School Leaders and Sustainability: An Exploratory Study

by

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Abstract

This elicitation study explored school leader beliefs and practices relative to sustainability and green school practices. Using the Theory of Planned Behavior as the theoretical framework, the study specifically explored what school leaders reported in relation to their salient behavioral beliefs (attitudes), normative beliefs (subjective norms), and control beliefs (perceived behavioral control) relative to green school practices. A leader's attitude towards sustainability can play a role in their intentions to implement green practices (Ajzen, 1991). Respective to the sustainable green school practices, school leaders reported financial savings, creating the next generation of sustainability, and resource conservation as the advantages of green school practices and costs and time as the disadvantages of implementing sustainable practices within schools. Leaders may make decision based on who may approve or disapprove of the ideas considered. Regarding sustainable practices within schools, school leaders indicated school board members, superintendents, teachers, students, parents, and community members would support the implementation of green school practices, and virtually no one would disapprove of these practices. A final distinctive factor in the behavioral intentions of leaders regarding sustainable practices within schools is related to their perceived ability to implement such practices (Ajzen, 1991). School leaders report lack of resources, costs, and time as reasons that would make it difficult or impossible to implement green school practices and funding, district level cooperation, and knowledge and information would enable school leaders

to implement sustainable practices. This study recognized the responses reported by the participants are not generalizable, but will lay the foundation for future research.

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List of Abbreviations

CO_2 – Carbon Dioxide

DOE – United States Department of Education

EPA – Environmental Protection Agency

ISLLCS – Interstate School Leaders Licensure Consortium Standards

ISTE – International Society for Technology in Education

LEED – Leadership in Energy and Environmental Building Design

TPB – Theory of Planned Behavior

USGBC – United States Green Building Council

USDOE – United States Department of Energy

CHAPTER 1. INTRODUCTION

Introduction

With the establishment of the U.S. Environmental Protection Agency in late 1970, the idea of sustainability in the United States became a reality (EPA, 2011). This newly created agency was charged with improving and protecting environmental quality and shouldered the enormous task of protecting human health and the environmental resources on which human activity depends. To this day, the mission of the EPA includes sustainability:

> The mission of the EPA is to protect human health and the environment. The EPA's purpose is to ensure that environmental protection contributes to making our communities and ecosystems diverse, sustainable and economically protective. (EPA, 2011)

The creation of the EPA heightened social awareness of the nature of environmental degradation and introduced the U.S. to the idea of "sustainability." Sustainability implies that it is possible to enjoy economic growth without harming the environment and further degrading the natural environment for future generations. In its broadest sense, sustainability is the ability to endure in the present without yielding through time, and creating the availability for such in the future (Edwards, 2005).

The term sustainability remains a relatively new concept with multiple related terms and definitions emerging throughout an array of disciplines (Edwards, 2005; Gladwin, Kennelly, & Krause, 1995). Sustainability is a complex issue, intertwining environmental, economic and

social issues (Edwards, 2005), and may be discussed as ecological intelligence (Orr, 2009), ecological sustainability (Gladwin, Kennelly, & Krause, 1995), environmental sustainability (Goodland, 1995), and others (Edwards, 2005). This paper used the term 'sustainability' to refer universally to the integration of the triple bottom line paradigm approach to sustainability: planet (environment), people (learning) and prosperity (financial) (see Figure 1).

Sustainability's emphasis on "stewardship" struck a chord with a wide range of professions from forestry to fishing, from agriculture to architects, from water resources to waste management. It has quickly found its place in many disciplines and contexts throughout the world, leading to what some have called the largest social movement in human history (Hawken, 2008). A key component to sustainability is meeting our needs today without compromising the needs of future generations and the ecosystems which exist. As the world's population continues to grow and societies continue to move to a global economy, sustainability takes on a greater significance due to increased utilization of natural resources and demand for energy. Without sustainability efforts to conserve and preserve scarce resources, societies throughout the world may not be able to flourish (Edwards, 2005).

Schools have a role to play in the sustainability revolution and the global efforts to address the environmental, social and economic issues associated with sustainability (Orr, 2009). Sustainable schools could engage in curriculum change and development as sustainability is embedded across the whole curriculum (Zurich International School, 2008). This integration of sustainability and curriculum could serve to educate students, teachers and parents on the benefits and use of sustainable practices, in turn, potentially increasing their involvement and participation in sustainability. Schools could apply green technologies within their facilities through the design of sustainable architecture, creating the potential for saving precious natural

resources (Gelfand & Freed, 2010). School leaders all over the world are engaging in sustainable practices (Henderson & Tilbury, 2004; Zurich International, 2008). Whole school approaches to sustainability incorporating school governance, instructional approaches, curriculum, resource management and school operations and grounds are occurring in countries such as Australia, China, New Zealand, and Sweden (Henderson & Tilbury, 2004). Presently, we do not understand to what extent school leaders are engaging or plan to participate in the sustainability movement due to the limited amount of research available.

Since we do not understand school leader participation in sustainability, this elicitation study seeks to explore school leader beliefs and practices related to sustainability and green school practices. Chapter 1 will discuss of the problem of practice, highlighting organizational participation in sustainability across a variety of sectors. Included in this section is a discussion of educational leadership and sustainability, focused on the limited amount of literature available in this area. A brief insight is provided into the potential benefits to green school through sustainable architecture, green technologies, and the school curriculum. The Theory of Planned Behavior is introduced as the theoretical basis of this study to explore school leader beliefs relative to sustainable practices. Finally, this Chapter will present three research questions that guided this study.

Problem of Practice

Since the birth of the EPA in 1970, public awareness of sustainability has expanded, becoming a global priority for many sectors throughout the world (Hawken, 2008). Today, the ideas behind the sustainability movement are widely accepted. Consequently, it is not uncommon to see nonprofits, governments, and other public sector organizations respond to sustainability in some context. More and more public and private sector organizations are

"going green" and building the idea of sustainability into corporate policy. Corporations, governments and institutions of higher education have joined the sustainability revolution, "rethinking and remaking our role in the natural world" (Edwards, 2006, p. xiv).

Corporations around the world are developing and adopting environmentally friendly green business practices (Flannery & May, 2000; Gilley, et al., 2000; Hawken, 2008; Poppa, Hascicc, & Medhia, 2011). From using or creating recyclable products to installing energy efficient equipment and systems, many private sector businesses are continuing to make changes to save energy and natural resources. These kinds of corporate changes are creating significant investments in the alternative renewable energy sector; wind, solar and geothermal. For example, automobile manufacturers are developing vehicles to run on engines powered by alternative forms of energy (Gilley, et al., 2000; Poppa, Hascicc, & Medhia, 2011). The private sector is not alone in its sustainable efforts, governments around the world have joined together to participate in the sustainability movement. As a result of the 2002 World Summit on Sustainable Development, partnerships from diverse countries across the globe were formed to develop policies, regulations, strategies and practices to ensure the advancement of sustainability (Hecht, 2009). In the United States, research and development activities in the areas of renewable energy are often funded through public-private partnerships in the form of grants. The U.S. Government, through the Department of Energy, offers grants to states, non-profit and private sector industries in an effort to aid in researching and developing forms of alternative energy solutions, while the American Recovery and Reinvestment Act of 2009, awarded the Office of Energy Efficiency (EERE) $16.8 billion for its programs and initiatives.

Educational institutions have a role to play in the sustainability movement. Many institutions of higher education have made major strides in this area, working extensively on

sustainability. College and university campuses across the U.S. have established "Offices of Sustainability" to direct universities on the implementation of ecologically sustainable practices. As evidenced by the formation of the Association for the Advancement of Sustainability in Higher Education, higher education institutions are taking their role in the sustainability movement seriously (Sibbel, 2009; Wright, 2010).

Sustainability and Educational Leadership

While the sustainability movement has made major strides, it still has a long way to go, particularly in the case of education. Specifically, the field of educational leadership appears to be slow in joining the sustainability movement on a substantial scale. Increasingly, school leaders are considering their role in the future of sustainability (Hacking, Scott, & Lee, 2010; Henderson & Tilbury, 2004; Stone, 2009). Unfortunately, we do not understand the degree to which school leaders are participating or plan to participate in the sustainability movement. A review of the educational leadership literature supports this point, revealing few studies in the area of sustainability and educational leadership, two theoretical papers (Furman & Gruenewald 2004; Kensler, 2012) and two empirical (Granados & Gamez, 2010; Pepper & Wildly, 2008). Of these empirical studies, research on leading for sustainability in Western Australian Government secondary schools to determine if surface knowledge of sustainability is enough, concluded that education for sustainability is fragmented and leading for sustainability requires an extensive knowledge of sustainability, future innovation, strong interpersonal relationships, and the commitment to future change (Pepper & Wildly, 2008). Other educational research in Spain indicated while there is no formal training in school management, sustainability in schools can be managed by following strategic models or approaches such as the triple bottom line approach to sustainability: the environmental, social, and economic legs of sustainability (Granados &

Gamez, 2010). These studies concluded an in-depth understanding of sustainability and strategic planning are important to the successful implementation of environmentally friendly practices within schools.

However, educational leadership standards do not call for sustainability in the field of practice or in administrative preparation programs. The Interstate School Leaders Licensure Consortium Standards (ISLLCS), which governs higher education K–12 administrative preparation programs, do not include requirements on sustainable practices for schools. These empirical studies, the only in educational leadership literature, are focused internationally in Australian and Spain, and do not concentrate on the attitudes or behaviors of schools leaders regarding sustainability and green school practices. This study is the first empirical study of its kind and the first to explore sustainability and school leadership in the United States.

Potential Sustainability Benefits to Schools

While there is limited educational leadership literature, there is a developing body of educational literature emphasizing the potential environmental (Crum & Turckes, 2007; Kats, 2006; Sack-Min, 2007), financial (Kats, 2006; Mattiessen & Peter, 2007), and learning (Buckley, Schneider, & Shang, 2005; Edwards, 2006; Heschong Mahone Group, 1999; Nicklas & Bailey, 1996) benefits of sustainable practices to schools. In public schools, sustainability can be seen not only in environmentally-friendly sustainable architecture and the use of green technologies, but also in the selection or development of school curriculum. Engaging in these sustainable practices may provide multiple benefits to schools and students. This section will emphasize the benefits available to schools based on sustainable architecture, the use of green technologies and school curriculum.

Sustainable Architecture

Organizations dedicated to the development of sustainable schools, such as the U.S. Green Building Council (USGBC), have established standards for ecological design principles and sustainability. The USGBC (2010) defined a "green school: as a school building or facility that creates a healthy environment that is conducive to learning while saving energy, resources, and money." Such efforts are based on the understanding that schools constructed with sustainable design principles can have long-term benefits not only to the environment, but also for the finances of schools (Beaver, 2009). Using these new sustainable design standards and technologies creates financial savings for the school (Kats, 2006). These efficiencies allow for the reallocation of funds to instructional programs, which in turn have the potential to increase student achievement.

Green Technologies

In the Greening of Americas Schools: Costs Benefits Report (2006), it demonstrated financial savings as a result of decreased water consumption and energy consumption, resulting from the development of sustainable technologies over the last decade. This is just one of the sustainable technologies available to schools. Another example is air quality. The U.S. Environmental Protection Agency estimates that a typical K–12 student spends 1,300 hours each year in a school building making them susceptible to any problems with indoor air quality due to mold or other causes (Turner Construction, 2005). Schools participating in the sustainability movement have the opportunity to impact student learning by improving indoor air quality resulting in a healthier environment and less absenteeism for students and teachers, and potentially an improvement in overall teaching and learning.

School Curriculum

The U.S. Census Bureau estimated there were approximately 309 million people living in the United States in 2009. In the fall of 2009, the National Center for Education Statistics projected approximately 55.6 million students and 3.7 million teachers and faculty in elementary and secondary education. Based on these statistics, approximately 19% of the United States population spends a significant portion of the day in schools.

If school leaders and administrators are willing to pursue and implement green school practices, the schools they lead have the capacity to cultivate an appreciation and understanding of sustainability in both their students and teachers (Edwards, 2006). When environmentally friendly schools have sustainability embedded into the curriculum, the next generation of students and teachers will experience first-hand the principles and practices of sustainability through both authentic learning and awareness of students and teachers (Edwards, 2006). To command such responsibility is awe-inspiring. This is a powerful position for school leaders that is worth of scholarly attention.

Theoretical Basis for the Study

The theoretical foundation for this elicitation study is the Theory of Planned Behavior (TPB; Ajzen, 1988, 1991). The TPB suggests that behavior is directly related to intention, which can be predicted based on the basis of attitude toward the behavior, subjective norms and perceived behavioral control (Ajzen, 1991). The TPB seeks to understand behavioral intentions and behavior by analyzing the salient beliefs of a group's attitude, subjective norms and perceived behavioral control regarding a particular topic. As described by Ajzen (1988, 1991), attitudes, subjective norms, and perceived behavioral control predict behavioral intentions. Attitudes tell us whether the person is in favor of doing something; subjective norms tell us how

much social pressure a person feels to do something; and perceived behavioral control tells us whether the person feels in control of the action in questions. A meta-analysis of studies published in 1997 has shown the TPB to be a valid theory to use in predicting behavioral intentions and behavior of individuals (Armitage & Conner, 2001). This theory serves as the framework for eliciting school leaders' salient beliefs relative to their attitude, subjective norms, and perceived behavior control when considering issues surrounding sustainability and implementation of green school practices. Salient beliefs are those beliefs that dominate a respondent's mind when asked a question. These beliefs form the basis of a person's overall attitude about the subject matter. Generally speaking, the stronger a person's salient belief is relative to a specific topic or task, the more likely the person is going to act or perform the certain behavior in question (Ajzen, 1988, 1991).

The Theory of Planned Behavior has been successfully used in conducting elicitation studies to evoke responses to open-ended questions to assess behavioral, normative and control beliefs (Downs & Hausenblas, 2005; Frances, 2004; Lee, 2010). In these studies, researchers analyzed the responses of the participants by performing a content analysis to rank order the beliefs to determine the 5–10 most salient beliefs (Downs & Hausenblas, 2005). This elicitation study assisted in indentifying the salient beliefs school administrators have regarding attitude, subjective norms and their perceived behavior control as it relates to sustainability and green school practices.

Purpose of the Study

The purpose of this elicitation study was to explore school leader beliefs and practices related to sustainability and green school practices. These salient beliefs are those prominent beliefs that enter a respondents mind when asked a question. "Elicitation studies are important

because they provide researchers with valuable information concerning people's thoughts and feelings about behavior" (Downs & Hausenblas, 2005, p. 3). In view of the fact there is limited knowledge regarding green school practices, this study will expand the field of educational leadership by providing insights on the salient beliefs school leaders have on the important aspects of sustainability.

There are no studies in the field of Educational Leadership utilizing the Theory of Planned Behavior and green school practices. Limited school policy in the area of sustainability and the changing nature of state level policy increasingly requiring green facility design for school buildings (Environmental Law Institute, 2012) heightens the need for an initial elicitation study to provide insight on the salient beliefs school leaders have regarding green school practices. Although there is limited policy, approximately 50% of state legislatures have considered or enacted some form of legislation addressing the construction of new buildings and LEED certification as a design standard (USGBC, 2010). With billions of dollars to be spent on school construction in the years to come, some recent policy at the state and local level has been established focusing on "high performing" school buildings. States such as California, Massachusetts, and New Jersey, along with the Los Angeles Unified School District, the Wake County Public School System in North Carolina, the Elk River Area School District in Minnesota, and the Edmonds School District in Washington have developed ambitious policies, programs and practices to change the way they develop school facilities (Educational Law Institute, 2003). "States and school districts have a unique opportunity to use the wealth of information and other resources now available to maximize their investment in school facilities" (Educational Law Institute, 2003, p. VII). Only when understanding what is guiding the intentions and behaviors of school leaders in this matter will we be able to develop educational

policy on sustainability that can be implemented on a broader scale. As we begin to understand what is guiding the intentions and behaviors of school leaders regarding green school practices, data can be collected on a larger scale to support this policy development. This study will provide the foundation for future research about sustainability in the education realm. For the first time, school administrators will provide insight regarding their attitudes, subjective norms and perceived behavioral control of school leaders relative to sustainability and green school practices. The results from the present study will provide the information needed to design an effective instrument for collecting this information on a much larger scale.

Research Questions

The following research questions guided this study.

1. What salient behavioral beliefs do school leaders report relative to their attitudes regarding the implementation of green school practices?

2. What salient normative beliefs do school leaders report relative to their subjective norms regarding the implementation of green school practices?

3. What salient control beliefs do school leaders report relative to their perceived behavioral control regarding the implementation of green school practices?

Significance of the Study

Researchers do not know the degree to which school leaders across the United States are engaging in green school practices. Furthermore, in the field of educational leadership, there is a lack of meaningful research for school leaders to rely upon when faced with decisions regarding sustainability and green school practices. Leadership preparation programs do not emphasize green school practices and the Interstate School Leaders Licensure Consortium (ISLLC) standards do not specifically call for them. Although there is limited research, minimal school

policy, and few expectations for the implementation of sustainable practices within schools, we know some school leaders are involved in sustainability and advocate its implementation in the schools they lead (Ackley, 2009).

The schools and their leaders that actively participate in the sustainability movement are interesting cases. What factors differentiate those leaders who do participate in sustainability efforts form whose who do not? If the expectation existed, would school leaders get more involved in green school practices? Could low school administrator participation be the reason for the lack of research and resources available to make prudent decisions? Is it due to a lack of education and knowledge? Expanding upon educational leadership research to understand school leader attitudes, social norms, and perceived behavioral control regarding sustainability has the potential to benefit schools environmentally, financially and educationally (Kats, 2006) as well as society by encouraging better stewardship of our natural resources.

Delimitations

This study sought a diverse array of perspectives relative to why or why not school leaders intended to initiate, continue, or increase practices consistent with green schools in the future. This study has the following delimitations:

1. This study began in September 2010 and ended in February 2011. Those surveyed in this study included school leaders throughout the United Sates with and without experience related to green school practices. Prior experience with sustainability may impact perspectives and attitudes.
2. The study did not include teachers. Data used was collected from current school leaders with administrative responsibly. However, it is important to acknowledge that teachers can and do play a role in the issues related to sustainability that are

presented here, such as curriculum integration with sustainability, and developing the future sustainable users.

3. All information received by the author in the surveys is assumed to reflect accurately the respective situations on which individuals are reporting.
4. Conclusions drawn from this study may or may not be applicable to similar cases or situations. Additional studies are needed to add to the growing body of knowledge on this topic, as this study attempts to do.

Assumptions

This research project makes the following assumptions relative to the participants and the survey instrument used to collect the data: the responses of the participants accurately reflect their professional opinions; the participants understood the definitions of sustainability and green schools as defined in the survey; the survey asked the right questions in an effort to solicit the salient beliefs of school administrators relative to green school practices; the participants responded to the survey thoroughly in an open and honest manner; and the participants in the survey have the ability to express their salient beliefs regarding green schools in an open ended questionnaire.

Definition of Terms

Behavioral Beliefs – "Attitudes" as expressed in the Theory of Planned Behavior, "refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991, p. 188).

Control Beliefs – "Perceived Behavioral Control" as expressed in the Theory of Planned Behavior, "refers to the perceived ease or difficulty of performing the behavior and it is assumed

to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 1991, p. 188).

Green School – The U.S. Green Building Council (USGBC, 2010) defines a green school as "a school building or facility that creates a healthy environment that is conducive to learning while saving energy, resources and money."

Normative Beliefs – "Subjective Norms" as expressed in the Theory of Planned Behavior, "refers to the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188).

Salient Beliefs – are those prominent beliefs that enter a person's mind when asked a question. This study assumed salient beliefs are the beliefs the respondents would initially recorded in the survey.

Sustainability – refers to the capacity of living systems to satisfy their needs in the present without diminishing their capacity to do so in the future (Edwards, 2005).

Organization of the Study

Following this introductory chapter, the study begins with a review of the literature on sustainability, benefits of green schools, educational leadership, Theory of Planned Behavior, pro-environmental behavior, education, and business management. Chapter Three details the research design: the participant and sample populations, the sampling method, the measures, and the data collection and analysis processes used to establish the study. Chapter Four then examines the data reported by school leaders relative to their attitudes, subjective norms, and perceived behavioral control when considering the implementation of sustainability and green school practices. Finally, Chapter Five concludes with a discussion of the findings, recommendations for practice, and implications for future research.

CHAPTER 2. REVIEW OF THE LITERATURE

Introduction

As a matter of circumstance, the world is in the midst of a sustainability movement (Edwards, 2006). Societies around the world continue to expand and their participation in the global economy increases, giving considerable importance to sustainability. As defined in Chapter 1, sustainability in this paper referred generally to the triple bottom line approach of planet (environment), people (learning), and prosperity (financial) (Edwards, 2005). Many sectors, such as, business, governmental and higher education sectors have begun to participate in the sustainability movement (Sack-Min, 2007; Sibbel, 2009; USGBC, 2010). In the field of educational leadership, limited research has been done to understand why and to what extent school leaders are participating in the sustainability revolution.

There is power in numbers. If the more than 130,000 (NCES, 2010) schools in the United States joined the sustainability movement and actively implemented green practices, the potential impact on energy consumption and the use of natural resources could be quite significant. These 130,000 United States schools represent almost 20 percent of the population in the United States (NCES, 2010); some 230,000 administrators (USDOL, 2010), over 55 million students (NCES, 2010) and 3.7 million teachers (NCES, 2010). Evidence has suggested on average green schools use approximately one-third less energy and natural resources (Kats, 2006). While there is a lack of research on the extent of involvement by schools and their administrators in the sustainability movement, we do know a number of school leaders are participating on some level, as evidenced

by the exemplars in the book *Smart by Nature* (Stone, 2009), a recent dissertation (Ackley, 2009), and the growing number of LEED certified school buildings across the country (USGBC, 2010). Educational leadership has a significant role to play in developing education administrators, students and teachers into the future participants and advocates of the sustainability movement.

If we are to educate our school leaders on sustainability and the benefits of participating in green school practices, we must first understand the behavioral intentions of school leaders regarding the implementation of green school practices. By understanding these intentions, effective educational leadership programs and standards can be developed to support school leader efforts regarding sustainability. Currently, there are no formal education standards for managing sustainable schools. The Interstate School Leaders Licensure Consortium (ISLLC) Standards, which governors the curriculum standards for K-12 educational leadership preparation in higher education, do not include requirements on sustainability in the leadership standards. Should curriculum standards in higher education include green school practices? Effective educational leadership standards would require institutions of higher education to include these ideas discussed into school administrator preparation programs. These programs are an important aspect to the long-term sustainability of green schools, as educational leadership programs are developing the next generation of sustainable school leaders. Evidence has suggested extensive knowledge and understanding of sustainability is important to the leading for sustainability (Pepper & Wildy, 2008). Generally speaking, graduates of educational leadership and teacher preparation programs, principals and teachers, influence K–12 curriculum standards at the state and local school board levels (Nance & Marks, 2012). Introducing sustainability standards into post secondary educational leadership programs and teacher

preparation programs may influence school leaders to advocate for the incorporation of sustainable green school practices into the curriculum of K–12 programs. In turn, integrating these sustainable green school practices with school curriculum may cultivate the development of school leaders, teachers and students to be the next participants in the sustainability movement. Developing the next generation of sustainable users through schools may lead to the preservation of energy and natural resources for future generations.

This study will examine school leader behavior towards sustainability using the Theory of Planned Behavior (TPB) as a foundational framework. The Theory of Planned Behavior seeks to understand the attitudes, normative beliefs, and control beliefs of individuals to determine their behavioral intentions toward a given action (Azjen, 1988, 1991). In this case, the TPB will be used to examine school leader beliefs relative to sustainability and green school practices. The purpose of this elicitation study is to explore school leader beliefs and practices relative to sustainability and green school practices. This study will examine school leader behavior using the Theory of Planned Behavior (TPB). The TPB has been successfully used in over 185 studies (Downs & Hausenblas, 2005; Frances, 2004; Lee, 2010) since 1997 supporting the usefulness of the TPB as a predictor of intentions and behavior (Armitage & Conner, 2001). Later in the chapter there is a review of the literature related to the Theory of Planned Behavior.

There are environmental, social and economic benefits associated with green school practices. Early research indicates sustainability and green school practices are important in the field of educational leadership for potential environmental, learning and financial benefits (Kats, 2006). The economic crisis is forcing schools to reassess their funding streams, and find creative ways to do more with less. Energy efficiency and other sustainability related practices may be effective ways to redirect money from building management funds into instruction related funds

and improve the school environment for student learning (Edwards, 2006; Heschong Mahone Group, 1999; Sack-Min, 2007). With a growing world population, sustainable school practices can lead to a reduction in the carbon footprint and the use of our natural resources with potential implications on climate change (Sack-Min, 2007; Solomon, 2007) Evidence has suggested schools designed with sustainable school architecture on average use less energy, reducing the carbon footprint, and consume less natural resources (Kats, 2006).

Ultimately, school leaders will have to make a conscious choice as to their involvement or nonparticipation in the sustainability revolution through the use of sustainable architecture, green technologies and the curriculum. In this chapter, the literature related to various approaches to sustainability and effective green school practices are discussed with a particular emphasis on the sustainable building and whole school approaches to sustainability. Additionally, the triple bottom line approach to sustainability focused on the environmental, learning, and financial benefits for schools will be discussed. Then, educational leadership participation in the sustainability movement will be discussed. This will be followed by a discussion of the Theory of Planned Behavior and research using the TPB in the areas of pro-environmental behaviors, education, and business management. Following a review of these studies, guidelines for an elicitation study were followed which guided me in the development of an open-ended questionnaire based on the TPB, eliciting responses from school leaders based on their salient beliefs regarding their participation in the sustainability movement. The results of this elicitation study will be used by a future researcher to develop a survey instrument to more broadly understand the behavioral intentions of school leaders relative to the implementation of green school practices. These future survey results may be used in the design of educational programs and interventions to assist school leaders in implementing sustainable practices.

Sustainability Approaches

While we do not know to what extent school leaders are participating in the sustainability movement, we do know there is participation on some level. There is growing evidence based on increased participation by schools in architectural design rating systems employing sustainable practices, and the whole school approaches to sustainability that school leaders are participating in the movement (Henderson & Tilbury, 2004; DOE, 2011; Schelly, Cross, Franzen, Hall, & Reeve, 2010; USGBC, 2011). The following section will discuss the relevant literature on the sustainable buildings approach to sustainability and the whole school approach to sustainability.

Sustainable Buildings Approach

Many aspects of sustainability are relevant to school buildings. As a result, school leaders may need to gain an awareness of the environmental and operational aspects of the facility since they are crucial to sustainability. Buildings play an important role in contributing to the carbon and ecological footprints of schools. By sector, buildings are the number one producer of Carbon Dioxide ($CO_{2)}$ emissions, ahead of transportation, and industry (USGBC, 2010). The U.S. Green Building Council established a standard for school sustainability, which for the past decade has evaluated school and commercial construction in categories such as materials and resources, energy and atmosphere, indoor environmental quality, and innovation and design (Schachter, 2009). The U.S. Green Building Council officially began their green movement in 1983 with the development and deployment of the Leadership in Energy and Environmental Building Design (LEED) certification for construction projects incorporating green technology and construction materials into the design and construction/renovation of facilities.

The USGBC's LEED certification program is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across an array of metrics: energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts (U.S. Green Building Council, 2010). LEED is a voluntary certification program that can be applied to any building type and any building lifecycle phase. The LEED Green Building Rating System promotes a whole-building approach to sustainability by recognizing performance in the key areas of: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor air quality, innovations and design, and regional priority.

In 2007, the USGBC further developed its building rating system by creating the Leadership in Energy and Environmental Building Design (LEED) Green Building Rating system specifically for schools. LEED for schools covers new construction and renovations and fits school-specific needs such as classroom acoustics, mold prevention and air quality. The green schools standards are concerned with a healthy environment for its stakeholders, significant energy reductions, and an enhanced design quality.

LEED certification, a sustainability certification program for school buildings, can be used as an indicator of school leader involvement. In 2007–08, there were 132,656 public and private elementary and secondary institutions of learning in the United States (NCES, 2009). Since 2007, the number of LEED certified schools has multiplied from around 80 to 150, with more than 500 schools planning or engaged in construction projects which have registered for eventual certification (Schachter, 2009; USGBC, 2011). As of July 2010, 1,705 schools were on the K–12 Public LEED Registered Project List seeking LEED certification for a sustainable

architecture project (USGBC, 2010). Based on the number of schools in the United States and the number of schools seeking to participate in sustainability through ecological architecture, 1.28% of elementary and secondary institutions have shown an interest in sustainable school practices providing evidence of school leader participation.

The whole school approach to sustainability appears to be gaining traction in the United States and internationally, as evidenced through increased participation in programs like Ecoschools, Enviroschools, and the new United States Department of Education Green Ribbon Schools program (Henderson & Tilbury, 2004; DOE, 2011). This approach to school leadership and sustainability seeks to involve all stakeholders, including the community at large (Henderson & Tilbury, 2004). Under this approach, school leadership plays an important role in the integrating sustainability into individual roles, facilities and operations, school governance, and school culture (Higgs, & McMillan, 2006). School leaders in the United States may want to think about the whole school approach to sustainability when considering the implementation of sustainable practices. The following section will discuss the whole school approach to sustainability.

Whole School Approach to Sustainability

International programs and organizations are increasingly promoting, networking, and recognizing whole school approaches to sustainability. Current examples include Enviroschools in New Zealand, Green School Award in Sweden, Green Schools in China, and other international programs (Henderson & Tilbury, 2004). In the United States, the Department of Education recently announced a new Green Ribbon Schools program that seeks to recognize schools that have worked save energy, reduce costs, feature environmentally sustainable learning spaces, protect health, foster wellness, and offer environmental education to boost academic

achievement and community engagement (DOE, 2011). Under the whole school approach to sustainability all stakeholders are involved in the reform with an emphasis on partnering with the community at large. Early research indicates that the whole school approach to sustainability creates momentum in moving communities in the direction of sustainability (Henderson & Tilbury, 2004; Higgs & McMillan, 2006; Schelly, et al., 2010). A key or important first step towards whole school approach to sustainability or leading a sustainable school is making sustainability a strong emphasis in the school development plan or by implementing a sustainability action plan (Hacking, Scott, & Lee, 2010; Jackson, 1986).

The Zurich International School (ZIS) is an example of how sustainability principles can influence administrators and stakeholders to create model green schools. In 2007, ZIS established a green committee to support the environmental part of the ZIS Mission and Philosophy: "we care for the world around us and our planet" (Zurich International School, 2008). "The group, made up of staff, faculty, students and parents, worked hard to make practical changes to the school's use of resources as well as encouraging more emphasis on 'green' issues in the classroom" (Zurich International School, 2008). By establishing goals to continuously identify and evaluate the environmental impacts of the five ZIS campuses, the committee and school were able to establish goals that increased environmental curricula and practices, and increased student and community awareness of environmental issues centered on the school's philosophy of maintaining high standards of continuity, involvement, and innovation. School leaders trying to develop and implement whole school sustainability measures can utilize the approach followed by ZIS and international projects for best practices. The triple bottom line paradigm is a useful tool in understanding the complex and multi-pronged

concept of sustainability and the benefits that active participation in the sustainability movement can produce for schools.

The Triple Bottom Line Paradigm

Paradigms are ways of looking at the world. Because good paradigms are thorough and helpful, they often attract a strong group of followers. In his book, *The Sustainability Revolution: Portrait of a Paradigm Shift*, Edwards (2005) viewed the triple bottom line concept as a way to view sustainability. Edwards suggests utilizing a paradigm shift effecting planet (environment), people (learning), and prosperity (financial). Grandos and Gomez (2010) argued that the triple bottom line is a very good way to view schools and sustainability. The Triple Bottom Line is defined as a balance of environmental, social and economic sustainability (Newport, et al., 2003). The triple bottom line approach, used by organizations around the globe to assess success (Grandos & Gamez, 2010), and its context to sustainability within green schools can be seen in Figure 1. The relevant benefits of this approach for schools are displayed in Figure 2.

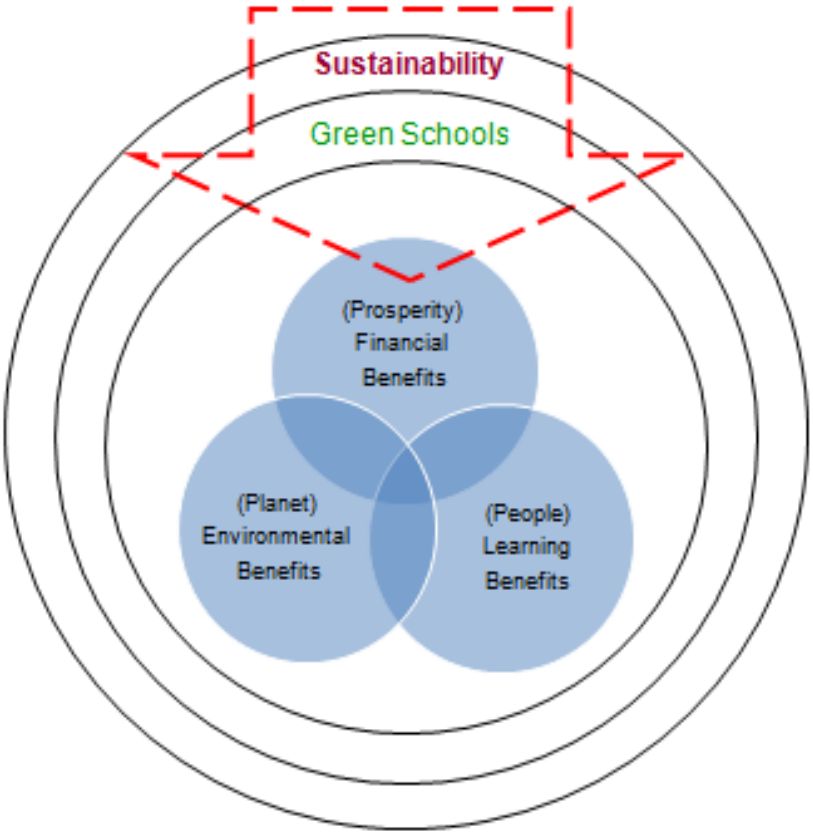

Figure 1. Green Schools in the Context of the Sustainability Movement

Figure 1 provides a model of how these overarching principles can serve to influence school administrators to incorporate this philosophy of the triple bottom line approach to sustainability into school management practices. It is important to note the research in these areas is in the very early stages and not yet conclusive. However, the research suggests positive associations/correlations, but does not definitively demonstrate these relationships. The relative benefits of the triple bottom line approach to sustainability for schools can be seen in Figure 2.

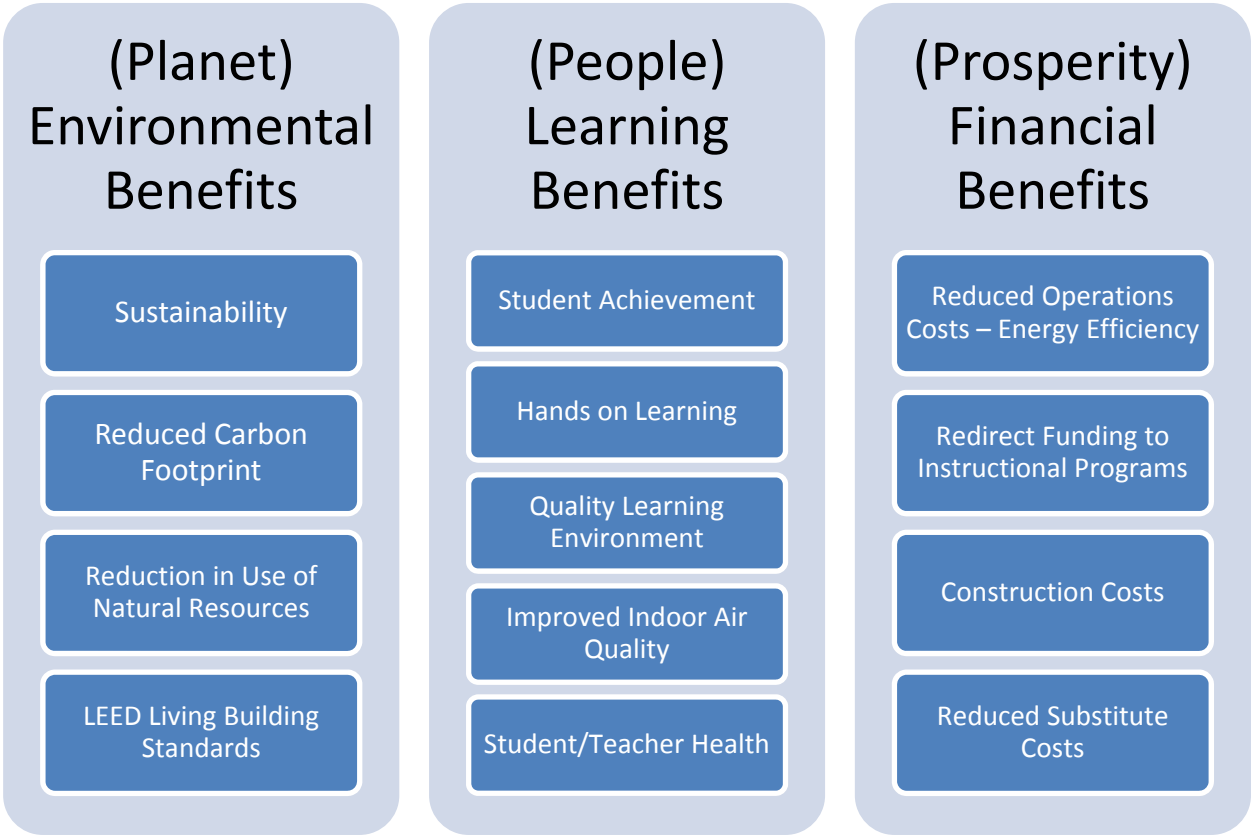

Figure 2. Benefits of Green Schools

There are a number of benefits offered by green schools. Figure 2 provides visual depiction of the three broad categories of the triple bottom line paradigm: planet (environmental), people (learning), and prosperity (financial), with concrete examples of the specific potential benefits for schools related to sustainability and green school practices.

Early research based on the triple bottom line paradigm suggests potential environmental benefits (Kats, 2006; NRC, 2006; Sack-Min, 2007), learning benefits (Buckley, et al., 2005; Edwards, 2006; Heschong Mahone Group, 1999; Kats, 2006; Nicklas & Bailey, 1996), and financial benefits (Kats, 2006; Mattiessen & Peter, 2007) for schools related to sustainability and green school practices. However, "Much is still not known about the potential interactions of

building systems, materials, operations and maintenance practices and their effects on building occupants in general, or about school environments in particular" (National Research Council, 2007, p. 156).

Each leg of the multi-pronged triple bottom line approach to sustainability will be discussed in the following sections. For school leaders, understanding the benefits of this approach to sustainability could serve as the catalyst for the implementation of green school practices within schools.

Environmental Benefits

As indicated in the literature, a few of the environmental benefits of the triple bottom line approach to sustainability are a reduced carbon footprint and a reduction in the use of natural resources. As depicted in Figure 1, the educational environmental benefits are interrelated to other learning and financial benefits. It is important to note, the environmental benefits of sustainability impact the school plant, the community, and society as a whole. In fact, while there are a number of environmental benefits which can occur within the context of the school itself, many of the environmental benefits do not stop at the walls of the school.

The environmental impacts of sustainability, which extend beyond the school, include a reduction in the carbon footprint, and energy and water consumption. The United States is responsible for about one quarter of global greenhouse emissions, with the building sector, including residential, commercial, and industrial buildings, being responsible for over 40% of the United States CO_2 emissions, representing more than any other entire economy in the world (Kats, 2006). The report on the *Green Schools: Attributes for Health and Learning* (NRC, 2006) concluded that by implementing green school standards, CO_2 emissions (the principal greenhouse gas and principal product of combustion) would be reduced due to decreased energy

consumption causing lower emission of pollutants. Carbon Dioxide (CO_2) is a greenhouse gas that traps heat in the atmosphere creating climate change and global warming. In 2007, the Intergovernmental Panel on Climate Change (IPCC) issued its Fourth Assessment Report (Metz 2007; Parry 2007; Solomon, 2007). Based on physical, chemical, and biological measurements and observations, the IPCC concluded that global warming is indisputable. With more than 130,000 (NCES, 2010) schools in the United States, school leaders have the ability to assist in the reduction CO_2 emissions.

For school leaders considering the environmental aspect of the triple bottom line approach to sustainability, a major benefit would also be the reduction in the use of natural resources. Natural resources are becoming a scarce commodity as the global population reaches a record level of seven billion peoples (UNFPA, 2011). A reduction in the use of such resources can lead to a reduction in green house gas emissions, a reduction in the use of water and other resource necessary for the preservation of the civilized world. However, these benefits extend beyond the resources themselves. A reduction in the consumption of natural resources can lead to financial savings through the reduced costs of consumption, cheaper prices based on reduced demand; both of which lead to financial savings. Green schools, on average, use 33% less energy and 32% less water than schools not participating in sustainability (Kats, 2006). School districts developing plans for new facilities may perhaps conduct site studies to determine the best way to position a building to take advantage of natural light and prevailing winds for ventilation, which have an impact on energy efficiency (Sack-Min, 2007). Homewood Middle School in Hoover, Alabama, employed this technique as a part of designing a LEED school, achieving a 38% reduction in energy consumption (Sack-Min, 2007).

Throughout the United States school districts are realizing the benefits of building green schools through LEED certification (U.S. Green Building Council, 2010). Following the LEED guidelines can reduce a building environmental footprint, as well as the bottom line. The U.S. General Services Administration (2008) compared 12 LEED buildings against the average performance of U.S. commercial buildings, finding on average, the LEED buildings had 15 percent lower energy costs and 13 percent lower maintenance costs. The environmental benefits of a properly conceived and executed, green buildings save energy, minimize building impact in the natural environment, and encourage the use of sustainable and renewable materials (Crum & Turckes, 2007). The work that has been undertaken suggests that school buildings designed on green principles offer benefits for the pupil and the teacher alike. Green schools appear to provide an environment which pupils and teachers both value. Without question, research indicates savings can be achieved in the preservation of natural resources leading to a reduction on the demand for fiscal resources.

Because the multi-prongs of the triple bottom line approach to sustainability are intertwined, the environmental benefits related to schools have the potential to impact the learning benefits. The following section will review the literature relate to the learning benefits of sustainability for schools.

Learning Benefits

Learning benefits of schools include the potential for increased student achievement, hands on learning opportunities, quality learning environments, green sustainability, and student and teacher health. I will review studies correlating increased daylight exposure and sustainable design practices to improved student health, improved student and teacher attendance and improved student achievement.

Green school design typically emphasizes providing natural lighting views and managing daylight, by increasing daylight and eliminating glare. Early correlative research indicates possible positive impacts on student achievement due to various aspects of daylighting schools. In one overarching analysis of 17 studies, the consensus findings established a positive association between good ambient lighting in the classroom and reduced off-task behavior, improved student test scores (Buckley, Schneider, & Shang, 2005). Another investigation of 53 generally more recent studies also demonstrated a positive correlation between increased daylighting in classrooms and higher student achievement (Kats, 2006). The study of energy performance of two daylight middle schools and one K–5 elementary school in North Carolina concluded students attending class in full spectrum lighting were healthier and attended school 3.2 to 3.8 more days per year (Nicklas & Bailey, 1996). Through building design standards seeking to provide maximum daylighting, each of these schools was designed to achieve in excess of 70 footcandles over two-thirds of the time the schools were occupied. The results of the study suggested full spectrum lighting was associated with more positive moods in students. According to Nicklas and Bailey (1996), because of the additional vitamin D received by the students in full spectrum lighting, they had 9 times less dental decay and grew in height an average of 2.1 cm more, over a two year period of time, than students attending schools in average light.

Early research indicates there is an association between the abundance of daylight school children are exposed to and their school performance (Heschong Mahone Group, 1999). In 1999, an investigative study by the Heschong Machone Group (1999) explored the relationship between school daylighting and human performance. In the study, three elementary school districts with similar school facilities and a range of daylight conditions were used to assess the

relationship of daylight on student achievement in math and reading. The final data set included the results of more than 102 schools and 1,304 classrooms and the impact of daylight from exposure from skylights and windows on student achievement. This study was limited due to the lack of control variables for comparing wealthier and poorer schools, and the time variances of testing. The 1997–1998 grade level reading and math test scores of more than 21,000 students in Orange County, California, Seattle, Washington, and Fort Collins, Colorado suggested a 20% faster progression in math and a 26% faster progression in reading based on the impact of daylighting. The results of the study suggested a positive association existed between increased exposure to daylighting and improved student achievement (Heschong, 2002).

In a study of fifty-four green schools construction in the United Kingdom, evidence suggested that schools which link sustainable design with the education ethos offer potential learning advantages, and this advantage appears most noticeable in lower age groups (9–13) of pupils (Edwards, 2006). In the study, Edwards (2006) concluded school buildings designed with energy efficient and sustainable architecture provided benefits for students and teachers. Evidence indicated green design provides an environment resulting in lower pupil and teacher absenteeism. This suggests a greater satisfaction with the school as a place for learning, leading to improved productivity. Documented improvements on student standardized examinations in the study support this claim. In five out of seven cases, the green schools, school buildings designed with energy efficient and sustainable architecture, achieved higher overall Stanford Achievement Test (SAT) scores when compared to non-green schools, the local education agency (LEA) overall average, and to the national average on SAT tests. Evidence has accumulated that shows the quality of indoor environments can affect the health and productivity of adults and children (National Research Council, 2006).

The U.S. Environmental Protection Agency estimates that a typical K–12 student spends 1,300 hours each year in a school building, making them susceptible to any problems with indoor air quality due to mold or other causes (Turner Construction, 2005). The environmental quality of schools is an important factor in student achievement. Improvements in the environmental quality of schools have an impact on student performance (Heschong Mahone Group, 1999). The quality of the classroom environment resulting from green design approaches appears to reduce stress in teachers, leading to lower rates of absenteeism or staff turnover, and this in turn leads to improved productivity (Edwards, 2006).

As evidenced by the review of the literature, the physical characteristic of a school related to ecological design principles have the potential to correlate to student learning. Another aspect of green school practices is the potential impact on student learning achieved through the financial benefits. The financial savings achieved can be redirected to instruction. I will discuss the financial benefits of implementing green school practices in the following section.

Financial Benefits

With the scarcity of fiscal resources, school districts are continuously seeking ways to improve financial efficiency, be it energy efficiency, facility costs or operational costs. Creating these efficiencies allows school leaders to focus more funding on instructional practices. These financial benefits of sustainable practices can be achieved through the utilization of green building design principles; creating energy efficient, reduced operational costs, and lower personnel cost related to improved teacher health, as previously discussed in the learning benefits. It is a common misconception that sustainable architecture and the use of green technologies cost significantly more to implement. In fact, as technologies or green products

become more readily available, the potential exists for the construction costs of building green to be the same as conventional construction (Kats, 2006; Mattiessen & Peter, 2007). Educational institutions that adopt or implement green school practices can yield substantial financial benefits. I will review the literature related to the sustainable design principles of schools as it relates to the financial benefits.

K–12 school districts spend $6 billion each year on energy costs and the Department of Energy estimates that these costs could be cut by 25% through better design such as improving the orientation of buildings to integrate daylight without heat gain, using shading devices, and employing highly reflective materials on roofs (Turner Construction, 2005). Based on the United States Department of Energy (USDOE) estimates, the potential energy savings in school buildings across the country could fund up to 30,000 new K–12 teachers or 40 million new textbooks, while the dollar value of these savings will only increase as energy costs continue to climb (Turner Construction, 2005). In a study of 30 green schools, the Greening of America's Schools: Costs and Benefits Report (2006) demonstrated the initial construction costs of a green school were approximately 2% more than conventional schools, or about $3 per square foot. However, the long-term financial benefits of green schools were twenty times larger than those of conventionally constructed schools (Kats, 2006).

In 2006, a study of 60 academic classrooms, 17 LEED seeking classroom project and 43 non-LEED classroom projects, were analyzed to determine costs data. The results of the study concluded there was no statistically significant difference in average costs of green buildings as compared to non-green buildings (Mattiessen & Peter, 2007). According to Mattiessen and Peter (2007), many project teams are building green buildings with little or no added costs, and with budgets well within the costs range of non-green buildings with similar programs. However, the

report does conclude that the idea of a green school is an added feature and continues to be a problem with many building designs. While many project teams are building green building with little or no additional costs, many times design teams see sustainable design as a separate feature. It gives the impression there is an added feature, therefore there must be added costs. According researchers (Kats, 2006; Mattiessen & Peter, 2007; Sack-Min, 2007), greening school design provides an extraordinary cost-effective way to enhance student learning, reduce health and operation costs, ultimately, increasing school quality and competiveness. Kats' (2006) analysis of the costs and benefits of 30 green schools and use of conservative and prudent financial assumptions provide a clear and compelling case that greening schools today is extremely cost-effective, and represents a fiscally better design choice. Although sustainable designs have a slightly higher construction cost, money is usually quickly recouped through lower utility bills and maintenance costs (Sack-Min, 2007).

As the body of evidence suggests, the triple bottom line approach to sustainability within schools can lead to environmental, learning and financial benefits to schools and school leaders. The environmental benefits; sustainable culture, reductions in harmful environmental emissions, and the preservation of natural resources occurring within the context of the school will eventually extend to local communities, states and nationally, as society seeks ways to sustain quality of life. For schools, the environmental, learning and financial benefits may impact student achievement by producing healthier environments and redirecting funding for instructional programs. Through the multi-pronged approach of the triple bottom line to sustainability; the environmental, learning and financial benefits overlap, creating multiple benefits from each of the principles in the triple bottom line paradigm. In spite of these documented benefits, we don't know why or to what extent education leaders will choose

participate in any of these green school practices. Therefore, we need this elicitation study to clarify our understanding of school leader behavioral intentions relative to green school practices. While literature is limited in this area, the next section sets forth the research to date.

Educational Leadership Participation

School leaders are participating in the sustainability movement (Stone, 2009; ZIS, 2008), we just don't know to what extent participation exists, how it exists and why these administrators choose to participate. A review of the literature revealed only a few studies in the area of K–12 sustainability and educational leadership, supporting the idea the field of educational leadership is lagging behind in the sustainability revolution. One factor may be the lack of such standards in higher education school leadership preparation programs. For example, the Interstate School Leaders Licensure Consortium (ISLLC) Standards, which are used by school leadership programs, do not include requirements that are clearly reflective of sustainable practices for elementary and secondary school administration. One could ask, should curriculum standards in higher education's educational leadership preparation include green school practices? These standards would require higher education to include these ideas discussed into school leadership administrator preparation programs, in turn, facilitating the implementation of green school practices into the curriculum. Therefore, the need for this study exists to inform the development of curriculum standards at all levels of education to be integrated with green school practices.

School leadership requires an external focus from leaders, a vision with performance expectations, and well developed structures and systems to support the development of people and the implementation of the program (Lewis & Murphy, 2008). School vision is also critical to sustainable schools (Pepper & Wildly, 2008). One of the few empirical educational research studies examining sustainability in schools lends support to these guiding principles. Research

on leading for sustainability in Western Australian Government secondary schools determined that surface knowledge of sustainability was not enough. In an effort to understand how education for sustainability is conceptualized, incorporated across the curriculum and led, researchers visited three Western Australian secondary schools and conducted semi-structured interviews with teachers who were allegedly leading education for sustainability. The interviews explored the success achieved and the trials faced by teachers responsible for education for sustainability at their respective schools. The study concluded that education for sustainability was fragmented and leading for sustainability requires an extensive knowledge of sustainability, future innovation, strong interpersonal relationships, and the commitment to future change (Pepper & Wildy, 2008).

The remaining study in the area of sustainability and educational leadership sought to discuss how the triple bottom line approach of balancing the environmental, social, and economic legs of sustainability could be adapted to increase organizational sustainability in a Spanish school (Granados & Gamez, 2010). Through a combination of various conceptual approaches, a system design model was developed and adapted to Spanish head teacher practices. This research concluded while there is no formal training in Spanish schools for school management, sustainability in schools can be managed by following strategic models or approaches such as the triple bottom line approach to sustainability: the environmental, social, and economic legs of sustainability (Granados & Gamez, 2010). These two studies concluded an in-depth understanding of sustainability and strategic planning are important to the successful implementation of sustainability within schools. Much more educational leadership research on sustainable school practices is needed.

By examining sustainability for schools through the triple bottom line paradigm, early research indicates a positive association regarding the environmental benefits (Kats, 2006; NRC, 2006; Sack-Min, 2007), learning benefits (Buckley, et al., 2005: Edwards, 2006; Heschong, 2002; Kats, 2006), and the financial benefits for schools (Kats, 2006; Mattiessen & Peter, 2007). As evidenced by school participation the U.S. Green Building Councils LEED certification program, school leaders are participating in sustainable school practices (USGBC, 2010). With the limited research that exists regarding sustainability and education leadership, we do not understand school leader involvement in the sustainability movement. In an effort to determine if school leaders will participate in sustainability and to what extent they plan to participate, we need to know more about school leader beliefs in relation to sustainable building leadership and management practices. For this reason, an initial elicitation study of school leaders and sustainable green practices is needed. The elicitation study will elicit responses to open ended questions in an effort to obtain the salient beliefs of school leaders relative to their attitudes, subjective norms and perceived behavioral control as it relates to their behavioral intentions towards the implementation of green school practices.

The Theory of Planned Behavior (TPB) provides a theoretical framework for assessing, if in fact, school leaders intend to participate in green school practices. The TPB will be discussed in the next section.

Theory of Planned Behavior

The Theory of Planned Behavior (Ajzen, 1991) provided a framework regarding how human action is guided. The TPB requires an analysis of human behavior and can predict the occurrence of a specific behavior provided that the specific behavior is intentional (Francis, et al., 2004). Ajzen (1991) reported the following regarding human behavior:

> Explaining human behavior, which can be rationalized at many levels, can be a complex and difficult task. Concepts referring to behavioral dispositions, such as social attitude and personality trait, have played an important role in these attempts to predict and explain human behavior; however, general dispositions tend to be poor predictors of behavior in specific situations. (p. 179)

The Theory of Planned Behavior, which has evolved as an extension of Fishbein and Ajzen's (1975; Ajzen & Fishbein, 1980) theory of reasoned action, is a theory designed to predict and explain human behavior in specific contexts. A central factor in the theory is the individual's intention to perform a given behavior. It proposes that a person's intention to engage in a specific behavior can best predict that person's action for performing the behavior. "Intentions are assumed to capture the motivational factors that influence a behavior; they are indicators of how hard people are willing to try, of how much effort they are planning to exert, in order to perform the behavior. As a general rule, the stronger the intention to engage in a behavior, the more likely should be its performance" (Ajzen, 1991).

Ajzen (1988) and subsequent research (1991) has suggested three variables: attitudes, subjective norms and perceived behavioral control explain or predict intention. Attitude toward a behavior includes one's positive or negative evaluation of engaging in the behavior. Subjective norms refer to one's perceiving pressures derived from significant others on performing a behavior. Perceived behavioral control is the extent a person feels power over enacting a given behavior (Ajzen, 1991). This study seeks to explore school leaders beliefs and practices related to sustainability, therefore, the TPB provided an appropriate framework for this study as a way to understand school leader attitudes towards sustainable practices, understand what social pressure they feel to implement sustainable practices, and to understand to what extent they believe they

have control over the implementation of sustainable practices. Each of these; attitudes, subjective norms, and perceived behavioral control are key factors in the TPB for assessing the behavioral intentions of school administrators to implement green school practices. The Theory of Planned Behavior, a model for dealing with the complexities of human social behavior, is depicted in Figure 3.

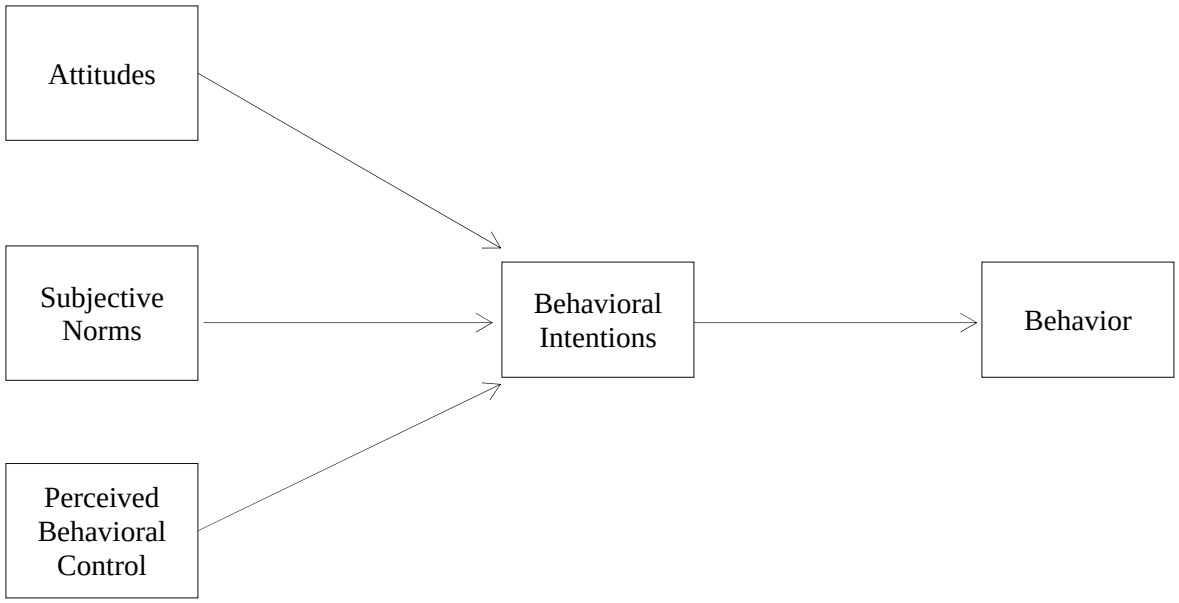

Figure 3. Theory of Planned Behavior Model (Ajzen, 1991, p.182)

The Theory of Planned Behavior (TPB) has been applied to a variety of contexts such as exercise beliefs (Downs & Hausenblas, 2005), health related practices (Francis, et al., 2004), and pro-environmental behaviors (Oreg & Katz-Gerro, 2006). A meta-analysis of 161 articles contained in 185 independent empirical tests published up until the end of 1997 (Armitage & Conner, 2001) supported the Theory of Planned Behavior as a reasonable model to use in predicting behavioral intentions and behavior. Ten years ago, in the field of health related practices, TPB is the explicit theoretical basis for more than 222 studies published in the Medline

database, and more than 610 studies published in the PsychINFO database since 1985 (Frances, et al., 2004, p. 2). Today, it continues to be utilized in health related fields, business management fields, as well as other fields (Cornado et al., 2010; Stern, 2011). Health services researchers desiring to predict and understand the behavior of patients have developed questionnaires and surveys based on the Theory of Planned Behavior that can be used to investigate the attitudes and beliefs underlying health-related behaviors (Francis, et al., 2004).

Previous research in schools relative to green school practices and school leader behavioral intentions does not exist. Therefore, research in closely related fields was reviewed to make some connection to the field of educational leadership. This study will specifically look at research utilizing the Theory of Planned Behavior in the areas of pro-environmental behaviors (Oreg & Katz-Gerro, 2006; Taylor & Todd, 1995), education (Chen, 2009), and business management (Armitage & Conner, 2001; Cordano & Frieze, 2000; Flannery & May, 2000; Martin-Pena, Diaz-Garrido, & Sanchez-Lopez, 2010). These studies are appropriate to review because they utilize the TPB as a theory to understand behaviors and intentions of individuals related to their organizational practices which can be associated with school leadership.

Pro-environmental Behavior

In an attempt to understand the factors that predict pro-environmental concerns and behaviors, the TPB has been used as a model to predict pro-environmental attitudes and behaviors. Pro-environmental behaviors are the behaviors of individuals resulting in a favorable impact on the global environment. Pro-environmental behaviors are important to understanding the implementation of pro-environmental practices across all sectors of the economy. In the field of educational leadership, it is particularly important to understand how school administrators

feel regarding the environment, thus, potentially impacting their willingness to implement pro-environmental practices within schools.

The literature on pro-environmental behavior focuses on two major themes; one that focuses on social demographic variables and the other on social-psychological constructs, which employs constructs such as values, attitudes and beliefs (Dietz, Stern, & Guagnano, 1998). Research on social-psychological constructs are of particular interest, as this study seeks to explore the attitudes, subject norms and perceived behavioral of school leaders using the TPB. "Research utilizing social-psychological measures have been more successful in predicting pro-environmental behavior, with many of these studies utilizing the TPB" (Oreg & Katz-Gerro, 2006, p. 463). Pro-environmental research seeks to understand the attitudes of individuals or organizations towards practices favoring the environment. This paper seeks to explore school leader beliefs and practices related to sustainability and the implementaion of green school practices. Pro-environmental research using the TPB explores behavioral intentions related to sustainable practices, thus, provides a link to understaning school leader individual behavior towards the environment. As a result, this research could assist school leaders with developing research models using the TPB that will predict school leaders' willingness to implement green school practices.

A study by Oreg and Katz-Gerro (2006) utilized values, the Theory of Planned Behavior, and the Value-Belief Norm Theory in an effort to predict pro-environmental actions of the adult population. The results of a study with 31,042 participants in 27 countries went beyond the Ajzen's Theory of Planned Behavior capturing the way people think and feel about the environment, proposing an individuals' attitude and behavior is also driven by the imperatives of cultural values, with the strongest hypothesized relationships between perceived behavioral

control and willingness to sacrifice to protect the environment (Oreg & Katz-Gerro, 2006). Oreg and Katz (2006) found the following:

> An individual's environmental attitudes and behaviors are not only motivated by socioeconomic logic but also by cultural values. The findings provide strong validation to the planned behavior perspective of pro-environmental behavior whereby behavioral intentions mediate the relationship between pro-environmental attitudes and behaviors. (p. 476)

Recent models for attitude management suggest that knowledge of a certain fact influences the attitude to perform the act (Fransson & Garling, 1999). As an example, if school leaders are convinced that a specific factor contributes to saving the environment, then their attitude about it will be positive, thus leading to the likelihood they will implement an environmentally friendly practice in schools. However, even with the knowledge of a practice affecting one's attitude towards a behavior, it is important that the behavior is not influenced too strongly by circumstances beyond the individuals, because if it is beyond their control they will not perform the act regardless of one's knowledge (Fransson & Garling, 1999).

Several other studies have confirmed the TPB's theory's significance in predicting pro-environmental behaviors (Boldero, 1995; Cheng, et al., 1999; Taylor & Todd, 1995, 1997). For example, based on the responses of 731 participants in a study examining the antecedents of recycling and composting intentions in the context of an integrated waste management behavior model, Taylor and Todd (1995) determined that both attitudes and perceived behavioral control towards recycling were positively correlated to the individuals recycling intentions. In another study investigating the waste paper recycling behavior among college students in Hong Kong, a total of 282 undergraduate students from the Chinese University of Hong Kong participated in

the study (Cheung, et al., 1999). The study used the TPB in understanding waste paper recycling and concluded that attitudes, subjective norms, and perceived behavioral control of the college students towards waste paper recycling predicted the behavioral intentions of the students to recycle wastepaper and in turn the recycling intentions predicted actual recycling behavior (Cheung, et al., 1999). Successful research utilizing the TPB to predict pro-environmental behaviors validated the use of the theory as a framework to understanding what school leaders will report regarding their attitudes, subjective norms and perceived behavioral control related to the implementation of green school practices.

Educational Research and the Theory of Planned Behavior

The Theory of Planned Behavior, a framework for analyzing an individual's complex behaviors, has been used effectively in the field of educational research. Pryor and Pryor (2005) can be credited with introducing the TPB to education through initial studies investigating the decision making of school teachers, principals, and others in the areas of professional development, technology integration, and democratic practice within the classroom. This review of the literature examined research regarding the behavioral intentions of teachers utilizing the TPB in the areas of physical education (Chen, 2009), and technology integration in the classroom (Lee, Cerreto & Lee, 2010). A teacher's behavioral intention is important to the implementation of new programs; in the same manner the behavioral intentions of principals will be important to the implementation of sustainable practices. Thus, suggesting the valid use of the TPB in seeking to understand the attitudes, subjective norms, and perceived behavioral control relative to the implementation of green school practices.

A study regarding the Theory of Planned Behavior in the field of education centers on teacher decisions as it relates to the use of educational technology (Lee, Cerreto & Lee, 2010).

In an effort to determine the behavioral intentions of teachers to utilize technology for creating lesson plans and delivering classroom instruction, Lee, Cerreto and Lee (2010) conducted an elicitation study with 34 middle and high school teacher in the Republic of Korea. Participants were asked to write answers to open-ended questions regarding their beliefs about the use of presentation software to create and present classroom lessons. The results of the elicitation study were used to develop a closed-ended questionnaire. The closed-end questionnaire was distributed to 149 middle and high school teacher at eleven schools based on their relevant student population. The results of the closed-ended questionnaire revealed that attitude toward the behavior, subjective norms, and perceived behavioral control were all significant predictors of teacher's intentions to use computers to create and deliver lessons. However, attitude toward the behavior had twice the influence of subjective norm and three times the influence of perceived behavioral control (Lee, Cerreto, & Lee, 2010). This finding suggested that teachers must have positive attitudes about using computers to create and deliver lessons and thus, strategies for change may need to focus on changing teacher attitudes. Similarly, principals may be making decisions regarding the implementation of sustainable practices within schools. This research suggests school leaders need a positive attitude regarding sustainability to facilitate this change.

Limited research exists in the field of education using the Theory of Planned Behavior. Although, the research available has been successful in using the Theory of Planned Behavior to determine behavioral intentions with regards to technologically innovative ideas suggesting the valid use of the theory with other areas of innovation, such as sustainability (Lee, Cerreto & Lee, 2010). Based on the TPB, attitudes, subjective norms, and perceived behavioral control can be assessed to determine the behavioral intentions of individuals. Before school leaders can

develop strategies and professional development opportunities for the implementation of green school practices, researchers first need to understand the behavioral intentions of school leaders regarding sustainable practices.

Business Management

The Theory of Planned Behavior has been successfully used to study pro-environmental behaviors related to business management (Cordano & Frieze, 2000; Flannery & May, 2000; Martin-Pena, et al., 2010). This research is of particular interest to this study, as research in business management is the most closely aligned to school leadership and management. A business manager's attitude towards the environment can predict how they will respond to implementing environmental practices; in the same manner a principal's attitude toward sustainable practice can influence the implementation of green school practices. Understanding the behavioral intentions of managers using the TPB in business management research provides insight into the potential pro-environmental behaviors of school leaders.

"The Theory of Planned Behavior is particularly appropriate for examining the behavior of managers since, as it name implies, the Theory of Planned Behavior is a theory for making predictions regarding the formulation and executions of plans and actions" (Martin-Pena, Diaz-Garrido, & Sanchez-Lopez, 2010, p. 298). Research has indicated that a manager's behavioral intentions toward the natural environment can play a significant role in determining how a company responds to environmental problems (Martin-Pena, Diaz-Garrido, & Sanchez-Lopez, 2010). Researchers drawing on Ajzen's (1988, 1991) TPB, selected Spanish companies to analyze the relationship between management's behavioral intentions towards an environmental problem and the company's specific actions in this area. A random sample of 661 companies was obtained from Dunn and Bradstreet's database of the 50,000 top Spanish companies. As the

source of primary information for the study, a questionnaire was sent by email to the manager responsible for the environment of each company in the sample, and if failed, then it's CEO or President. The total number of respondents was 184 or 30.11% of the sample. The results of the study confirmed that management's behavioral intentions toward the environment influenced environmental actions of the company (Martin-Pena, Diaz-Garrido, & Sanchez-Lopez, 2010). The findings suggested that the school leaders' behavioral intentions towards implementing green school practices will influence whether or not a school implements such practices. In more relative terms, if the principal is not in favor of implementing green school practices, most likely there will be little, if any, action to implement sustainable practices at the school.

In an effort to investigate the individual and contextual influences shaping the environmental ethical decision intentions of a sample of managers in the U.S. metal-finishing industry, Flannery and May (2000) used Ajzen's Theory of Planned Behavior and a moral intensity construct to ground their theoretical framework. The study focused on the environmental decision concerning water pollution in the U.S. metal-finishing industry (Flannery & May, 2000). According to Azjen (1988), eliciting the salient beliefs of a group of people is imperative in developing an instrument to be used to understand the intentions and behaviors of a sample of individuals. As a result, the researchers involved six managers from Midwestern U.S. metal-finishing industry companies in qualitative interviews to assist in the development and the constructs and the instrument. The 696 members of the National Association of Metal Finishers were mailed the survey instrument with 139 usable questionnaires returned, for a response rate of 20 percent. The results of this study indicated that a number of both individual and situational factors influenced the environmental ethical decision intentions of U.S. managers working in the metal finishing industry. "In using the Theory of Planned Behavior, the researchers found that a

manager's attitude was a marginal predictor and subjective norms were a significant predictor of managers' environmental ethical decision intentions" (Flannery & May, 2000). Based on these findings, the attitudes of school leaders will provide a small degree of insight into their behavioral intentions relative to sustainability.

In another study using a modified version of TPB, researchers analyzed the behavioral preferences of U.S. environmental managers (Cordano & Frieze, 2000). In this study researchers used two pollution prevention analyses to support and develop the research model based on Ajzen's (1991) Theory of Planned Behavior. The study examined a variety of potential influences relative to the TPB in the areas of regulatory environments, technological developments, stakeholder relationships, and organizational processes (Cordano & Frieze, 2000). The population for the study consisted of environmental managers at manufacturing facilities in the United States. The sample, which was drawn from the 16,000 members of the Air and Waste Management Association, was selected based on the address and "environmental managers" job title members listed in the Environmental Protection Agency's Toxics Release Inventory. The sample selection process produced 577 environmental managers at different manufacturing facilities in the United States that were mailed a survey. The data collection process produced 295 usable survey responses, a 52 percent response rate from 230 different companies. The finding concluded a positive relationship existed between environmental managers' attitudes about pollution prevention and their preference to implement source reduction activities. Also, there was a positive relationship between environmental managers' assessment of subjective norms about environmental regulation and their preference to implement source reduction activities. In addition, the results predicted as perceived behavioral control increased behavioral intentions for source reduction activity increased" (Cordano & Frieze, 2000). According to the

researchers Cordano and Frieze (2000, p. 636), “the application of Ajzen’s Theory of Planned Behavior explains a moderate amount of the variance in environmental managers’ preferences to implement source reduction activities.” As a result of this study, school leaders can associate ones attitude towards sustainability and their perceived ability to implement change as important factors in the implementation of sustainable practices within schools. For this reason, the research presented in the section on business management and pro-environmental behaviors lends credence to this study’s use of the TPB as a foundational framework to elicit responses from school leaders regarding their attitudes, subjective norms and perceived behavioral control as it relates to sustainable green school practices.

Conclusion

This chapter has presented an overview of the various facets of sustainability and use of TBP in different fields as it relates to this study. This background lays the foundation for this study in two ways.

First, it provided for an overview of sustainable school practices and the environmental, learning and financial benefits associated with the practices. The chapter highlighted the lack of research in educational leadership, provided a body of knowledge related to the benefits of green school practice, and provided relevant research that utilizes the theory of planned behavior in determining pro-environmental behaviors across multiple disciplines.

Second, it sets the stage for the proposed research questions which seek to discover attitudes, subjective norms, and perceived behavioral control of school leaders relative to implementing sustainable green school practices.

CHAPTER 3. METHODS

Research Design

As discussed in Chapter 1, the purpose this elicitation study was to explore school leader beliefs and practices relative to sustainability and green school practices. Qualitative research utilizing elicitation study methodology (Frances, et al., 2004) was used to explore and describe school leader beliefs and practices relative to sustainability and green school practices. An open-ended survey (Table 1) was developed based on a *Manual For Health Services Researchers* which provides guidance on constructing questionnaires based on the Theory of Planned Behavior (Francis, et al., 2004). An elicitation study was conducted in order to identify participants' salient beliefs regarding the implementation of green school practices. The results of the elicitation study will be used in future research to develop direct measures for assessing behavioral intentions based on attitude, subjective norm, and perceived behavioral control in the development of a closed-ended survey. Elicitation studies are essential when using the TPB because they evoke responses to open ended questions based on an individual's salient beliefs, in an effort to determine the behavioral, normative and control beliefs of an individual or population (Downs & Hausenblas, 2005). These salient beliefs are those prominent beliefs that enter a person's mind when asked a question, providing researchers with vital information concerning the thoughts and feelings about a behavior from individuals (Downs & Hausenblas, 2005).

This elicitation study assisted in identifying the salient beliefs of school administrators regarding their attitude, subjective norm and perceived behavioral control as it relates to sustainability and green school practices.

Research Questions

1. What salient behavioral beliefs do school leaders report relative to their attitudes regarding the implementation of green school practices?

2. What salient normative beliefs do school leaders report relative to their subjective norms regarding the implementation of green school practices?

3. What salient control beliefs do school leaders report relative to their perceived behavioral control regarding the implementation of green school practices?

Participants and Sample

The participant population for this elicitation study was a group of United States school leaders known for their practices related to sustainability and green school practices, as well as school leaders who may or may not be familiar with sustainability. Aimed at achieving a variety of school administrations in the sample, the snowball method of sampling was used to identify participants from the population that met certain criteria. The criteria for selection included:

1. Positional school leaders or administrators in the United States
2. School leaders with or without knowledge of sustainability practices
3. Schools leaders willing to participate in the study.

Snowball sampling is a technique used for developing a research sample where a sample of the participant population recruits future participants for the research sample based on their social network. As a result, the sample group grows with each survey response, thus creating the snowball effect. As the sample pool increases, enough data is collected to meet the criteria for

completing research. The snowball method of sampling might lead to greater participation than if the survey were sent out randomly to a group of individuals. For example, research says that people act on peer pressure more than we might think (Kandel & Lazear, 1992). If they know that a colleague completed the survey and recommended them, then they might be more likely to complete the survey. According to Creswell (2007), the snowball method of sampling is useful when it is difficult for researchers to access a certain population.

Twenty-five participants are recommended (Godin & Kok, 1996) because elicitation studies are designed to collect data until it is likely that saturation has been achieved. Saturation is the point at which you begin to receive the same information already collected. Saturation generally occurs by the twenty-fifth sample, therefore, Godin and Kok (1996), recommended minimum sample size of 25 participants. This study sought a sample size larger than the minimum twenty five suggested. In fact, rather than stopping at twenty five participants, I gathered 71 valid responses; almost three times the recommended number of participants at which saturation is assumed to occur.

When considering the rationale for selecting the participants in the study, the first criterion was based on the fact that my study sought the behavioral intentions of school administrators in the United States to implement sustainable green school practices. The second criterion was related to the knowledge level of school leaders relative to green school practices. This study was interested in the reasons why school leaders may or may not choose to lead and manage their school facilities with attention to sustainability or green school practices. Therefore, the study needed participants with and without knowledge of sustainability or green school practices. Diversity of perspectives was necessary to gain a thorough understanding of what school leaders would report regarding the advantages and disadvantages, their willingness,

and their perceived ability to implement sustainable practices. The third criterion suggests school leaders must be willing to participate in the study. Only willing participants will respond to the questionnaire.

The snowball sampling began by indentifying a group of school leaders in the United States. Based on this group, an email list of known school leaders was developed to solicit their participation in the initial round of surveys. The initial email list was developed based on my knowledge of colleagues in the fields of education and educational leadership with and without experiences in sustainability practices. The initial email contact list included the following potential participants for this study:

1. Colleagues in the field of education throughout the United States
2. School leaders considered to be exemplars of sustainability (Stone, 2009)
3. School leaders affiliated with the Alabama Division of the US Green Building Council.

The purpose of this elicitation study was to explore school leader beliefs and practices relative to sustainability and green school practices. The participant population and sample provided the necessary participants to complete the study.

Measures

In this elicitation study, the Theory of Planned Behavior (Azjen, 1991) was used as theoretical framework for developing the open-ended questions seeking responses from school leaders relative to sustainability and green school practices. The TPB has been used successfully in conducting elicitation studies (Down & Hausenblas, 2005; Frances, 2004; Lee, 2010). The TPB uses elicitation studies with open-ended questions to assess the behavioral, normative and control beliefs of a population, performing a content analysis to rank order beliefs to determine

the 5-10 most salient beliefs (Downs & Hausenblas, 2005). This study relied on the TPB to guide the question development for the survey instrument used in the study. Thus, the survey included nine questions related to the attitudes, subjective norms and perceived behavioral control of school leaders relative to the implementation of green school practices (see Table 1).

Table 1

Open-ended Questions Used in the Present Study

Attitude
1. What do you believe are the ADVANTAGES of leading and managing your school to be a green school?
2. What do you believe are the DISADVANTAGES of leading and managing your school to be a green school?
3. Is there anything else you associated with your own views about leading and managing your school to be a green school?
Subjective Norms
4. Within or outside your organization, who are the individuals, if any, who would APPROVE of you leading and managing your school to be a green school?
5. Within or outside your organization, who are the individuals, if any, who would DISSAPPROVE of you leading and managing your school to be a green school?
6. Is there anything else you would associate with other people's views about you leading and managing your school to be a green school?

(table continues)

Table 1 (continued)

Perceived Behavioral Control
7. What factors or circumstances would make it DIFFICULT or IMPOSSIBLE for you to lead and manage your school to be a green school?
8. What factors would ENABLE you to lead and manage your school to be a green school?
9. What other issues, if any, come to mind when you think about leading and managing your school to be a green school?

Three open-ended questions in each of the following constructs of the TPB (attitudes, subjective norms and perceived behavioral control) were developed for inclusion into the survey instrument. Upon development of the survey, professionals in the field of sustainability were asked to review the questions and provide feedback to the scope and content of the questions. This was necessary to ensure the questions were couched to elicit the responses to appropriate questions serving the needs of this study.

Data Collection

The entire data collection process occurred electronically. SurveyMonkey was utilized to collect the data for the survey questionnaire. SurveyMonkey is an online data collection system which makes it easy to conduct, manage and analyze research. The data collection process began in September of 2010 and concluded in February of 2011. On September 16, an email containing a link to the survey listed on SurveyMonkey (see Appendix A) was sent to potential participants in the sample population. An email was sent to each potential sample participant explaining they were chosen to participate because either they are a practicing K–12 school administrator and/or they know practicing K–12 school administrators who might be willing to

participate in the study. In addition, respondents were assured the survey response would remain in complete confidentiality and their identity, if provided, would be destroyed at the end of the data collection process or after the follow-up interview, whichever came first. By February 7, 2011, there were a total of 71 completed surveys.

Analysis

An elicitation study was developed based on the constructs of the TPB, attitude, subjective norm, and perceived behavioral control, in an effort to understand what school leaders would report regarding the implementation of green school practices. This study elicited open ended responses to nine questions centered on the beliefs of school administrators relative to green school practices. Content analysis of the responses to these open ended questions was performed and was categorized into themes and labeled. To increase the validity of the analysis, two researchers completed an independent analysis of the responses (Frances, et al., 2004). To analyze the data, the themes were listed in order from most frequently mentioned to least frequently mentioned.

CHAPTER 4. RESULTS

Introduction

The purpose of this elicitation study was to explore school leader beliefs and practices relative to sustainability and green school practices by using qualitative methods to answer the following three research questions centered on the Theory of Planned Behavior:

1. What salient behavioral beliefs do school leaders report relative to their attitudes regarding the implementation of green school practices?
2. What salient normative beliefs do school leaders report relative to their subjective norms regarding the implementation of green school practices?
3. What salient control beliefs do school leaders report relative to their perceived behavioral control regarding the implementation of green school practices?

Participant responses to these questions allowed us to better understand what school leaders report about the advantages and disadvantages of green school practices, their willingness to implement these practices and whether or not they feel as if they have the ability to implement such practices, if so desired.

Demographics

The sample for this elicitation study was a group of United States school leaders known for their practices related to sustainability and green school practices, as well as, school leaders who may or may not be familiar with sustainability based on their reported practices. Seventy-one people completed the questionnaire. Thirty people that began the questionnaire were unable

or unwilling to complete it. The demographic section provided information about each respondent's gender, age, professional experience in the field of education and the current position held by each respondent. Other questions solicited answer from the participants regarding their current school type; public, private or independent, geographic location, and community type designation. In addition, the participants reported their present level with the school system and their professional development experiences; formal or informal. Finally, participants were asked to report the number of green school practices currently taking place within their respective schools. This data tells us if a diverse set of school leaders from around the U.S. with various position and experience levels participated in the study.

Thirty-four of the participants were male; thirty-two of the participants were female; and five participants did not report their gender. The respondents ranged in age from thirty-five to sixty-seven years of age, with 50 (70.43%) of the respondents between thirty-six and fifty-five years of age (see Figure 4).

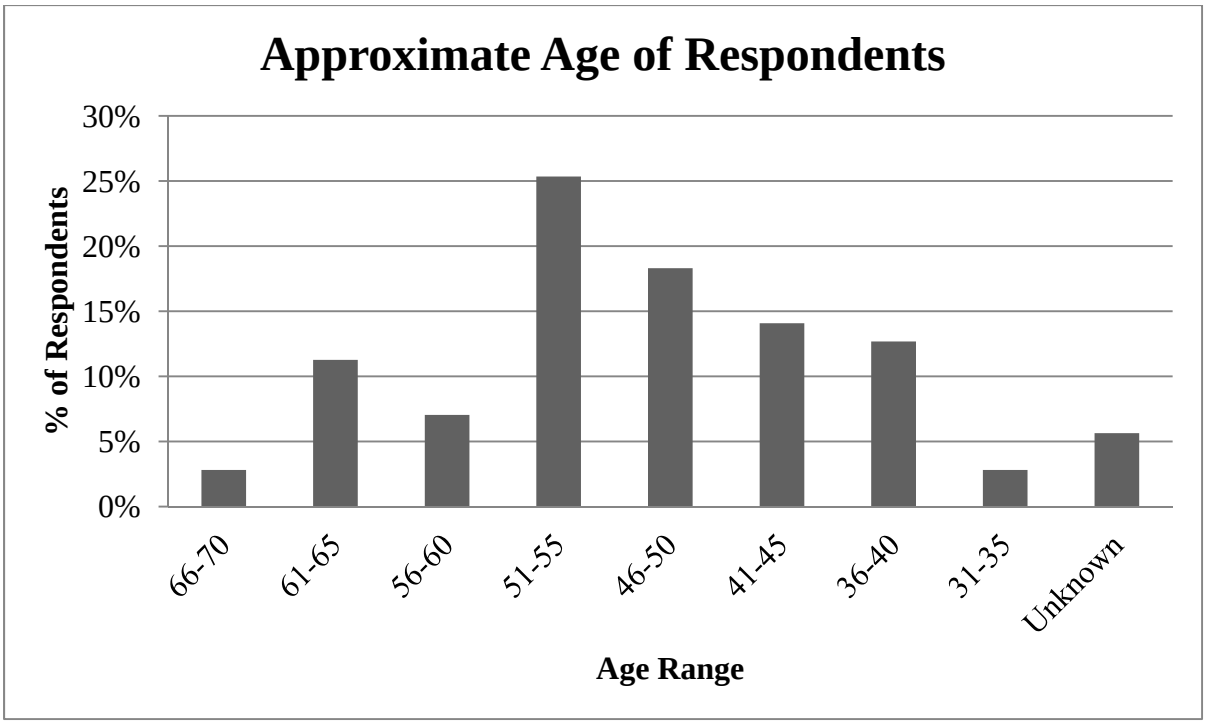

Figure 4. Approximate Age of Respondents Based on Birth Year

The professional work experience for the current position of the respondents ranged from zero to more than fifteen years, with 27 (38.03%) between 4–7 years, 18 (25.35%) between 0–3 years, and 14 (19.72%) between 8–11 years of experience (see Figure 5). The professional position of the top 5 most respondents were principals, assistant principals, superintendents, assistant superintendents, and chief financial officers with 26 (36.62%), 9 (12.68%), 6 (8.45%), 5 (7.04%), and 4 (5.63%) respectively (see Table 2).

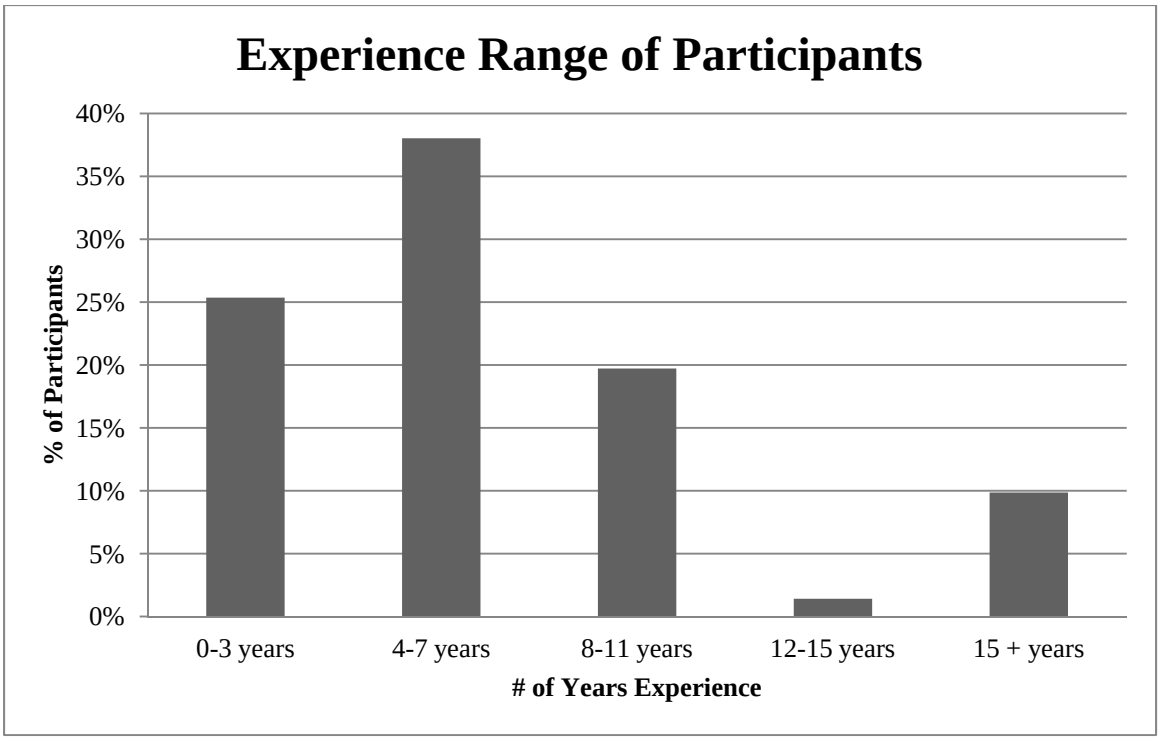

Figure 5. Experience Range of Participants

Table 2

Current Professional Position of Respondents

Professional Position	Response Percent	Response Count
Assistant Principal	12.68	9
Superintendent	8.45	6
Assistant Superintendent	7.04	5
Chief School Financial Officer	5.63	4
Administrator	2.82	2
Director	2.82	2
Dean of Academics	1.41	1
Dean of Students	1.41	1
Director of Assessment and Instruction	1.41	1
Director of Athletics	1.41	1
Director of Curriculum	1.41	1
Director of Technology	1.41	1
Executive Director of Secondary Education	1.41	1
Head of School	1.41	1
Program Manager	1.41	1
School Technology Coordinator	1.41	1
Supervisor	1.41	1
Sustainable Schools Project Manager	1.41	1
Vice President	1.41	1
Unknown	5.63	4

The respondents hold positions in public, private, and independent schools, 62 (87.32%), 2 (2.82%), and 3 (4.23%), respectively, with 4 (5.63%) unknown (see Figure 6). Of the respondents, 31 (43.66%) work at the district level, 11 (15.49%) in a high school, 16 (22.54%) in an elementary school, and 2 (2.82%) in a junior high school (see Figure 7). Bureaucracy and red tape have the potential to affect the perceived behavioral control of school leaders to implement green school practices. This bureaucratic oversight may vary widely between public, private and independent school, with public school having the most potential for federal, state and local regulations. In future studies, it will be important to investigate the connection between the school type of the respondents and their perceived behavioral control to implement sustainable practices.

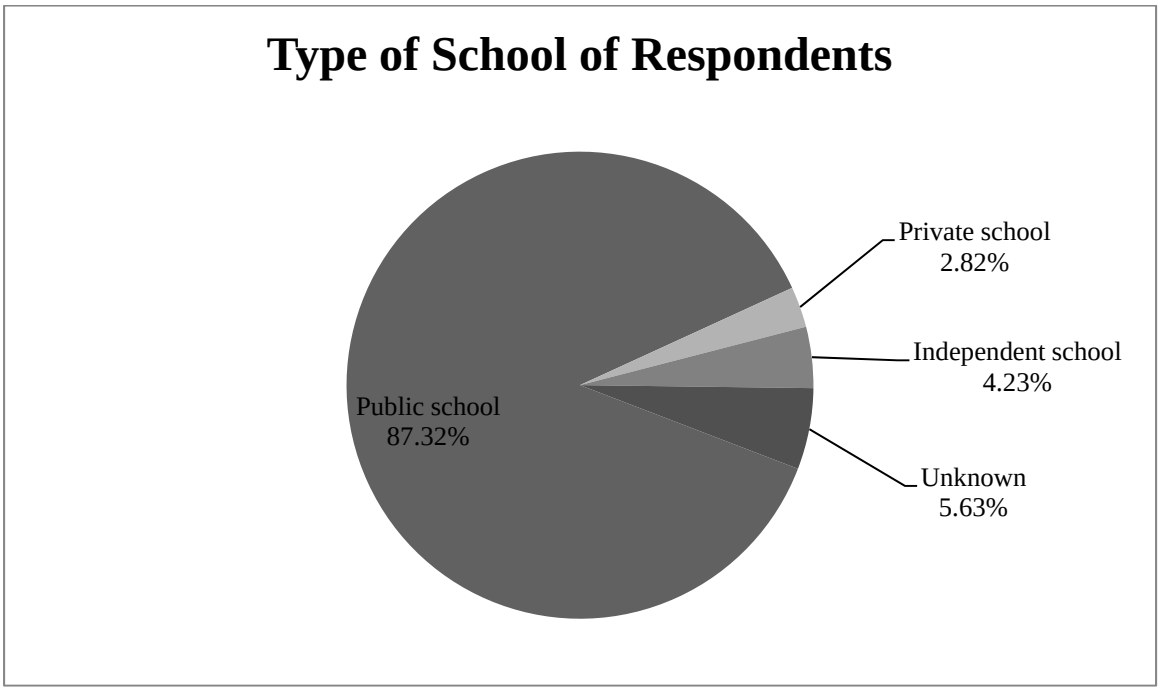

Figure 6. Type of School of Respondents: Public, Private or Independent School

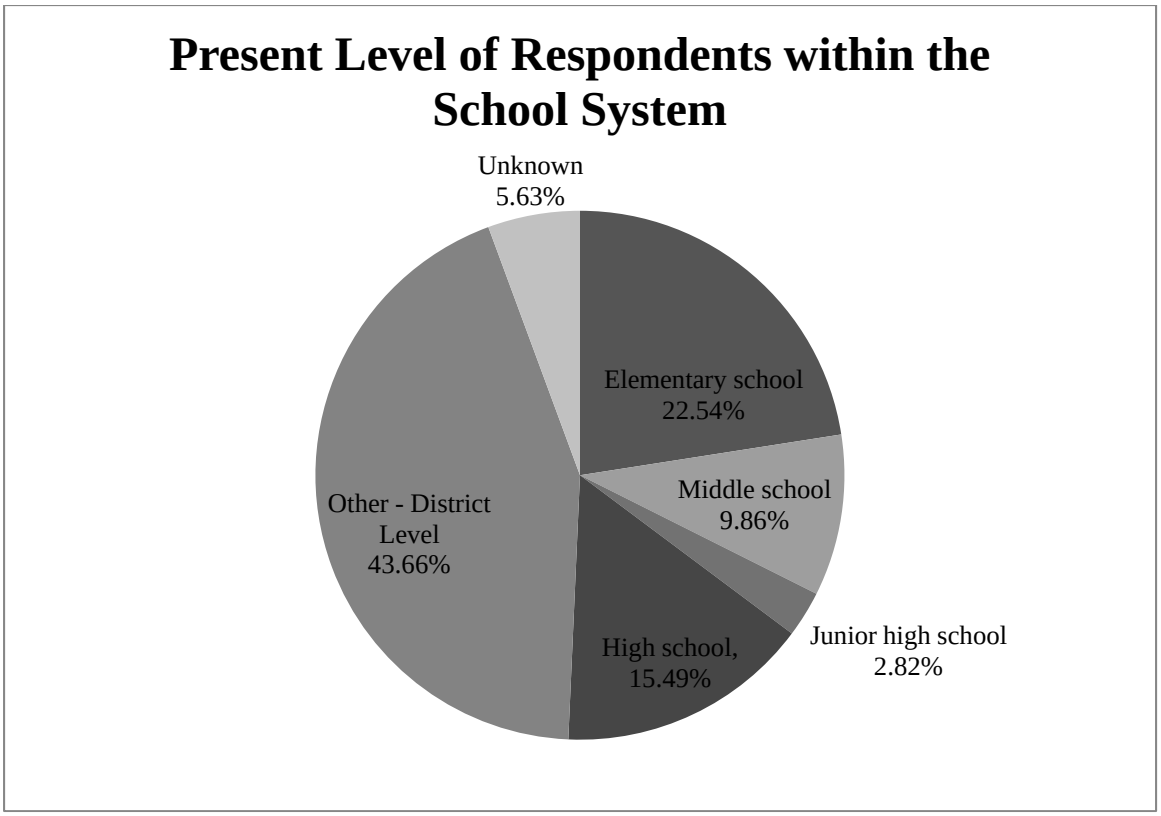

Figure 7. Present Level of Respondents within the School System

The respondents work at various levels within the school system; elementary, middle, high school or at the district level. Table 3 provides the community type location of the schools represented by the participants of the study. The schools are located in urban, suburban, and rural areas with high and low poverty levels (see Table 3). As presented in Figure 7, these schools are located in the following community types; urban (14.08%), suburban (36.62%), and rural (33.80%) when combining the categories of high and low poverty levels. In future research, it will be important to explore the connections between community type, attitude, subjective norms and perceived behavioral control of school leaders related to sustainability to determine if financial means or the lack of importance plays a role in school leader intentions towards implementing green school practices.

Table 3

Community Type Location of Respondents Including Poverty Level

Community Type Area Location	Response Percent	Response Count
Urban area with high poverty	5.6	4
Urban area with low poverty	8.45	6
Suburban area with high poverty	9.86	7
Suburban area with low poverty	26.76	19
Rural area with low poverty	15.49	11
Rural area with high poverty	18.31	13
Other (please specify)	9.86	7
Unknown	5.63	4

The map of the United States indicates the current school location of the respondents and the number of respondents by state for the purpose of this study (see Figure 8). Of the 71 participants in the study, 67 reported the state where their school was located. There is a cross-section of representation throughout the United States: Oregon, California, New York, Michigan, Pennsylvania, Ohio, Maryland, Virginia, Missouri and Arkansas with a majority of the respondents reporting their school location in the South; eight respondents were from Mississippi, thirty-five of the respondents were from Alabama and three of the respondents were from Georgia. This data reveals we had a diverse group of participants represented in the study based on geographical location from around the U.S. Future research in this area will need to investigate the connections between subjective norms and the geographical location of the

respondents and the potential to impact the behavioral intentions of school leaders to support sustainability.

Figure 8. U. S. Map Indicating the Number of Participants by Location

Of those respondents reporting how they obtained any prior knowledge regarding sustainability, 43 (60.56%) learned through informal education and 24 (33.80%) learned through a formal education program (Figure 9). Respondents planning to learn about sustainability in the

future, 48 (82.80%) plan to learn through informal education, and 16 (27.60%) plan to learn through formal education (Figure 10).

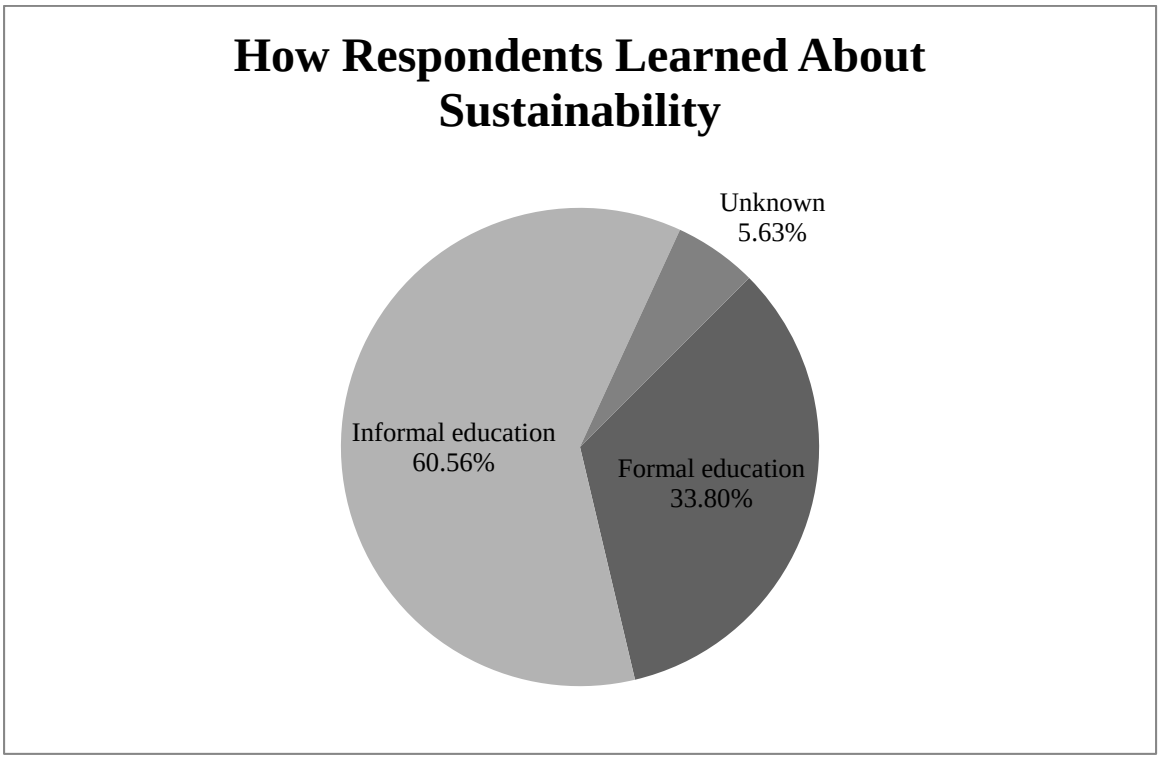

Figure 9. How Respondents Previously Learned About Sustainability

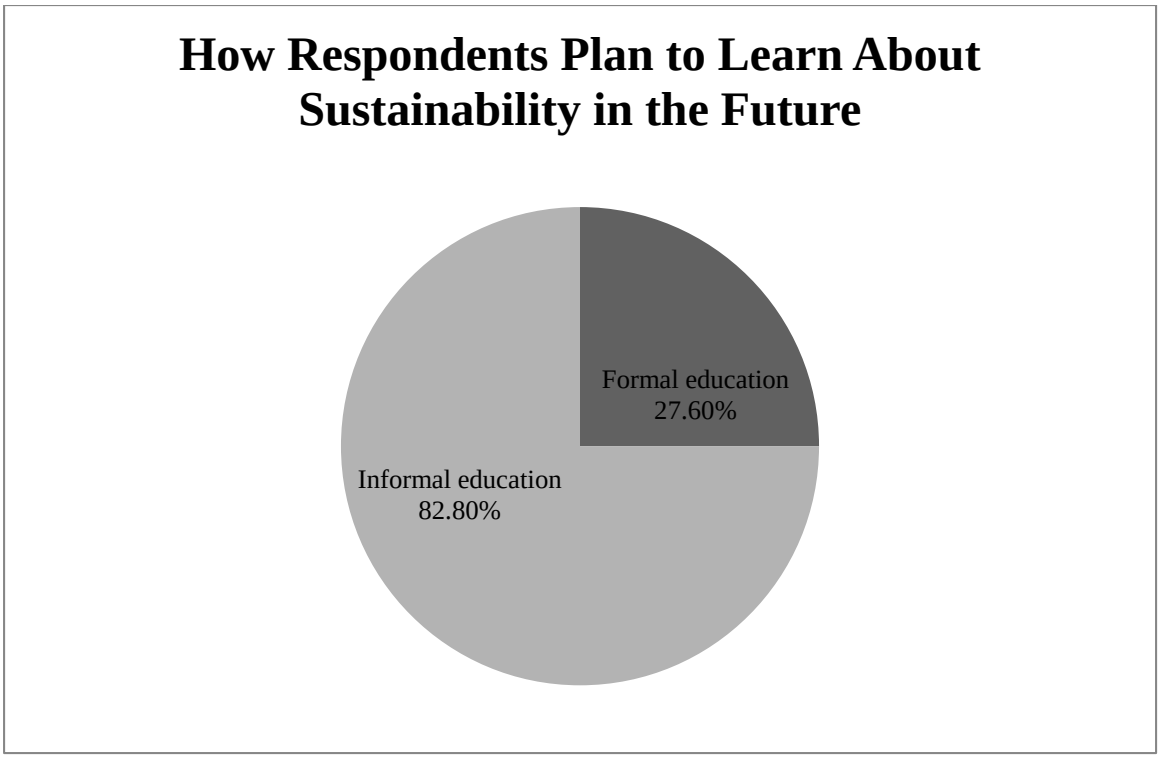

Figure 10. How Respondents Plan to Learn About Sustainability in the Future

Of the respondents, 65 reported a total of 112 current practices which were coded and categorized into 11 areas of sustainability considered to be consistent with green school practices; 40 (56.34%) reported energy management practices, 36 (50.70%) reported benefits from recycling practices and 14 (19.72%) reported resource conservation practices (see Table 4). When considering the number of current practices reported by each individual respondent, 39 (54.93%) reported between one and two, and 21 (29.58%) reported between three and four current practices. One respondent reported between five and six current practices, while there were no participants reporting current implementation of seven or more green practices (see Table 5).

Table 4

Coding Frame for the Question: What, if any, of Your Current Practices Do You Consider Consistent with Green School Practices?

Item Codes	Response Count	Response Percent	Response Percent Coded Items
Energy Management	40	56.34	31.75
Recycling Benefits	36	50.70	28.57
Resource Conservation	14	19.72	11.11
Green Products	10	14.08	7.94
Curriculum Integration	7	9.86	5.56
No Code Assigned	6	8.45	4.76
Green Technology Changes	6	8.45	4.76
None	2	2.82	1.59
Environmental Awareness	2	2.82	1.59
Stakeholder Support	1	1.41	0.79
Facilities – New Construction	1	1.41	0.79
Solar Power	1	1.41	0.79

Table 5

Number of Current Green Practices Reported by Respondents

Range of Reported Green Practices	Response Percent	Response Count
0	2.82	2
1–2	54.93	39
3–4	29.58	21
5–6	1.41	1
7 or more	0.00	0
Unknown	11.27	8

Table 6

Coding Frame for the Question: What Does Sustainability Mean to You?

Item Codes	Response Count	Response Percent	Response Percent Coded Items
Ability to Maintain Over Time	33	46.48	50.00
No Code Assigned	15	21.13	22.73
Resource Conservation	4	5.63	6.06
Environmentally Friendly	4	5.63	6.06
Status Quo	3	4.23	4.55
Environmental Preservation	2	2.82	3.03
Long-term Implementation Benefits	2	2.82	3.03
Health Benefits/Healthy Environment	1	1.41	1.52
Stewardship	1	1.41	1.52
Managing Resources	1	1.41	1.52

Number of Responses

There were seventy-one respondents to the nine open-ended questions grounded in the Theory of Planned Behavior with a total of 839 responses elicited (Table 7). As Table 7 shows, the total number of responses to each question ranged from 50 on the "Other associated with other people's views" question to 189 on the "approve" question. The mean beliefs for each questions ranged from 0.70 to 2.66 responses per person. A limited number of people listed five or more responses, suggesting that participants were not constrained by the response format (Sutton, et al., 2004). If participants felt constrained by the response format, they would feel obligated to respond, possibly overstating the number of green school practices implemented. With the limited amount of research in field of educational leadership regarding sustainability, a large number of respondents with five or more reported green school practices would possibly indicate constraint in the response format.

Table 7

Descriptive Statistics for Responses (Beliefs) Elicited by the Nine Open-Ended Questions

Question	Total Responses	Mean Responses Per Person	No of People who gave 5 or more beliefs	% of People who gave 5 or more beliefs
Advantages	139	1.96	1	1.41
Disadvantages	89	1.25	0	0.00
Other associated with your views	58	0.82	0	0.00
Approve	189	2.66	8	11.27
Disapprove	83	1.17	0	0.00
Other associated with others views	50	0.70	0	0.00
Difficult/Impossible	89	1.25	0	0.00
Enable	91	1.28	1	1.41
Other issues that come to mind	51	0.72	0	0.00

Theory of Planned Behavior

The Theory of Planned Behavior takes into account the attitude (behavioral beliefs), subjective norms (normative beliefs), and perceived behavioral control (control beliefs) of an individual or group of individuals as a predictor of their behavioral intentions to perform a specific act (Ajzen, 1991). This study was informed by the Theory of Planned Behavior, in an effort to gain an understanding of what school leaders reported relative to their attitude, subject norms, and perceived behavioral control as it relates to the implementation of sustainability and green school practices. Responses by the participants of the study to nine open-ended questions were compiled and used to develop tables for analysis.

Attitudes

Based on the Theory of Planned Behavior, three open-ended questions were presented to the participants in an effort to elicit responses regarding their attitude or salient behavioral beliefs towards sustainability. Examining attitudes tells us if someone is in favor of doing something or not. Salient behavioral beliefs, beliefs about the consequences of performing the behavior, are held to determine the attitude toward the behavior (Ajzen, 1991). This section represents responses reported by the participants in relation to their attitude or their salient behavioral beliefs regarding sustainability and green school practices.

Table 8 is a complex data table, thus this section will detail and highlight the different elements of the table. These elements include the advantages, disadvantages and other responses provided by the participants regarding their attitude toward the implementation of green school practices. Table 8 shows the coding frame for the "advantages," "disadvantages," and "other" questions related to the salient behavioral beliefs of the respondents. The response count column of Table 8 conveys the number of individuals out of 71 who reported on each coded item. This is important because it provides insight into the attitudes of current school leaders relative to sustainability and the potential advantages and disadvantages associated with each salient belief reported. Also, Table 8 shows for each "coded item" category the corresponding percentage out of 71 participants who gave a response that fell into the survey questions for "advantages," "disadvantages," and "other."

Table 8

Coding Frame for the "Advantages, Disadvantages, and Other" Questions and Numbers/Percentages of Participants Who Gave Responses in Each Category

	ATTITUDES						
Item Codes	Response Count	Advantages	Response Percent	Disadvantages	Response Percent	Other	Response Percent
Costs	40			39	54.93	1	1.41
Financial Savings	28	28	39.44				
Next Generation of Sustainability	24	23	32.39			1	1.41
NO	17					17	23.94
Resource Conservation	17	16	22.54			1	1.41
Time	17			14	19.72	3	4.23
No Code Assigned	16	5	7.05	2	2.82	9	12.68
Student Modeling	15	15	21.13				
Change Resistance/Habits/Buy-in	11			10	14.08	1	1.41
Environmental Benefits	10	10	14.08				
Health Benefits/Healthy Environment	10	10	14.08				
Environmental Preservation	8	8	11.27				
Lack of Information/Knowledge	8			5	7.04	3	4.23
None	7			7	9.86		
Community Leadership	6	6	8.45				
Stewardship	6	5	7.04			1	1.41
Responsibility	5					5	7.04
Curriculum Integration	4	2	2.82			2	2.82
Environmental Awareness	4	4	5.63				
Lack of Human Resources	4			4	5.63		
Recycling Benefits	3	2	2.82			1	1.41
Stakeholder Support	3					3	4.23
Advocate	2					2	2.82
Facilities–NEW Construction	2					2	2.82
Green Technology Changes	2			2	2.82		
Overreacting	2			2	2.82		
Politically Correct	2					2	2.82

(table continues)

Table 8 (continued)

Item Codes	ATTITUDES						
	Response Count	Advantages	Response Percent	Disadvantages	Response Percent	Other	Response Percent
Social Preservation	2	2	2.82				
Training Staff/Prof. Development	2			2	2..82		
Effective Learning Environment	1	1	1.41				
Efficient Sustainable Practices	1			1	1.41		
Facilities–OLD	1					1	1.41
Leading by Example	1					1	1.41
Open Minded	1					1	1.41
Public Perception	1	1	1.41				
Student Achievement	1					1	1.41
Student Attendance	1	1	1.41				
Inconclusive Effects	1			1	1.41		

There were a low number of items reported by the participants that could not be classified. Examination of Table 8 shows that, for “advantages,” disadvantages,” and “other” the percentage responses which could not be classified and assigned to “no code assigned” were, 5 (7.04%), 2 (2.82%), and 9 (12.68%), respectively. For the question on the “advantages” one of the respondents reported: “overreacting and trying to be to green.” In response to the question on “disadvantages,” one of the respondents reported: “the disadvantages are when they do not pick up the recycling in a timely manner because all of the recycling gets full and empties over." In reply to the question on “other,” one of the respondents stated: “I do believe in taking care of the earth god gave us.” These responses and with other unique reactions to the open-ended questions were difficult to categorize, therefore, they received a “no code assigned” classification.

Assessment of Table 8 shows, that for “advantages” 28 (39.44%) of the respondents reported “financials savings” as the most commonly reported advantage for leading and managing a green school. For the coded item “financial savings,” the majority of the representative responses included: “save money,” and “financial savings over time.”

Of the respondents, 23 (32.39%) considered developing the “next generation of sustainability” as an advantage of leading a green school. For the item code “next generation of sustainability”, one of the participants reported: “Our students will soon be the adults leading our society and they must learn now how to have a lasting relationship with the environment.”

When considering the categories were ranked based on the number of individuals responses to each coded item, “Resource conservation” was explicitly reported by 16 (22.54%) of the participants and ranked third highest among the advantages. “Student modeling” of green practices was seen as an advantage by 15 (21.13%) of the respondents. A representative participant reported: “less waste and more environmental awareness is good modeling for students.”

Review of Table 8 shows that for “disadvantages”, 39 (54.93%) of the respondents reported “cost” as the most common disadvantage for leading and managing a green school. For the item code “cost” participants responded with such phrases as: “costs for implementation,” “cost prohibitive initially,” “short-term higher costs” and “costs are often higher for green products.”

“Time” and “change resistance” represent 14 (19.72%) and 10 (14.08%) of the responses for disadvantages, respectively. These responses suggests that school leaders believe that there is limited time to implement new ideas and programs, causing teachers and staff to resist change, limiting buy-in which would make it difficult to lead a green school.

Evaluation of Table 8 indicates that for the "other" category, 17 (23.94%) of the respondents reported "no" when ask the question: Is there anything else you associate with your own views about leading and managing your school to be a green school? Of the respondents in the "other" category, 5 (7.04%) reported "responsibility" as another factor for consideration. One of the participants reported: "this gives responsibility to the students to take pride in their school and community." Of the remaining responses in the "other" category, no single item code received more than 3 (4.23%) responses.

Subjective Norms

Based on the Theory of Planned Behavior, three open-ended questions were presented to the participants in an effort to elicit responses regarding their subjective norms as it relates to green school practices. Examining subjective norms informs us of how much social pressure a person feels to do something or not. Salient normative beliefs are held to determine the subjective norms (Ajzen, 1991). This section represents responses reported by the participants in relation to their subjective norms or their salient normative beliefs related to sustainability and green school practices.

Table 9 is a complex data table, thus this section will feature and highlight the different elements of the table. These elements include the responses by the participants to who would approve and disapprove of the implementation of sustainability and green school practices. Table 9 shows the coding frame that was used for the "approve," "disapprove," and "other" questions related to the salient normative beliefs. The response count column of Table 9 conveys the number of individuals out of 71 who reported on each coded item. This is important because it provides insight into the subjective norms or the external pressures current school leaders experience regarding who would approve and who would not approve of the implementation of

green school practices. Also, Table 9 shows for each "coded item" the corresponding percentage of 71 participants who gave a response that fell into the survey questions for "approve," "disapprove," and "other."

Table 9

Coding Frame for the "Approve, Disapprove, and Other" Questions and Numbers/Percentages of Participants Who Gave Responses in Each Category

	SUBJECTIVE NORMS						
Item Codes	Response Count	Approve	Response Percent	Disapprove	Response Percent	Other	Response Percent
School Board	40	33	46.48	7	9.86		
Superintendent	36	29	40.85	7	9.86		
Parents	33	25	35.21	7	9.86	1	1.41
None	29			29	40.85		
NO	28					28	39.44
Teachers	23	16	22.54	7	9.86		
Community Support	22	15	21.13	7	9.86		
Departmental Manager	20	19	26.76	1	1.41		
Students	17	15	21.13	2	2.82		
Community Leadership	11	9	12.68	1	1.41	1	1.41
No Code Assigned	10	3	4.23	4	5.63	3	4.23
CFO	8	4	5.63	4	5.63		
Principal	7	7	9.86				
Stakeholder Support	7	7	9.86				
Central Office	6	6	8.45				
Educate Public	6					6	8.45
Politically Correct	4			2	2.82	2	2.82
Change Resistance/Habits/Buy-in	2					2	2.82
Private Industry/Paper-Copying Industry	2			2	2.82		
Collaboration-Across Organizations	1					1	1.41
Costs	1					1	1.41

(table continues)

Table 9 (continued)

Item Codes	SUBJECTIVE NORMS						
	Response Count	Advantages	Response Percent	Disadvantages	Response Percent	Other	Response Percent
Lack of Human Resources	1					1	1.41
Lack of Information/Knowledge	1			1	1.41		
Lack of Resources	1					1	1.41
Public Perception	1					1	1.41
School Staff	1	1	1.41				
State Officials	1			1	1.41		
Support Staff	1			1	1.41		
Time	1					1	1.41
Inconclusive Effects	1					1	1.41

There were few responses reported by the participants that that could not be classified. For example, examination of Table 9 shows that, for “approve,” disapprove,” and “other” the percentage responses which could not be classified and assigned to “no code assigned” were, 3 (4.23%), 4 (5.63%), and 3 (4.23%), respectively. For the question on “approve” one of the respondents reported: “all rational stakeholders would approve.” In response to the question on “disapprove,” one of the respondents reported: “a few individuals who believe the green movement is exaggerated or a political movement.” In reply to the question on “other,” one of the respondents stated: “representation of our school organizations and leaders.” These responses and with other unique reactions to the open-ended questions were difficult to categorize, therefore, they received a “no code assigned” classification.

Assessment of Table 9 shows, that for “approve” 33 (46.48%) of the respondents indicated the “School Board” and the “Superintendent” at 29 (40.85%) would approve of leading and managing a green school. Approval by the School Board and Superintendent would be extremely important to the implementation of green technologies since the Superintendent

develops and recommends policy to the School Board for consideration of approval. Also, 16 (22.54%) of the respondents reported “teachers” would approve of the principal leading and managing a green school. Teacher and staff buy-in would be critical for such a cultural change. A substantial number of respondents believe “parents” 25 (35.21%) and “students” 15 (21.13%) would approve of sustainable schools. The participants report the “community” 15 (21.13%) and “community leadership” 9 (12.68%) would support sustainable schools. Generally speaking, stakeholder support is necessary for the successful implementation of any initiative. Only 7 (9.86%) and 6 (8.45%) of the respondents indicate “principals” and “central office staff” would approve of leading and managing green schools, respectively.

Review of Table 9 shows that for “disapproves” 29 (40.85%) of the respondents reported “no one” will disapprove of leading and managing a green school. However, several respondents stated “this does not necessarily mean no one will disapprove of the implementation of green school practices”. Almost 10% of the respondents believe the “school board,” “superintendent,” “parents,” “community,” and “departmental managers” will disapprove. All other “disapproves” responses are much lower than 10%.

Evaluation of Table 9 indicates that for the “other” category, 28 (39.44%) of the respondents reported “no” when ask the question: Is there anything else you associate with other people’s views (within or outside your organization) about you leading and managing your school to be a green school? Of the respondents, 6 (8.45%) reported “educate public” as a factor when considering other people’s views. One of the participants reported: “a positive approach to educate the public will help in driving this point.” Of the remaining responses in the “other” category, no single item code received more than 2 (2.82%) responses.

Perceived Behavioral Control

Based on the Theory of Planned Behavior, three open-ended questions were presented to the participants in an effort to elicit responses regarding their perceived behavioral control to implement green school practices. Examining perceived behavioral control informs us of how much control a person feels to perform an action. Salient control beliefs, beliefs about factors that may facilitate or impede the performance of the behavior are assumed to determine a respondent's perceived behavioral control (Ajzen, 1991). This section represents responses reported by the participants in relation to their perceived behavioral control or their salient control beliefs related to sustainability and the implementation of green school practices.

Table 10 is a complex data table, thus this section will detail and highlight the different elements of the table. These elements include what would make it difficult/impossible to implement sustainable practices or what would enable a school leader to implement green school practices. Table 10 shows the coding frame for the "difficult/impossible", "enable", and "other" questions related to the control beliefs of the respondents. The response count column of Table 10 conveys the number of individuals out of 71 who reported on each coded item. This is important because it provides insight into the perceived behavioral control of school leaders, the ability they perceive they actually have to implement green sustainable practices. Also, Table 10 shows for each "coded item" the corresponding percentage of 71 participants who gave a response that fell into the survey questions for "difficult/impossible", "enable", and "other."

Table 10

Coding Frame for the "Difficult/Impossible, Enable, and Other" Questions and Numbers/Percentages of Participants Who Gave Responses in Each Category

	PERCEIVED BEHAVIORAL CONTROL						
Item Codes	Response Count	Difficult/ Impossible	Response Percent	Enable	Response Percent	Other	Response Percent
Lack of Resources	26	26	36.62				
Funding	21			20	28.17	1	1.41
Stakeholder Support	21	10	14.08	6	8.45	5	7.04
District Level Cooperation	20			16	22.54	4	5.63
Time	19	12	16.90	4	5.63	3	4.23
None	17	1	1.41			16	22.54
Information/Knowledge	15			14	19.72	2	2.82
Costs	12	10	14.08	1	1.41	1	1.41
No Code Assigned	11	1	1.41	3	4.23	7	9.86
Change Resistance/Habits/Buy-In	9	5	7.04	1	1.41	3	4.23
Community Support	7			6	8.45	1	1.41
Lack of Information/Knowledge	7	7	9.96				
Collaboration–Across Organizations	6			5	7.04	1	1.41
Training Staff/Professional Development	6			5	7.04	1	1.41
Lack of Human Resources	5	5	7.04				
Recycling Benefits	4			2	2.82	2	2.82
Curriculum Integration	3			3	4.23		
Efficient Sustainable Practices	3	2	2.82			1	1.41
Facilities–OLD	3	2	2.82			1	1.41
No Return on Investment	3	3	4.23				
Green Technology Changes	2	1	1.41	1	1.41		
Lack of Control	2	2	2.82				
Opportunity	2			2	1.41		
Environmental Benefits	1			1	1.41		
Facilities–NEW Construction	1			1	1.41		
Lack of Training	1	1	1.41				
Media	1					1	1.41
Politically Correct	1	1	1.41				
Student Modeling	1					1	1.41

There were 11 responses that could not be classified into a coding category. Examination of Table 10 shows that, for “difficult/impossible”, “enable”, and “other” the percentage responses which could not be classified and assigned to “no code assigned” were, 1 (1.41%), 3 (4.23%), and 7 (9.86%), respectively. For the question on “difficult/impossible” one of the respondents reported: “not having enough volunteers.” In response to the question on “enable,” one of the respondents reported: “different job." In reply to the question on “other,” one of the respondents stated: “important.” These responses and with other unique reactions to the open-ended questions were difficult to categorize, therefore, they received a “no code assigned” classification.

Respondents indicate several circumstances which would make it difficult or impossible to implement green school practices. For example, assessment of Table 10 shows that 26 (36.62%) of the respondents reported “lack of resources” as a reason it would be difficult or impossible to implement green school practices. For the coded item “lack of resources” participants responded with such phrases as: “lack of funds,” “lack of resources,” and “budget constraints.” These responses are indicative of the majority of the responses from participants in this category.

Of the respondents, 10 (14.08%) list “costs” as major factors that would make it difficult or impossible to implement green school practices. The respondents had comments such as: “it would be difficult for us to pay the initial costs,” “cost of implementation,” and “financial cost” as reasons making it difficult or impossible to implement sustainable practices. The coded item categories “lack of resources” and “costs” are similar but distinctively different, therefore, have been kept separate in Table 10. A school district could have ample financial resources and not be willing to implement a project with large upfront costs. It should be noted if the coded item

categories of “lack of resources” and “costs” were combined, it would represent 36 (50.70%) of the responses for major factors making it difficult or impossible to implement green school practices.

Of the respondents, 12 (16.90%) indicated “time” and 10 (14.08%) reported “stakeholder support” as factor that would make it difficult or impossible to implement green school practices. For these coded items the participants listed such phrases as: “time and discouragement of our students and faculty to culture change,” “lack of interest/commitment from teachers,” “lack of support from district administration/community,” “time and increased responsibility for those I would be trying to gain buy-in from” as barriers to implementing green school practices.

Review of Table 10 shows that for “enable” 20 (28.17%) of the respondents see “funding” as an enabler to leading a green school. For the coded item “funding”, respondents reported phrases such as: “funding,” “enough resources to complete the green process,” and “financial capacity to sustain.”

“District level cooperation” was reported as important for enabling green school practices by 16 (22.54%) of the respondents. Respondents reported comments such as: “support from central office,” “support from administration at the central office,” and “district support” as enablers to implementing sustainable practices.

Of the respondents, 14 (19.72%) reported “information and knowledge” as a key factor to enabling school leaders to lead and manage green schools. For the code item “information/knowledge” respondents used phrases such as: “knowledge of how to do so,” “training and knowledge,” “more knowledge about the steps to take what green really is,” and “more information on what it means to be a green school.”

Evaluation of Table 10 indicates that for the "other" category, 16 (22.54%) of the respondents reported "none" when ask the question: What other issues, if any, come to mind when you think about leading and managing your school to be a green school? Of the respondents, 5 (7.04%) reported "stakeholder" as a factor when considering other issues that come to mind. One of the participants reported: "convincing all stakeholders that this is important" as a consideration. Of the remaining responses in the "other" category, no single item code received more than 4 (5.63%) responses.

The respondents reported financial savings, the next generation of sustainable users, resource allocation and student modeling as the advantages to sustainable schools. The respondents reported costs, time and resistance to change as major disadvantages to sustainable schools. The respondents reported the School Board, superintendent, and parents would strongly approve of sustainable schools. In addition, teachers, students, departmental management, community, and community leaders would approve of the sustainable schools. The overwhelming majority of respondents indicated no one would disapprove of sustainability, however, this does not necessarily mean they will implement sustainable practices. Respondents reported lack of resources, time and stakeholder support as reasons making it difficult or impossible to implement green schools. Key enablers reported for a successful implementation were funding, district level cooperation, and information and knowledge.

The following chapter will discuss the responses of the participants, using the research questions as a structure. Through analysis of their responses we can begin to gain some insight into the attitude, subjective norms, and perceived behavioral controls the school leaders reported relative to green school practices.

CHAPTER 5. DISCUSSION

Introduction

The Theory of Planned Behavior (Ajzen, 1991) informed the researcher developed instrument used in this elicitation study. Seventy-one school leaders from around the U.S responded to the open-ended questions based on the TPB exploring the behavioral intentions of school leaders and green school practices. While this study did not test the Theory of Planned Behavior, it was utilized as the framework to elicit responses to open ended questions, which will be used to formulate a survey to test the theory in a future study. This elicitation study was the first study in educational leadership to use the TPB to explore school leadership and sustainability.

Problem

Sustainability continues to expand, becoming a global priority for many sectors throughout the world. Corporations, governments and institutions of higher education are implementing sustainable practices into their organizational models and business structures. On a broad scale, the field of educational leadership appears to be lagging behind in joining the sustainability movement. Possibly, the lack of research, educational leadership standards, school policy, and professional development on sustainability contribute to the low degree of participation. Unfortunately, there are few studies in the literature in the areas of sustainability and educational leadership. This takes on particular importance due to the fact that engaging in the sustainability movement may provide benefits to schools, however, we do not understand to

what extent school leaders are participating, nor do we understand to what extent school leaders are willing to participate in the sustainability movement.

Purpose Statement

The purpose of this elicitation study was to explore school leader beliefs and practices relative to sustainability and green school practices. Elicitation studies are used to evoke responses to open-ended questions based on an individual or groups salient beliefs. This elicitation study sought after what school leaders would report regarding the implementation of green school practices.

Research Questions

1. What salient behavioral beliefs do school leaders report relative to their attitudes regarding the implementation of green school practices?
2. What salient normative beliefs do school leaders report relative to their subjective norms regarding the implementation of green school practices?
3. What salient control beliefs do school leaders report relative to their perceived behavioral control regarding the implementation of green school practices?

Methodology

This was a qualitative study based on Ajzen's Theory of Planned Behavior elicitation study model. The Theory of Planned Behavior assesses the attitudes, subjective norms and perceived control beliefs of a population (Ajzen, 1991). This elicitation study evokes responses from the participants to open-ended questions based on their behavioral, normative and control beliefs relative to sustainability and green school practices. The study used the snowball method of a sampling – a technique where a sample of the participant population recruits future participants based on their social network. A survey was developed based on a "manual for

health services researchers" which provides guidance on constructing questionnaires based on the Theory of Planned Behavior (Francis, et al., 2004). Open-ended questions related to green school practices were developed and incorporated into the survey containing 23 questions. SurveyMonkey, an on-line data collection system which makes it easy to conduct, manage and analyze was used to collect the data for the survey questionnaire. Two researchers separately analyzed the data and then compared and reconciled their results to increase validity (Frances, et al., 2004). The process included content analysis of open ended questions centered on the beliefs of school administrators relative to green school practices. Survey responses were categorized by themes and labeled. Themes were listed from most frequent to less frequent. A content analysis was performed to rank order the beliefs to determine the 5–10 most salient beliefs. The data collected will be used to develop a follow-up survey that can be used on a broader scale.

Major Findings

Demographics

A diverse of set of 71 school leaders in the United States varying in gender, age, years of experience, professional positions, type of school, level within the organization, community type, with and without knowledge of sustainable practices participated in the study. The study included an almost equal representation of men and women. In alignment with school leader characteristics in Alabama (Reames, Kochan, & Linxiang, in press), a majority of the participants were between the ages of 31–55 (47.89%) years of age with 0–11 (83.10%) years of experience. Participants within these age ranges and experience levels represent a majority of the participating school leaders. The participants work in a variety of school levels with an equal representation of community types; urban, suburban, and rural areas with high and low levels of poverty. The socio-economic status of schools should be fairly represented by the responses of

school leaders in the study. School leaders in the study represent public, private and independent schools. The responses related to perceived behavioral control by these school leaders participating in the study may vary significantly by school type, due to the varying levels of bureaucratic oversight, such as federal, state and local regulations. A majority of the respondents (87.32%) represent public schools which may tend to have the most bureaucratic oversight, potentially skewing the overall perceived behavioral control response reporting in the study.

Attitudes

According to Ajzen's Theory of Planned Behavior (1991), attitudes or behavioral intentions can have an impact on whether or not school leaders will implement green school practices. Table 8 reports the attitudes of school leaders relative to sustainable practices. In examining Table 8, the data reveals several advantages based on the salient beliefs of the respondents related to the implementation of green school practices: financial savings, next generation of sustainability, and resource conservation. As school districts grapple with the realities of decreasing budgets, implementing green school practices can lead to financial savings (Kats, 2006). These precious financial savings can be redirected to classrooms. In Table 8, of the 71 respondents, 28 (39.44%) identified financial savings as an advantage to implementing green school practices. Ironically, these savings can occur through resource conservation, which can play a role in developing the next generation of sustainable users. Early research indicates a financial savings can be achieved through the utilization of green building design principles creating energy efficiency, reduced operational costs, and lower personnel costs (Kats, 2006; Mattiessen & Peter, 2007; Sack-Min, 2007).

Of the respondents, 23 (32.39%) see "developing the next generation of sustainable users" as an advantage. As the world population continues to increase (UNFPA, 2011),

sustainable users will help to conserve precious natural resources. With over 19% of the United States population (NCES, 2010) spending a considerable amount of time in schools daily, integrating sustainable practices into the curriculum will assist with this development (Edwards, 2005).

In Table 8, 16 (22.54%) of the respondents see resource conservation as an advantage to leading a green school. When applying the triple bottom line approach to sustainability, these responses are consistent with environmental benefits to schools; sustainability, reduced carbon footprint, reduction in use of natural resources and LEED living building standards (Kats, 2006; National Research Council, 2006; Sack-Min, 2007).

In analyzing Table 8, the data reveals barriers to going green. According to early research, some barriers to going green are real and some may reflect misconceptions. For example, 39 (54.93%) of the participating school leaders reported that costs associated with going green were as a disadvantage for implementing green school practices (Table 8). However, early research indicates there is an insignificant difference in the cost of green technologies, particularly, when constructing or renovating facilities (Kats, 2006; Mattiessen & Peter, 2007). Kats (2006) study indicates initial construction costs for green schools are only about 2% higher than conventionally constructed schools. This cost differential could be mitigated further as green technologies develop, the associated costs are likely to continue coming down. Research dealing with the connections of building systems, operational practices, and the potential effects on building occupants and school environments is still considered to be in its early stages and inconclusive (National Research Council, 2007). However, research does suggest there are some positive correlations between sustainable green school practices and the environmental, learning and financial benefits to schools.

With all of the accountability measures, administrative functions, organizational management, instructional programs, and internal and external relations in place for teachers and administrators, the availability of time can be a major real barrier to the implementation of new programs (Horng, Klasik, & Loeb, 2009). Of the respondents, 14 (19.72%) of school leaders considered "time" as a disadvantage or major barrier to implementing green school practices. Principals spend much of their day on administrative and organizational tasks and substantially less on day to day instruction and instructional program tasks (Horng, Klasik, & Loeb, 2009). As a result, time becomes a barrier to instructional leadership. This barrier for administrators could be overcome by delegating administrative functions to other key employees within the school, focusing more on instructional programming and professional development activities. Lack of time to implement new programs can create resistance to change or lack of buy-in from administrators and teachers. Some 10 (14.08%) of the respondents indicated resistance to change and buy-in as a negative factor when considering the attitudes of schools leaders towards sustainability. This response indicates administrators and teacher need to understand the benefits of sustainability.

Of the respondents, 7 (9.86%) indicate there are "no disadvantages to going green." This could signify these respondents have already learned informally or formally about sustainability; have previously implemented sustainable practices; or are awaiting the opportunity to integrate sustainable green school practices within their organizations.

Subjective Norms

According to Ajzen's Theory of Planned Behavior (1991), subjective norms or normative beliefs can have an impact on whether or not school leaders will implement green school practices. Table 9 reports the normative beliefs or social pressures of school leaders relative to

the implementation of sustainable practices. In examining Table 9, the respondents indicated the school board (46.48%), superintendent (40.85%), and parents (35.21%) would be supportive of implementing green school practices. Over 20% of the respondents believe teachers, community, staff, and students each would approve of implementing green school practices. This group of stakeholders; teachers, community, staff and students, could place a significant deal of social pressure on school leaders to implement sustainable practices in schools.

The amount of social pressure felt by school administrators to implement green school practices may be a major determining factor in the behavioral intentions of school leaders in relation to sustainable practices. Research indicates a magic ingredient to increased pro-environmental practices is peer pressure (Goldstein, Cialdini, & Griskevicius, 2008). In a study over an 80 day period of time conducted in a southwest mid-priced, mid-sized national hotel chain, 1,058 guests responded to standard and descriptive requests to participate in a towel reuse program (Goldstein, Cialdini, & Griskevicius, 2008). The standard message asked guests to participate in the program to "Help Save the Environment" and the descriptive message informed guests that a majority of other guests participate in the program. When given descriptive messages "Join a Majority of Fellow Guests in Saving the Environment", almost 75% of hotel guests overwhelmingly chose to participate in environmental conservation program suggesting social norms or peer pressure have an impact hotel guests in relation to environmental programs (Goldstein, Cialdini, & Griskevicius, 2008). The present study indicates overwhelming support by school boards, superintendents, parents, teachers, community, staff and students for the implementation of green school practices, creating a social norm or peer pressure for school leaders to be in favor of implementing sustainable practices.

Over 40% of the respondents reported no one would disapprove of schools implementing green school practices. This does not mean school leaders are going to participate; however, it does suggest there is growing social pressure for schools to go green since it is becoming mainstream in society. As a result, school leaders have the opportunity to gain a thorough understanding of sustainability and the potential benefits available to schools.

Perceived Behavioral Control

According to Ajzen's Theory of Planned Behavior (1991), perceived behavioral control or control beliefs can have an impact on whether or not school leaders will implement green school practices. Table 10 reports the perceived behavioral control of school leaders indicating what would make it difficult/impossible or what would enable the implementation of sustainable practices. Over 36% of the respondents see "lack of resources" as an obstacle and an additional 14% consider "costs" as a barrier to leading green schools. This reflects the misconception that it costs substantially more to implement green school practices. Early research indicates the upfront costs are marginal or non-existent and the long-term savings can offset the upfront costs or allow for resource reallocation over time (Kats, 2006; Mattiessen & Peter, 2007).

Almost 20% of the respondents see "information and knowledge" as an enabler to leading and managing a green school. If school leaders are aware of the benefits of sustainability, then likely a willingness will exist to implement green school practices. Thus, it is vitally important for school leaders to become exposed to sustainable practices through educational leadership programs or other means of formal professional development. Without such educational opportunities available for school leaders regarding sustainability in schools, the lack of "information and knowledge" can also be seen as a barrier to the implementation of green school practices, as is the case when limited or no professional development is offered.

Lack of knowledge and understanding contributes to "time" (16.90%) and "stakeholder support" (14.08%) being considered reasons for making it difficult or impossible to manage a green school. Research indicates school leaders see time as a barrier to their ability to focus on curriculum and instruction programs (Horng Klasik, & Loeb, 2009). If school leaders have a negative attitude about towards implementing due to the lack of time, then it could have a negative impact on their perceived behavior control or their perceived ability to implement green school practices. Times for planning, rewriting lesson plans and for staff development are universal barriers to implementing new programs (Symons, 2008). With exemplary professional development, school leaders would better understand the time requirement necessary to implement green school practices and garner the stakeholder support necessary for the successful implementation of the program.

Unanticipated Outcomes

Given the gravity and popularity of the green movement throughout the United States and around the world, coupled with the ability to respond on-line and the method of sampling and outreach, I expected to have a much higher response to the survey. As a result of the snowball method of sampling, I expected to generate a much greater number of participants. The snowball method of sampling builds on the idea that participants are likely to send the survey to individuals whom they assume will take the survey due to their relationship or interest in the topic (Creswell, 2007). As a result of sending the survey to individuals known for their participation in sustainability and to the members of a state level non-profit organization for sustainability, I anticipated a much higher response rate to the survey.

The survey was sent to school leaders in various parts of the United States to seek representation geographically. I was surprised this did not generate more respondents from all

over the United States, particularly in States like Oregon, where the Sustainable Oregon Schools Initiative and the Oregon State Department of Education have partnered to create the Oregon Sustainable Schools Award (Dernbach, 2009).

With the majority of the respondents from the South, particularly Alabama, I expected more negative responses to sustainability. Due in part, to the fact the South is generally more politically conservative in nature. This politically conservative nature tends to reveals itself with innovations as well, typically taking citizens and politicians much longer to support new measures. Sustainability is a fairly new innovative idea. Therefore, I expected more push back from individuals living in the South. The responses of the participants did not support this notion. In the media, there seems to be a groundswell of support for sustainability in schools. The print media, through educational magazines related to technology, school administration, facilities and other school related areas, constantly has articles featuring innovative ideas centered on sustainability in educational contexts (Hutton, 2011; Schachter, 2009). Through such exposure, I expected educators throughout the United States to have a heightened interest in the topic of sustainability in schools. For such reasons, I anticipated many more participants to respond to the survey. Although we cannot know for sure, limited participation may be a result of people's busy schedules or the lack of knowledge with sustainability. Generally speaking, people don't like responding to topics in which they are unfamiliar.

Conclusion

The Theory of Planned Behavior (Azjen, 1991) can provide insight into the behavioral intentions of individuals regarding a specific behavior. As for this study, the TPB can help to inform interventions leading to changed behaviors of school leaders related to the implementation of green school practices. According to the study, an area of intervention may

be helping leaders to understand the benefits gained through sustainable practices without a cost to the school district, which in turn can save money over time. There appears to be a misconception about the costs of leading and managing a green school. The U.S. Green Building Council (2010) reported 27 state legislatures considered or enacted some form of legislation addressing buildings and LEED certification. While some states such as Ohio (USGBC, 2010) have implemented policy related to sustainability, many states and local boards of education remain in need of school facility policies incorporating sustainable design and architecture, setting forth the requirement to design and build facilities with green technologies. Without such policies, school districts will be slow in taking advantage of the financial, environmental, and learning benefits of building green schools.

The limited number of school leaders reporting the implementation of three or more current green school green practices (Table 5) suggests the need for formal and informal professional development programs, overall awareness, and standards to support school leader implementation of green school practices. Accordingly, school districts should consider providing professional development to school administrators on the benefits of going green. Collaborative efforts yielding partnerships between school districts and nonprofit organizations, such as the United States Green Building Council, should be considered relying on their expertise in this arena to develop educational programs for school leaders on the benefits of sustainability. In partnerships with institutions of higher education, educational programs developed on sustainability could be delivered to current school leaders through regional training for school leaders throughout the states on sustainable school practices.

Organizations such as the International Society for Technology in Education (ISTE) and the Interstate School Leaders Licensure Consortium (ISLLC) and other governing bodies might

consider developing and implementing technology and educational leadership standards addressing the issue of sustainability. Standards issued by these organizations regarding sustainability would lead to professional development and school leader curriculum programs on sustainability.

State and local curriculum standards should consider infusing the elements of sustainability throughout the curriculum, exposing students and teachers to the benefits of green school practices, while developing the next generation of sustainable users. Students and teachers spend the majority of their day in schools. As a result, the integration of sustainable practices into curriculum and day-to-day activities of students and teachers will assist in cultivating sustainable users for generations to come. For it will take a collective effort and a myriad of interventions and strategies for schools to join the sustainability movement. With over 19% of the United States population in schools on a daily basis (NCES, 2010), it is imperative for schools to participate in this movement.

Recommendations for Practice

This study sought to explore school leader beliefs and practices related to sustainability and green school practices. As a result of a thorough review of the literature and in consideration of the practices reported by school leaders who participated in this study, the following recommendations can be made affecting the practice of school leaders relative to sustainability. The followings recommendations are a result of the literature review:

1. School policy at the state and local levels is needed to guide the design and construction of green building programs. Such design and construction programs harness the environmental, learning and financial, environmental benefits of building green facilities. A reason for such practice is the fact that K–12 schools represent one

of the single largest sectors in the nonresidential construction industry (Green buildings research white paper, 2007). Buildings are the number one producer of harmful Carbon Dioxide emissions for the environment (USGBC, 2010). Sustainable building approaches, such as the U.S. Green Building Councils LEED Certification allow schools to participate in building rating systems aimed at energy savings, CO_2 emissions reductions, and other sustainable performance measures. Policy should be developed at the state and local district level requiring new schools to be designed based on sustainable building metrics, promoting the use of organizations such as the U.S. Green Building Council and its green building certification program as standard practice.

2. The whole school approach to sustainability integrates sustainability into individual roles, facilities and operations, school governance, and school culture (Henderson & Tilbury, 2004). The approach requires school leadership to involve all stakeholders including the community at large in the schools sustainable efforts (Henderson & Tilbury, 2004). School districts should consider the whole school approach to sustainability as a measure of participating in the sustainability movement.
3. Educational leadership standards do not exist for sustainable green school practices. Recognizing the potential benefits of sustainability to schools, the Interstate School Leaders Licensure Consortium Standards (ISLLCS), which governs higher education K–12 administrative preparation programs, may possibly develop educational leadership standards addressing sustainability in schools.

4. There are few studies focused on sustainability and educational leadership. Researchers in these areas need to conduct more meaningful research allowing school leaders to understand their role in the sustainability movement.

The followings recommendations are a result of the data collected by this study:

1. Based on the data collected in this study the majority of the participants with knowledge about sustainable practices learned through informal education. Therefore, the majority of present school leaders are likely unaware of the environmental, learning and financial benefits of implementing sustainable green school practices. As a result, professional development should be developed and provided to current school leaders on these benefits. Without such programs, green school practices will be slowly implemented by school leaders for lack of knowledge and information regarding the implementation process and benefits to schools. It may take some time for future school leaders to be trained through college and university school leadership programs containing ISSLC standards on sustainability.
2. Participants in this study indicate they plan to learn about sustainability informally in the future. For this school leadership professional development programs should be developed on the integration of sustainable practices into the school and school culture. This is necessary to assist school leaders in introducing sustainability systemically, utilizing the whole school approach to sustainability (Henderson & Tilbury, 2004). This can be done through professional organizations, universities, and the state departments of education.
3. Respondents to the study indicate school boards as the largest group with influence over who would approve of leading and managing a green school. Professional

development should be provided to School Boards at the state and local level on the implementation of green school practices and the benefits of such practices to schools. If school boards do not understand the implementation process and the benefits of green schools, they are likely to be unwilling to introduce policy supporting the sustainable movement.

4. Participants in the study reported curriculum integration as an advantage to leading and managing a green school. Policymakers at the federal, state, and local levels should integrate sustainability and green practices into the school curriculum. Approximately 19% of the United States population, 55.6 million students and 3.7 million teachers, spend a significant portion of their day in schools exposed to the curriculum (NCES, 2010). This exposition to sustainable practices through the curriculum on a daily basis will assist in developing the next generation of sustainable users.
5. Participants in the study indicate the "lack of resources" as the most significant factor making it difficult or impossible to lead and manage a green school. Initial costs increases for going green are often minimal and substantial savings can occur over time (Kats, 2006). Policymakers at the federal and state levels should provide financial incentives to schools participating in sustainable green school practices.

Recommendations for Further Research

School leaders are participating in sustainable practices, however, we do not know how often and to what extent. This study sought to elicit responses from school leaders throughout the United States regarding their attitudes, subject norms and perceived behavioral control as it

relates to the implementation of green school practices. As a result of the data collected through this study, the following recommendations can be made for further research:

1. The data collected in this study through the open ended questionnaire can be used to test the Theory of Planned behavior to see if the theory holds up for school leaders and the implementation of green school practices (Ajzen, 1988; 1991). Using a survey developed from the data collected, researchers can further explore what school leaders report as the facilitators and inhibitors to implementing practice in a way that can be generalized. This study used the snowball method of sampling which is a non-probability sampling technique and thus cannot be generalized to the population (Creswell, 2007).
2. Investigate the connection between the school type of respondents; public, private, and independent schools to determine the school leaders perceived behavioral control to implement sustainable practices. Bureaucratic oversight may vary widely for public, private and independent schools. Public school may have less control to implement sustainable practices due to federal, state and local regulations. If school leaders don't feel as though they have the perceived behavioral control to implement change, will sustainable practices be implemented?
3. The triple bottom line approach to sustainability is a good way to view schools and sustainability (Edwards, 2005; Grandos & Gomez, 2010). School leaders need to understand the benefits of sustainability in the context of schools. More empirical research needs to be performed on the environmental, learning, and financial benefits of sustainability for schools.

4. Explore the connections between social economic status, attitude, subjective norms, and perceived behavioral control of school leaders related to sustainability. Does the socio-economic of schools make a difference in the attitude and perceived behavioral control of the school leader regarding sustainable practices? Research in this area will assist in determining if the financial means of a school impact school leader intentions towards implementing sustainable practices.
5. Investigate the connections between subjective norms and geographical locations of school leaders and the potential impact on the behavioral intentions of school leaders to implement sustainable practices. Does the geographical location of a school make a difference in the school leader's intentions to implement sustainable practices? Regions throughout the United States have various views towards the sustainable movement. Research needs to be complete to understand if they subjective norms of a community will play a role in the willingness of school leaders to implement sustainable green school practices.
6. In order to provide school leaders with the knowledge and information necessary for the successful implementation of green school practices, targeted professional development must be implemented. A recommendation for further research would be a study utilizing the TPB (Azjen 1988; 1991) to identify the areas of professional development needed for the implementation of sustainability within schools.
7. Once professional development has occurred for school leaders on the implementation of interventions and strategies for achieving green school practices, researchers can test the effectiveness of the targeted professional development, interventions and strategies.

Summary

Since the 1970s, sustainability in the United States has developed along with the global movement. Although schools have a role to play in the global efforts to address sustainability (Orr, 2009), school leaders have not kept up with the sustainability movement permeating throughout the world. As evidenced by this study, research in the area of sustainability and educational leadership is limited; thus, we do not know the degree to which school leaders across the United States are engaging in sustainable school practices. This study, the first of its kind, used the Theory of Planned Behavior (Ajzen, 1991) as the theoretical foundation to explore school leader beliefs and practices related to sustainability and the implementation of green school practices. School leader beliefs were explored because they are critical to any school initiative (Leithwood, & Riehl, 2003). School leaders are the catylist for change at the building, district, and state levels; therefore, we must understand the attitudes, subjective norms, and perceived behavior control of these leaders in relation to the implementation to green school pratices. Increasingly, research is becoming available highlighting the environment, learning and financial benefits to schools. For this reason, it is imperative we understand the behavioral intentions of school leaders regarding the implementation of sustainable school practices.

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APPENDIX A

Email with Survey Link

Today, I am writing to you because – either you ARE a practicing K–12 school administrator AND/OR you KNOW practicing K–12 school administrators... If you ARE a practicing K–12 school administrator, we would very much appreciate your participation in our research study. If you KNOW practicing K–12 school administrators, we would very much appreciate your willingness to invite them to participate in our study. We are using a snowball sampling method and relying on personal connections to collect a diverse array of responses from all over the United States!

PURPOSE OF THE RESEARCH:

The purpose of our study is to gather current K–12 school administrator perspectives relative to their intentions to lead and manage their schools in ecologically sustainable ways. Presently, educational leadership scholarship has NO empirical work on U.S. school leaders' intentions or behaviors related to ecological sustainability. This foundational study will help us understand what may be facilitating or impeding the “greening” of K–12 school leadership/management.

WE NEED YOUR HELP:

As we are using a snowball method of sampling, we would very much appreciate your help.

1. If you ARE a practicing K–12 school administrator, please follow the link below and complete the survey. As you will read on the first page of the survey, your responses will be anonymous unless you choose to provide your contact information.

SURVEY LINK:

The survey is live and ready to collect responses:

<http://www.surveymonkey.com/s/X7NJJJP>http://www.surveymonkey.com/s/X7NJJJP

2. If you KNOW practicing K–12 school administrators, please forward this email to them and encourage their participation. OR, you may respond to this email with suggested individuals and their email addresses and I will be happy to send our request myself. Whether or not the administrators you know lead their schools in ecologically sustainable ways is not important. We are seeking a diverse array of perspectives from all over the United States.

Please confirm with me whether or not you will be able to complete and/or forward the survey. If I don't hear from you, I may send another reminder your way in two weeks. I hope that will be ok. Please be sure to let me know if you prefer not to participate and I will be sure to keep you off my reminder list!

Open-ended Questions Used in the Present Study

Attitude

1. What do you believe are the ADVANTAGES of leading and managing your school to be a green school?
2. What do you believe are the DISADVANTAGES of leading and managing your school to be a green school?
3. Is there anything else you associated with your own views about leading and managing your school to be a green school?

Subjective Norms

4. Within or outside your organization, who are the individuals, if any, who would APPROVE of you leading and managing your school to be a green school?
5. Within or outside your organization, who are the individuals, if any, who would DISSAPPROVE of you leading and managing your school to be a green school?
6. Is there anything else you would associate with other people's views about you leading and managing your school to be a green school?

Perceived Behavioral Control

7. What factors or circumstances would make it DIFFICULT or IMPOSSIBLE for you to lead and manage your school to be a green school?
8. What factors would ENABLE you to lead and manage your school to be a green school?
9. What other issues, if any, come to mind when you think about leading and managing your school to be a green school?