learning may fail when weaknesses are involved in the core processes of discovery, diffusion, and application of new knowledge (Yukl, 2009). According to Argote (2013), learning in some organizations has resulted in remarkable growth in productivity, while other organizations show little or no learning. Organizational learning is an important basis of lasting performance and survival for organizations (Yukl, 2009).

The theory of organizational learning has evolved over the years through the assistance of many theorists (Evans et al., 2012), and what is known about learning organizations' characteristics and best practices has been generated by organizational learning research (Perkins et al., 2007). According to Argote (2013), researchers on organizational learning through a behavior approach are interested in finding out if a

change in behavior at the organizational level is a good indicator of organizational learning (p. 32). Bapuji and Crossan (2004) suggest that research should continue to investigate the impact of organizational learning beyond the organization's boundaries and mechanisms that facilitate organizational learning. According to Perkins et al. (2007), in order to achieve organizational learning, the learning must become embedded in the organizational members' minds and in the organization environment.

Organizational learning can persist over time or depreciate (Argote & Miron-Spektor, 2011), so it will be important for the organization to develop sustainability. Successful application of new knowledge, as described by Yukl (2009) occurs when it is institutionalized in a manner that will ensure it is retained by the organization as long as the knowledge is relevant. Salaway (1987) notes learning is very difficult and time consuming when it involves skills that require employees to make a personal change. Since energy efficiency behaviors will require employees to learn new procedural knowledge, organizations may need assistance.

To assist public schools in developing energy efficient behaviors and establishing routines, outside assistance is available. Argyris (1992) calls these outside consultants "strategy professionals" (p. 143). Not only do strategy professionals bring expertise, but also tactics to confront resistance. Argyris (1992) states strategy professionals assist an organization in formulation and implementation of the desired action. An energy consultant can assist public schools in low-cost to no-cost strategies that may change employee behavior and habits towards energy conservation and facility operations. By simply doing so, superintendents might be able to replace lost funding

resources through lowering their utility expenditures in order to maintain quality educational services during tough financial situations.

Superintendents will need to know if energy conservation programs are effective and meeting their intended outcome, especially if the programs are being utilized to lessen resource dependence. Schalock (2002) notes regardless of ideologies, there is a need for thoroughness in determining between actual success and failure in achieving the desired outcome. Schools cannot be judged by inputs alone, but on what they are able to achieve (Guthrie, 2009). The same should be said of the programs implemented within schools. The question is simple: are energy conservation programs instituted in public schools effective?

To explore this question, the researcher examined the beliefs and behaviors of Oklahoma public school employees whose districts utilized an energy conservation program. The energy program is used by organizations to assist in conserving utility costs and developing sustainability. Increasing organizational effectiveness is no longer simply a popular trend, but a necessity for organizations to survive and establish sustainability (Finlinson, 2005). Using organizational learning theory as the theoretical lens, the researcher conducted a descriptive research study in determining if the intended outcomes of Company A's transformational program brought about behavioral and belief changes in employees' energy conservation practices.

Methodological Assumptions

One methodological assumption for this study is that employees are not energy conscientious. This assumption was the sole reason for a change in behavior and belief toward energy conservation within the population of Company A's transformational

program. Another assumption is that Company A's program will be implemented with fidelity within all districts. The assumption is that each person selected to oversee the implementation of the transformation program has similar leadership characteristics and/or role within the district, as well as the same determination to see a program succeed. Another assumption associated with this study is that Company A's program will work in any school district. This study assessed a set population range of employees and schools and the findings may not be replicable in a similar district.

Also, assumptions may be associated with the instrument used by the researcher. First, respondents completing the survey had the understanding necessary to complete the survey and did so in a conscientious manner. Secondly, the instrument developed by the researcher is appropriate for measuring attitudes, beliefs, and behaviors of the respondents in regards to energy conservation and Company A. Thirdly, respondents on the self-reporting survey were honest with their responses and actually reported their genuine behaviors and beliefs.

Organization of the Study

This study was organized into five chapters. Chapter I introduces the study and provides information on the background of the study, statement of the problem, purpose of the study, research questions, significance of the study, limitations of the study, theoretical framework, and methodological assumptions.

Chapter II contains the conceptual framework and is broken down into three main sections. Section I contains the financial struggle of public schools in relation to state allocations and utility expenses. Section II contains the use of energy efficiencies

as a cost avoidance strategy. Section III focuses on Company A's transformational program aimed at creating energy conservation behaviors within public schools.

Chapter III consists of information relative to the descriptive research methodology utilized in this study. Chapter III contains the research questions and research hypotheses that guided this study. Also included in Chapter III is the population for this study, procedure for data collection, data analysis, and internal and external validity.

Chapter IV provides an analysis and interpretation of the survey data collected in this study. The analysis included the demographic data and evaluation of data requested for the survey. Additional comments made by respondents concerning the energy conservation are included in this chapter.

Chapter V presents the summary of the study, the findings of the study, and recommendations. The recommendations are developed and divided into two sections. These sections include recommendation for practice and recommendations for further studies.

Summary

Oklahoma public schools are inadequately funded and rely heavily on their superintendents for education and finance direction. During periods of financial hardship, their leadership may be needed more profoundly than ever before. Public schools spend a great deal on utility costs and may have the potential to conserve large amounts of energy. Utilizing an energy consultant or company can assist public schools in low-cost strategies that may be able to change employee behavior and habits that will

allow for superintendents to replace lost funding resources through offsetting their utility expenditures.

This chapter identified the problem and the purpose for the study. Seven research questions were also listed that guided the researcher during the study. Organizational learning theory was presented as the theoretical framework. The next chapter is the conceptual framework that informs the problem and the need for energy conservation programs aimed at changing employee behavior and beliefs.

CHAPTER 2

Conceptual Framework

Introduction

This chapter outlines a conceptual framework based on the literature that infers the need for public schools to consider becoming energy efficient through changing employee behavior. The author has divided the conceptual framework into three sections. These three sections were determined relevant in informing the problem and assisting the reader in a methodological flow. The three areas are: (1) the financial struggle of public schools in relation to state allocations and utility expenses, (2) energy conservation programs as a cost avoidance strategy, and (3) logic model of Company A's transformational process.

Section I of the conceptual framework is titled *The Financial Struggle of Public Schools in Relation to State Allocations and Utility Expenses*. This section is important in developing the need for public schools to be more energy efficient. The literature will stress that public schools continue to have unstable budgets, which vary due to state government allocations. Regardless of allocated budgets, superintendents will need to ensure an adequate amount of funding is set aside for utility expenses. The literature will also indicate that this expense will vary based on utility usage costs and weather.

Section II of the conceptual framework is titled *Energy Conservation Programs as a Cost Avoidance Strategy*. This section will be broken down into eight components. Part I will discuss cost containment strategies where the most common strategy was energy management. This is important for the reader to understand because the two studies both identified energy management as a strong cost containment strategy during

straining financial times. The issue is that energy management may not be considered until allocations are at stake. Part II will discuss how energy conservation can have a direct effect on public school budgets. This is important for the reader to understand because the substantial amount of funding that can be saved by organizations, if they are, to become more energy efficient. Part III, IV, V, VI, and VII will discuss how public schools can become more energy efficient through policy development, construction of new school facilities, retrofit existing schools with energy efficient technologies, implementing operating procedures, and changing employee behavior. The importance of each of these sections will detail that each can have an impact on a public school becoming more energy efficient, but a major component to not overlook is employee behavior. Part VIII will look at employee behavior and the impact of how employee behaviors can become sustainable over time.

Section III of the conceptual framework is titled *Logic Model of Company A's Transformational Program*. This section outlines the four major steps of Company A's program. The researcher believes it is important to discuss the logic model behind the program to allow the reader to gain a better understanding of Company A's program and how it is centered on changing employee behavior.

In Chapter I, the theoretical framework of organization learning was discussed and explained how organizations can learn new knowledge, especially procedural knowledge that is embedded in employee routines. The conceptual framework will discuss how energy conservation should be important within organizations and how the individuals within the organization are vital in energy conservation. The following pages contain the study's conceptual framework.

The Financial Struggle of Public Schools in Relation to State Allocations and Utility Expenses

Public schools in the United States of America are facing financial hardship (Abshier, 2010; Eger & Archer, 2012; Lav & McNichol, 2007; McNichol et al., 2011; Oliff et al., 2012). Between 2002 and 2004, 34 states reduced the amount of per-pupil aid to school districts, which resulted in higher fees for textbooks and fewer courses, shorter school days, personnel cuts, and reduced transportation (Lav & McNichol, 2007). For the 2012-2013 school year, 26 states reduced public school funding, and 35 states funded public schools below 2008 levels (Oliff et al., 2012). State and local governments have experienced severe declines in tax revenues since 2007 (Young & Fusarelli, 2011). Because of the decline in state revenues, funding for schools has fallen sharply (Oliff et al., 2012). Superintendents must decide whether to increase class sizes, reduce the numbers of certified and non-certified positions, determine the existence of educational programs, and whether other areas and needs can be maintained or cut due to their current budget situations (Abshier, 2010; Laine, 2010; Lav & McNichol, 2007).

Public educational budgets are based primarily on state allocated funds, and these funds fluctuate based on state revenues. Therefore, schools need to have in place policies and practices to assist in conserving their allocations. As state and national trends show, public school budgets rise and fall with government budgets, so it is imperative for district administrators to establish sustainability in their funding. Laine (2010) notes that "school budgets across the United States are incredibly tight, a situation that is exacerbated by the nation's current economic condition" (p. 1). During

times of financial hardship, school boards and district administrators will assess where monies can be conserved. The result could be in program or personnel cuts, transportation issues, athletics, and larger class-sizes, (Laine, 2010; New York State Association of School Business Officials (NYASBO), 2005).

Because educational budgets are based in part on state funding, then school administrators need to be prepared for financial losses in the upcoming fiscal years. Even if tax revenues are revised upward based upon estimates, state officials and the legislature will need to continue to evaluate how funds are spent and how to make operating budgets more efficient (McNutt, 2011). If schools are to maintain their current level of quality while facing a decline in funding, it will be imperative for administrators to develop ways to conserve revenue funds within general operating budgets. According to Maguad (2007), schools will need to seek out additional sources of funding or assess where planned expenditures can be reduced.

Regardless of operating budgets, public schools are under the scrutiny of rising utility costs. Natural gas and electric bills are increasing, which is a major public concern (Rynn, 2009; Scherbaum et al., 2008). Rynn (2009) notes this issue will make "life miserable for tens of millions of households in winters and summers" (p. 168). If prices are escalating, superintendents need to be conscientious of this trend. In a national survey, 61% of public school districts reported a shortfall in energy funding for the 2001 fiscal year (U.S. Department of Education, National Center for Education Statistics (USDENCES), 2003). Since 2002, the Energy Information Administration noted the average nominal cost of electricity is up more than 5% per year, and the average cost of natural gas has risen more than 10% a year for residential customers in

the United States, driving up the demand for programs that bring down energy costs (Fuller, Portis, & Kammen, 2009). According to the United States Department of Energy (2008), school energy expenditures rose on average 20% from 2000 and 2002; and the cost of natural gas prices alone increased 14% annually between 2003 and 2006. Since the 1990s, the United States has experienced periods of volatility in energy costs and public schools' budgets have been directly affected by increased energy costs (American Association of School Administrators (AASA), 2008; Institute for Sustainable Energy (ISE), 2006; USDENCES, 2003).

Many stakeholders overlook utility expenditures within the public schools. Reports by the USDOE (2008) and the USDENCES (2003) note that schools spend $8 billion a year on energy costs. As cited by Jacobs (2009), the USDOE reports that U.S. schools spend more money on energy than they do on computers and textbooks combined. In most U.S. school districts, the cost of energy consumption is second only to salaries (Schelly et al., 2011; USEPA, 2011). Clearly, energy costs are significant items in a school's operating budget; however, many administrators are unaware of their monthly utility expenditures and subsequent ways to conserve. Woodruff, Turner, Heffington, and Capehart (2012) report that previous research indicates there are benefits in saving energy. According to the USDOE (2008), "energy costs can be high, but they are an expense a school can actually control" (p.2). Because a substantial amount of a school's operating budget is earmarked towards utility costs, then administrators may need to make sure their schools are functioning in a conservative and efficient manner with regard to energy use. According to Finlinson (2005), rising

utility costs and unstable budgets justify a comprehensive organizational approach to pursuing opportunities to reduce utility expenditures.

Energy Conservation Programs as a Cost Avoidance Strategy

Because reduction in state funding continues to variably impact school districts, administrators need a better understanding of how energy conservation measures can be used to offset revenue shortfalls. Educational administrators must manage the external environments of their school in order to gain control over resources. By doing so, Hoy and Miskel (2008) state, public schools can avoid dependency and uncertainty.

District funding is dependent on several factors. One primary factor is the state allocation of tax monies (Guthrie & Reed, 1991). Guthrie and Reed (1991) state that state-level government is primarily responsible for financing public schools. According to Hoy and Miskel (2008), school finances illustrate a dependence concept. Public schools are dependent on state funding and regardless if state allocations of tax monies are increasing, staying consistent, or decreasing, districts must ensure that an appropriate level of funds will be set aside for utility costs. If this is the case, superintendents need to be aware if their districts are functioning in a conservative and efficient manner with regard to energy use. Randolph (2013) states, many organizations focus on becoming more energy efficient because it is essential to their budgets. If superintendents or organizational leaders are frustrated with what is happening financially, they may need to change activities or procedures (Pfeffer & Salancik, 2003). Cost containment strategies can allow for changes in how an organization operates.

Cost containment strategies. Two studies have been conducted with higher education institutions and the use of cost containment strategies to assist in maintaining tuition costs and an operating budget that is being affected by lower state allocations. In order to recapture some of the lost funding from the state, both studies assessed if the institutions were applying certain practices to compensate or control expenditures to make up for the lost resource. The American Association of State Colleges and Universities (AASCU) (2008) released a report titled, *Cost Containment: A Survey of Current Practices at America's State Colleges and Universities*. This publication reported the findings of 114 AASCU member institutions that responded during a research study utilizing a survey questionnaire on cost containment practices at public colleges and universities (AASCU, 2008). According to the study, there are several areas that an institution or organization can assess for cost containment efforts. The AASCU survey looked at eight different operation areas: Salaries, Benefits, Staffing Levels, Business Services/Processes, Academic Programming, Athletic and Extracurricular Programming, Student Services, and Facilities and Infrastructure. Within these eight areas, respondents were asked to indicate to what extent they have achieved cost savings. To assist the respondents, 31 specific components were included as sub-categories of the eight sources. These components, or areas of cost containment practices were:

1. Administration Staffing Levels
2. Athletic Programs
3. Bookstore Operations
4. Cashiering and Financial Services
5. Class Size
6. Compensation - Administration
7. Compensation - Faculty
8. Compensation - Staff

9. Consortium Purchasing
10. Course Offerings
11. Course loads
12. Departmental Mergers
13. Dining/Food Services/Residence Hall Operations
14. Distance/Online Learning
15. Energy Management
16. Extracurricular Programs (Non-Athletic)
17. Facilities and Infrastructure
18. Faculty Staffing Levels
19. General Staffing Levels
20. Grounds Keeping
21. Health Insurance Benefits
22. IT/Computing
23. Joint Degree Offerings with Other Institutions
24. Other Fringe Benefits
25. Overtime Pay
26. Program Discontinuation/Consolidation
27. Retirement Benefits
28. Student Services, Academic
29. Student Services, Non-Academic
30. Utilization of Contingent Faculty
31. Vending Services (AASCU, 2008)

This study was sent to nationwide public four-year universities and colleges. The respondents were presidents, chancellors, or individuals familiar with cost containment practices at the institution. Several of the studies findings are listed below:

- 82% of respondents rate cost containment as very or extremely important to their organization.
- 77% of respondents were adequately or very satisfied with their organizations ability to identify, assess and implement highly effective cost containment strategies.
- Each of the 31 components was relied upon as an area of cost containment efforts.
- Respondents indicated they most often look at Facilities and Infrastructure, Business Services/Processes, and Academic Programming to contain costs.
- Over 80% of survey participants utilize at least one component in Facilities and Infrastructure (87%), Business Services/Processes (83%), and Academic Programming (82%)
- The top five components that respondents relied on mainly for cost containment are energy management, consortium practicing, facilities

and infrastructure, utilization of contingent faculty, and dining/food services/residence hall operations.

- 83% relied on energy management for cost containment (AASCU, 2008).

This study concludes that the findings were primarily positive in regards to cost containment efforts, but the researchers note that their findings also reveal that cost containment practices remains somewhat of a budgetary afterthought (AASCU, 2008). They note that institutions remain "largely focused on business operations; have yet to engage the full range of academic and administrative leadership within the institutions; tend to be ad hoc rather than strategic; and for the most part are not well documented or publicly communicated" (p. 5). Even though respondents noted using cost containment strategies, due to the institutions' lack of documentation and accountability of actual cost containment savings, the researchers conclude that cost management has yet to be "systematically engaged at a leadership and policy level within these institutions" (p. 5). Two important aspects of this study are the high percent of colleges that relied on energy management as a cost containment practice and that cost containment practices are considered during financial hardships. The significant question is: if energy management is strongly relied upon during financial hardship as an effective way to recover lost revenue, then should not energy management practices also be ongoing and a sustainable practice within institutions?

Following the works of the AASCU study on four-year public colleges and universities, Bauerschmidt (2011) surveyed the extent public community colleges were applying cost containment initiatives to assist with the loss of allocations and rising tuition costs. This study looked at six main categories, which were similar to the eight

categories in the AASCU (2008) study and also included 31 detailed areas of cost containment.

Bauerschmidt's (2011) and the AASCU (2008) study were similar in methodology and findings. Bauerschmidt and AASCU were able to conclude that the institutions studied were utilizing cost containment strategies to supplement lost state allocations and reduce tuition costs. Bauerschmidt (2011) noted that the most relied upon cost containment strategy was energy management, which is consistent with the AASCU (2008) findings. Respondents in the Bauerschmidt (2011) study reported, "they relied upon cost containment practices in the area of energy management more than any other areas within all six categories" (p. 83). In tabulations of responses, Bauerschmidt (2011) cited energy management as the most frequently indicated cost containment practice and that this practice saved public community colleges more than $10 million in the fiscal year 2008-2009. With energy management and conservation producing significant savings to allotted funds, then the practices should be ongoing and not only implemented when budgets are in jeopardy.

Impact of energy conservation programs on public school budgets. It is evident from the higher education studies that state universities and colleges relied heavily on energy conservation as a cost containment strategy. Energy conservation policies can be implemented in ways that allow for some form of sustainability. If such policies and practices are utilized at higher education institutions, public schools may need to be assessed to see if cost containment strategies, such as energy conservation programming are being used. Skoric (2000) and Schelly et al. (2011) suggest that energy conservation programs cannot only improve a school's financial performance,

but over time aid in developing sustainability policies. However, the one disadvantage is that not all public school districts are concerned with energy conservation as a way to assist in cost containment strategies. Ninety-nine percent of superintendents on a national survey addressing rising energy costs reported that rising utility costs will be detrimental to their school system, but only 59% were implementing some form of an energy conservation program (AASA, 2008). In a similar 2005 survey of New York superintendents, the New York State Association of School Business Officials and the New York State Association for Superintendents of School Buildings and Grounds found 82% of school districts expected an operational budget shortfall (NYASBO, 2005). To prepare for the shortfall, 93% of the administrators surveyed stated they would either implement new conservation efforts or adhere strictly to a conservation plan previously implemented. In a similar study, Abshier, Harris, and Hopson (2011) found superintendents were utilizing energy conservation as a way to maintain their district's financial stability during financial difficulties. Again, it appears schools are only addressing the issue of energy conservation during straining financial times or rising utility costs. If budgets are being cut and utility prices are escalating upwards, then schools need to be very conscientious of this trend.

Cook and Hall (2011) note due to the recent economic downturn, companies are carefully evaluating the costs and benefits of such energy initiatives. Along this same line, Granade et al. (2009) state "increasing awareness of energy use and knowledge about specific energy-savings opportunities will enable end-users to act more swiftly in their own financial interest" (p. 26). They suggest options as providing more information on utility bills, implementing voluntary standards, additional device- and

building-labeling schemes, audits and assessments, and awareness campaigns (Granade, et al., 2009). Implementing policies as simple as labeling light switches have been able to afford substantial savings. According to Lovins and Lovins (1997), one plant was able to save $30,000 in the first year by labeling the light-switches so factory workers could identify which switches controlled which lights.

As one can see, conserving energy can lead to financial savings, and this can be applied to public school facilities. While schools cannot operate without lights, heating and cooling, they can reduce their energy bills to increase the amount of funds available for instruction (Combs, 2001,). According to Crum (2010), "buildings use about 76% of electricity produced in the United States…and if all schools were built sustainably today, the energy savings would be $20 billion in 10 years" (p. 10). The USEPA (2008) note that public schools can reduce their energy use by 20-30% with a variety of behavioral and operational strategies. This is consistent with findings from the USDOE, and according to Energy Star® data, potential savings could be greater than 30% (ISE, 2006).

Schools are known for vast amounts of energy consumption due to the fact that they are in operation from morning to night, a hub for community activities, and heating and air conditioning units may run continually (Laine, 2010). The typical U.S. school district spends $400,000 each year on utility bills, while those in huge metropolitan areas may spend $20 million or more (USDOE, 2002). The USDOE (2002) note most districts could save 25% of these high costs by being smart about how energy is being used within their facilities and in a typical district, that equals $100,000 in savings each year, and a nationwide savings potential of $1.5 billion. The USDOE (2002) advises

energy conservation in operations and maintenance improvements, building renovations or retrofits, and simply behavioral changes. Granade et al. (2009) state that:

> Increased education and awareness is widely viewed as a necessary-but-not-sufficient component of a holistic approach, because it relies on end-user activity and provides savings of unclear durability. However, it can be highly cost effective, even at low capture ratios, if well designed. (p. 96)

It is evident from the literature that organizations and public schools have the potential to conserve funds through energy conservation. Public schools can accomplish this through several methods (USDOE, 2002). Superintendents and school boards can develop energy conservation policies, design new buildings to be green and meet the Leadership in Energy and Environmental Design (LEED) rating, explore the possibility of retrofitting existing schools with more energy-efficient technologies, change facility operating procedures, and/or develop an energy management program focused on changing employee behavior.

Energy conservation through policy development. One way for public schools to become energy efficient and focus on energy conservation is to develop policies and procedures (USEPA, 2011). Implementing policies and procedures that focus on building and mechanical changes, as well as behavioral change, may lead to substantial savings (Ehrhardt-Martinez et al., 2009). The least energy efficient schools are using three times more energy than the best energy performers, and higher performing Energy Star labeled schools cost 40 cents per square foot less to operate than the average performers (ISE, 2006). For schools or organizations to be successful in their implementation of certain policies or practices, they must continuously monitor

and provide feedback (Fowler, 2004). At times, direct mandates will need to be a viable policy tool to induce the adoption of energy conservation (Shama, 1983). Eggink (2007) does warn organizations against simply requiring mandates but encourages the educational process of employees to coincide with policy.

The National School Board Association endorses the efforts of the USDOE on the development of policies that focus on energy management guidelines. If local school boards recognize the lasting benefits of energy efficient operations, then they will be able to develop plans and/or policies that may lead to sustainability. Regardless of whether school boards oversee new construction, retrofitting existing buildings, or adopting energy management practices, they serve a vital purpose within their community, not only from an education standpoint, but because they are in a position to serve as models of energy efficiency (USDOE, 2008).

Regarding the development of policies that outline energy guidelines, Skoric (2000) and Taylor (2009) suggest that organizations develop specific policies on electrical use. Taylor (2009) discusses the need for commercial and industrial facilities to turn off all lights at night, except those needed for security reasons. Taylor (2009) suggests requiring the use of energy-saving thermostats to be used in residential and commercial buildings. In order to help in energy conservation, Taylor (2009) says, "do the simple stuff and do it now" (p.160).

Even if such options are in place, without policy, monitoring, and evaluation, such solutions will likely prove insufficient to drive broad adoption (Granade, et al., 2009, p. 26). As noted by Fowler (2004), "merely having sound policies on the books is never enough; steps must also be taken to increase the likelihood that they will be

followed" (p. 134). Having policies in place will not create sustainability unless the policies are monitored for compliance (Fowler, 2004). An example of this can be noted in the Canaan, Lesan, Nowlin, and Smith (2010) study of the *Missouri Green Cleaning Guidelines and Specifications for Schools* document. The Missouri Department of Elementary and Secondary Education (MDESE) released this document to Missouri public schools with the assumption that public schools would use these guidelines to promote environmental stewardship and practices to improve the environment of educational facilities. These guidelines were strongly recommended, but not legally required by law. Canaan et al. (2010) found MDESE provided no guidance or incentives for school district compliance, and few school districts actually applied the *Missouri Green Cleaning Guidelines and Specifications for Schools*. Canaan et al. (2010) made several recommendations for the MDESE to consider, and one recommendation was to develop a standardized policy for districts to adopt.

Once policy and procedures are developed, superintendents and school boards can develop public schools that are designed for energy efficiency. This can be accomplished in several ways. First, new buildings can be built and designed according to Leadership in Energy and Environmental Design (LEED) ratings. Second, existing school buildings can be retrofitted with energy-efficient technologies. Both of these require substantial cost factors that will need to be weighed. Two other options for public school administrators are altering operations and management procedures regarding how schools utilize energy, and lastly, employee behavioral changes focusing on energy conservation.

Energy conservation through new school construction. One way for public schools to become more energy efficient is by building new green schools that meet the LEED rating. The move toward greener organizations has been making its way across the nation over the last two decades (Finlinson, 2005). Kats (2006) published a major report on green schools. His report was intended to document the financial costs and benefits of green schools compared to conventional schools. His review of 30 green schools nationwide concluded that initial construction costs of green schools are less than 2% more than conventional schools but will provide financial benefits that are 20 times as large. According to Kats (2006), conventional schools usually have lower design and construction costs but higher operational costs.

Green schools use 33% less energy and 32% less water than conventionally constructed schools, significantly reducing utility costs over the average 42-year lifecycle of a school (U.S. Green Building Council (USGBC), 2010, p. 6). Green school enhancements typically include more efficient lighting and more efficient heating and cooling systems, as well as a more protected school envelope due to better insulated walls and roofs (Kats, 2006). The construction of green schools can be an important long-term strategy for reducing energy consumption (Schelly et al., 2011). Existing schools can also become green schools by becoming more energy efficient and applying for the LEED rating.

Research comparing energy consumption in green buildings and conventional buildings has been conducted in recent years (Issa, Attalla, Rankin, & Christian, 2011). One of the largest studies conducted on LEED buildings was by Turner and Frankel (as cited by Issa et al., 2011). This study determined that 100 of the 121 LEED buildings

analyzed were 32% lower in energy use than the commercial buildings surveyed. The issue with the study is Turner and Frankel did not have any meaningful statistical analysis, excluded such variables as age and size of the buildings, and excluded the 21 LEED buildings with the highest energy use from the analysis (Issa et al., 2011). The results of the Turner and Frankel study prompted Newsham, Mancini, and Birt (2009) to reanalyze the 121 LEED buildings. Their study reported on all 121 LEED buildings. Newsham et al. (2009) concluded that LEED buildings consumed on average 18-39% less energy than conventional buildings. However, an important finding was 28-35% of the LEED buildings consumed more energy than conventional buildings.

Issa et al. (2011) conducted a study of Toronto public schools. Their goal was to compare energy consumption in conventional, energy retrofitted, and green LEED Toronto schools. In the schools studied, green schools consumed and spent 37% more on electricity than conventional schools. However, green schools consumed and spent 56% and 41% less on gas when compared to conventional and energy-retrofitted schools.

One reason for the increase in electrical use could be increased energy efficiency may encourage occupants to use technologies, products, and services they would not have used otherwise (Issa et al., 2011). Issa et al. (2011) state this closely relates to the Khazzoom-Brookes postulate. Khazzoom (1980) argues that increased energy efficiencies may lead to users actually using more products than normal due to the products being energy efficient. Khazzoom uses two examples to state his case. He states if a freezer becomes more efficient, a user may buy one, or add an additional one, or replace the existing one with a larger one. He also states, “improved space heating

efficiency is likely to make a person more liberal in demanding other end-uses, and could easily prompt additionally the expansion to new uses that the household did not enjoy before" (p. 35).

The Issa et al. (2011) study is similar to a study of a LEED school in Fort Collins, Colorado. Fossil Ridge High School was built in 2005 and is a LEED certified school. Fossil Ridge High School was found to be more energy efficient when electricity and natural gas was combined compared to another school (Schelly et al., 2011). However, Fossil Ridge High School consumed electricity at a higher rate than the comparative school (Schelly et al., 2011). The findings of Issa et al. (2011), Newsham et al. (2009), and Schelly et al. (2011) prompts the notion that beyond design, superintendents may need to also consider employee behavior toward energy conservation. Because overall consumption may be reduced in certain LEED schools, Schelly et al. (2011) states, "building new schools to the LEED standards might be one important way to reduce energy consumption, it is not the only way" (p. 337).

Energy conservation through energy-efficient technologies in existing facilities. Building new schools will be difficult for several superintendents because of their dependence on limited budgets and bond issues. Maiden and Sterns (2007) note, "school districts across the U.S. are faced with the need to finance construction, renovations, or repair of public school facilities" (p. 147). For example, Oklahoma schools rely on bond issues to raise capital funds and these bond issues must pass with a 60% approval (Maiden & Sterns, 2007). In the U.S., there are about 13,600 public school districts, which make up approximately 98,800 public schools (NCES, n.d.).

With so many preexisting schools, it is imperative for superintendents to work within their existing buildings to improve energy efficiencies.

Traditionally, the most common and relied upon approach to energy conservation in organizations is through technological or operational modifications (Carrico & Riemer, 2011). USDENCES (2003) noted that 47% of public school districts renovated or retrofitted their facilities to be more energy efficient. Although the USDOE (2008) acknowledges building renovations and retrofits can prove effective, they will require an upfront cost. According to the USDOE (2008), the average age of American schools is over 42 years. Peterson (2004) states the average age of school facilities is over 40 years and many buildings are "difficult to retrofit and adapt to the needs of today's educational program and services" (p. 1). Inequality in capital outlay funding also makes it difficult for school districts to upgrade aging facilities (Maiden & Sterns, 2007). However, if schools can be retrofitted to make them more energy efficient and/or decrease the heating and cooling needs of a building with guidelines, then they would see significant energy savings (Rynn, 2009).

Because retrofitting will require additional costs, the USEPA (2011) recommends using a five-stage approach to upgrading facilities. This approach includes the following stages:

1. Conduct retro commissioning
2. Install energy-efficient lighting
3. Reduce supplemental loads (e.g., by purchasing Energy Star labeled equipment)
4. Install fan system upgrades
5. Install heating and cooling system upgrades. (USEPA, 2011)

As noted in a study of the Poudre School District in Colorado, substantial savings were achieved in the first year of retrofitting three older high schools with heating and system upgrades that included automated systems (Schelly et al., 2011).

It is important to note the Issa et al. (2011) study of Toronto public schools who caution school administrators in energy-retrofitting older school buildings. In the schools studied, energy-retrofitted schools spent 37% more on electricity than conventional schools and the same as green schools. However, energy-retrofitted schools consumed and spent 25% less on gas than conventional schools. Issa et al. (2011) state that the findings showed "no statistically significant difference in total energy costs between conventional and energy-retrofitted schools" and "this finding reinforces once again the need to question the cost effectiveness of retrofitting older buildings" (p. 390). According to a statement from Mark Frankel with NBI, it is important to remember that mechanical systems can have problems and not operate as they were intended, which can lead to an increase in energy use (Navarro, 2009).

If schools do decide to address energy efficiency by retrofitting preexisting school buildings, an affordable option is performance-based contracting. Performance-based contracting allows school districts to upgrade facilities with mechanical-system upgrades, building automation, and lighting retrofits (Abshier, 2010; Bennet, 2009). This process eliminates the need for major upfront funding because the improvements are financed through energy and operating cost savings.

Energy conservation through operational procedures. Unfortunately, the majority of districts are not in a position to purchase new equipment and complete major system replacement due to current finances (Peterson, 2004). This implies that

schools will need to look at no cost to low-cost procedures, therefore, allowing for a greater return on investment. Peterson (2004) also states some proven low-cost energy conservation methods have been developed, as well as no-cost practices that have greatly reduced utility bills. Woodroof (2011) states each year thousands of energy management programs are developed that yield substantial savings and return on investments. The USDOE (2008) acknowledges that improving a school's energy efficiency does not have to cost millions. In fact, schools can cut their energy expenses by 5 to 20% simply by efficiently managing and operating physical plants. This holds true regardless of the age of a school building (USDOE, 2008).

If the potential for energy and financial savings as projected by USDOE (2008) exists then schools should develop policies and practices that focus on facility operations. Again, the key according to Judy Marks, director of National Clearinghouse of Educational Facilities, is that "districts have recognized that one way to cut costs is to make changes in the way facilities operate" (Pascopella, 2010, p. 34). Districts that are successful in keeping their energy costs down typically have implemented a district-wide energy management program (Combs, 2001). Lowering a school's energy costs does not require sacrificing educational resources. More efficient energy operations allow a school to cut costs and the resulting savings can be put toward hiring another teacher or upgrading the computer lab (USDOE, 2008, p 2.).

An applicable example of operational procedures can be seen in the Idaho Falls School District (IFSD). By turning down thermostats over winter holiday breaks, IFSD has been able to save annually $20,000.00 (USDOE, 2001). Rynn (2009) notes that a focus should be on conserving as much as possible during unoccupied times. For public

schools, this may be during extended holiday breaks and weekends. By applying operational procedures, a district can take advantage of extended shutdown times.

Energy conservation through employee behavior. Even if buildings are designed to be green or energy-retrofitted with new technology, people occupy them. Even if operations of a facility or school are modified, people are still part of the process. Eggink (2007) states, "people control thermostats, light switches, computers, process machinery, and a host of sophisticated devices" (p. 19). In a New York Times article, Mark Frankel, technical director for the NBI, stated, "if the occupants don't turn off the lights, the building doesn't do as well as expected" (Navarro, 2009, p. A8). From Fankel's quote, one can see that regardless of energy efficiencies, employee behavior must be considered. According to Eggink (2007), individual behaviors profoundly affect the amount of energy consumed.

Despite the necessity for public schools to be more energy efficient, few school districts have successfully incorporated energy conservation practices into their organizational culture (Schelly et al., 2011). According to Ehrhardt-Martinez et al. (2009), energy professionals are increasingly interested in applying behavioral change strategies to help in energy conservation. Recent research suggests that 25% energy savings can come from behavior-based approaches (Woodroof, 2011). An example of the need for a behavior-based approach can be seen in Pegg, Cripps, and Kolokotroni's (2007) study of post-occupancy buildings. They noted that certain schools that controlled light switches manually, lights were left on in main corridors and classrooms. They also found that schools that utilize mechanical ventilation were being ventilated for significant durations beyond normal school hours.

According to an Oregon Department of Energy (2004) report, a small district with a student population of 3,100 saved 15% of their utility costs and did not spend any extra money to implement the savings. The key to their success lay in recognizing that behavioral changes are necessary for energy programs to succeed. One way to promote behavioral change is through monitoring energy practices by means of conducting energy audits. Rynn (2009) suggests energy audits are a viable part of the process, but public schools usually lack energy audit expertise (Fonseca, Bisen, Midkiff, & Moynihan, 2006). Rynn (2009) encourages organizations to hire energy auditors to monitor the facilities and maximize the energy conservation potential.

To support this behavioral approach to energy conservation, the USDOE (2002) notes that behavioral changes alone can greatly affect energy consumption. They state that turning off one typical computer at night and on weekends can save more than $30 annually. If a district with 100 computers were to apply this principle, the district could save upwards of $3,000 each year.

The Council Rock School District in Pennsylvania, through a comprehensive energy policy, cut energy usage by 50% and achieved more than $9 million in total savings (Patt, 2010). According to Tom Schneider, Director of Facilities for Council Rock, "energy management doesn't have to cost anything. You just have to get staff and students enthused about shutting off lights, keeping doors shut during air-conditioning times, and doing the simple things" (Patt, 2010, p. 24). This district's success was possible because all stakeholders embraced the policy and procedures and understands that behavioral changes can create huge savings (Patt, 2010).

Marietta City Schools in Georgia were able to save on average 12% of their energy use, with several schools at or above 20% (The Journal, 2010). All 12 schools in the district monitored their energy expenditures and found ways to save. Emily Lembeck, Marietta City Schools Superintendent, commented that "in just four months, our schools reduced energy use by double digits and this initiative has provided our students an opportunity to learn about energy conservation in a real-world setting" (The Journal, 2010, p. 10).

In a study of the Poudre School District, an older high school was able to achieve greater electrical savings than a LEED certified school (Schelly et al., 2011). Rocky Mountain High School, built in 1973, has been able to reduce its electrical consumption by 50%. This case study demonstrates that older school buildings can reduce energy consumption through a comprehensive effort, and the savings at Rocky Mountain High School is a direct result of behavioral modifications of staff and students. This was done through leadership, communication, developing a sense of efficacy, energy audits, and comparative feedback (Schelly et al., 2011).

As Finlinson (2005) noted, some research examines behavior occurring in a residential context, but little attention has been given to employee behaviors consuming energy in an organizational context. Siero et al. (1996) conducted a study on changing organizational energy consumption behavior through comparative feedback. Significantly, not only did energy savings occur by changing employee behavior, but also their results clearly showed that employees who received comparative feedback saved more energy than employees who only received information about their own performance. This is similar to Chen et al.'s (2012) study that also found the

importance of feedback in changing employee behavior towards energy consumption. Their study assessed the extent to which persuasive feedback could change energy consumption behavior. Although the results varied towards the end of the study due to user fatigue, feedback clearly led to an initial decline in energy consumption. From this study, it is clear that in order to change energy consumption behavior, multiple factors must be implemented.

One such study assessing multiple factors is Carrico and Riemer (2011). Carrico and Riemer (2011) evaluated the effectiveness of feedback and peer education in a higher learning institution on behavioral changes in implementing energy conservation strategies. Carrico and Riemer (2011) addressed the growing issue of organizations utilizing cost-effective energy conservation methods in order to assist in reducing greenhouse gas emissions and energy consumption. They concluded that consistent feedback and the combination of feedback and peer education were able to reduce electricity consumption. The control group showed a significant increase in energy consumption when compared to the baseline data. Significant decreases were found within the feedback group as well as the group that received both interventions.

Schelly et al.'s (2011) study, as stated earlier, focused on three high schools. Of those three high schools, one of the older schools was outperforming the others, which led to a more intensive assessment of the school. Schelly, Cross, Franzen, Hall, and Reeve (2012) led a qualitative study which identified the contributing factors of how one high school was able to surpass the other two through employee behavior. In their opinion, the success of this high school was due to the behavioral changes that produced a culture that embraced energy conservation. The results of the case study revealed that

energy conservation efforts complement environmental education, such that both can be an integral part of sustainability education (Schelly et al., 2012). The four categories of modeling (individual role models, school facilities and operations, school governance, and school culture) from Higgs and McMillain (2006) were apparent, in addition to consistent communication, which focused on behavioral expectations, knowledge, energy and resource use data, and conservation accomplishments (Schelly et al., (2012).

Changing employee behavior and practices to promote sustainability. It is important for organizations to understand and identify employee motivational factors for consuming energy if an organization wants to conserve energy (Finlinson, 2005). Programs focusing on changing employee behavior can assist in this endeavor and are vital to the addition of technologies that address energy efficiency (Ehrhardt-Martinez et al., 2009). Scherbaum et al. (2008) state that the most common strategy used by organizations is to decrease energy use through structural and operational changes to work processes and workplace, and clearly this approach can be effective. However, if organizations are looking for a long-term impact, then they should also consider, changing employee energy-use behavior (Scherbaum et al., 2008). Scherbaum et al. (2008) note that changing employee behavior can be productive, it is more difficult to implement. To address changing employee energy-use behavior, schools may need assistance in developing an energy management program. An energy management program does not just happen in public schools, it may need a guiding force to get the process started (Fonseca et al., 2006). Randolph (2013) notes that facility managers may lack the time and skills needed to turn energy-saving opportunities into actual practice.

Energy professionals indicated that behavior change strategies are highly effective, and their effectiveness is largely a function of the quality of the program's design and implementation (Ehrhardt-Martinez et al., 2009). It will be imperative for public schools to address credibility when implementing a behavioral program. Plympton (2011) noted in situations where there are one or a few members of the organization who lack credibility and are seen leading the change initiative will significantly increase the resistance to change. Energy consultants may be able to assist public school personnel in establishing credibility in leading an energy management program that will procure employee support.

Because resistance to change can lead to diminished or non-productive savings, it will be important for schools to address certain problems. Shama (1983) states:

> An important consideration in assuring smooth and speedy adoption is identifying and solving problems, which may otherwise result in rejecting the innovation. Factors which may contribute to the rejection of energy conservation at any stage of the adoption process may relate to one or more attributes of the innovation, e.g. lack of proper understanding of the innovation, and personality characteristics of potential adopters, e.g. dislike of change. (p. 160)

Shama's statement is important for schools to consider if they want to fully implement a successful behavioral program focused on energy conservation.

Outside assistance may be needed and a viable company may need to be assessed as to their qualifications to lead such a change initiative. Woodroof's (2011) study of school districts that have implemented an energy saving program for more than

two years identified key success factors when selecting an energy savings program that focuses on saving schools money without the investment in new equipment. Regardless of school size, school districts are choosing energy management companies based on capabilities and track records of success, followed by the ability of the company to provide support, training, and benchmarking capability (Woodroof, 2011). Each of these will be vital for schools if they are to conserve energy through a behavioral based program.

In a study on the overall effects of energy management programs, Arnold (2010) and Skoric (2000) found the benefits of implementing an energy management program outweigh the cost factor. Skoric (2000) suggests that schools develop energy policies, educate stakeholders on these policies, use energy managers to audit for compliance, and during the startup years, primarily concentrate on low-cost to medium-cost investments that will have a greater impact on investment return. Arnold (2010) also asserts that energy management standards should be in place and focused on human behavior. By doing so, organizations can implement low-cost/no-cost energy practices. Both studies note that when organizations implemented an energy management policy and applied simple low-cost/no-cost activities, their efforts resulted in savings and conservation (Arnold, 2010; Skoric, 2000). According to Arnold (2010), the results show "how vision, focus and team dedication can lead to measurable results on sustainability initiatives" (p. 68).

Even if schools are retrofitted for energy efficiency, or new buildings are being built as green schools, energy management policies and practices will need to be in place to maximize energy efficiency. Oetinger (2010) determined that sustainability

measures on new buildings regarding energy efficiency show an excess of 19% in energy savings in the first year of operations. Even if new construction is required, the incorporation of energy efficient strategies provides for energy savings, and although new construction for green schools may cost more initially, the benefits upon completion will aid in return on investment.

According to Peterson (2004), "saving energy and becoming energy efficient may significantly impact a school district's bottom line" (p. 4). He notes there are many opportunities school districts can apply to their conservation needs, which can be fully implemented at little or no cost. He notes for a district to be successful it must allow employees to create a baseline and gather instrumental data, analyze the baseline and data in order to make appropriate decisions, and then implement the guidelines (Peterson, 2004). If a school district can develop appropriate energy policies with direct guidelines and procedures, then according to Peterson (2004), "the savings can be tremendous if the district is serious about developing and supporting an energy conservation and reduction plan" (p. 4). However, for energy efficient behaviors to be truly successful and reflect second-order change, the organization will need to transform and embed the routines within the system itself (Perkins et al., 2007).

Thousands of existing schools have the potential to become energy efficient through energy conservation, but this will require behavioral change, not just physical improvements to buildings (Finlinson, 2005; Schelly et al., 2011). Ehrhardt-Martinez et al. (2009) note:

> This predisposition toward technology as the preferred means of achieving energy savings has become institutionalized via evaluation criteria that attribute

> energy savings to the installation of new equipment without giving adequate recognition to the ways in which behavior enhances, undermines, or maximizes those same savings. (p. 12)

Multiple school districts have been able to produce substantial savings through energy conservation by designing green schools and/or achieving LEED or Energy Star® certification, by retrofitting older existing school buildings, changing operations and management, and in addressing behavioral changes (ISE, 2006; Schelly et al., 2011; USEPA, 2011). In addressing behavioral changes, school districts will need to continue to focus on employee behavior because a primary criterion for effective change is behavior (Argyris, 1992).

Clearly, energy efficiency and energy conservation practices are avenues districts may pursue to offset their financial losses from state allocations and bring about organizational change. One of the keys will be in the development of energy policies that contain guidelines and procedures that can produce learned knowledge, or what Argote (2013) describes as procedural knowledge. These policies will need to incorporate operations and management, as well as addressing behavioral changes and monitoring of compliance. Pfeffer and Salancik (2003) state that within organizations, people are involved in a variety of activities that are important to the performance of the organization. If schools are to reduce dependency on outside funding, then superintendents, as Pfeffer and Salancik stated, need to be concerned with the employees and their activities within the school system. By focusing on changing employee behavior, energy efficient behaviors can be learned and become sustainable within organizations.

To assist in understanding how an organization can learn new knowledge as a function of experience, organizational learning theory was introduced in Chapter I. This current chapter outlined the conceptual framework and the need for energy efficient behaviors within public schools. To assist public schools in implementing programs focused on changing employee behavior, an energy management company may be needed. This study assessed the effectiveness of such a company.

Company A prides itself on being a people-based energy management program. Company A creates and assists with the implementation of a customized and comprehensive energy plan for K-12 school districts, higher education institutions, large churches and organizations. Company A has a client base of over 1,200 and works with clients in 48 states. Company A's program focuses exclusively on organizational and behavioral change. In Oklahoma, several public schools have or are in the process of using Company A. This study looked at schools that have utilized Company A between four years and six years to determine if their transformational program has been successful in changing employee behavior, and contributing to energy conservation.

Logic Model of Company A's Transformational Program

The logic model for Company A's transformational program is a four-step process. Realizing that there are several important factors in an educational setting that affects results, this program focuses primarily on personnel and leadership. Company A's transformational program is based on changing personnel behavior to create a people-based energy saving program. The conceptual framework for Company A's program is as follows:

Step 1 involves assessment and planning. Prior to any implementation of the transformational program, Company A's trained personnel do a thorough onsite analysis of the district's facilities. This includes examining every facility and area of the school system. They also analyze energy consumption using each facility's utility bills. Based on the data collected, Company A's trained personnel will develop a strategic energy action plan for the district.

Step 2 involves coordinating all personnel efforts and communicating the program. In an educational setting with various levels of personnel with diverse backgrounds, the program actively engages all personnel by encouraging complete involvement in the program. To produce maximum savings, it is imperative that everyone who consumes energy also understands how to save energy. Communication is vital in promoting the energy conservation program and district guidelines. Several mediums, such as emails, posters, and presentations, can be used to communicate the program.

Step 3 involves leadership and focus. Executing a district-wide energy savings program will require constant focus on the energy program. Company A will assist the district in selecting an energy manager who will provide the onsite district leadership for the energy management program. This step not only involves the selection of the energy manager, but also the specified training of the energy manager. Company A's specialists and energy experts will provide onsite trainings with the energy manager that will include auditing of facilities, analyzing previous and current energy use, as well as in coordination and communication procedures. In the first year of implementation, Company A's specialists will meet with the energy manager approximately once a

month to review data, conduct onsite audits to assess how the program is going, and assess the strategic energy action plan's progress. The performance of the program after year one will determine the frequency of visits by Company A's specialists. Company A also offers multiple national trainings a year at different locations. The energy manager is highly encouraged to attend these trainings.

Step 4 involves measurement and verification. Company A believes this is a crucial step because the district is responsible for measuring and verifying the efficacy of the energy conservation program. Utility bills are logged into a third-party software provider that will keep track of monthly energy consumption and costs. The software will make appropriate adjustments based on weather trends and calculate the energy savings for the district. Measurement is not only completed in the form of analyzing utility bills, but through assessing site audit reports. The energy manager is required to conduct site audits at various times of the day to check for compliance to the program guidelines. After each audit, an audit report is filled out and given to the site administrator and head custodian. A copy of this audit form is also given to the energy manager's reporting senior.

Summary

This chapter was divided into three major sections, which provided a review of literature related to the current financial struggle of public schools, energy efficiencies as a cost avoidance strategy, and the transformative process of Company A's program. A special focus was on the concept of instilling energy efficient behaviors in employees from the scholarly literature. According to Finlinson (2005), more research is needed on energy consuming behaviors occurring in an organizational context.

In order for organizational learning to have occurred, individual learning must have transpired across the organization. The procedures, skills, and experiences of employees must lead to procedural knowledge that has been stored within the organizational context. Finlinson (2005) notes it is important to understand and identify the factors that underlie employees' motivation for consuming energy if the organization's goal is conservation. Adding to that, Ehrhart-Martinez et al. (2009) state, "a good starting point is to recognize that energy systems will always operate within larger social systems and that individuals and organizations play important roles in defining the structures and norms of operation" (p. 27). Using guided research questions, this study evaluated the ability of Company A to produce energy conservation beliefs and behaviors, as well as the factors considered important in producing energy efficient behaviors and sustaining the learned behaviors of the organization. According to the literature, it is vital to look at both the individual and the organization to gain a better perspective of energy consumption.

The next chapter is the methodology that was used by the researcher. It outlines the research questions and research hypotheses that guided the study. Also included in the next chapter is a description of the study's population, as well as the data collection and data analysis.

CHAPTER 3

Design of Study

Introduction

This quantitative study examined the beliefs and behaviors of certain Oklahoma public school employees concerning the ability of Company A's transformational program to produce energy saving habits and enable organizational change regarding energy conservation. The organizational change introduced through Company A's program aimed at employees becoming more energy efficient in their daily routines, therefore, establishing an energy efficient culture within the organization. This study also examined whether those beliefs and behaviors varied regardless of whether an employee worked at a secondary or elementary school, the number of years employed by the district, and the type of HVAC thermostat control within the employee's workspace. This study also examined if energy efficient behaviors of employees were also being applied within the employees' residence due to the transferring of learned knowledge from the organization. This study examined factors, such as school board policy, compliance monitoring, communication, and self-efficacy to understand which contributing factors may have been most responsible for a change in employee behavior. These factors were also examined in relation to their importance in the sustainability of the energy efficient behaviors of the organization.

The study was guided by nonexperimental quantitative methods, utilized a descriptive survey, and means testing procedures. A nonexperimental quantitative study focuses on the assessed population as a whole and does not include interventions that may manipulate the population (Cook & Cook, 2008). Descriptive survey research

can be a useful methodological approach in addressing and assisting educational research (Creswell, 2005). Chen (2011) notes that surveys can be used to gauge institutional practices and have become an indispensible tool for institutional researchers and administrators. According to Creswell (2005), surveys may be used to determine individual opinions about policy issues. Descriptive survey research can be used to describe the attitudes, opinions, trends, and behaviors of a population (Creswell, 2005; Gay et al., 2006).

Research Questions

This study was guided by the following research questions:

- Research Question 1 – What is the level of success that Company A's transformational program has had in changing employee behavior towards energy conservation?
- Research Question 2 – What is the level of success that Company A's transformational program has had in changing employee beliefs towards energy conservation?
- Research Question 3 – Are there significant differences in energy conservation beliefs and behaviors between elementary and secondary school employees?
- Research Question 4 – Are there significant differences in energy conservation beliefs and behaviors between employees based on whether their heating, ventilation and air conditioning (HVAC) thermostat is controlled through an energy management system or controlled manually?

- Research Question 5 – Are there significant differences in energy conservation beliefs and behaviors between employees based on the years of employment within the district?
- Research Question 6 – What factors of school board policy, compliance monitoring, communication, or self-efficacy may have contributed to Company A's program in transforming employees to exhibit energy conservation behavior?
- Research Question 7 – What factors of school board policy, compliance monitoring, communication, or self-efficacy will need to be maintained so organizational learning knowledge does not depreciate and energy conservation behavior is sustainable?

Research Hypotheses

The research hypothesis that directed this study was that certain Oklahoma public schools that utilized Company A's transformational process to become more energy efficient had no change on employee behaviors and beliefs in regards to energy conservation.

The specific null hypotheses tested in this study included the following:

- Null Hypothesis 1: There has been no change in employee behavior in regards to energy conservation as a result of the implementation of Company A's transformational program.
- Null Hypothesis 2: There has been no change in employee beliefs in regards to energy conservation as a result of the implementation of Company A's transformational program.

- Null Hypothesis 3: There are no statistically significant differences in the beliefs and behaviors of elementary and secondary school employees whose Oklahoma public school implemented Company A's transformational program.
- Null Hypothesis 4: There are no statistically significant differences in the beliefs and behaviors of certain employees whose Oklahoma public school implemented Company A's transformational program based on the type of HVAC thermostat within their workspace.
- Null Hypothesis 5: There are no statistically significant differences in the beliefs of certain employees whose Oklahoma public school implemented Company A's transformational program based on the employee's years of employment within the district.
- Null Hypothesis 6: There are no differences in the beliefs regarding compliance of certain employees whose Oklahoma public school implemented Company A's program with regard to the importance of school board policy, compliance monitoring, communication, and self-efficacy in bringing about organizational change as it relates to energy efficiencies.
- Null Hypothesis 7: There are no differences in the beliefs regarding sustainability of certain employees whose Oklahoma public school implemented Company A's program with regard to the importance of school board policy, compliance monitoring, communication, and self-efficacy in sustaining energy efficient behaviors within the organization.

Population

The population for this study was employees of Oklahoma public schools that have utilized Company A's transformational program. Company A currently has an Oklahoma client base of 18 public school districts. There are two ways to be considered a current client of Company A. The first is to currently be in Company A's four-year program. The second way is to have completed the four-year program, continue to apply Company A's methods, and report utility data usage to the company.

These 18 Oklahoma districts vary in location, overall student and teacher population, number of school buildings, and the number of months and/or years since implementation of the program. Because a large discrepancy existed between the 18 districts, the researcher utilized purposeful sampling. Creswell (2005) notes, the researcher in selecting individuals and sites can use purposeful sampling if they can help learn and understand a problem. Because each district are clients of Company A, and the study is focused on Company A's transformational program, the researcher can use his knowledge of the groups to be sampled (Gay et al., 2006). According to Gay et al. (2006), the researcher can deliberately identify the criteria for selecting a sample. The districts were narrowed down based on their start date with Company A and the district's overall employee population.

The selected samples for this study were narrowed down to districts that started implementation of Company A's transformational program during a time span between 2007 and 2009. This time span was selected because Company A contracts with a district for four years. This date range will allow for Company A's program to have been fully implemented for at least four years.

Five school districts in Oklahoma that fell within the date range were selected. The districts range in size from 200 to 900 total employees, and have between 4 to 11 schools. The districts for this study can be viewed in Table 1.

The following five paragraphs describe each district. The demographics for each district were taken from the Office of Accountability 2012 District Report Cards. The number of months with Company A is from Company A's Oklahoma client list.

District A resides in a large rural community in the southwest quadrant of Oklahoma. The community has a poverty rate of 20% and an average household income of around $51,000. The district has an average property value per average daily membership (ADM) of $25,350, and 52 % of its students are eligible for free/reduced lunches. The district is composed of 8 schools with an approximate student population of 3,800 and approximately 310 certified employees. District A has been a client of Company A for 53 months.

Table 1

District Demographics

District	Number of schools	Approximate employees	Months with Company A
District A	8	480	53
District B	4	221	79
District C	5	338	55
District D	7	574	50
District E	11	879	77
Total	35	2,492	62.8 (average)

Note. Each district provided approximate number of employees.

District B resides in a small rural community in the northeast quadrant of Oklahoma. The community has a poverty rate of 21% and an average household

income of around $45,700. The district has an average property value per ADM of $22,100, and 69% of its students are eligible for free/reduced lunches. The district is composed of 4 schools with an approximate student population of 1,700 and approximatley130 certified employees. District B has been a client of Company A for 79 months.

District C resides in a small suburban community in the central part of Oklahoma. The community has a poverty rate of 14% and an average household income of $56,600. The district has an average property value per ADM of $23,200, and 69% of its students are eligible for free/reduced lunches. The district is composed of 5 schools with an approximate student population of 2,800 and approximately 200 certified employees. District C has been a client of Company A for 55 months.

District D resides in a large suburban community in the northeast quadrant of Oklahoma. The community has a poverty rate of 14% and an average household income of $59,300. The district has an average property value per ADM of $38,700, and 64% of its students are eligible for free/reduced lunches. The district is composed of 7 schools with an approximate student population of 4,100 and approximately 300 certified employees. District D has been a client of Company A for 50 months.

District E resides in a large suburban community in the central part of Oklahoma. The community has a poverty rate of 8% and an average household income of $72,200. The district has an average property value per ADM of $37,000, and 37% of its students are eligible for free/reduced lunches. The district is composed of 11 schools with an approximate student population of 7,600 and approximately 510 certified employees. District F has been a client of Company A for 77 months.

In order to address the research hypotheses, the researcher determined the appropriate sample size. At a confidence interval equal to 5 and a confidence level at 95%, the sample size will need to be approximately 333 respondents. A sample size of 333 will allow the researcher to determine if the intended population was substantial enough to provide reliable answers that allow for statistical judgments that are accurate in regards to the specific research questions. Gay et al. (2006) recommends a sample size based on a population of 2,600 to have a sample size of 335.

Data Collection

The design of this study was nonexperimental descriptive survey research. Survey research is a popular design in educational research (Creswell, 2005). Creswell (2005) and Gay et al. (2006) noted that data for descriptive survey research are typically collected through questionnaires, surveys, interviews, or observations. The use of a descriptive survey allowed this researcher to collect the information concerning beliefs and behaviors of Oklahoma public school employees towards Company A's transformational program in bringing about organization change as it relates to energy efficient behaviors.

This researcher developed a 42-item Likert-style survey that explored the beliefs and behaviors of Oklahoma public school employees concerning the ability of Company A's transformational program to bring about transformational change in their organization. The survey for this research study included demographic questions and attitudinal questions. Although there was only one open-ended question within the questionnaire, each survey section allowed for extra comments to be made. This

allowed participants to voice concerns, questions, or comments for that section (Smith, 2011).

The survey was divided into five key sections: employee demographics, employee behaviors and beliefs prior to employment or implementation of Company A's transformational program, employee behavior and beliefs after employment or implementation of the program, contributing factors for energy conservation behavioral practices, and sustainable factors for continued employee energy conservation behaviors. Specific demographic data requested on the survey included years employed within the district, whether the employee is considered certified or support staff, whether the employee's workspace is considered a secondary school, elementary school, or other, and the type of HVAC thermostat that is in the employee's workspace. Specific behavioral questions asked about the employee's energy conservation practices, such as HVAC and light routines before and after implementation of the program at work and at their personal residence.

To assist the researcher in data collection, a six-point Likert scale was used to answer questions regarding employee energy conservation behaviors and beliefs. For statements regarding employee behavioral practices and attitudes, the choices included strongly agree, agree, moderately agree, moderately disagree, disagree, and strongly disagree, as well as a not applicable response. All not applicable responses were excluded from the mean statistics. For questions relating to the employee's beliefs regarding compliance and sustainability, the respondent was asked to select the three most important factors that led to their compliance and would lead to sustainability of the program.

The following procedural steps were followed in the development of the survey. The first step involved the construction of the survey items. The researcher relied on educational research texts such as Gay et al. (2006) and Creswell (2005) for individual item development. Secondly, survey items were assessed for content validity. The researcher looked at both item and sample validity. Thirdly, five experts reviewed the survey. Two of these experts are employees of Company A. The first was a facility/operations specialist and the second was a data specialist. The other three experts are current energy managers of Oklahoma public schools or Oklahoma career technology centers that utilize Company A. The fourth step involved the piloting of the survey. The survey was piloted a total of two times. The first was by an Oklahoma public school district that is a current client of Company A. The district that was asked to pilot the survey is a district that is not being used in this study. Their responses allowed for the researcher to calculate reliability statistics for the prior and after statements. Participants were also asked to review the survey based on clarity of content, questions asked, overall format, and ease of responses. Based on the outcome of the pilot participants' responses and the reliability statistics, the survey was revised to adhere to clarity of content, questions asked, overall format, ease of responses, and internal reliability. After revision of the survey, two more Oklahoma public school districts were asked to pilot the survey. These two districts are not participating in the current study and their results are not included in this study's findings. The reliability statistics of the second piloted survey for the prior and after statements can be viewed in Table 2. Piloting and having the survey reviewed assisted the researcher in content

validation and the alignment of the survey to theory content. A copy of the final survey is included in Appendix A.

An introductory email asking for district participation was sent to the five superintendents of the districts that are being used in this study. Once participation was granted, an email was sent to the employees of the participating districts explaining the purpose of the research, and its possible impact on education. The email included a website URL where the survey could be accessed. The email also included the researcher's appreciation of the employees' time and efforts for assisting with the research. Two follow-up notices were emailed to participants after the initial email. The email addressed confidentiality, and that participation in the study was purely voluntary. A copy of the content of the emails is included in Appendix B.

Table 2

Instrument Reliability

Survey statements	Cronbach's Alpha	Number of items
Prior statements	0.922	16
After statements	0.918	16

Variables

The independent variables used for this study were the employees' workspace classification, years of experience within the district, and the type of HVAC thermostat control system within the employee's workspace. The study participants could select an elementary school setting, a secondary school setting, or other. For this study, an elementary school setting was considered to be any grade combination with the majority of grades sixth grade and below. The secondary school setting included any grade

combination with the majority of grades above sixth grade. The educational setting of other was used to apply to other buildings that might include central office personnel, maintenance, transportation, etc.

The years of experience an employee has within the district was divided in to three groups. These three groups are based on whether the respondent was an employee of the district during any part of the implementation of Company A's program. The three groups are: 1) this is my first year to be employed with the district, 2) one to three years, and 3) four years or more.

The type of HVAC thermostat within the employee workspace was classified as either a manual thermostat or an energy management system (EMS) or programmable thermostat (PT). Company A has set guidelines for the operation of HVAC systems that require routine settings of occupied and unoccupied. HVAC units are to be properly set for occupied and unoccupied status. Occupied status refers to the time the classroom is occupied, and the guidelines require a set temperature range. Unoccupied status is when the classroom is not occupied, which generally equates to the end of school on one day till the start of school the next school day. Unoccupied status also has a temperature set point requirement. A manual thermostat is defined as a thermostat that the employee must manually setback during unoccupied times. A programmable thermostat is a thermostat that has been set to a certain time schedule that will automatically adjust for occupied and unoccupied times and set points. An EMS thermostat is one that is controlled automatically by a computer. With a programmable or EMS thermostat, the employee does not have to manually setback for unoccupied set points.

The dependent variables of this study centered on the beliefs and behaviors of Oklahoma public school employees whose district has utilized Company A's transformational program to instill energy efficient practices. The employees of these districts have been confronted with the task of assisting their districts in establishing organizational change by becoming more energy efficient. Therefore, this researcher wanted to investigate the beliefs and behaviors of employees of Company A's Oklahoma public schools clients concerning the ability of the program to bring about organizational change.

Data Analysis

The researcher used statistical software SPSS 19.0 to assist in the compilation and analysis of the data collected that relates to the research questions that focus on employee behaviors and beliefs. Mean scores, frequencies, dependent and independent t-tests, and an analysis of variance (ANOVA) were used to analyze for statistical significance. Descriptive statistics and testing for statistical significance allowed for the researcher to prove or disprove the null hypotheses.

To determine statistically significant differences, Null Hypothesis 1 and 2 applied a dependent t-test procedure. According to Salkind (2011), a dependent t-test can be used when a single group of the same subjects are being studied in a prior and after scenario. Null Hypothesis 1 takes into account if Company A had any affect on an employee's behavior toward energy conservation. Null Hypothesis 2 takes into account if Company A had any affect on an employee's beliefs toward energy conservation. A dependent t-test was run for all survey items concerning employees' behaviors and beliefs before and after implementing Company A's energy management program.

To determine statistically significant differences, Null Hypothesis 3 and 4 applied an independent t-test procedure. According to Gay et al. (2006), a t-test can be used to determine whether two means are significantly different at a probability level. Null Hypothesis 3 takes into account the elementary and secondary school settings of the employee. Null Hypothesis 4 takes into account whether the employee has control of their thermostat or if it is controlled by an EMS/PT. A independent t-test was run for items concerning employees' behaviors and beliefs before and after employment or implementing Company A's energy management program.

To determine a statistically significant difference, Null Hypothesis 6 applied an ANOVA. An ANOVA statistical test was used because more than two groups were tested (Salkind, 2011). Based on the variable of years employed, an ANOVA was run for each item concerning employees' behaviors and beliefs before and after implementing Company A's energy management program.

Internal and External Validity

To assist with the validity and reliability of the descriptive research study, the researcher utilized several techniques. First, the survey instrument was assessed for content validity. This included both item and sample validity. The researcher also relied on checklists that focus on common problems associated with item construction in developing instrument questions. Several educational research specialists, such as Creswell (2005) and Gay et al. (2006) have published checklists to assist novice researchers. The checklists pertain to question construction, unbalanced response options, and questions and answer choices are aligned, rather than mismatched.

The researcher conducted an initial pretest of the survey. An Oklahoma public school district that is currently utilizing Company A's transformational program was contacted and a small number of personnel piloted the questionnaire. Pilot participants took the online survey and were allowed to provide comments directly on the survey. Feedback from the pilot participants allowed the researcher to modify the survey to address needed changes. The researcher also took into consideration factors such as unclear test directions, subjective scoring, and Cronbach's alpha.

Based on this feedback, the researcher redesigned the survey and re-piloted the survey. This survey was piloted with two Oklahoma public school districts that had utilized and are still clients of Company A. The second pilot survey displayed the results the researcher would need to conclude any statistical findings. All pilot participants' responses were not included in the final data. To assist with external validity, the researcher was concerned with "experimenter effects" and "reactive arrangements" (Gay et al., 2006, p. 245).

Summary

This study examined the beliefs and behaviors of certain Oklahoma public school employees whose districts utilized Company A's transformational program concerning the program's ability to enable energy efficient practices. Using a Likert-style cross-sectional survey, this research study focused on the response analysis to gain insight if Company A's program was able to enable organizational change based on employees' behaviors and beliefs. In the review of the literature, Pfeffer & Salancik (2003) note people within an organization are "willing and ready to tell the researcher of their satisfactions and dissatisfactions, their importance to the organization, their

feelings toward their work, and their reasons for their decisions" (p. 6). Creswell (2005) stated descriptive survey research is a popular design in educational research. The data from the descriptive survey displayed the frequency of responses to each survey question concerning demographics, beliefs, and behaviors.

CHAPTER 4

Results of the Study

This quantitative study investigated the beliefs and behaviors of certain Oklahoma public school employees concerning the ability of Company A's transformational program to produce energy saving habits and enable organizational change regarding energy conservation. The hypotheses for this study stated that Company A's transformational program has had no change on employee behaviors and beliefs in regards to energy conservation; that there is no statistically significant difference between employee behaviors and/or beliefs based on whether an employee worked at an elementary or secondary school, the number of years the employee has been employed by the district, or the type of HVAC thermostat control system within the employee's workspace; and that there is no difference between school board policy, compliance monitoring, communication, and self-efficacy in regards to supporting and continuing the district's energy conservation program.

To discover the behaviors and beliefs of certain Oklahoma public school employees who have utilized Company A, the entire population of five school districts were asked to participate in this study. A total of 493 employees responded to the survey. Of these survey responses, only 438 were actually submitted. The researcher believed any open survey would not be valid; therefore, 55 surveys were not used in the analyzing of survey data. Table 3 shows the number of submitted responses from each school district.

The survey invited the employees to respond to several statements related to their behaviors and beliefs concerning the ability of Company A's program to bring

about a change in energy conservation. Employees were asked to reflect on their behaviors and beliefs prior to their employment with the district or prior to their district implementing Company A's energy conservation program. Employees were also asked to reflect on their behaviors and beliefs after their employment with the district or after the district implemented Company A's energy conservation program.

Table 3

Responses per District

District	f[a]	P[b]
District A	126	28.7
District B	45	10.3
District C	123	28.1
District D	52	11.9
District E	92	21.0
Total	438	100

Note. N=438
[a]f = frequency distribution; [b]P = f/N(100)

The survey also asked for specific demographic data that included an employee's years of employment with the district, the type of HVAC thermostat within an employee's workspace, if the employee was a certified or support staff employee, and whether their workspace was considered a secondary setting, elementary setting, or other. Table 4 displays the data concerning respondents' total years of experience. Table 5 displays the data concerning the type of HVAC thermostat within their workspace of each employee respondent. Table 6 displays the data concerning the workspace setting of the respondents.

Although an employee's classification as certified or support staff was not an independent variable, the researcher desired to include this data to provide the reader

with potentially useful demographical data. The survey asked respondents to distinguish between three employment classifications: certified employee, support staff employee, and other. Table 7 displays the data concerning the employment classification of the participants.

Table 4

Years Employed with the District

Years of experience	f^a	P^b
This is my 1st year with the district	42	9.6
1-3 years	73	16.7
4 years or more	322	73.5
No data submitted	1	0.2
Total	438	100.0

Note. N=438
[a]f = frequency distribution; [b]P = f/N(100)

Table 5

Type of HVAC Thermostat in an Employee's Workspace

Type of HVAC thermostat	f^a	P^b
Manual thermostat	236	53.9
EMS/PT thermostat	165	37.7
No thermostat	23	5.3
Unsure	14	3.2
No data submitted	0	0
Total	438	100.0

Note. N=438
[a]f = frequency distribution; [b]P = f/N(100)

The researcher also desired to include an employee's awareness of his or her district's energy conservation program. Responses for this question were simply a

"Yes" or "No." Table 8 displays the data concerning the acknowledgement of the districts' energy conservation programs.

Table 6

Employee's Workspace Setting

Workspace setting	f^a	P^b
Elementary school setting	181	41.3
Secondary school setting	211	48.2
Other	42	9.6
No data submitted	4	0.9
Total	438	100

Note. N=438
[a]f = frequency distribution; [b]P = f/N(100)

Table 7

Employment Classification of an Employee

Employment classification	f^a	P^b
Certified employee	362	82.6
Support staff employee	67	15.3
Other	9	2.1
No data submitted	0	0
Total	438	100.0

Note. N=438
[a]f = frequency distribution; [b]P = f/N(100)

Analysis of Employee Responses

Means comparison procedures were used to analyze the data with the statistical software SPSS 19.0. The purpose of the analysis was to determine the behaviors and beliefs of the participating employees as indicated by their responses concerning Company A's ability to enable energy conservation. Overall, survey results showed a

mixed response to the survey statements for each statement area. There were 32 statements that focused on employee behavior and beliefs prior to and after their employment with the district or implementation of Company A's energy management program. Responses to these survey statements were recorded as strongly disagree (SD), disagree (D), moderately disagree (MD), moderately agree (MA), agree (A), strongly agree (SA), and whether the statement did not coincide with the employee's workspace, pattern, and/or residence (NA). Each of these terms were given a numerical value that would allow each survey respondent to score at least a minimum score and possibly the maximum score per statement. The lowest score was given a value of one and represented SD. The maximum score was given a six and represented SA. All responses for NA were not assigned a value.

Table 8

Energy Conservation Program Awareness

Energy conservation program awareness	f[a]	P[b]
Yes	437	99.8
No	1	0.2
No data submitted	0	0
Total	438	100.0

Note. N=438
[a]f = frequency distribution; [b]P = f/N(100)

Of the 32 statements, 16 statements focused on prior behaviors and beliefs, and 16 statements focused on after behaviors and beliefs. In each set of statements, seven statements were about the employee's behaviors, and nine statements were about the employee's beliefs. The responses of an employee who selected NA or was left blank

were not figured in the mean scores. Table 9 displays the percentages of responses for all prior statements (PS) and after statements (AS).

Table 9

Percentages of Prior and After Statements of Employees Based on Employment or Implementation of Company A's Program

Statements	SD	D	MD	MA	A	SA
PS1 – I setback or turned off my manual thermostat at the end of the workday.	6.9	16.7	6.0	15.5	25.3	29.6
AS1 – I setback or turn off my manual thermostat at the end of the workday.	2.5	4.6	1.5	5.8	23.0	62.6
PS2 – I ensured my manual thermostat was setback or turned off for the weekend.	6.6	14.4	6.3	16.1	24.8	31.7
AS2 – I ensure my manual thermostat is setback or turned off for the weekend.	2.5	3.4	1.2	4.0	22.4	66.5
PS3 – I turned off all lights at the end of the workday (excluding security lights).	2.4	1.4	1.0	3.8	20.1	71.2
AS3 – I turn off all lights at the end of the workday (excluding security lights).	0.9	0.2	0.0	0.7	16.8	81.3
PS4 – I unplugged or turned off my personal appliances during extended breaks (winter/spring).	9.4	16.2	3.4	9.4	16.9	44.7
AS4 – I unplug or turn off my personal appliances during extended breaks (winter/spring).	1.0	0.7	0.0	2.2	17.5	78.7
PS5 – I unplugged or turned off my personal appliances during summer vacation.	4.1	7.2	1.5	5.4	17.8	63.9
AS5 – I unplug or turn off my personal appliances during summer vacation.	1.0	0.2	0.2	1.0	15.1	82.5
PS6 – I was concerned whether my air conditioning was left on after hours during the school week.	6.5	21.3	11.6	21.5	26.2	12.8
AS6 – I am concerned whether my air conditioning is left on after hours during the school week.	4.7	5.5	5.0	9.0	21.4	54.4

(*Table 9 continues*)

(*Table 9 continued*)

Statements	SD	D	MD	MA	A	SA
PS7 – I was concerned whether my air conditioning was left on all weekend.	6.3	19.9	11.6	18.6	27.4	16.2
AS7 – I am concerned whether my air conditioning is left on all weekend.	4.8	5.8	4.0	9.3	21.1	55.1
PS8 – I was concerned whether my heater was left on after hours during the school week.	5.8	20.4	13.4	20.4	25.3	14.6
AS8 – I am concerned whether my heater is left on after hours during the school week.	4.8	5.6	5.6	9.1	19.7	55.3
PS9 – I was concerned whether my heater was left on all weekend.	5.6	19.4	13.3	18.7	25.5	17.5
AS9 – I am concerned whether my heater is left on during the weekend.	4.5	5.8	4.3	9.3	20.4	55.8
PS10 – I was concerned whether my colleagues were setting back of turning off their thermostats at the end of the workday.	15.8	32.9	17.0	17.7	10.3	6.2
AS10 – I am concerned whether my colleagues are setting back or turning off their thermostats at the end of the workday.	7.1	9.8	9.0	15.4	21.7	37.1
PS11 – I was concerned with the amount of energy being consumed at the district level.	10.6	26.5	17.4	21.4	15.3	8.9
AS11 – I am concerned with the amount of energy being consumed at the district level.	4.5	5.4	5.6	17.6	23.3	43.5
PS12 – I was concerned with the amount of energy being consumed at the site level where I work.	10.4	26.6	18.6	21.9	15.5	7.1
AS12 – I am concerned with the amount of energy being consumed at the site level where I work.	4.7	6.1	6.3	16.4	23.9	42.5

(*Table 9 continues*)

(*Table 9 continued*)

Statements	SD	D	MD	MA	A	SA
PS 13 – I was concerned with the amount of energy I was consuming within my workspace.	10.6	27.1	16.7	17.4	19.1	9.2
AS13 – I am concerned with the amount of energy I was consuming within my workspace.	4.9	6.6	6.8	13.1	24.8	43.8
PS14 – I was concerned with the amount of money being spent by the district for utility expenses.	9.2	24.3	16.3	20.1	17.7	12.3
AS14 – I am concerned with the amount of money being spent by the district for utility expenses.	4.0	5.2	3.5	16.0	24.0	47.3
PS15 – I setback or turned off my thermostat at my own residence when it was not occupied.	1.4	7.1	4.6	12.2	27.9	46.8
AS15 – I setback or turn off my thermostat at my own residence when it is not occupied.	0.2	3.3	2.6	5.9	26.5	61.5
PS16 – I turned off all lights at my own residence when it is not occupied.	0.7	0.9	1.8	10.1	27.0	59.4
AS16 – I turn off all lights at my own residence when it is not occupied.	0.0	0.7	1.2	4.2	22.8	71.2

When assessing and comparing the prior and after statements, it is evident from Table 9 that the overall combined percentage of the after statements for MA, A, and SA increased over the prior statements. The largest increase in combined A and SA occurred in AS 12. After Statement 12 investigated whether respondents were concerned with the amount of energy being consumed at the respondent's site level. The A and SA indicated a 43.8 difference in the percentage of responses.

A major difference was seen between an employee's prior concerns regarding his or her actions towards the setback of his or her HVAC units. When employees were asked to respond on whether they were concerned they were setting back or turning off their air conditioning or heating units, there was a 34.0 or greater difference in the

percentage of A and SA responses for these four statements. The greatest difference occurred in AS6, which asked if employees with manual thermostats were concerned whether they setback or turned off their air conditioning after hours during the school week.

One of the survey questions that had the highest A and SA responses prior to implementation of Company A's program was PS3. The statement asked if employees were turning off their workspace lights, excluding those needed for security. Although PS3 was already at 91.3% of the respondents in the categories of A and SA, it increased to 98.1% of A and SA after the implementation of Company A's program.

It is also important to note from the survey's findings of the prior and after statements that the overall greatest increases occurred in the belief statements, rather than the behavior statements. The behavior statements within an employee's workspace indicated on average a 24.08 difference in the percentage of responses for A and SA. In comparison, the belief statements of an employee within the district indicated on average a 38.67 difference in the percentage of responses for A and SA.

Analysis of Research Question 1

Research Question 1 investigated the level of success that Company A's transformational program has had in changing employee behaviors towards energy conservation. The null hypothesis for this research question was there was no change in employee behavior in regards to energy conservation as a result of the implementation of Company A's transformational program. To investigate Research Question 1, each respondent was asked seven prior-behavior statements, and seven after-behavior statements concerning their energy conservation routine within their district and

residence. The seven prior-behavior statements were Prior Statements 1, 2, 3, 4, 5, 15, and 16. The seven correlated After Statements were 1, 2, 3, 4, 5, 15, and 16. Table 10 displays the mean scores of the employee responses regarding their energy conservation behaviors prior to and after district employment or implementation of Company A's program.

Table 10

Correlated Energy Conservation Behaviors Prior to and After District Employment or Implementation

Number of correlated responses	Prior statements (PS#)	Prior mean	Standard deviation	After statements (AS#)	After mean	Standard deviation
310	PS1	4.28	1.642	AS1	5.34	1.165
306	PS2	4.38	1.597	AS2	5.43	1.106
408	PS3	5.51	1.028	AS3	5.77	0.623
401	PS4	4.42	1.827	AS4	5.72	0.695
377	PS5	5.19	1.416	AS5	5.76	0.681
424	PS15	4.98	1.284	AS15	5.41	0.958
426	PS16	5.40	0.900	AS16	5.62	0.689

From Table 10, the mean of each after statement increased over each prior statement. To determine statistically significant differences and to answer Research Question 1, the researcher ran a dependent t-test, also known as a paired samples test. A paired samples test can be used to compare a single group's performance in a pre- and post-type format (Gay et al., 2006; Salkind, 2011). Table 11 displays the findings of the paired samples test.

There were statistically significant differences between the employees' behaviors when analyzing the prior and after statements of the survey. For example, using Paired Statement 4 as an example of statistical significance for all seven

statements, $t_{(400)} = 14.073$, $p < .05$ states that Company A did have an impact on whether an employee was turning off personal appliances during extended school-year breaks. Because there was a statistically significant difference for each paired statement and the difference between the after and prior mean scores indicate a positive growth, Company A's transformational program did have an impact on employee energy conservation behaviors. Therefore, Null Hypothesis 1 is rejected.

Table 11

Paired Samples Test of After and Prior Behavior Statements

	Paired differences							
				95% Confidence interval of the difference				
Paired statement	Mean	Std. deviation	Std. error mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	1.055	1.595	.091	.877	1.233	11.644	309	.000
Pair 2	1.046	1.578	.090	.868	1.223	11.594	305	.000
Pair 3	.260	1.073	.053	.155	.364	4.891	407	.000
Pair 4	1.302	1.852	.093	1.120	1.484	14.073	400	.000
Pair 5	.573	1.392	.072	.432	.714	7.994	376	.000
Pair 15	.429	.972	.047	.336	.522	9.091	423	.000
Pair 16	.223	.785	.038	.148	.298	5.864	425	.000

Analysis of Research Question 2

Research Question 2 investigated the level of success that Company A's transformational program had in changing employee beliefs towards energy conservation. The null hypothesis for this research question was there has been no change in employee beliefs in regard to energy conservation as a result of the implementation of Company A's transformational program. To investigate Research Question 2, each respondent was asked nine prior-belief statements, and nine after-

belief statements concerning their beliefs towards energy conservation. Table 12 displays the mean scores of the employee's responses regarding their energy conservation beliefs prior to and after district employment or implementation of Company A's program.

Table 12

Correlated Energy Conservation Beliefs Prior to and After District Employment or Implementation

Number of correlated responses	Prior statements (PS#)	Prior mean	Standard deviation	After statements (AS#)	After mean	Standard deviation
389	PS6	3.79	1.519	AS6	5.02	1.431
386	PS7	3.90	1.549	AS7	5.04	1.436
383	PS8	3.84	1.509	AS8	5.02	1.452
385	PS9	3.91	1.523	AS9	5.05	1.428
398	PS10	2.91	1.439	AS10	4.48	1.610
414	PS11	3.31	1.490	AS11	4.83	1.402
415	PS12	3.26	1.449	AS12	4.78	1.435
416	PS13	3.34	1.535	AS13	4.81	1.464
412	PS14	3.48	1.548	AS14	4.95	1.364

From Table 12, the mean scores of each after statement increased over each prior statement. To determine statistical significance and to answer Research Question 2, the researcher also ran a paired samples t-test for the after and prior statements. Table 13 displays the findings of the paired samples test.

There were statistically significant differences between the employees' beliefs according to the prior and after statements of the survey. Using only Paired Statement 12 as an example of this statistical significance for all nine paired belief statements, $t_{(414)} = 18.316$, $p < .05$ indicates that Company A did have an impact on whether an

employee was concerned with the amount of energy being consumed within their workspace site. Because there was a statistically significant difference for each paired statement and the difference between the after and prior mean scores indicate a positive growth for all statements, Company A's transformational program did have an impact on employee energy conservation beliefs. Therefore, Null Hypothesis 2 is rejected.

Table 13

Paired Samples Test of After and Prior Belief Statements

	Paired differences							
				95% Confidence interval of the difference				
Paired statement	Mean	Std. deviation	Std. error mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 6	1.234	1.589	.081	1.076	1.392	15.316	388	.000
Pair 7	1.142	1.617	.082	.981	1.304	13.878	385	.000
Pair 8	1.178	1.603	.082	1.016	1.339	14.374	382	.000
Pair 9	1.132	1.575	.080	.975	1.290	14.111	384	.000
Pair 10	1.570	1.767	.089	1.396	1.744	17.730	397	.000
Pair 11	1.519	1.742	.086	1.351	1.688	17.746	413	.000
Pair 12	1.525	1.696	.083	1.362	1.689	18.316	414	.000
Pair 13	1.471	1.717	.084	1.306	1.637	17.474	415	.000
Pair 14	1.468	1.790	.088	1.295	1.642	16.653	411	.000

Analysis of the Independent Variables

The researcher also investigated employee beliefs and behaviors of certain Oklahoma public school employees concerning the ability of Company A's transformational program to bring about energy conservation changes and whether these changes vary due to type of the employee's workspace setting, years of employment, and type of HVAC thermostat within the employee workspace. The responses for the

impact of these independent variables concerning employee beliefs and behaviors were analyzed which allowed the researcher to determine if there are any statistically significant differences in employees' behaviors and beliefs among groups. An independent t-tests and an ANOVA assisted the researcher in investigating the influence of the independent variables upon the dependent variables of beliefs and behaviors.

Analysis of Research Question 3

Research Question 3 investigated whether there were any statistically significant differences in energy conservation beliefs and behaviors between elementary school employees and secondary school employees. The null hypothesis for this research question was there are no statistically significant differences in the beliefs and behaviors of elementary and secondary school employees whose Oklahoma public school implemented Company A's transformational program. Because the researcher was only interested in elementary and secondary school employees, an independent t-test was used to determine statistical significance. The frequencies and mean score for each prior and after statement for elementary and secondary school employees can be viewed in Appendix C. Table 14 displays the results of the independent t-test for elementary and secondary school employees' responses.

From Table 14, it is evident that the greatest obtained value is 1.730 from AS4. This indicates that there was not a statistically significant difference between the employees' beliefs and behaviors according to an employee's workspace classification. For example, using AS4, which asks whether an employee ensured that his or her personal appliances were unplugged or turned off during extended school breaks, there is no statistical significance ($t_{(377)} = 1.730$, $p < .05$). Because all 32 statements

indicated no statistically significant differences between elementary or secondary site employees on energy conservation behaviors and beliefs, Null Hypothesis 3 is not rejected.

Table 14

Independent Samples Test for Elementary (E) and Secondary (S) School Employees

	t-test for equality of means		
Statement	*t*	df	Sig. (2-tailed)
PS1	-1.045	303	.297
PS2	-1.530	302	.127
PS3	-1.460	369	.145
PS4	.294	369	.769
PS5	-.246	353	.806
PS6	-1.328	367	.185
PS7	-1.153	366	.250
PS8	-.806	365	.421
PS9	-1.369	366	.172
PS10	-.165	370	.869
PS11	-.296	378	.767
PS12	.707	378	.480
PS13	-.053	378	.958
PS14	-.469	375	.639
PS15	-.783	387	.434
PS16	.419	386	.675
AS1	.025	283	.980
AS2	-.343	280	.732
AS3	-.074	376	.941
AS4	1.730	377	.084
AS5	.495	372	.621
AS6	.263	356	.793
AS7	.116	354	.908
AS8	.642	352	.521
AS9	.203	354	.839
AS10	.751	364	.453
AS11	.865	377	.388
AS12	.480	379	.632
AS13	.068	380	.946
AS14	1.038	377	.300
AS15	.675	378	.500
AS16	1.119	382	.264

Analysis of Research Question 4

Research Question 4 investigated whether there were any statistically significant differences in energy conservation beliefs and behaviors between employees and the type of HVAC thermostat within their workspace. Because the researcher was only concerned with employees whose workspace HVAC thermostat was either a manual (M) thermostat or an energy management system/programmable thermostat (EMS/PT), an independent samples t-test was run to determine statistically significant differences. The frequencies and mean scores based on these two types of HVAC thermostats can be viewed in Appendix D. Table 15 displays the results of the independent samples t-test for employees whose HVAC workspace thermostat is manual or EMS/PT.

Table 15

Independent Samples Test for an Employee's Workspace HVAC Thermostat

	t-test for equality of means		
Statement	*t*	df	Sig. (2-tailed)
PS1	.598	328	.551
PS2	.565	327	.573
PS3	.026	379	.979
PS4	-.534	376	.593
PS5	.107	352	.915
PS6	1.154	380	.249
PS7	.843	380	.400
PS8	.978	379	.329
PS9	1.293	380	.400
PS10	-.585	381	.560
PS11	-.484	389	.629
PS12	-.043	388	.966
PS13	.217	388	.828
PS14	-.350	386	.726
PS15	-.256	397	.798
PS16	.528	395	.598
AS1	2.356	314	.019
AS2	2.077	310	.039
AS3	-.056	386	.956

(*Table 15 continues*)

(*Table 15 continued*)

	t-test for equality of means		
Statement	*t*	df	Sig. (2-tailed)
AS4	1.389	381	.166
AS5	.458	370	.647
AS6	2.750	373	.006
AS7	3.100	371	.002
AS8	2.527	369	.012
AS9	3.008	371	.003
AS10	.955	375	.340
AS11	1.332	389	.184
AS12	1.662	390	.097
AS13	1.603	391	.110
AS14	1.803	390	.072
AS15	-.318	392	.751
AS16	1.375	393	.170

Overall, the independent samples test for workspace thermostat revealed that there were no statistically significant differences between manual and EMS/PT thermostats in how an employee responded to the statements. With an alpha level set at 0.05, 6 of the 32 statements showed statistically significant differences. All six of the statements that showed statistically significant differences came from the after statements: AS1, AS2, AS6, AS7, AS8, and AS9.

After Statement 1 ($t_{(314)} = 2.356$, $p < .05$) and AS2 (($t_{(310)} = 2.077$, $p < .05$) asked if employees setback their manual thermostats at the end of the weekday and ensured setback for the weekend. After Statement 6 ($t_{(373)} = 2.750$, $p < .05$), AS7 ($t_{(371)} = 3.100$, $p < .05$), AS8 ($t_{(369)} = 2.527$, $p < .05$), and AS9 ($t_{(371)} = 3.008$, $p < .05$) asked if employees were concerned if their air conditioning or heating units were left on after hours during the school week or the weekend. From the reported data for these six after statements, there were statistically significant differences between whether an employee's workspace HVAC thermostat is controlled manually or by an EMS/PT.

However, the researcher is aware that the probability of type I errors increase when multiple t-tests are ran for the same hypothesis (Curtin & Schulz, 1998). To avoid making a type I error, the researcher redetermined statistically significant differences based on the Bonferroni Correction and used $p < .00156$ ($\alpha/32$). Based on the reported data and the Bonferroni Correction for multiple independent t-tests, Null Hypothesis 4 is not rejected.

Analysis of Research Question 5

Research Question 5 investigated if there were any statistically significant differences in energy conservation beliefs and behaviors between an employee's years of employment. Survey respondents were asked to select between the following choices: (1) this is my first year to be employed with the district, (2) one to three years, or (3) four years or more. Because there were three groups, an ANOVA was run to determine statistically significant differences. The frequencies and mean scores based on the three variables of years of employment can be viewed in Appendix E. Table 16 displays the results of the ANOVA for an employee's years of experience within the district.

Overall, the ANOVA statistical test on an employee's years of employment within the district revealed that there were no statistically significant differences between first year employment, those who have worked for the district between one and three years, or those employees who have been with the district four years or more in how an employee responded to the statements. However, 8 of the 32 statements showed statistically significant differences. Of the statements that showed statistically significant differences, one came from the prior statements and seven came from the

after statements. These statements were PS12, AS1, AS6, AS7, AS8, AS9, AS11, and AS12. The following eight paragraphs address the statistical findings of the ANOVA, as well as the Bonferroni post hoc test results. The Bonferroni post hoc test allowed the research to determine where the difference lies between the three groups (Salkind, 2011).

Statement PS12 asked if employees were concerned with the amount of energy being consumed at the site level where they work. For statement PS12, $F_{(2,421)} = 3.320$, $p < .05$, there is a statistically significant difference between years of employment. For PS12, the null hypothesis is rejected. The Bonferroni post hoc test revealed the responses by the employees between one to three years of employment were significantly different from employees with four or more years of employment.

Statement AS1 asked if employees were setting back their manual thermostat at the end of the workday. For statement AS1, $F_{(2,322)} = 3.344$, $p < .05$, there is a statistically significant difference between years of employment. For AS1, the null hypothesis is rejected. The Bonferroni post hoc test revealed the responses by the employees in their first year of employment were significantly different from employees with four or more years of employment.

Statement AS6, AS7, AS8, and AS9 asked if employees were concerned if their air conditioning or heating units were left on after hours during the school week or the weekend. From the reported data for AS6 ($F_{(2,397)} = 3.987$, $p < .05$), AS7 ($F_{(2,395)} = 3.441$, $p < .05$), AS8 ($F_{(2,392)} = 5.822$, $p < .05$), and AS9 ($F_{(2,394)} = 4.546$, $p < .05$) there were statistically significant differences between years of employment. For AS6, AS7, AS8, and AS9, the null hypothesis is rejected. The Bonferroni post hoc test for these

four statements revealed the responses by the employees in their first year of employment were significantly different from employees with four or more years of employment.

Table 16

ANOVA for 1st Year Employment, 1-3 Years of Employment, and 4 Years or More of Employment within the District

Statement	F	df – between groups	df – within groups	Sig.
PS1	1.588	2	344	.206
PS2	.934	2	343	.394
PS3	1.047	2	413	.352
PS4	1.728	2	410	.179
PS5	.025	2	384	.976
PS6	1.879	2	409	.154
PS7	2.243	2	409	.107
PS8	2.930	2	407	0.55
PS9	1.814	2	408	.164
PS10	.869	2	413	.420
PS11	1.820	2	422	.163
PS12	3.320	2	421	.037
PS13	1.026	2	421	.359
PS14	.939	2	419	.392
PS15	.615	2	430	.541
PS16	.410	2	430	.664
AS1	3.344	2	322	.037
AS2	2.059	2	318	.129
AS3	.152	2	420	.859
AS4	1.139	2	415	.321
AS5	.878	2	402	.416
AS6	3.987	2	397	.019
AS7	3.441	2	395	.033
AS8	5.822	2	392	.003
AS9	4.546	2	394	.011
AS10	2.795	2	406	.062
AS11	4.075	2	421	.018
AS12	3.430	2	422	.033
AS13	1.957	2	423	.143
AS14	2.892	2	421	.057
AS15	.296	2	422	.744
AS16	.423	2	426	.655

Statement AS11 and AS12 asked if employees were concerned with the amount of energy being consumed at the district or site level. For statement AS11 ($F_{(2,421)} = 4.075$, $p < .05$) and AS12 ($F_{(2,422)} = 3.430$, $p < .05$), there were statistically significant differences between years of employment. For AS11 and AS12, the null hypothesis is rejected. The Bonferroni post hoc test for these two statements revealed the responses by the employees in their first year of employment were significantly different from employees with four or more years of employment.

Analysis of Research Question 6

The researcher was also interested in factors that may have contributed to each employees' support and compliance with the implementation of Company A's program. Prior to survey respondents answering this statement, employees were asked if they believed they were supportive of their district's energy conservation program. If a respondent selected "No," they were asked to explain why they believe they were not supportive of their district's energy conservation program. Table 17 displays the frequencies of responses on if employees supported their district's energy conservation program, followed by the employees' direct responses on why they believe they were not supporting the district's initiative.

If survey respondents believed they were supportive of their district's energy program, the researcher asked the survey respondents to select three factors for why they supported their district's energy conservation program. Table 18 displays the frequency of responses selected for each factor representative of the 438 survey responses, as well as the percentages based on the frequency of the 438 surveys and the percentage based on the overall 1,308 possible number of responses.

Table 17

Frequency of Employees' Responses on Why They Supported Their District's Energy Conservation Program

Response	f[a]	P[b]
Yes	436	99.5
No	2	0.50
Total	438	100.0
Response 1	"There have been times when I have left my lights on (i.e. lamps) when my classroom is unoccupied."	
Response 2	"Because I am not the only person who uses the spaces I use in the district, it did not concern me to 'police' the area, knowing that the space would be used after I left. Furthermore, given the nature of my job, and the responsibilities that could, at any moment, demand my attention, I choose not to concern myself with matters such as these that do not have an immediately significant impact on my job. It's not that I don't care about the ecological impact, it's just that I care more about the other aspects of my job (like tracking student progress and effectively instructing my students and athletes) than I do about whether my computer was plugged in to charge over the weekend."	

Note. N=438
[a]f = frequency distribution; [b]P = f/N(100*)*

From the analysis of data collected from the employees' responses, the most frequent response for why they supported their district's energy conservation program was because the employee knew they were assisting their district in saving money. Of the 438 completed surveys, this response was on 391 surveys representing almost 90% of the overall respondents. This factor received 95 more responses than the second most selected response. The second most selected response for why employees supported their district's energy conservation program was because the energy program was communicated on a regular basis. This response occurred 296 times; representing over

65% of the respondents. This factor occurred 79 times more frequently than the third most popular response. The third most selected response was because the energy conservation program was monitored for compliance. This response occurred 217 times; representing 49.5% of the surveys. When reviewing data for frequency percentages out of the possible 1,308 responses, these three factors contribute to over 69% of the overall responses. The remaining four responses combined equal 30.88%. Since three factors out of seven contributed for almost 70% of the total responses, the null hypothesis that there are no contributing factors for why an employee supported their district's energy conservation program is rejected.

Table 18

Contributing Factors on Why Employees Supported Their District's Energy Conservation Program

Factors	f[a]	P[b]	P[c]
The energy conservation program was school board policy.	102	23.3	7.80
The energy conservation program was monitored for compliance.	217	49.5	16.59
The energy conservation program was communicated on a regular basis.	296	67.6	22.63
I naturally cared about the environment.	185	42.2	14.14
I knew I was assisting the district in saving money	391	89.3	29.90
I knew my colleagues were being held to the same guidelines as I was being held to in terms of energy conservation.	93	21.2	7.11
Other	24	5.5	1.83
Total	1308		100.0

Note. N=438 Completed Surveys and R=1,308 Total Responses
[a]f = frequency distribution; [b]P = f/N(100); [c]P = f/R(100)

If a respondent selected "Other," he or she was asked to explain what other factors contributed to his or her supporting the energy conservation program. Table 19 displays the factors that employees listed as "Other." These statements from the respondent are verbatim from their response. The researcher believed some of these statements could have been categorized within one of the six factors previously listed. However, since the respondent responded then they believe that their response is different than one of the six factors.

Table 19

Employees' Responses to Other Reasons Why They Supported Their District's Energy Conservation Program

Respondent's statement
"Saves money for teacher salaries."
"It is stupid to waste energy."
"I feel like the money we save can help save jobs."
"Money saved can be spent on things students NEED to learn."
"Savings is what helps pay our district higher teacher's salaries."
"The results are noticeable."
"This is just something I have always done."
"I feel it is important."
"I firmly believe in the importance of conserving energy and resources."
"That is my lifestyle."
"Common Sense"
"I teach my own family to conserve energy so I feel I must be a good role model. I try to set a record for the longest amount of time that my students turn off all the lights and close the door with out me prompting them and then we celebrate."
"One of my close colleagues initially monitored the program, and I wanted to support them."
"The other two checks do not really apply. I was simply raised without so I only use heat/air/electricity when necessary. "
"I am doing what I have always done."
"I wanted to save money and jobs during this time."

(*Table 19 continues*)

(*Table 19 continued*)

Respondent's statement
"Public money is tight."
"Conserving energy is the right thing to do. That money can be spent on the kids."
"It made sense not to leave the air or heaters running after hours."
"Awards"
"I do it because it becomes habit."
"I supported the policy on energy conservation mainly because I was asked to. I felt like we were all in it together and I wanted to do my part, however small it was."
"Standard procedure for me."

Analysis of Research Question 7

The researcher was also interested in what factors will need to be in place to continue compliance with the district's energy conservation program. The researcher asked survey respondents to select three statements on what factors they believe need to be in place for them to continue to support their district's energy conservation program. Table 20 displays the frequency of responses selected for each statement representative of the 438 survey responses, as well as the percentages based on the frequency of the 438 surveys, and the percentage based on the overall 1,314 possible numbers of responses.

From the analysis of data collected from the employees' responses, the most frequent response for why employees will continue to support their district's energy conservation program is if the energy program continues to assist the district in saving money. This selection occurred 89.5% of the time on completed surveys. The second most selected response for why employees would continue to support their district's energy conservation program is if the energy program continues to be regularly communicated. This response was selected on 70.1% of the completed surveys. The third most selected response for why employees would continue to support their

district's energy program is if the energy program continues to be monitored for compliance. This response was selected 53.7% of the time. When reviewing data for frequency percentages out of the possible 1,308 responses, these three factors contribute to over 71% of the overall responses. The remaining four responses combined equal 28.93%. Since three factors out of seven contributed for over 70% of the total responses, the null hypothesis that there are no contributing factors on why an employee would continue to support their district's energy conservation program is rejected.

Table 20

Contributing Factors on Why Employees Will Continue to Support Their District's Energy Conservation Program

Factors	f[a]	P[b]	P[c]
The energy conservation program will need to be school board policy.	89	20.3	6.77
The energy conservation program will need to continue to be monitored for compliance.	235	53.7	17.88
The energy conservation program will need to continue to be communicated on a regular basis.	307	70.1	23.36
The energy conservation program for the district will continue if employees care about the environment.	160	36.5	12.18
The energy conservation program will need to continue to save the district money.	392	89.5	29.83
The energy conservation program will continue if all of my colleagues are held to the same guidelines.	113	25.8	8.60
Other	18	4.1	1.38
Total	1314		100.0

Note. N=438 Completed Surveys and R=1,314 Total Responses
[a]f = frequency distribution; [b]P = f/N(100); [c]P = f/R(100)

If a respondent selected "Other," he or she was asked to explain what other factors would need to be in place for him or her to continue to support the energy conservation program. These statements from the respondent are verbatim from their response. The researcher believed some of these statements could have been categorized within one of the six factors previously listed. However, since the respondent responded then they believe that their response is different than one of the six factors. Table 21 displays the respondents' statements to the other factors they may be needed for them to continue to support the energy program.

Table 21

Employees' Responses to Other Reasons Why They Will Continue to Support Their District's Energy Conservation Program

Respondent's statement
"Savings need to continue being put back into the district's budget for raises for teachers."
"If employees are able to see and hear the results (amount of money saved and what it is going to) then it will continue."
"I will continue to follow this program even if the district was no longer part of this program. I feel this program has proven itself over and over to be valuable to our district."
"I will conserve no matter what."
"Occasionally monitored."
"We win prizes for best conservation awareness!"
"Again, the other two checks do not apply much. I do this for no reason other than habit."
"It is the right thing to do."
"My room is not set up to heat/cool with 30+ bodies in the room. The remote monitoring does not take that into consideration."
"The program needs refinement."
"All schools need to be the same standards."
"It is the right thing to do and it just makes sense."
"We care about how much money the district has saved!"
"If I follow best practices, will I ever see monetary gain? Does all the savings just go to support the program?"
"It takes little effort to conserve energy if a person gets in the practice of doing it."
"If we see the money we are helping save."

The final question of the survey related directly to the theoretical framework of organizational learning. For learning to have occurred within the organization, energy conservation beliefs and behaviors would have to be embedded into the routines and culture of the organization. The final question asked survey respondents if the energy conservation program in your district has become part of the everyday practices of the district. Table 22 displays the frequencies of this question. According to the data collected from the respondents, energy conservation is part of the everyday practices of the districts that have utilized Company A's program to change employee beliefs and behaviors towards energy conservation. With over 95% of the respondents agreeing, organizational learning has occurred through the implementation of Company A's program.

Table 22

Frequency of Employees' Responses on Is Energy Conservation an Everyday Practice within Their District

Response	f[a]	P[b]
Yes	422	96.3
No	12	2.7
No response	4	0.9
Total	438	100.0

Note. N=438
[a] *f = frequency distribution;* [b] *P = f/N(100)*

Supplementary comments were asked five different times on the survey. The survey asked for employees to "Please feel free to respond further to any of the questions and/or statements listed above." This statement was asked after the Demographical Questions, Prior Statements, After Statements, Support Factors, and

Continued Factors. Several survey respondents did comment, and all comments are presented in Appendix F. All statements are categorized into Favorable, Neutral/Limited, or Unfavorable by section. When possible, the employee comments are presented as a direct quote. When a direct quote could not be used as it was written, an attempt was made to express the intent of the comment. Overall, several comments were favorable in regards to an employee's district's energy conservation program. The majority of unfavorable comments were directly related to the type of workspace HVAC thermostat within an employee's workspace.

Summary

This study examined the beliefs and behaviors of certain Oklahoma public school employees whose districts utilized Company A's transformational program concerning the program's ability to enable energy efficient practices and beliefs. The general observation from the data collected and analyzed for this study showed that Company A did have an affect on employee energy conservation behaviors and beliefs. Although the study showed that the majority of the employee's responses were consistent with respect to the independent variables, a few survey statements showed statistically significant differences allowing the researcher to reject the null hypothesis for those specific statements. A full interpretation and discussion of these results is provided in Chapter V.

CHAPTER 5

Conclusions, Implications, and Recommendations

This chapter reviews the purpose of the study and methodology used. A summary of the results is given with a connection to the literature, and the conclusions drawn are discussed. In addition, this chapter will also address the recommendations for practice and further research.

The objective of this study was to investigate the beliefs and behaviors of certain Oklahoma public school employees concerning the ability of Company A's transformational program to develop energy saving habits and attitudes, and enable organizational change regarding energy conservation. The study attempted to determine the important factors needed by a district in order for employees to support and sustain implementation of a district's energy conservation program. The study also investigated whether there were statistically significant differences in how an employee responded based on the employee's years of employment with the district, the type of HVAC thermostat within the employee's workspace, and the classification of the employee's workspace.

The following research questions guided this study:

- Research Question 1 – What is the level of success that Company A's transformational program has had in changing employee behavior towards energy conservation?
- Research Question 2 – What is the level of success that Company A's transformational program has had in changing employee beliefs towards energy conservation?

- Research Question 3 – Are there significant differences in energy conservation beliefs and behaviors between elementary and secondary school employees?
- Research Question 4 – Are there significant differences in energy conservation beliefs and behaviors between employees based on whether their heating, ventilation and air conditioning (HVAC) thermostat is controlled through an energy management system or controlled manually?
- Research Question 5 – Are there significant differences in energy conservation beliefs and behaviors between employees based on the years of employment within the district?
- Research Question 6 – What factors of school board policy, compliance monitoring, communication, or self-efficacy may have contributed to Company A's program in transforming employees to exhibit energy conservation behavior?
- Research Question 7 – What factors of school board policy, compliance monitoring, communication, or self-efficacy will need to be maintained so organizational learning knowledge does not depreciate and energy conservation behavior is sustainable?

To assist the researcher in answering the seven research questions, a descriptive survey was developed. The survey included 42 items that contained both Likert style questions as well as respondent choice questions. This survey was distributed to the employees of five public school districts in Oklahoma that have utilized Company A's energy conservation program. The survey was emailed to approximately 2,500 certified and support employees. The researcher received a total of 438 completed surveys.

The data was analyzed by SPSS 19.0 software. The data were analyzed based on the frequencies of responses of the employee's beliefs and behaviors towards energy conservation practices and attitudes prior to and after the implementation of Company A's energy conservation program. Mean statistics, frequencies, dependent t-test, independent t-tests and an ANOVA were used to analyze the employees' responses to answer the seven research questions.

Previous research indicates there are benefits in saving energy (Woodruff et al., 2012). Energy conservation programs cannot only improve a school's financial performance, but aid in developing sustainability policies (Schelly et al., 2011; Skoric, 2000). Public schools can reduce their energy use by 20-30% by implementing organizational and behavioral changes (USEPA, 2008). To assist public schools in their energy conservation endeavors, outside organizations may need to be utilized. Professional organizations can assist public schools in the formulation and implementation of an energy program focused on changing employee behavior.

Thousands of energy management programs are developed each year that yield substantial savings and return on investments (Woodruff, 2011). However, there is a need for thoroughness in determining between actual success and failure in achieving the desired outcome (Schalock, 2002). In today's accountability era, superintendents will need to know if energy conservation programs are effective and meeting their intended outcome. According to Guthrie (2009), programs cannot be judged by inputs alone, but on what they are able to achieve. This study set out to determine if Company A's energy conservation program was able to provide districts with a successful energy

conservation program by changing employee beliefs and behaviors in regards to energy conservation.

Implications of the Study

To answer Research Question 1 and Research Question 2, mean comparison procedures were conducted and analyzed. Survey respondents were asked to respond to 16 statements in regards to their behavior and beliefs prior to employment with the district or prior to implementation of Company A's energy conservation program. Survey respondents were also asked to respond to 16 statements in regards to their behavior and beliefs after employment with the district or after implementation of Company A's energy conservation program.

The results for Research Question 1 indicate that Company A's energy conservation program did have an impact on changing employee energy conservation behavior. The dependent t-test indicated all paired statements on behavior showed statistical significance. When analyzing the data, several more findings can be drawn from review of the mean scores.

One important finding is the impact Company A's program had on employees and their habit for setting back their manual thermostats at the end of the workday and for the weekend. After implementation, the mean scores increased by more than one scale point for each statement. When assessing both the strongly agreed responses for Paired Statement 1 and Paired Statement 2, there is a difference of 33 or more responses between the Prior and After Statements. Ensuring proper thermostat setback by employees can lead to substantial energy and monetary savings. This is important when schools have heating and air conditioning units that may run continually (Laine, 2010).

Both Rynn (2009) and USDOE (2001) state by setting back HVAC units at the end of the work day, weekends, and extended breaks, schools may be able to save a substantial amount of energy and money.

This finding is also important when compared with employee behavior to turning off workspace lights. Although the mean score for turning off lights was already within the Agree range (5.0) on the Likert Scale, it did increase by 0.26 points. This indicates that the majority of employees had already instilled this type of behavior within their routines, but had not applied energy conservation behavior to their workspace thermostat. This may have occurred for several reasons. One is that turning off lights appears to be a normal behavior, and a behavior that a person is accustomed to performing. Another reason is the behavior of setting back an HVAC thermostat has a direct influence on the comfort levels of workspace temperatures and/or goes against the employee's normal routine. In this case, turning off lights was a normal procedure with no correlation to comfort. A third reason this behavior was not occurring might be because changing employee behavior is difficult to implement (Scherbaum et al., 2008). According to the logic model of Company A, consistent monitoring and communication is essential in developing this type of change. By requiring and/or communicating the need for employees to apply energy conservation behavior towards all energy use, organizations can ensure energy savings (Woodroof, 2011). This is important because individual behaviors can have a tremendous impact on what a person will do towards energy conservation (Eggink, 2007). By establishing a culture where individual behaviors are focused on energy conservation in all areas, school districts can save

energy and money. From this study, Company A was able to develop energy conservation behaviors.

Not only did Company A's program have an affect on employee behavior within the districts, it also had an affect on an employee's behavior within his or her residence. When looking at employee behavior within his or her personal residence, one can note two important findings. First, Company A did have a positive impact on employee behavior within the employee's personal residence. Although the mean score of 4.98 was already high for thermostat setback within an employee's residence, it did improve to 5.41. This indicates that the operational procedures an employee learned through the organization, he or she was able to transfer this knowledge to his or her personal residence. According to organizational learning theory, knowledge can be procedural (Argote, 2013), and knowledge transfer is evident when experience acquired in one unit affects another (Argote et al., 2003). Although Company A is primarily utilized to assist public schools and larger organizations in developing energy conservation behaviors, their program allowed for the transfer of learned behaviors within the organization to be applied beyond the organizational setting.

Another important finding is in the comparison of the mean scores of personal residence HVAC setback and the workspace HVAC setback prior to implementing Company A's program. The mean score for residence setback was 4.98, as compared to the mean score of 4.24 for employee behavior within the district at the end of the workday. This difference in mean scores indicate that employees were applying HVAC setback procedures within their personal residence and were more concerned with energy conservation when it affects them personally. Possible reasons why employees

were not applying this behavior within their workspace may be because it did not affect them monetarily or was not part of district protocol. The same can be said for organizations, higher educational institutions, and school districts and their energy conservation programs. According to AASCU (2008) and Bauerschmidt (2011), energy conservation was being used as a cost containment strategy during continued allocation losses, which means allocation losses were directly affecting the organization. This is consistent with public school superintendents who were utilizing energy conservation as a way to maintain the district's financial stability during financial difficulties (Abshier et al., 2011; NYASBO, 2005). From the survey data, it appears Company A's program assisted in implementing an energy conservation program that will assist districts during tough financial times. By incorporating Company A's program to assist in implementing an energy conservation program, districts were able to increase awareness in energy conservation that can be applied within the organization, as well as the behaviors already taking place at an employee's residence. After implementation of Company A's program, both mean scores are respectively 5.41 for personal residence and 5.34 for workspace.

The results for Research Question 2 indicate that Company A's energy conservation program did have an impact on employee energy conservation beliefs. The dependent samples t-test indicated all paired statements on employee beliefs showed statistically significant differences. According to respondents, Company A had an impact on their beliefs in regards to energy conservation. When comparing mean score growth between the behavior and the belief statements, the growth between the paired prior and after statements were larger in the statements that reflected employee

beliefs, except for one behavior statement (Paired Statement 4). Table 23 displays the mean difference, standard deviation for the paired differences, and the effect size.

Table 23

Effect Size of Paired Samples Test

Paired Samples	*Mean*	Standard Deviation	Effect Size
Pair 1	1.055	1.595	.74
Pair 2	1.046	1.578	.76
Pair 3	.260	1.073	.31
Pair 4	1.302	1.852	.94
Pair 5	.573	1.392	.51
Pair 6	1.234	1.589	.83
Pair 7	1.142	1.617	.76
Pair 8	1.178	1.603	.80
Pair 9	1.132	1.575	.77
Pair 10	1.570	1.767	1.03
Pair 11	1.519	1.742	1.05
Pair 12	1.525	1.696	1.05
Pair 13	1.471	1.717	.98
Pair 14	1.468	1.790	1.00
Pair 15	.429	.972	.38
Pair 16	.223	.785	.27

Note. The mean and standard deviation shown is from the paired differences of the dependent t-test. Effect size was calculated using the formula for Cohen's *d* and the mean scores and standard deviations reported in Table 10 and Table 12.

This finding about the mean score increase of the belief statements may indicate that although employees exhibited energy conservation behaviors, Company A's program had a greater impact on employees' beliefs. With this finding, it will be important for districts to understand, identify, and remember the importance of employee motivational factors. According to Finlinson (2005), understanding and

identifying employee motivational factors for consuming energy can benefit an organization in energy conservation. Programs focused on identifying and changing employee behaviors and attitudes can assist in this endeavor (Ehrhardt-Martinez et al., 2009). From the findings, Company A's program can assist an organization in developing such a program.

Although the mean scores did increase the greatest within the belief statements, it is important to note the changes in standard deviations within the behavior statements. The average standard deviation for the seven prior behavior statements was 1.385. The standard deviations for the seven after behavior statements exhibit a narrower variance with an average standard deviation of 0.845. For comparison purposes, the average standard deviation for the nine prior belief statements was 1.507 and the nine after belief statements was 1.447. This finding suggests that although Company A had an impact on employee beliefs, Company A was also able to develop more consistent energy conservation behaviors amongst the districts' employees, as noted earlier. This finding indicates that behaviors have become a learned function of the organizations through the procedural practices of the organization. According to Argote (2013), an indication of organizational learning can be procedural knowledge.

Research Questions 3-5 took into consideration certain independent variables, including years of employment, type of HVAC thermostat within the employee workspace, and the site classification of the employee's workspace. Analyzing for statistically significant differences amongst these variables will allow for superintendents, school administrators, and/or energy managers to understand where attention may need to be placed in order to establish compliance for an energy

conservation program. For example, does extra monitoring of compliance need to be placed on certain employees and or certain school sites?

Research Question 3 was concerned with how an employee would respond regarding his or her energy conservation beliefs and behaviors based on whether their workspace was located at an elementary or secondary school site. The results of the study indicated there is no statistically significant differences in how an employee responded. The importance of this finding is that when a district is implementing an energy conservation program, all district employees, regardless of the type of workspace thermostat, will need to be included as a vital member if the district wants to ensure a successful energy conservation program.

Research Question 4 was concerned with how an employee would respond regarding his or her energy conservation beliefs and behaviors based on whether their HVAC thermostat is controlled manually or through an EMS/PT. The results of the study indicated that overall there is no statistically significant differences in how an employee responded. The importance of this finding is that when a district is implementing an energy conservation program, all district employees, regardless of the type of workspace thermostat, will need to be included as a vital member if the district wants to ensure a successful energy conservation program. Although this study investigated employee behaviors and beliefs, it is consistent with other studies that investigated the effect of energy-retrofitted school buildings as compared to conventional school buildings (Issa, et al, 2011; Schelly et al., 2011). In particular, Issa et al. (2011) state that their findings showed no statistically significant difference in total energy costs between conventional and energy-retrofitted schools.

However, when looking at the researcher's study, 6 of the 32 statements resulted in statistically significant differences at an alpha level of 0.05. The researcher believes two of the six statements (AS1 and AS2) should be excluded as statistically significant findings. Statements AS1 and AS2 asked about an employee's behavior if the employee had a manual thermostat within their workspace. Statement AS1 asked if the employee setback or turned off his or her manual thermostat at the end of the workday. Statement AS2 asked if the employee ensured setback or turned off his or her manual thermostat for the weekend. The choices were SD, D, MD, MA, A, SA, or My Work Pattern Does Not Fit This Criteria (NA). Because this statement asked specifically about a manual thermostat, the intent was for employees that utilized an EMS/PT thermostat to respond NA. However, several EMS/PT thermostats allow employees to manually control for room set points during occupied times, as well as to override during unoccupied times. Since EMS/PT thermostats should automatically setback and/or EMS/PT employees were confused with the statement, the researcher believes these two statements should not be included as important findings from the study.

The other four statements that showed statistically significant differences at an alpha level of 0.05 focused on employee beliefs. The results of the study indicate that there is a statistical significance between employees whose HVAC thermostat is controlled manually or by an EMS/PT in regards to the employee's concern for whether his or her air conditioning or heating units continues to run after school hours or during the weekend. By analyzing the mean scores from the survey, it is evident that employees with manual thermostats had a higher mean score and are more concerned than employees with an EMS/PT thermostat. As stated earlier, several studies have

been done on energy-retrofitted and conventional school buildings, but little appears to be known about the employees within these facilities. From this study, it is evident from the employees surveyed that employees who control their HVAC thermostats manually are more concerned with the energy being consumed by their units during unoccupied times. Again, it is important to note that with an alpha level of 0.00156, that these statements would not be considered strong statistically significant differences, but the researcher wanted to address these statements due to the fact that this study is an exploratory study, and the findings may be a starting point for further investigations.

As noted, several studies have been done comparing conventional and energy-retrofitted schools and buildings. It is important to note that these studies focused solely on the buildings and or employees as a whole. Issa et al. (2011) study is used as an example, which found no statistically significant differences between conventional and energy-retrofitted buildings when assessed for energy cost. However, when looking at employee behaviors and attitudes, Schelly et al. (2012) determined that employees were vital in the success of one Colorado school out performing other retrofitted or designed green schools. They also noted in a previous study that thousands of existing schools have the potential to become energy efficient through energy conservation, but this will require more than just physical improvements to the buildings (Schelly et al., 2011).

The findings of the current study indicate that although retrofitting school buildings can assist in energy efficiency, a major component in energy conservation still needs to be employee behaviors and beliefs. Granade et al. (2009) recommend that increased education and awareness be part of the holistic approach in energy

conservation. Increasing employee concerns about energy conservation can have a profound effect on the amount of energy being consumed (Eggink, 2007). Another reason why energy conservation efforts should be concerned with employee behaviors is because mechanical systems, such as an HVAC energy management system, can have problems and not operate as intended, which can definitely lead to increased energy consumption (Laine, 2010; Navarro, 2009). By being focused on the employees' behaviors and beliefs, school districts can continue to ensure an effective energy conservation program. From the literature and the supplementary comments afforded by the survey, the majority of the unfavorable comments were aligned to EMS/PT thermostat systems and EMS/PT operations.

Research Question 5 was concerned with how an employee would respond regarding his or her energy conservation beliefs and behaviors based on the number of years of employment with the district. The results of the study indicated that overall there is no statistically significant differences in how an employee responded based on his or her years of employment with the district. The importance of this finding supports the ability of Company A to instill energy conservation beliefs and behaviors within the organization as a whole. The lack of overall statistically significant differences between first year, one to three years, or four years or more employment with the district, indicates that regardless of when an employee was hired, the employee is applying energy conservation behaviors and the district's energy conservation program is part of the district's culture.

The study did conclude that 8 of the 32 statements did show statistically significant differences. These 8 statements were PS12, AS1, AS6, AS7, AS8, AS9,

AS11, and AS12. Prior Statement 12 was the only statement to result in statistically significant differences between employees with one to three years of employment and employees with four years or more employment. The other seven statements that resulted in statistically significant differences were between first year employees with the district and employees with four years or more employment. This finding indicates that employees who were employed during the implementation of Company A's program held stronger beliefs about energy conservation. This may be in part due to the logic model of Company A's transformational program that focuses on monitoring and communicating during the implementation stages of the program.

Secondly, this finding may also indicate that energy conservation is part of the district culture, which equates to organizational learning. Fitzpatrick (2005) noted that organizational culture is a receptacle for organizational memory, which is critical for organizational learning. When information is stored in receptacles, operational patterns become part of the culture (Probst & Büchel, 1997). A culture where employees trust each other and have specific processes enables the organization to retain learned knowledge (Argote, 2013). The statistically significant difference between new employees and those with four or more years of experience, shows energy conservation behaviors and beliefs became a learned trait through the organization's culture. Because there were no statistically significant differences between first year employees and those who have been employed for one to three years, or between employees with one to three years of employment and those who have been employed four years or more indicates that overtime, employees became more concerned with how their energy conservation actions affect the district and/or school site. It is important to note that

although these eight statements did show statistically significant differences, the effect size of these differences where in the low range when effect size was analyzed using eta-squared.

Research Question 6 asked employees why they supported their district's energy conservation program. A survey respondent could select from seven factors, which included the following: (1) the program is school board policy, (2) monitored for compliance, (3) regularly communicated, (4) the employee naturally cared about the environment, (5) the program will save the district money, (6) the employee's colleagues are being held to the same guidelines, or (7) the employee could list another reason. The number one reason why employees supported the program was because they were aware that their actions could save the district money. The second and third most common response was the energy conservation program was communicated on a regular basis and monitored for compliance. This is important because it allows school administrators and energy managers to know the importance of these three factors and to focus on these during implementation stages.

These three factors are consistent with the literature. Skoric (2000) suggest schools need to communicate to stakeholders the importance of energy conservation. By supplying employees with energy conservation awareness, an employee can learn energy conservation behaviors (Carricco & Riemer, 2011; Schelly et al., 2012; Siero et al., 1996). Not only is communication a necessity, but energy audits are also. Compliance monitoring through energy audits is a useful strategy for developing energy conservation behaviors (Rynn, 2009; Schelly et al., 2011; Skoric, 2000). Fowler (2004)

stated that compliance monitoring assists in creating and developing employee buy-in that will be needed for programs and policies to be successful.

The final research question asked what factors would be most important for the employee to continue to support their district's energy conservation program. An employee could select between (1) school board policy, (2) continued monitoring for compliance, (3) regularly communicating the program, (4) if the employee continues to naturally care about the environment, (5) if the program continues to save the district money, (6) if colleagues continue to be held to the same guidelines as they are, or (7) another reason on what would keep them supporting their district's energy conservation program. Identical to Research Question 6, the number one reason was the program would need to continue to save the district money through energy conservation practices. This finding closely aligns to Yukl's (2009) comment in regards to organizational learning and that learned knowledge will need to continue to be relevant if institutionalization is the goal. The second most selected reason was to continually communicate the program. This could include the guidelines of the program, the reminders of the program, and the savings of the program. The third most selected reason was to continue to monitor for compliance. This will require the district's energy manager and or school administrators to continue to audit each of their school sites for compliance to the district's energy conservation guidelines. These findings are consistent with the previous mentioned literature (Carricco & Riemer, 2011; Fowler, 2004; Rynn, 2009; Schelly et al., 2012; Siero et al., 1996; Skoric, 2000). It will be important for superintendents, school administrators, and/or energy managers to note

these three factors, because as Argote (2013) states, organizations can deploy strategies to minimize forgetting, which leads to knowledge depreciation.

The researcher's survey also asked employees if the energy conservation program in their district have become an everyday practice within the district. Over 96% of the survey respondents agreed that energy conservation has become an everyday practice within the district. According to the researcher, this finding indicates that organizational learning occurred within the districts surveyed. The literature states that learning occurs through the individuals in the organization and that organizational learning occurs when those individuals have embedded the learned knowledge in a repository, such as the routines and culture of the organization (Argote, 2013). It is important to note that individual learning does not equate to organizational learning; but when individual learning is documented and followed, the organization has gained knowledge and this knowledge then exists within the organization's context or culture (Probst & Büchel, 1997). Organizations will not automatically change, but change can take place through implemented and sustained learning by individuals and the collective whole (Russ, 2006). Company A's transformational program appears to have been successful in developing energy conservation behaviors and beliefs in the employees surveyed.

Conclusions and Limitations

Energy conservation can be an integral part of a school district's practice to assist in maintaining a healthy school budget, as well as in off setting unpredictable allocation losses. From the study, Company A's energy conservation program was able to assist school districts in developing energy conservation behaviors and beliefs within

their employees. The findings of this study indicated that after implementing Company A's program, energy conservation has become part of the districts' culture. It will be imperative for school districts to focus on educating their employees on how their actions can assist the district in saving money, regularly communicating the program to all employees, and continuing to monitor all employees for compliance to the district's energy conservation guidelines. This study also concluded that in general, all employees held and applied similar behaviors and beliefs towards their energy conservation actions.

Before discussing the researcher's recommendations for practice and future studies, it is important to note some of the limitations, such as a skewed response rate, that can be a threat to the statistical conclusions of this study. First, it is important to remember that the researcher utilized a self-reporting survey. When a self-reporting survey is used, respondents may not actually represent their true behaviors and beliefs. Second, the generalization of the responses may not truly represent the population. Although the researcher was able to collect 438 completed surveys, the overall population was approximately 2,500 employees. Of the 438 completed surveys, roughly 83% were from certified employees. It is also advised to be cautious of the responses on the surveys because little is known about the respondents other than the demographical data that was reported. Lastly, this study was nonexperimental rather than quasi-experimental; therefore one should be careful with casual inferences. The researcher only assessed certain districts that have utilized Company A and did not have a control group of districts that did not utilize Company A or another energy

management company. The next section is the researcher's recommendations for practice and future studies.

Recommendations

Recommendations for Practice

Oklahoma public school superintendents should be cognizant of the amount of money being spent by their district for utility expenses. An energy audit should be conducted that assesses the amount of energy being consumed by each building based on square footage of the building and the occupancy levels of the building. If the results of the energy audit reveal that the district is functioning at a non-conservative level, then superintendents may want to consider an energy conservation program. As noted in the conceptual framework from Chapter II, energy companies can assist public school districts in establishing an energy conservation program. This study investigated whether Company A was able to assist five public school districts in establishing an energy conservation program by changing employees' behaviors and beliefs. From the results of the study, the researcher suggests the following recommendations for practice:

1. Oklahoma public school superintendents should consider utilizing Company A or an energy management company with a similar logic model to assist in establishing an energy conservation program. Company A was able to change employee behaviors and beliefs through their transformational energy program. The mean statistics of the behavioral and belief statements revealed that a change in employee behaviors and beliefs did take place through Company A's program. Results also revealed that energy conservation practices have become

part of the districts culture, therefore, conserving both energy and district finances.

2. Superintendents, school administrators, and/or energy managers working in public schools are aware of many variables that may or may not have an affect on energy conservation behaviors. When a public school district first starts an energy conservation program, an energy manager's attention will need to be focused on such variables. This study looked at the variables of years of employment, type of HVAC thermostat within an employee's workspace, and the classification of the employee's workspace. From this study, superintendents, school administrators, and/or energy managers will need to continue to work with all employees within a public school district. Few statistical differences were determined from the responses of the employees' behaviors based on these variables.
3. The survey asked respondents to select three reasons why they supported their district's energy conservation program. Superintendents, school administrators, and/or energy managers who are aware of these reasons would be better positioned to make changes necessary to achieve successful implementation of a district's energy conservation program. Superintendents, school administrators, and/or energy managers who actively monitor compliance of the program, continually communicate components of the energy conservation program, and provide information to each employee on how their actions can contribute to substantial savings throughout the district, stand a better chance of gaining support for their energy conservation program.

4. The survey also asked respondents to select three reasons they believe will need to be in place for the district's energy conservation program to continue to be supported. Superintendents, school administrators, and/or energy managers who are aware of the three most selected reasons are also in a better position to continue to have employees support the district's energy conservation program. Communicating the positive results and monetary savings of the program, and monitoring for compliance will allow for superintendents, school administrators, and/or energy managers to sustain an energy conservation program.
5. Superintendents, school administrators, and/or energy managers should review the actual comments made by the survey respondents. Survey respondents were allowed to make additional statements in regard to the survey or had selected "other" as a reason they supported and/or continue to support the district's energy conservation program. These comments may provide a more personal perspective of an employee's beliefs about a district's energy conservation program. The majority of these comments generally supported the results of this study, but all comments allow for a wider perspective on the topic of implementing an energy conservation program.
6. The last recommendation for practice is for environmental ethics to be embedded within leadership training courses for school administration and for states to consider energy conservation policies for public schools. If higher educational institutes incorporated aspects of environmental ethics and energy conservation practices within certain courses, superintendents and site principals would have a better understanding of the monetary costs associated with utility

expenditures and possible ways to conserve not only their allocated budgets, but also energy. If state governments developed policies that required certain components of energy conservation practices be incorporated within public schools, then public schools could be better stewards of their finances as well as possibly develop more energy conscientious employees.

Recommendations for Further Study

Based on the research of this study, the following recommendations are made for further studies:

1. Further research could be conducted disaggregating the results of the survey and investigating how each district responded. This would allow for a more detailed analysis to determine if Company A was equally successful in all five public school districts.
2. Based on the disaggregation of district data, additional research could be completed to ascertain if other factors beyond Company A had a pivotal role in assisting in employee energy conservation behaviors and/or beliefs. Factors to be assessed could be frequencies of communication, introductory district programs, role of energy manager, reward systems, etc.
3. A follow-up study could be conducted on the five districts and their energy conservation program. A researcher could determine if the program is still being sustained or if knowledge has depreciated. The study could assess what factors have led to the sustainability or the cause of the depreciation of organizational learning.

4. Additional research could be conducted on other public schools that utilize Company A's program. This study only investigated five public school districts in Oklahoma within a certain time period of implementation and district employee size. Further study could include the other 13 public school clients in Oklahoma, as well as former Oklahoma public school clients.
5. Since this study was based on five Oklahoma school districts that have utilized Company A's energy conservation program, additional studies could be done in other states. From the literature in Chapters 1 and 2, all states are faced with fluctuating budgets based on state revenues. Company A works with public schools and organizations in 48 states.
6. Additional research could be conducted to determine if the beliefs and behaviors of other organizations' employees are similar to the results of public school employees. This study only assessed the employees of five public school districts. Company A currently works with career technology centers, higher education institutions, churches, and other large organizations.
7. Further research could also be conducted comparing the ability of Company A to bring about employee behaviors and beliefs towards energy conservation and the ability of similar energy companies that are currently working with public school districts. There are numerous energy management companies that public schools could consider using when implementing an energy conservation program. In addition, a study could be conducted comparing public school district using Company A's program and a district that did not utilize an energy management company's program.

8. Lastly, a longitudinal study could be conducted on a public school district prior to the implementation of Company A's program. This would allow for a pre-survey to be given to district employees on their current behaviors and beliefs towards energy conservation. After implementation of the program, post-surveys could be given to district employees. This research study could involve a mixed-methodology approach and have actual interviews and observations from the district throughout the implementation of Company A's program.

Summary

Oklahoma public schools are inadequately funded and rely heavily on their superintendents for education and finance direction. During periods of financial hardship, their leadership may be needed more profoundly than ever before. Public schools spend a great deal on utility costs and may have the potential to conserve large amounts of energy. Utilizing an energy consultant or company can assist public schools in low-cost strategies that may be able to change employee behavior and beliefs that will allow for superintendents to replace lost funding resources through offsetting their utility expenditures.

The purpose of this study was to explore the relationship between Company A's transformational energy conservation program and employees' energy conservation behaviors and beliefs within five Oklahoma public school districts. The findings indicate that Company A's program did have a change on employees' energy conservation behaviors and beliefs. The results of this study should contribute to the overall understanding that researchers have of the relationship between public school districts and their use of energy management companies.

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Appendix A

Employee Energy Conservation Survey

EMPLOYEE ENERGY CONSERVATION SURVEY

I am currently a doctoral student in the dissertation stage at the University of Oklahoma and I thank you for taking the time to participate in this short survey. Your participation in this survey is completely voluntary. Your confidentiality and anonymity are assured. Completion of this survey is your consent for your responses to be compiled with others taking this energy conservation survey. Your input and time are greatly appreciated.

EMPLOYEE DEMOGRAPHICS

How many years have you been employed at the district where you currently work?

- ❍ This is my first year to be employed with the district.
- ❍ 1-3 years
- ❍ 4 years or more

Which of the following best describes your role within the district?

- ❍ Certified Employee
- ❍ Support Staff Employee
- ❍ Other

Which of the following best describes your work place?

- ❍ Elementary School Setting - An elementary school setting for this survey is defined as any school with any grade combination primarily dealing with grade levels between pre-kindergarten through sixth grade classes.
- ❍ Secondary School Setting - A secondary school setting for this survey is defined as any school with any grade combination primarily dealing with grade levels between sixth grade through twelfth grade classes.
- ❍ Other - Any facility that houses no classroom instruction such as transportation, central office, maintenance, etc.

Which of the following best describes your classroom or workspace thermostat?

- ❍ Manual Thermostat
- ❍ Energy Management System (EMS) or Programmable Thermostat (PT) - An EMS or PT is a computerized program that automatically controls the thermostat for occupied and unoccupied status.
- ❍ No Thermostat
- ❍ Unsure

Are you aware that your district has an energy conservation program?

- ❍ Yes
- ❍ No

Please feel free to respond further to any of the questions listed above:

PRIOR to employment with your district or PRIOR to your district implementing a company's energy management program, please respond to the following statements regarding your workspace:

	Strongly Disagree (1)	Disagree (2)	Moderately Disagree (3)	Moderately Agree (4)	Agree (5)	Strongly Agree (6)	My Work Space or Work Pattern Does Not Fit This Criteria (7)
I setback or turned off my manual thermostat at the end of the workday. (1)	❍	❍	❍	❍	❍	❍	❍
I ensured my manual thermostat was setback or turned off for the weekend. (2)	❍	❍	❍	❍	❍	❍	❍
I turned off ALL lights at the end of the workday (excluding security lights). (3)	❍	❍	❍	❍	❍	❍	❍
I unplugged or turned off my personal appliances during extended breaks (winter/spring). (4)	❍	❍	❍	❍	❍	❍	❍
I unplugged or turned off my personal appliances during summer vacation. (5)	❍	❍	❍	❍	❍	❍	❍

PRIOR to employment with your district or PRIOR to your district implementing a company's energy management program, please answer the following statements in regards to energy conservation:

	Strongly Disagree (1)	Disagree (2)	Moderately Disagree (3)	Moderately Agree (4)	Agree (5)	Strongly Agree (6)	My Work Pattern Does Not Fit This Criteria (7)
I was concerned whether my air conditioning was left on after hours during the school week. (6)	❍	❍	❍	❍	❍	❍	❍
I was concerned whether my air conditioning was left on all weekend. (7)	❍	❍	❍	❍	❍	❍	❍
I was concerned whether my heater was left on after hours during the school week. (8)	❍	❍	❍	❍	❍	❍	❍
I was concerned whether my heater was left on all weekend. (9)	❍	❍	❍	❍	❍	❍	❍
I was concerned whether my colleagues were setting	❍	❍	❍	❍	❍	❍	❍

back or turning off their thermostats at the end of the workday. (10)							
I was concerned with the amount of energy being consumed at the district level. (11)	❍	❍	❍	❍	❍	❍	❍
I was concerned with the amount of energy being consumed at the site level where I work. (12)	❍	❍	❍	❍	❍	❍	❍
I was concerned with the amount of energy I was consuming within my workspace. (13)	❍	❍	❍	❍	❍	❍	❍
I was concerned with the amount of money being spent by the district for utility expenses. (14)	❍	❍	❍	❍	❍	❍	❍

PRIOR to employment with your district or PRIOR to your district implementing a company's energy management program, please answer the following statements in regards to your residence:

	Strongly Disagree (1)	Disagree (2)	Moderately Disagree (3)	Moderately Agree (4)	Agree (5)	Strongly Agree (6)	My Residence Does Not Fit This Criteria (7)
I setback or turned off my thermostat at my own residence when it was not occupied. (15)	❍	❍	❍	❍	❍	❍	❍
I turned off all lights at my own residence when it was not occupied. (16)	❍	❍	❍	❍	❍	❍	❍

Please feel free to respond further to any of the questions and/or statements listed above:

AFTER employment with your district or AFTER your district implemented a company's energy management program, please respond to the following statements regarding your workspace:

	Strongly Disagree (1)	Disagree (2)	Moderately Disagree (3)	Moderately Agree (4)	Agree (5)	Strongly Agree (6)	My Work Space or Work Pattern Does Not Fit This Criteria (7)
I setback or turn off my manual thermostat at the end of the workday. (1)	❍	❍	❍	❍	❍	❍	❍
I ensure my manual thermostat is setback or turned off for the weekend. (2)	❍	❍	❍	❍	❍	❍	❍
I turn off ALL lights at the end of the workday (excluding security lights). (3)	❍	❍	❍	❍	❍	❍	❍
I unplug or turn off my personal appliances during extended breaks (winter/spring). (4)	❍	❍	❍	❍	❍	❍	❍
I unplug or turn off my personal appliances during summer vacation. (5)	❍	❍	❍	❍	❍	❍	❍

AFTER employment with your district or AFTER your district implemented a company's energy management program, please answer the following statements in regards to energy conservation:

	Strongly Disagree (1)	Disagree (2)	Moderately Disagree (3)	Moderately Agree (4)	Agree (5)	Strongly Agree (6)	My Work Pattern Does Not Fit This Criteria (7)
I am concerned whether my air conditioning is left on after hours during the school week. (6)	❍	❍	❍	❍	❍	❍	❍
I am concerned whether my air conditioning is left on all weekend. (7)	❍	❍	❍	❍	❍	❍	❍
I am concerned whether my heater is left on after hours during the school week. (8)	❍	❍	❍	❍	❍	❍	❍
I am concerned whether my heater is left on during the weekend. (9)	❍	❍	❍	❍	❍	❍	❍
I am concerned	❍	❍	❍	❍	❍	❍	❍

whether my colleagues are setting back or turning off their thermostats at the end of the workday. (10)							
I am concerned with the amount of energy being consumed at the district level. (11)	❍	❍	❍	❍	❍	❍	❍
I am concerned with the amount of energy being consumed at the site level where I work. (12)	❍	❍	❍	❍	❍	❍	❍
I am concerned with the amount of energy I was consuming within my workspace. (13)	❍	❍	❍	❍	❍	❍	❍
I am concerned with the amount of money being spent by the district for utility expenses. (14)	❍	❍	❍	❍	❍	❍	❍

AFTER employment with your district or AFTER your district implemented a company's energy management program, please answer the following statements in regards to your residence:

	Strongly Disagree (1)	Disagree (2)	Moderately Disagree (3)	Moderately Agree (4)	Agree (5)	Strongly Agree (6)	My Residence Does Not Fit This Criteria (7)
I setback or turn off my thermostat at my own residence when it is not occupied. (15)	❍	❍	❍	❍	❍	❍	❍
I turn off all lights at my own residence when it is not occupied. (16)	❍	❍	❍	❍	❍	❍	❍

Please feel free to respond further to any of the questions and/or statements listed above:

Supporting Your District's Energy Conservation Program
Do you feel you have been supportive of your district's energy conservation program?
❍ Yes
❍ No

Because you answered YES on the previous question, please identify the THREE most important reasons you supported your district's energy conservation program:

- ❑ The energy conservation program was school board policy.
- ❑ The energy conservation program was monitored for compliance.
- ❑ The energy conservation program was communicated on a regular basis.
- ❑ I naturally cared about the environment.
- ❑ I knew I was assisting the district in saving money.
- ❑ I knew my colleagues were being held to the same guidelines as I was being held to in terms of energy conservation.
- ❑ Other (Please Explain)

Because you answered NO on the previous question, please explain why you have not been supportive of your district's energy conservation program:
Please feel free to respond further to any of the questions and/or statements listed above:

Continuing to Support Your District's Energy Conservation Program

Please select THREE of the following reasons that are most important to you as a district employee in order for you to continue to support your district's energy conservation program:

- ❑ The energy conservation program will need to continue to be school board policy.
- ❑ The energy conservation program will need to continue to be monitored for compliance.
- ❑ The energy conservation program will need to be communicated on a regular basis.
- ❑ The energy conservation program for the district will continue it employees care about the environment.
- ❑ The energy conservation program will need to continue to save the district money.
- ❑ The energy conservation program will continue if all of my colleagues are held to the same guidelines.
- ❑ Other (Please Explain)

Has the energy conservation program in your district become a part of the everyday practices in the district?

- ❍ Yes
- ❍ No

Please feel free to respond further to any of the questions and/or statements listed above:

Appendix B

Recruitment for Participation Email

Dear District Employee:

I am inviting you to participate in a research project about the beliefs and practices of certain Oklahoma public school employees regarding the ability of an energy management company's transformational program to develop energy efficient behaviors. I am a doctoral student in the Educational Administration, Curriculum, and Supervision program at the University of Oklahoma. This research project will fulfill the requirement of my dissertation. Your district is one of five that was selected for this research project because the focus of the research is on the beliefs and practices of certain Oklahoma public school employees that have utilized an energy management program. The information obtained will be kept confidential and used solely for research purposes.

The information obtained from this research will provide insight to the beliefs and practices of certain Oklahoma public school employees concerning the ability of an energy management company to instill energy efficient behaviors. If you have any questions, please contact me, Mr. Jon Myers, at jmyers@nobleps.com or 405-823-0066 or my dissertation committee chairperson, Dr. Jeffrey Maiden, maiden@ou.edu or 405-325-1524.

The following information outlines the research study and the links to participate or not in the study.

Project Title: Employee Beliefs Regarding an Energy Management Company's Transformational Program in Developing Energy Efficient Behaviors in Public Schools
Principal Investigator: Jonathan V. Myers
Department: Educational Administration, Curriculum, and Supervision (EACS)

You are being asked to volunteer for this research study. This study is being conducted at The University of Oklahoma. You were selected as a possible participant because your district is one of five that has been selected for this research project because the focus of the research is on the beliefs and practices of certain Oklahoma public school employees that have utilized an energy management program
Please read this information sheet and contact me to ask any questions that you may have before agreeing to take part in this study.

Purpose of the Research Study
The purpose of this study is to obtain information that may provide insight into the beliefs and practices of certain Oklahoma public school employees concerning the ability of an energy management company to instill energy efficient behaviors.

Number of Participants
About 2,200 public school employees will be asked to participate in this study. Of that 2,200, approximately 1,450 are certified staff employees and 750 are support staff employees.

Procedures
If you agree to be in this study, you will be asked to answer a short survey. This survey will be online and all responses will be anonymous.

Length of Participation
Completing the online survey should only take three to five minutes of your time. The online survey will be open for participants beginning late-November (2013) and closing mid-December (2013).

Risks and Benefits
There are no risks and no benefits from being in this study.

Confidentiality
In published reports, there will be no information included that will make it possible to identify you. Research records will be stored securely and only approved researchers will have access to the records.

Voluntary Nature of the Study
Participation in this study is voluntary. If you withdraw or decline participation, you will not be penalized or lose benefits or services unrelated to the study. If you decide to participate, you may decline to answer any question and may choose to withdraw at any time.

Contacts and Questions
If you have concerns or complaints about the research, please feel free to contact Jon Myers at 405-823-0066 or by email at jmyers@nobleps.com. Also you may contact Dr. Jeffrey Maiden at 405-325-1524 or by email at maiden@ou.edu. Please contact the researcher(s) if you have questions or if you have experienced a research-related injury. If you have any questions about your rights as a research participant, concerns, or complaints about the research and wish to talk to someone other than individuals on the research team or if you cannot reach the research team, you may contact the University of Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or irb@ou.edu.

The OU IRB has approved the content of this message but not the method of distribution. The OU IRB has no authority to approve distribution by mass email. *Please keep this information sheet for your records. By providing information to the researcher(s), I am agreeing to participate in this study.*

- ⭘ I agree to participate (click should connect to survey)
- ⭘ I decline (click should connect to a Thank You for considering page)

This study has been approved by the University of Oklahoma, Norman Campus IRB.
IRB Number: 3684 **Approval date:** 11/14/2013

The University of Oklahoma is an equal opportunity institution.

Appendix C

Table C1

Group Statistics for Elementary (E) and Secondary (S) School Employees

Statement	E or S	N	Mean	Standard deviation	Standard error mean
PS1	E	142	4.14	1.732	.145
	S	163	4.34	1.552	.122
PS2	E	142	4.20	1.735	.146
	S	162	4.48	1.505	.118
PS3	E	167	5.41	1.233	.095
	S	204	5.57	0.893	.063
PS4	E	170	4.49	1.837	.141
	S	201	4.43	1.785	.126
PS5	E	165	5.21	1.408	.110
	S	190	5.24	1.347	.098
PS6	E	169	3.69	1.528	.118
	S	200	3.90	1.482	.105
PS7	E	169	3.80	1.557	.120
	S	199	3.90	1.532	.109
PS8	E	168	3.76	1.513	.117
	S	199	3.89	1.507	.107
PS9	E	169	3.81	1.543	.119
	S	199	4.03	1.524	.108
PS10	E	170	2.91	1.415	.109
	S	202	2.93	1.471	.104
PS11	E	173	3.25	1.448	.110
	S	207	3.30	1.510	.105
PS12	E	175	3.31	1.372	.104
	S	205	3.21	1.488	.104

(*Table C1 continues*)

(*Table C1 continued*)

Statement	E or S	N	Mean	Standard deviation	Standard error mean
PS13	E	175	3.34	1.481	.112
	S	205	3.35	1.564	.109
PS14	E	172	3.42	1.455	.111
	S	205	3.49	1.586	.111
PS15	E	181	4.93	1.298	.096
	S	208	5.03	1.217	.084
PS16	E	180	5.40	0.907	.068
	S	208	5.36	0.938	.065
AS1	E	135	5.30	1.259	.108
	S	150	5.30	1.225	.100
AS2	E	133	5.36	1.227	.106
	S	149	5.41	1.145	.094
AS3	E	175	5.75	0.707	.053
	S	203	5.75	0.636	.045
AS4	E	177	5.79	0.639	.048
	S	202	5.66	0.771	.054
AS5	E	174	5.79	0.656	.050
	S	200	5.76	0.636	.045
AS6	E	166	4.99	1.491	.116
	S	192	4.95	1.441	.104
AS7	E	164	4.98	1.517	.118
	S	192	4.96	1.438	.104
AS8	E	162	5.01	1.487	.117
	S	192	4.91	1.461	.105
AS9	E	166	5.00	1.514	.117
	S	190	4.97	1.418	.103

(Table C1 continues)

(*Table C1 continued)*

Statement	E or S	N	Mean	Standard deviation	Standard error mean
AS10	E	170	4.50	1.651	.127
	S	196	4.37	1.595	.114
AS11	E	178	4.81	1.424	.107
	S	201	4.69	1.451	.102
AS12	E	178	4.75	1.487	.111
	S	203	4.67	1.450	.102
AS13	E	178	4.75	1.541	.116
	S	204	4.67	1.470	.103
AS14	E	177	4.95	1.373	.103
	S	202	4.81	1.392	.098
AS15	E	179	5.45	0.913	.068
	S	201	5.38	0.926	.065
AS16	E	179	5.64	0.708	.053
	S	205	5.56	0.716	.050

Appendix D

Table D1

Impact of HVAC Thermostat within Employee Workspace

Statement	M or EMS/PT	N	Mean	Standard deviation	Standard error mean
PS1	M	217	4.31	1.650	.112
	EMS/PT	113	4.19	1.636	.154
PS2	M	217	4.39	1.618	.110
	EMS/PT	112	4.29	1.602	.151
PS3	M	225	5.52	1.078	.072
	EMS/PT	156	5.51	0.912	.073
PS4	M	221	4.34	1.868	.126
	EMS/PT	157	4.45	1.770	.141
PS5	M	208	5.15	1.453	.101
	EMS/PT	146	5.14	1.470	.122
PS6	M	224	3.87	1.476	.099
	EMS/PT	158	3.68	1.585	.126
PS7	M	223	3.97	1.518	.102
	EMS/PT	159	3.84	1.618	.128
PS8	M	224	3.91	1.475	.099
	EMS/PT	157	3.75	1.580	.126
PS9	M	223	4.02	1.470	.098
	EMS/PT	159	3.81	1.631	.129
PS10	M	226	2.90	1.471	.098
	EMS/PT	157	2.99	1.463	.117
PS11	M	229	3.28	1.470	.097
	EMS/PT	162	3.36	1.527	.120
PS12	M	227	3.28	1.448	.096
	EMS/PT	163	3.29	1.464	.115

(Table D1 continues)

(*Table D1 continued*)

Statement	M or EMS/PT	N	Mean	Standard deviation	Standard error mean
PS13	M	228	3.39	1.531	.101
	EMS/PT	162	3.35	1.530	.120
PS14	M	226	3.47	1.526	.102
	EMS/PT	162	3.52	1.569	.123
PS15	M	236	4.98	1.316	.086
	EMS/PT	163	5.01	1.232	.097
PS16	M	233	5.42	0.858	.056
	EMS/PT	164	5.37	0.967	.075
AS1	M	224	5.42	1.172	.076
	EMS/PT	92	5.07	1.265	.132
AS2	M	224	5.50	1.096	.073
	EMS/PT	88	5.20	1.214	.129
AS3	M	233	5.76	0.707	.046
	EMS/PT	155	5.77	0.579	.047
AS4	M	227	5.75	0.706	.047
	EMS/PT	156	5.64	0.803	.064
AS5	M	219	5.77	0.706	.048
	EMS/PT	153	5.74	0.657	.053
AS6	M	229	5.22	1.330	.088
	EMS/PT	146	4.81	1.524	.126
AS7	M	227	5.26	1.309	.087
	EMS/PT	146	4.79	1.535	.127
AS8	M	226	5.20	1.344	.089
	EMS/PT	145	4.82	1.540	.129
AS9	M	228	5.26	1.314	.087
	EMS/PT	145	4.81	1.509	.125

(*Table D1 continues*)

(*Table D1 continued*)

Statement	M or EMS/PT	N	Mean	Standard deviation	Standard error mean
AS10	M	232	4.59	1.568	.103
	EMS/PT	145	4.43	1.615	.134
AS11	M	230	4.93	1.391	.092
	EMS/PT	161	4.74	1.408	.111
AS12	M	232	4.92	1.381	.091
	EMS/PT	160	4.68	1.455	.115
AS13	M	233	4.95	1.379	.090
	EMS/PT	160	4.71	1.510	.119
AS14	M	231	5.09	1.286	.085
	EMS/PT	161	4.84	1.414	.111
AS15	M	233	5.40	1.046	.069
	EMS/PT	161	5.43	0.828	.065
AS16	M	232	5.67	0.688	.045
	EMS/PT	163	5.57	0.702	.055

Appendix E

Table E1

Impact of Years of Employment for 1st Year Employment (<1), 1-3 Years of Employment (1-3) and 4 Years or More of Employment within the District (≥4)

Statement	<1, 1-3, or ≥4	N	Mean	Standard deviation	Standard error mean
PS1	<1	30	3.87	1.907	.348
	1-3	55	4.04	1.763	.238
	≥4	262	4.33	1.598	.099
	Total	347	4.24	1.655	.089
PS2	<1	30	4.07	1.946	.355
	1-3	55	4.16	1.664	.224
	≥4	261	4.40	1.582	.098
	Total	346	4.34	1.629	.088
PS3	<1	40	5.58	0.931	.147
	1-3	66	5.67	0.847	.104
	≥4	310	5.47	1.063	.060
	Total	416	5.51	1.020	.050
PS4	<1	40	4.78	1.819	.288
	1-3	68	4.66	1.784	.216
	≥4	305	4.33	1.822	.104
	Total	413	4.43	1.819	.090
PS5	<1	32	5.16	1.687	.298
	1-3	60	5.15	1.538	.199
	≥4	295	5.19	1.369	.080
	Total	387	5.18	1.421	.072
PS6	<1	35	3.37	1.610	.272
	1-3	69	3.67	1.578	.190
	≥4	308	3.86	1.481	.084
	Total	412	3.78	1.512	.074
PS7	<1	34	3.38	1.633	.280
	1-3	69	3.86	1.620	.195
	≥4	309	3.97	1.514	.086
	Total	412	3.90	1.546	.076

(Table E1 continues)

(*Table E1 continued*)

Statement	<1, 1-3, or ≥4	N	Mean	Standard deviation	Standard error mean
PS8	<1	34	3.24	1.539	.264
	1-3	68	3.85	1.548	.188
	≥4	308	3.89	1.492	.085
	Total	410	3.83	1.512	.075
PS9	<1	35	3.46	1.559	.264
	1-3	69	3.90	1.628	.196
	≥4	307	3.98	1.509	.086
	Total	411	3.92	1.537	.076
PS10	<1	36	2.92	1.228	.205
	1-3	67	2.72	1.253	.153
	≥4	313	2.97	1.517	.086
	Total	416	2.93	1.454	.071
PS11	<1	38	3.37	1.478	.240
	1-3	69	3.00	1.425	.171
	≥4	318	3.37	1.503	.084
	Total	425	3.31	1.492	.072
PS12	<1	38	3.26	1.408	.228
	1-3	70	2.87	1.318	.158
	≥4	316	3.36	1.466	.082
	Total	424	3.27	1.445	.070
PS13	<1	37	3.35	1.438	.236
	1-3	70	3.11	1.460	.175
	≥4	317	3.40	1.555	.087
	Total	424	3.35	1.530	.074
PS14	<1	37	3.54	1.574	.259
	1-3	68	3.26	1.482	.180
	≥4	317	3.55	1.555	.087
	Total	422	3.50	1.545	.075
PS15	<1	41	4.78	1.589	.248
	1-3	72	4.97	1.353	.159
	≥4	320	5.02	1.223	.068
	Total	433	4.99	1.282	.062

(Table E1 continues)

(Table E1 continued)

Statement	<1, 1-3, or ≥4	N	Mean	Standard deviation	Standard error mean
PS16	<1	42	5.29	1.330	.205
	1-3	71	5.39	0.819	.097
	≥4	320	5.42	0.845	.047
	Total	433	5.40	0.898	.043
AS1	<1	33	4.79	1.409	.245
	1-3	51	5.31	1.068	.149
	≥4	241	5.37	1.200	.077
	Total	325	5.30	1.212	.067
AS2	<1	33	5.03	1.212	.211
	1-3	51	5.35	1.055	.148
	≥4	237	5.46	1.148	.075
	Total	321	5.40	1.144	.064
AS3	<1	42	5.71	0.508	.078
	1-3	72	5.75	0.599	.071
	≥4	309	5.77	0.671	.038
	Total	423	5.76	0.644	.031
AS4	<1	42	5.57	0.770	.119
	1-3	70	5.79	0.447	.053
	≥4	306	5.71	0.771	.044
	Total	418	5.71	0.728	.036
AS5	<1	38	5.68	0.525	.085
	1-3	67	5.85	0.359	.044
	≥4	300	5.75	0.731	.042
	Total	405	5.76	0.666	.066
AS6	<1	41	4.51	1.583	.247
	1-3	66	4.79	1.534	.189
	≥4	293	5.11	1.391	.081
	Total	400	5.00	1.447	.072
AS7	<1	41	4.54	1.567	.245
	1-3	66	4.85	1.511	.186
	≥4	291	5.12	1.402	.082
	Total	398	5.01	1.447	.073

(Table E1 continues)

(Table E1 continued)

Statement	<1, 1-3, or ≥4	N	Mean	Standard deviation	Standard error mean
AS8	<1	40	4.35	1.594	.252
	1-3	65	4.78	1.556	.193
	≥4	290	5.12	1.399	.082
	Total	395	4.99	1.464	.074
AS9	<1	40	4.43	1.583	.250
	1-3	64	4.91	1.466	.183
	≥4	293	5.13	1.396	.082
	Total	397	5.02	1.440	.072
AS10	<1	41	4.00	1.643	.257
	1-3	68	4.26	1.742	.211
	≥4	300	4.56	1.573	.091
	Total	409	4.46	1.616	.080
AS11	<1	41	4.22	1.636	.255
	1-3	70	4.77	1.496	.179
	≥4	313	4.88	1.354	.077
	Total	424	4.80	1.417	.069
AS12	<1	42	4.29	1.627	.251
	1-3	71	4.61	1.544	.183
	≥4	312	4.86	1.386	.078
	Total	425	4.76	1.447	.070
AS13	<1	42	4.45	1.485	.229
	1-3	71	4.61	1.608	.191
	≥4	313	4.86	1.437	.081
	Total	426	4.77	1.475	.071
AS14	<1	40	4.50	1.450	.229
	1-3	71	4.79	1.482	.176
	≥4	313	5.01	1.326	.075
	Total	424	4.92	1.371	.067
AS15	<1	41	5.46	0.869	.136
	1-3	71	5.32	1.116	.133
	≥4	313	5.40	0.960	.054
	Total	425	5.40	0.978	.047

(*Table E1 continues*)

(*Table E1 continued*)

Statement	<1, 1-3, or ≥4	N	Mean	Standard deviation	Standard error mean
AS16	<1	42	5.71	0.508	.078
	1-3	72	5.60	0.725	.085
	≥4	315	5.62	0.701	.039
	Total	429	5.62	0.688	.033

Appendix F

Supplementary Comments

Supplementary comments were asked five different times on the survey. The survey asked for employees to "Please feel free to respond further to any of the questions and/or statements listed above." This statement was asked after the Demographical Questions, Prior Statements, After Statements, Support Factors, and Continued Factors. Several survey respondents did comment and all comments are presented in this section. All statements are categorized into Favorable, Neutral/Limited, or Unfavorable by section. When possible, the employee comments are presented as a direct quote. When a direct quote could not be used as it was written, an attempt was made to express the intent of the comment.

Supplementary Comments from Demographics Page

Favorable Comments

I think energy conservation is important. I agree that we should be doing what we can do help save money on electricity so we can purchase things we need, like new computers.

I am very pleased that our district is part of the energy saving program. There are so many benefits; one is helping teachers stay employed. Our energy manager has done a wonderful job, and continues to exert the energy needed to enable the program to be successful.

Our energy conservation program has saved our district hundreds of thousands of dollars.

Energy conservation is an important environmental issue, which I am passionate about.

I think it is awesome that all our whole school participates in the energy conservation. It is not that hard to make sure you have turned the thermostats down and all of the lights are off.

I try to make sure all energy-consuming devices are unplugged at the end of every day and on weekends and holidays, except for my desktop computer.

Our district does a great job with energy conservation. They have some really great steps in place to ensure that we do conserve our energy to its fullest. Plus they remind us all of the time about turning off what we do not need everyday, reminding us to turn off the equipment completely when we go on extended breaks, and to turn our thermostats down everyday before we leave! We need those reminders!! I am very thankful for them!!!

I have witnessed and taken part in energy conservation (actively making sure computers, lights, etc. are turned off in the evenings and before breaks).

Administration does a good job of always reminding us to turn off items before a break.

This program saves a great deal of money for the district

At first it was daunting wanting to get it right but I quickly became used to adjusting thermostats and turning off appliances. Being aware of the small things that I can do to help our district save money is not a hardship, but it is a habit. I am proud to do my part.

Unfavorable Comments

I have no control over the thermostat. In fact, some days, it is freezing cold in here and other days it is so hot. I'm sure the district could save a lot of money if they let us regulate our own temperatures.

The temperature of my classroom is controlled at the district building. I do not like that I cannot control any part of the comfort level in my room. I often stay late to work, but the AC is automatically turned off at 4pm. In addition to that the heat is WAY TOO hot in the winter. My room is very uncomfortable.

Although I understand and appreciate the Energy Management System in place at District A, the inability to shut off the thermostat is frustrating. Sometimes the cool air comes on when the room is cold, and a simple shut off switch at the source would be nice.

One Thermostat controls 3 different rooms with different configurations of outside and inside walls. The heat and air is not pushed to the necessary areas evenly.

We have no local control of our temperature. It is very difficult to moderate the temperature for classrooms and offices in our building, as it is controlled miles away from our location. I believe that it creates a lot of wasted energy, because of the inability to change as conditions in the building change.

It's inconvenient to get it turned on when the school is not open. Many times they won't turn it on even when they are asked.

The thermostat in my room controls temp in 2 other classrooms. It can be very cold in one room, but comfortable in another. The other teachers frequently come to my room to adjust the thermostat.

One thermostat controls 4 rooms. It is hard to please 4 different people. My room is usually the coldest room because it has a north door. Brrr.

Neutral/Limited Response

It would be great if the school learned more about how to conserve energy and create a healthier environment - http://www.epa.gov/iaq/schools/Tools for Schools program.

My office is at the Administration building, but I travel to several buildings through out the week.

On the "Which of the following best describes your classroom or workspace thermostat?" There is a thermostat in the classroom. It does not regulate heat or air. The heat and air are regulated from the office. We therefore are unable to control or set back the temperature in the classroom.

We also have an Energy Management System for the weekends, holidays and evenings.

I would like to see teachers turn off their lights when they leave the classroom and reduce lights elsewhere when applicable.

The thermostats do not have a separate heating and cooling setting so in the fall and spring, I do not know where to set it during longer shutdowns. I think it can all be controlled from the board office.

A manual thermostat located in another classroom controls my classroom temperature.

I believe I am under an EMS; I do not control my own thermostat.

My thermostat can be controlled throughout the day manually, but is controlled by an EMS for times on and off and temp at certain times.

We have an EMS system that shuts our heating/cooling system down or overrides what we have set it at, but during the workday we can adjust as needed--though we are encouraged to stay within a range.

Thermostats in our building do not allow you to switch from cool to heat. You pick the temp. And it does what it needs to do in order to maintain that temp.

All buildings in the district are controlled from a central office, except ours.

My classroom thermostat operates manually at designated times.

I know I can manually change my thermostat but I am unsure on if it is programmable.

Our school has both manual and EMS thermostats, depending on the room.

My thermostat is in another room.

The thermostat in my workspace is controlled by EMS but I am also able to adjust the temperature manually.

My thermostat is on the same zone as the computer lab and is always on so I much adjust it manually before I leave the school.

I know there is a manual thermostat in my room but I never use it. I let the computer system control my room temp.

My office is connected to a thermostat in another room that controls an area of the main offices.

I have a thermostat in my classroom and it can be adjusted. But the district Energy Personnel has some control also.

Supplementary Comments from Prior Statements

Favorable Comments

Prior employment was military senior leader. Energy conservation was a key focus for the base and my group.

I am VERY energy aware and wish we all did more to help our environment.

I was raised in a house where Dad was a utility company employee. Energy conservation was preached at my house.

I didn't realize the expense until we were told how much the district had saved.

I conserve energy at home also, and have for many years. More people need to be conservative in the power usage. I have saved so much money in my electric bills at home by being conservative.

I am conservative! So, I try to save energy when possible.

I know I'm not the norm, but I really did worry about energy consumption...

I feel that my school practices good energy conservation habits.

Unfavorable Comments

I agree with turning off air conditioners to save money, but not heaters. After having seen the negative effects of cold classrooms on students. It's just not worth it.

I feel some teachers increase our usage of electricity during the winter with space heaters in their rooms because some of the classes can get very cold.

Concerned about heat/cold for classroom animals not as much for the budget cost

I had no concern because I don't know how much we spend on utilities in our district; they could make us more aware by sharing this.

Neutral/Limited Response

I'm new in the district

I work in a library. The temperature settings have to agree with the best atmosphere for books and materials housed here.

The thermostat that controls my classroom has always been in a different classroom in the pod, so I was not really the one in charge of maintaining it.

Our district has always automatically turned off the air to all rooms at a certain time after school, so I wasn't concerned with whether I left it on overnight or not.

At my prior employment we already had an energy conservation plan. It allowed individual control within very well thought out limits.

I was not very "concerned" about my thermostat settings because I know I always turn them up or down accordingly. I do not use them at all if I can help it, both at home and at work.

My heat and air at my house is programed to turn down during our working hours and go back up when we are usually home.

I never worked for a school district before my employment here.

This is my first year of teaching. Winter breaks and even weekends don't apply to previous settings. Manual settings didn't apply. I always turn lights off when not in use.

We are required to leave computers on now to try to stop a virus so we are not turning those off like we used to

We did not have manual control over our thermostats. The school was set on a timer. That way it would all shut off and come on at the same time.

I've always worked at schools with automated HVAC systems, and had little to no control over the systems.

Supplementary Comments from After Statements

Favorable Comments

I am not able to set or control my classroom heat or cooling temperature but have always tried to conserve when I am able at work or at home.

I reference energy conservation to current district subordinates at monthly meetings and definitely during periods of inactivity (holidays, long weekends, etc.). Freezers in the district have alarms to ensure stability of temp control (not excessive or minimal).

Jobs can be saved and salaries paid with the amount of energy saved by the energy management program.

I find myself adhering to school mandates at home.

This program has saved me money on my residential utilities.

I'm concerned with the amount of energy I'm consuming could be seen two ways: I'm concerned in that I'm conservative, but I'm not concerned because I AM conservative.

We set our heat/air via our alarm system through our phones based on when we are at home or when we are anticipated to return home to save on electricity. It has really proven to be cost effective.

I don't worry about thermostats because the district monitors and shuts them off. I do make sure everything that is not controlled by the district is turned off daily and unplugged on breaks. At my house, I do make an effort to turn off lights and watch the thermostat because I have to. My personal effort can be directly linked to how this district manages energy efficiency.

I do set thermostat to district guidelines, but it is also programmed to go off or on at certain times so I'm not totally in control.

I even go around checking others now.

Unfavorable Comments

Once again, I am not concerned about the air because it automatically gets turned off. Many times I am still at school when this happens.

Our EMS thermostat in our cafeteria allows the air & heat to run for hours after we have emptied the room each day!

I'm not sure what you mean by "I am concerned." Am I concerned, as do I have strong feelings about it? Or, Am I concerned that the district/school/employees are not managing energy responsibly? Yes, I'm concerned about energy usage, and I do whatever I can to conserve. Yes, I'm concerned that the district was wasting a lot of energy. Yes, I'm concerned with the new centrally controlled thermostats because sometimes my room is too cold in the summer and too hot in the winter, which means energy is not being used efficiently. Yes, I'm concerned, but how do you want me to answer? I agree that I'm glad (concerned) that the district is making an effort to conserve energy, but I am worried (concerned) that some energy is being wasted when I could be a better monitor of the thermostat in my room.

I do not like working in a cold or hot building after office hours. Our heat and air are turned off before we are able to leave for the day and this makes for an uncomfortable work environment.

Neutral/Limited Response

I have no control over my classroom thermostat. I have to tell somebody in the district office what's going on.

I do not control the heater and do not have a way to adjust the heat or air in my office.

Personal appliances were not turned off over the summer because summer academy was held in my classroom.

We do not worry about setting back thermostats after hours/weekends because the automatic system takes over.

My thermostat controls a room used after school for student care until parents arrive, therefore I do not adjust my thermostat at the end of the day.

Our heat/air system automatically shuts off around 3:30-4:00 daily; also it remains off all weekend and during breaks.

I'm not so worried about my air in my classroom/building because somebody comes through over the holidays/breaks and puts the thermostat where they need it to be. My classroom is not a concern of mine because I don't ever move my thermostat so it should be where it needs to be.

My thermostat is programmed so I don't worry about turning it off at the end of the day; it is programmed to do so.

Because my school went to the energy conservation, we do not have a choice whether to turn our heat/air on or off. It is managed at a different location.

Our building has motion sensor lights and we cannot control the thermostat.

I am in a different office now than before the district implemented the energy program. Prior to the implementation my office had it's own thermostat. Now my office does not have it's own thermostat.

I turn off lights when I am leaving my home except for one interior and one exterior for safety purposes. If I am home I often have lights and TV's on in rooms that I am frequently going in and out of.

Automated HVAC - Can only control up to 2 degrees variance during working hours

Supplementary Comments from Support Factors

Favorable Comments

The administration felt compelled to advise its employees that a designated maintenance individual would come periodically to each room and personally check, and employees would be rewarded or admonished for their participation or lack thereof; however, no cards were ever left, which to me is disappointing when no one follows through. I do naturally care to save energy; I do so as well at home, but feedback is a positive tool, a tool that for over a year now has not been given.

The district energy manager motivated me to be more frugal with my energy usage, and did so in a positive manner.

Unfavorable Comments

Our district needs a more proactive, upfront energy manager. The energy manager positions seems to be more of a title and a pay check rather than an actionable/goal driven person who really understands what needs to be done for the environmental benefits or financial savings. There is limited to no communication or direction of why or how energy conservation efforts should be followed from the district energy manager.

I would be more supportive of the program if there was more concern about the comfort level of staff and students.

The LOOOOOOONG emails had nothing to do with my turning off the heater and unplugging my computer. You only need to tell me one time.

We are wasting money cooling and heating our cafeteria during off hours. Our site has no control over that thermostat and no one seems prepared to help us eliminate this waste.

My main concern is when I drive by a school after midnight and all of the hall lights are still on.

On the rare days I forgot to turn it off I found it funny that a note was left on my desk, but my air was still on. If you are going to right me a note turn off the air because I forgot.

Neutral/Limited Response

It's all of the above.

I had to really concentrate on remembering to turn everything off when we first started the program. If all of our computers were shut down and monitors turned off we were randomly given a card for good monitoring. We would turn that card in for a chance at a prize. Now, since we have been doing the program for so long it is hard to leave my computer turned on. Our district has had a worm that they are trying to get rid of. We are now required to leave our computers on at night and the antivirus company is shutting them down remotely. I automatically go to turn the computer off!!

Supplementary Comments from Continued Factors and Everyday Practices

Favorable Comments

Energy conservation is an everyday practice only due to automatic controls on building temperatures, etc. It needs to become an engrained practice with continued communication and leadership focus to show support of not only board policy but also environmental affects to compliance.

It has become automatic for me. I can't speak for the rest of the district.

The first year we implemented the program I literally thought, "Turning off our monitors can't save that much money." The first year with everyone doing his or her part the district saved $260,000! (I think that is the amount...I could be wrong.)

Each site should have some accountability. If there is no monitoring at all it will not last.

Unfavorable Comments

Many employees are concerned about new building - HS - where a lot of energy is consumed daily and nightly. Why wasn't this policy considered when bldg.

For me, I do practice these methods every day, but no, they are not an everyday thing district wide.

Neutral/Limited Response

Even though I could check only three above I still think it should be school board policy as well.

It has for some.

I would have rather answered unsure to the previous question.

The only times I do not unplug my fridge, during extended breaks, is if I am planning to work in my room during the break.