Educational Leadership, Sustainability and Independent Schools

by

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Abstract

Green schools are healthy, high performing schools that address ecological, economic, and equity concerns. Independent schools are institutions that "consistently aspire to instill in graduates such qualities as good citizenship, moral integrity, leadership, critical thinking, and indeed, care for the environment" (Calder, 1998, p. 215). Educational leaders within the National Association of Independent Schools (NAIS) were chosen as the population of this study because of the diversity in levels of sustainability initiatives within their schools. The purpose of this study was to explore the relationships among independent school leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions of implementing these practices in their school. The understanding of this relationship will provide a foundation for continued exploration of the impact educational leaders have on promoting green school practices. Hopefully, this study will incite future research that will produce information that would help develop and strengthen K–12 leadership programs. The Theory of Planned Behavior served as the theoretical framework for this study (Ajzen, 1991). Results indicate that attitude, perceived behavioral control and subjective norms all contributed significantly to explain current behaviors. Results also indicate attitudes and perceived behavioral control contributed significantly to explaining planned and behaviors. According to the data, educational leaders reported the following constructs as having the highest influence over the degree to which they believe implementing green school practices in their school are important respective to attitudes (behavioral beliefs and outcome beliefs): making the planet

healthier, conserving energy and other resources, making school buildings a healthier learning environment for students, conserving energy and other resources, modeling for students how to live more sustainability, managing the school in a way that makes the buildings healthier learning environments and saving money over the long term (more than three years). Respective to subjective norms (normative beliefs and motivation to comply) educational leaders report that the National Association of Independent Schools, teachers, students, other heads of school, board of trustees and parents influence the degree to which they believe implementing green school practices in their school are important. Respective to perceived behavioral control (control beliefs and perceived power) educational leaders report that administrative team support, business office support, access to green school information, support from the board of trustees, the funding for green school initiatives and time influence the degree to which they believe they can implement green school practices at their school.

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CHAPTER I. INTRODUCTION

As the end of the United Nations Decade of Education for Sustainable Development (2005–2014) draws near, (United Nations, 2005) it will be a time of reflection for all that were involved. What was accomplished? What have we learned? Where can we go from here? What are we doing to educate the next generation on environmental sustainability? These will be the questions asked at conferences and workshops around the world.

With 98,817 public schools around the United States enrolling 49.4 million students and 33,366 (2009–2010) independent schools enrolling 5.3 million students (National Center for Education Statistics, 2012), education of the next generation holds the key to the future of our planet. Educational leaders will play a vital role in this process due to the powerful and complex nature of their position. The US Green Building Council (USGBC) through its' National Action Plan for Educating for Sustainability is calling on educational leaders to commit to sustainability initiatives in their curriculum and school practices (Sobel, Gentile & Bocko, 2014). The National Association of Independent Schools is also asking member schools to engage in sustainable practices throughout their school (NAIS, 2012, "Environmental," para. 2). Listed as the largest non-religious private school association in the United States, NAIS will be the target of this research study (National Center for Education Statistics, 2012). Specifically, the relationship between NAIS Heads of School and green school practices at their institution.

The NAIS is pushing for the development of sustainability in 21st century schools. This undertaking encourages schools to be sustainable in 5 key areas: demographic, environmental,

financial, global and programmatic. The member schools are promoting environmental sustainability in curriculum, student life, community outreach and service, landscaping, campus operations, fundraising, purchasing and in short and long term planning. NAIS hosted its first environmental summit in 2013 to support collaboration amongst independent school personal in the promotion and planning of sustainability initiatives (NAIS, 2012, "Summit," para. 1). The present study will employ the NAIS definition of environmental sustainability and states that schools "can work toward environmental sustainability by becoming more green, reducing school and personal carbon footprints, promoting a commitment to life-long environmental responsibility and incorporating environmental education into the curriculum" (NAIS, 2012, "Environmental," para. 2). Environmental sustainability initiatives and green school practices will be used interchangeably as for the purpose of this study. They are synonymous and defined as acceptable practices that promote healthy environments conducive to learning while saving energy, resources and money (USGBC, 2013).

Independent schools are assisted in their efforts of integrating environmental sustainability into education by organizations such as the U.S. Partnership for Education for Sustainable Development. This organization was conceived in 2003 in response to the Decade of Education for Sustainable Development and "acts as a convener, catalyst and communicator working across all sectors of American society (U.S. Partnership, 2012, "Goal," para.1). With over 500 organizations and educational institutions from around the world belonging to this partnership, there is tremendous work being accomplished providing knowledge and resources on how to implement green school initiatives. The U.S. Partnership has an entire website devoted to K–12 education with learning activities and assessments available for schools around the country. Evidence is shared in regards to civic engagement for a sustainable future and green

job growth, green teacher webinars and national green week (Green Education Foundation, 2012).

The United States Federal Government, through the Department of Education (DoED), now recognizes K–12 schools that are leaders in environmental sustainability. The Department of Education Green Ribbon Schools (ED-GRS) award was created because they wanted to celebrate individual institutions' accomplishments in their promotion of sustainability initiatives. This award recognizes public and independent schools along with school districts "that are exemplary in reducing environmental impact and costs; improving the health and wellness of students and staff; and providing effective environmental and sustainability education, which incorporates STEM, civic skills and green career pathways" (U.S. Department of Education, 2014, "Purpose," para. 1). In the first year (2011–2012) 78 schools representing 28 states and the District of Columbia received this honor. In the second year, school districts were added to the list of potential award recipients. In the 2012–2013 academic year, 78 educational entities received the award. Included in the list were 14 school districts, 54 public schools and 10 private schools (U.S. Department of Education, 2014). In the 2013-2014 academic year, 57 educational entities received the award. Included in the list were 9 school districts, 39 public schools and 9 private schools (U.S. Department of Education, 2014). The Green Ribbon Award was a great start to recognizing green school initiatives. Educational leaders in their multifaceted role will play a vital role in the success or failure of green school practices.

The collaboration among groups is a necessity in the success of distributed leadership and sustainable leadership models (Pepper & Wildy, 2008). Educational leaders must be knowledgeable about sustainability, open to others' ideas and possesses a cooperative spirit that promotes learning in order to be agents of a sustainable future. Research has shown that

effective school leaders provide direction, make schools professional learning communities for teachers and students (Leithwood & Riehl, 2003) and have direct and indirect effects on student learning (Leithwood & Beatty, 2009). Further research by Leithwood, Harris and Hopkins (2008) posited seven claims based on a comprehensive literature review on school-leadership (pp. 27–28).

1. School leadership is second only to classroom teaching as an influence on pupil learning.
2. Almost all successful leaders draw on the same repertoire of basic leadership practices.
3. The ways in which leaders apply these basic leadership practices—not the practices themselves—demonstrate responsiveness to, rather than dictation by, the contexts in which they work.
4. School leaders improve teaching and learning indirectly and most powerfully through their influence on staff motivation, commitment and working conditions.
5. School leadership has a greater influence on schools and students when it is widely distributed.
6. Some patterns of distribution are more effective than others.
7. A small handful of personal traits explain a high proportion of the variation in leadership effectiveness.

These research findings are of vital importance in understanding the traits and actions that make a successful school leader. Cultivating the potential of others is an aspect of school leaders and "requires leadership that is inclusive, committed to a shared vision, demonstrates care and concern and develops ideas from others, thereby enabling others to develop their ability

to lead" (Birney & Reed, 2009, p. 12). It is these types of traits that are necessary for organizational change such as promoting sustainability initiatives in a K–12 school.

Problem of Practice

"Sustainable" and "sustainability" have appeared in numerous educational leadership/administration articles and books addressing a variety of topics associated with educational organizations and processes. Some scholars refer to sustainable education as one that is lasting or has lasting effects and is not connected to environmental sustainability. This study is referring to sustainability in regards to environmental sustainability. Ackley and Begely (2010) researched the dimensions of green school leadership and found that principals that implemented green change on their own were more likely to get involved versus those that were forced by a higher authority. The study specifically focused on institutions that were labeled green schools by reviewing and analyzing the "intentional actions and practices" of green school leaders (Ackley & Begley, 2010, p. 13). K–12 schools and their leaders have the potential to act as change agents in the sustainability movement. The research study will address the limited information on educational leaders and their attitudes, subjective norms and perceived behavioral control on implementing green school practices in their school.

Using the Theory of Planned Behavior (TPB) (Ajzen, 1991b), the present study will look for the relationships between independent school leaders' attitudes, subjective norms and perceived behavioral control with their current and planned green school practices. These practices can include but are not limited energy reduction, water reduction, waste management and promoting environmental sustainability across all aspects of K–12 management. The TPB stems from an article Ajzen published in 1985 and is designed to predict and explain specific human behaviors in certain context (Ajzen, 1985).

Sustainability

The term sustainability has been around since the early 18th century (Mitchell, 2010), with an increase in use and meaning since that time (Goldsmith, Allen, Allaby, Davoll & Lawrence, 1972; Kidd, 1972). In more recent times, sustainability was mentioned on the international stage with the publication of the Brudtland Commission (WCED, 1987) stating sustainability "meets the needs of the present without compromising the ability of future generations to meet their own needs" (p. 8). This report led to world summits on sustainability for the purpose of exchanging ideas and promoting an environmentally sound world. Since that time numerous characterizations and concepts have emerged making it difficult for researchers to have one set definition for sustainability (Johnston, Everard, Santillo, & Robèrt, 2007; Mebratu, 1998; Seghezzo, 2009). For clarity and consistency, this study will employ the NAIS definition of sustainability and how it relates to K–12 institutions.

Sustainability in Education

Research indicated that the implementation of green programs in schools takes time (Rauch, 2000). There is evidence of these initiatives in all levels of the educational system in the United States. Higher education's four year institutions and community colleges have seen a growth in the implementation of sustainability initiatives (Lindsay, Harrell-Blair, McDaniel, Williams & Reed, 2010; Rogers & Pleasants, 2011; Sibbel, 2008), in their curriculum (Kowalczyk, 2010), in various academic programs (Calder, 2009), in their promotion of Leadership in Energy and Environmental Design (LEED) certified green buildings (Dougherty, 2010; Reid, 2008), and the number of college presidents supporting the efforts (Newport, 2012). In K–12 schools there is evidence of various new sustainability initiatives (Higgs & McMillan, 2006), programs that are reducing energy consumption (Schelly, Cross, Franzen, Hall & Reeve,

2011) and leadership involvement in these programs (Birney & Reed, 2009; Henderson & Tilbury, 2004; Pepper & Wildy, 2008). At the time of publication, an extensive review of the literature revealed only one research study focusing on the TPB and educational leaders' green school practices (Veronese & Kensler, 2013).

Independent schools in the United States enroll over ten percent of all K–12 students in the country (National Center for Education Statistics, 2012). "Independent schools…aspire to instill in graduates such qualities as good citizenship, moral integrity, leadership, critical thinking and indeed care for the environment. The work of building a sustainable world requires precisely these qualities and more" (Calder, 2009, p. 215) and school leaders play an important role in ensuring these traits are developed in their students. Scholars have addressed educational leadership (Day & Leithwood, 2007; Harris, Leithwood, Day, Sammons & Hopkins, 2007; Leithwood & Beatty, 2009; Leithwood & Riehl, 2003; Wahlstrom, Louis, Leithwood & Anderson, 2010) and green school leadership (Ackley & Begley, 2010; Birney & Reed, 2009; Higgs & McMillan, 2006; Pepper & Wildy, 2008; Schelly et al., 2011), but not the relationship of educational leaders attitudes, subjective norms and perceived behavioral control with their current and planned green school practices.

Educational leaders and institutions play a role in a sustainable future (Ferdig, 2007), possess the ability to influence actions (Pepper & Wildy, 2008) and promote education for sustainability (Hattan et al., 2010). There has been a movement to apply whole-school approaches to sustainability (Henderson & Tilbury, 2004), to integrate democratic and ecological principles for green schools (Kensler, 2012), and to develop a sustainability ethic in leaders (Middlebrooks et al., 2009). Research posited that leadership roles must be adaptive more than ever in order to deal with new complex issues (Allen, Stelzner, & Wielkiewicz, 1999) such as

green school practices. School administrators are changing to meet the needs of new green school programs and curriculum (Ackley & Begley, 2010) and their actions can determine the success or failure of this movement (Wenzhong, 2004). The TPB examines intentions which can act as catalysts in performing these tasks or actions.

The TPB (Ajzen, 1991b) provides the theoretical foundation for this study as the research project seeks to understand the attitudes, subjective norms and perceived behavioral controls of independent school leaders in regards to their current and planned green school practices. Attitudes stem from beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (behavioral beliefs) and can be favorable or unfavorable. Subjective norms stem from the normative expectations of others and motivation to comply with these expectations (normative beliefs). Perceived behavioral control stems from beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (control beliefs) (Ajzen, 2002b). From this research it is hopeful the TPB will be able to aid in the prediction of educational leaders behaviors involving green school practices.

The theory has been used to predict health behaviors (Cooke & Sheeran, 2004) and various environmental behaviors (Boldero 1995; Carrus, Passafaro, & Bonnes, 2008; Cheung, Chan, & Wong 1999; Cordano & Frieze, 2000; Martin-Pena, Diaz-Garrido, & Sanchez-Lopez, 2010; Oreg & Katz-Gerro, 2006; Sparks & Shepherd, 1992; Taylor & Todd, 1995,1997; Thomas, 2005). In addition, the TPB has been used in various educational settings (Coren, 2012; Fang, Tsai & Lee, 2010; Kersaint, Lewis, Potter, & Meisels, 2005; Lee, Cerreto, & Lee, 2010; Pierce & Ball, 2009) and provides the foundation for environmental models (Bamberg & Moser, 2007; Kollmuss & Agyeman, 2002; Taylor & Todd, 1997). This study examined the behavioral,

normative and control beliefs of educational leaders and their related actions regarding environmental sustainability in their schools.

Purpose of the Study

There is evidence that the green school movement is growing throughout the world and is visible is the United Kingdom, Canada, Sweden, China and New Zealand, South Africa, and Ireland(Henderson & Tilbury, 2004). However, the research about educational leaders' relationship in the promotion of such green practices has not kept pace with the movement (Kensler, 2012). The purpose of this study was to test the degree to which the TPB (Ajzen, 1985) explained independent school leaders' intent to implement green school practices at their school.

The present research used a survey that was developed from an earlier elicitation study (Veronese & Kensler, 2013). Elicitation studies "develop indirect measures for all predictor constructs (attitude; subjective norm; and perceived behavioral control) in the TPB" (Francis, et al., p. 25, 2004) and are suggested when using the TPB to establish salient beliefs (Downs & Hausenblas, 2005). Respondents answered open ended questions stemming from the TPB three constructs—attitude, subjective norms and perceived behavioral control. A questionnaire elicited salient beliefs from respondents, and from these elicited beliefs a survey was constructed for public schools (Veronese & Kensler, 2013). For the purpose of this study, the survey was then modified to fit independent school organization and terminology.

This was a cross-sectional correlational research study with data collected by an electronic survey. Participants were heads of independent schools that are members of the National Association of Independent Schools (NAIS). Data was collected from all participants

using Qualtrics which is web-based survey software that allows the creation of surveys, the collection and storage of data and the production of reports.

Research Questions

The following questions were examined in the study.

1. How do educational leaders' attitudes (behavioral beliefs + outcome beliefs) about green school practices relate to their behavioral intentions towards their current and planned practices at their school?

2. How do educational leaders' subjective norms (normative beliefs + motivation to comply) about green school practices relate to their behavioral intentions towards their current and planned practices at their school?

3. How do educational leaders' perceived behavioral control (control beliefs + perceived power) about green school practices relate to their behavioral intentions towards their current and planned practices at their school?

4. How do attitudes, subjective norms and perceived behavioral control predict unique variance within the current and planned green school behaviors of educational leaders?

Significance of the Study

This study added to the limited amount of research connecting educational leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions of implementing these practices at their school. The TPB was utilized for this study as it posits a model about human action and behavior (Ajzen, 1985, 1992, 2001) that has been used in multiple studies across various disciplines. In relation to sustainability and education, the TPB has been used to examine Chinese school principals' behavioral intentions (Wang, 2013) and school leaders and green school practices (Veronesse & Kensler, 2013).

Other research studies have focused on determining behavior in whole-school approaches to sustainability (Henderson & Tilbury, 2004), in integrating democratic and ecological principles for green schools (Kensler, 2012) in developing a sustainability ethic in leaders (Middlebrooks et al., 2009) and green school leadership (Birney & Reed 2009; Higgs & McMillan, 2006; Pepper & Wildy, 2008; Schelly, Cross, Franzen, Hall & Reeve, 2010). The present study aims to increase the literature regarding educational leaders and green school practices, specifically using the TPB. The focus is in determining the relationships between educational leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions of implementing these practices at their school. The understanding of this relationship could help provide the foundation for the conversation about educational leaders and their impact on green school practices. Future research could provide information that would help develop and strengthen K–12 leadership programs focused on green school programs.

Delimitations

This study sought to find relationships among heads of independents schools' attitudes, subjective norms and perceived behavior control about green school practices and their intentions towards implementing these practices at their schools. This study has the following delimitations: the study began in February and ended in June 2013. Those surveyed in this study included only Heads of School throughout the National Association of Independent Schools (NAIS). The study did not include all independent school leaders nor independent schools in the country.

Assumptions

There were several assumptions associated with this study. It was assumed that all respondents in this study answered all survey questions openly and honestly, without any consideration of researcher expectations and that all responses accurately reflect the participant's professional opinions. It is further assumed that Heads of School willingly consented to the survey invitation and are in fact the individuals that completed the survey.

Definition of Terms

Attitude – An attitude can be "favorable or unfavorable and is produced by behavioral beliefs" (Ajzen, 2002, p. 665).

Behavioral Beliefs – "Beliefs about the likely consequences or other attributes of the behavior" (Ajzen, 2002, p. 665).

Control Beliefs – "Beliefs about the presence of factors that may further or hinder performance of the behavior" (Ajzen, 2002, p. 665).

Educational Leader– "Effective educational leaders help their schools to develop visions that embody the best thinking about teaching and learning and help the school to become a professional learning community to support the performance of all key workers, including teachers and students" (Leithwood & Riehl, 2003, pp. 3–4).

Green School – "Healthy environment conducive to learning while saving energy, resources and money" (USGBC, 2013).

Independent School – An independent school is a school which does not receive funds from the federal government for financing its operations and is governed by an independently elected board of trustees or directors. "The National Association of Independent Schools (NAIS) is a nonprofit membership association that provides services to more than 1,700 schools and

associations of schools in the United States and abroad, including 1,400 independent private K-12 schools in the U.S." (NAIS, 2012, para. 1).

Intention – "Assumed to be the immediate antecedent of behavior" (Ajzen, 2002, p. 665).

Normative Beliefs – "Beliefs about the normative expectations of other people" (Ajzen, 2002, p. 665).

Perceived Behavioral Control – "The perceived ease or difficulty of performing the behavior" (Ajzen, 2002, p. 665).

Subjective Norms – "Perceived social pressure" (Ajzen, 2002, p. 665).

Sustainability – According to Brundtland Report (1987), sustainability is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (p. 43). NAIS states that "schools can work toward environmental sustainability by becoming more green, reducing school and personal carbon footprints, promoting a commitment to life-long environmental responsibility and incorporating environmental education into the curriculum" (NAIS, 2012, "Environmental," para. 2).

Organization of the Study

This study focused on the behavioral intentions of educational leaders and sustainability initiatives in independent schools. It is organized into five chapters and includes references and appendices. Chapter I provided an introduction and overview of the study. Chapter II provides a review of the literature on sustainability, educational leadership and the TPB. Chapter III details the research design and methodology of the study. Included in this chapter is a description of the instrument used to gather the data, analyses procedures and description of the sample selected for study. Data analysis and explanations of findings are discussed in Chapter IV. Chapter V

includes a summary of the study, further discussion of the findings, implications for school leaders, recommendations for future research and conclusions. The study concludes with references and appendices.

CHAPTER II. REVIEW OF LITERATURE

This chapter presents a review of literature exploring the history of sustainability and its development in the world and specifically the United States. The review will continue with an examination of sustainability in the educational system, independent schools and in management/leadership. Finally, a review of the Theory of Planned Behavior (TPB) will be presented, its role in multiple disciplines and its connection to educational leadership and sustainability. In this analysis, historical context, gaps in current research and a framework for future developments will be provided.

History of Sustainability

In this section a framework for the history of sustainability will be laid; that is, the evolution of the term "sustainable" and the action of being sustainable. While there is a general consensus of the development and use of the term sustainability, there is no single agreed upon definition. The fact that "sustainability" "was first stated as a major goal of the society in the polemical rather than the academic literature has contributed substantially to the development of different concepts of sustainability" (Kidd, 1992, p. 3).

As Schmandt (2010) described the first recorded time a derivative of the term was used was in 1713 by Hans Carl von Carlowitz in reference to the sustained yield of a natural resource, in this case, wood. His book *Sylvicultura Oeconomica* addressed the number of trees being cut down and not replaced. Wood was being used for various reasons but the forests were not being replanted but instead turned into fields for growing crops (p. 11). The term appeared again in

1804, also in reference to the abuse of the timber industry. George Ludwig Hartig (1804) published his thoughts:

> There is no continuous forest economy unless the yield of wood is calculated according to the principle of sustainability…. The forest manager must use the forest in such a way that the next generation can benefit at least as much from the forest as the current generation. (Schmandt, 2010, p. 13)

The term "sustainability" reappeared in 1972 in the *Blueprint for Survival*, a book written by the editors of the British periodical *The Ecologist*. Goldsmith et al. (1972) used the word in reference to the industrial expansion not being sustainable, individuals being more interested in the idea of sustainable society than helping produce one (p. 3) and indefinite growth not being sustained by finite resources (p. 6). The term possessed so little in terms of academic merit or importance it could not be found in the table of contents or the index of their book.

The first record of the word 'sustainability' being used in regards to the conservation of the environment more broadly can be found in a repeated sentence in the International Union for the Conservation of Nature (IUCN) 1972, 1973 and 1974 Yearbooks (Kidd, 1992).

> Conservation in the sense used by IUCN means management (which includes surveys, research, policy, administration, preservation, utilization and hence implies education and training) of the resources of the environment, soil and minerals, air and water and all living species, including man—so as to achieve the highest sustainable quality of human life. (IUCN, 1972, p. 5)

The phrase 'sustainable development' first made its appearance in 1987 with the releasing of 'Our Common Future', commonly known as the Brundtland Report, by the United Nation's World Commission on Environment and Development (WCED). Gro Harlem

Brundtland, chair of the commission, posited that sustainable development is reached when "it meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987 p. 8). Since the report was issued "around 140 alternative and variously-modified definitions of 'sustainable development' have emerged" and it is "estimated that some three hundred definitions of 'sustainability' and 'sustainable development' exist broadly within the domain of environmental management and the associated disciplines which link with it, either directly or indirectly" (Johnston et al., 2007, p. 60). There exists then a "vagueness of the concept of sustainable development" that leads to confusion of how to promote such an act (Mebratu, 1998, p. 2). This lack of clarity "coupled with its (sustainable development) increasing importance in national, international and corporate polices, has led to a large political battle for influence over our future by linking interpretation to the concept" (Mebratu, 1998, p. 2). This has led to researchers (Seghezzo, 2009) attempting to not define these terms but instead, the terms' boundaries.

Twenty-two years after the Brundtland Report was issued, Seghezzo (2009) cited constraints to the WCED's characterization of sustainable development but postulated that their "definition of sustainable development could be mitigated if sustainability is seen as the conceptual framework within the territorial, temporal and personal aspects of development can be openly discussed" (p. 547). He believed that it is impossible for a single definition of sustainability unless it lies "within the mutually-agreed confines of a sufficiently inclusive conceptual framework" (p. 552). The framework he suggested is grounded in place, permanence and persons and has five dimensions. Place contains three dimensions of space, permanence contains the dimension of time and persons contains the human dimension (p. 547). It was his

hope that this framework will act as a supplement to other paradigms and models and not replace them.

Sustainability in the World

The focus of this research project will now shift to the initiatives that have brought environmental sustainability to the world's attention. The push for a more sustainable world made its first appearance in a July 30, 1968 recommendation from the United Nations' 45th session of the Economic and Social Council (ECOSOC) to the General Assembly. Resolution 1346 (XLV) suggested "the desirability of convening a United Nations conference on problems of the human environment" (resolution). In response to this growing concern, the General Assembly at its 23rd session on December 3, 1968 adopted Resolution 2398 (XXIII) convening a United Nations Conference on the Human Environment in Stockholm, Sweden from June 5 to June 16, 1972. This was the first conference of its kind and would set in motion a chain of events that would lead us to the worldwide sustainability initiatives we have today (United Nations, 2012).

The Stockholm Conference acted as catalyst for sustainability initiatives and prompted an educational element that aimed at providing information for future generations. The educational component came into fruition through four intergovernmental conferences on environmental education. The first meeting was organized by the United Nations Education, Scientific and Cultural Organization (UNESCO) in cooperation with the U.N. Environment Program (UNEP) and was convened in Tbilisi, Georgia on October 14–26, 1977. Ten years later, in 1987, UNESCO and UNEP organized an International Congress in Moscow, USSR in order to determine an international strategy for action in environmental education and training for the upcoming decade. This was followed by a third conference held at Thessaloniki, Greece in 1997

which described the role of education and public awareness for achieving sustainability. The fourth conference was held November 24–28, 2007 at Centre for Environment Education in Ahmedabad, India. The conference brought together over 500 stakeholders from around the world to "urge people to join in pursuing the principles of sustainability with humility, inclusivity, integrity and a strong sense of humanity" (Center for Environmental Education, 2012, "Declaration," para. 9).

Another result of the Stockholm Conference was that of Norwegian Prime Minister Gro Harlem Brundtland being asked by the Secretary General of the United Nations to chair a World Commission on Environment and Development. He accepted the challenge and in 1987 *Our Common Future* was published and the concept of sustainable development launched around the world. In his foreword he delivers this powerful plea:

> The Commission has completed its work. We call for a common endeavor and for new norms of behavior at all levels and in the interests of all. The changes in attitudes, social values and in aspirations that the Report urges will depend on vast campaigns of education, debate and public participation. To this end, we appeal to "citizens" groups, to non-governmental organizations, to educational institutions and to the scientific community. They have all played indispensable roles in the creation of public awareness and political change in the past. They will play a crucial part in putting the world onto sustainable development paths, in laying the groundwork for Our Common Future. (Foreword, pp. 4–5)

In response to the Brundtland Commission, the United Nations Conference on Environment and Development (UNCED) was held in Rio de Janerio, Brazil, June 3–14, 1992. The 'Earth Summit' as it was called led to the development of the Commission on Sustainable

Development and the adoption of Agenda 21. The former was designed as an effective tool to ensure the follow up of the Conference on Environment and Development while the later was a plan of action adopted by more than 178 governments to promote sustainable development around the world.

Programs for further implementation of Agenda 21 were reaffirmed at the World Summit on Sustainable Development held in Johannesburg, South Africa August 24–September 2, 2002. The following December at its 57th meeting, the United Nations General Assembly adopted a resolution to put in place a Decade of Education for Sustainable Development (2005–2014) and have the United Nations Educational, Scientific and Cultural (UNESCO) lead this initiative (United Nations Decade of Education, 2012). As this decade of learning, sharing ideas and difficult conversations comes to a close it has produced the foundation for the world to move forward with sustainable development.

Sustainability in the United States

This section will discuss sustainability in the United States within the context of higher education, K–12 schools, independent schools and in management/leadership.

Addressing attendees at the 2009 World Science Forum in Budapest, Hungary, Assistant Secretary Jones of The Bureau of Oceans and International Environmental and Scientific Affairs stated, “The global problems that we are facing today have taken on a new urgency. The world has grown smaller and more interconnected. The issues of climate change, environmental degradation and food shortages … are glaringly obvious and immediate challenges” (United States Department of State, 2012, “Mission,” para. 4). Speeches and statements like this provided the foundation for the term sustainability to grow in use and understanding in countries around the world, including the United States. What is even more important is its

implementation and continued presence in strategic conversations by decision makers in the public and private sectors. In the United States "the Obama Administration has set a strong foundation and trajectory for enhancing sustainability and building a green economy at home and abroad" (United States Department of State, 2012, "Vision," para. 1). One of the agencies responsible for domestic sustainable initiatives, the Environmental Protection Agency (EPA), states that their

> efforts in the area of sustainability practices and approaches include labeling green products and promoting green chemistry and engineering, managing materials rather than creating waste, using green infrastructure to manage storm water runoff and supporting the sustainable design of communities. (U.S. Environmental Protection Agency, 2012, 'Introduction," para. 1)

In 1992, the EPA established the ENERGY STAR Program which is a voluntary program that partners with businesses, school districts and individuals to save energy and in turn money. "Now in its 20th year, the ENERGY STAR program has boosted the adoption of energy efficient products, practices and services through valuable partnerships, objective measurement tools and consumer education" (Energy Star, 2012, "About," para. 3").

These types and other sustainability initiatives that have been created and promoted at secondary schools around the United States are now being awarded by the U.S. Department of Education. The Green Ribbon Schools (ED-GRS) award began in 2011 when U.S. Secretary of Education Arne Duncan wanted "to recognize the highest performing green schools in the nation. The recognition award honors exemplary achievement in reducing environmental impact and costs; improving health and wellness; and providing effective environmental and sustainability education" (United States Department of Education, 2014).

Corporate America is also making a push for sustainability initiatives as more and more companies continue to adopt practices that are environmental friendly. A 2012 national survey of sustainability leaders revealed strategies for success were similar amongst business and included communication, collaboration and a mastery of the subject matter (Calandro, 2012). Novelis, DuPont, AT&T, McDonald's, Nixon Peabody, LLP, Hilton Worldwide and EMC are a few examples of corporations that have individuals or departments charged with implementing sustainable practices. These leaders are tasked with integrating sustainability initiatives in various processes throughout the company. The business management aspect will be discussed in more detail later. This section continues by providing a background of sustainability in education.

Sustainability in Education

This section describes the current state of environmental sustainability in the educational system. First, an examination of the higher education system will reveal what type of courses and degrees are being offered to current and future leaders. In addition, an assessment will be made of these institutions' applied action, specifically green buildings. Our colleges and universities play a central role in the preparation of professionals and therefore must restructure themselves to meet the environmental issues of the 21st century (Sibbel, 2008). Second, an overview of the K–12 system will provide a status of environmental sustainability initiatives and programs currently taking place in primary, elementary and secondary schools.

Sustainability in Higher Education

Higher education in the United States has seen tremendous growth in academic programs campus-wide sustainability programs and leadership. The U.S. has seen an integration of the education of environmental sustainability into college and university courses around the country

(Kowalczyk, 2010). Academic "programs in sustainability studies and related programs in sustainable design, sustainable agriculture, sustainability education and sustainable business" (Calder, 2009, p. 94) continue to emerge on higher education campuses. Four year institutions such as Arizona State University and Harvard University play a visible role in the academic environmental sustainability movement. In 2007, Arizona State University opened the first School of Sustainability in the United States offering bachelors, master's and doctoral degrees. Harvard University's Extension School offers a Sustainability and Environmental Management Graduate Program with concentrations in ecosystems or sustainability. Programs like these will serve as the model for higher education and help in the promotion of a sustainable future (Cortese, 2003).

Community colleges have seen an increase in "green-connected programs" and also the development of "educational pathways" leading to associate's and bachelor's degrees (Rogers & Pleasants, 2011). These program and degrees are providing green workers for the growing green service, jobs and careers rapidly becoming available in the United States. As sustainability continues to gain momentum in higher education institutions in the United States (Lindsay et al., 2010), we will see an increase in sustainability programs.

In addition to academic programs, there has been an increase in sustainability programs on college and university campuses nationwide. "The Association for the Advancement of Sustainability in Higher Education, known as AASHE, has tracked remarkable growth in campus-sustainability programs—the group's membership has gone from a handful of campuses in 2006 to about 1,000 today" (Newport, 2012). In addition, "the American College and University Presidents' Climate Commitment, a landmark carbon-neutrality effort, has committed almost 700 college presidents to zeroing out greenhouse-gas emissions and increasing climate-

literacy efforts" (Newport, 2012). David Hales, former President of the College of the Atlantic, stated, "For future generations to thrive in this world, education must lead the way by teaching and by example" (Hales, 2008, p. 23). The College of the Atlantic proved to be leading by example when they achieved net zero in greenhouse gas emissions in December 2006.

In addition to research and teaching, "higher education institutions are in a unique position to both lead and benefit from the campus-wide sustainability initiatives and green building in particular" (Reid, 2008, p. 5). Through the US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) programs, colleges and universities have the opportunity to receive certification in new construction and existing buildings. LEED is voluntary, international green building program that is designed to lower operating costs and increase asset value, reduce waste sent to landfills, conserve energy and water, be healthier and safer for occupants and reduce harmful greenhouse gas emissions (US Green Building Council, 2013a). A report issued in 2010 indicated "the use and popularity of the LEED rating system has increased among America's top universities" (Dougherty, 2010, p. 4). This commitment to sustainability by higher education institutions provides leadership, research and practical applications for other educational organizations to utilize.

Sustainability in K–12 Schools

The literature for sustainability initiatives at secondary schools and in the United States is limited but expanding. There are numerous guides and manuals providing instructions on how to become a green school (Calder, 2010; Metzger, 2011), but journal articles and books addressing current initiatives is lacking substance. There is evidence of school leaders all over the world engaging in sustainable practices (Henderson & Tilbury, 2004) and reducing energy consumption (Schelly et al., 2011); however, "rich conversations about the sustainability

movement and education have not yet entered educational leadership's scholarly discourse" (Kensler, 2012, p. 3).

One of the most noticeable areas of sustainable growth in K–12 schools is in new and retrofitted buildings (McGraw-Hill, 2012). The USGBC's Center for Green Schools is promoting the industry's Leadership in Energy and Environmental Design (LEED) standards for new construction and pre-existing structures. All "environmental initiatives at the school level are an open process and a long term concept" (Rauch, 2000, p. 253) and are teaching and preparing students for a more sustainable future. Schools are a place of ecological learning (Rauch, 2000) and quality sustainable education is needed in order to produce sustainable schools.

Henderson and Tilbury (2004), in an international review of whole-school approaches to sustainability, suggested that local stakeholders and schools should outline their specific vision for a sustainable school. Outlines should include but are not limited to, school leadership, whole-school participation, participatory learning approaches, professional development, monitoring, reflection and evaluation and practitioner research. These features coupled with critical success components such as partnerships, political support, budget and timeframes will aid in successful whole-school approaches to sustainability. Through their documented research and anecdotal evidence, "whole-school approaches to sustainability have an important contribution to make in shifting our communities towards sustainability" (p. 49).

In the United Kingdom, a study highlighting the characteristics of sustainable schools and the leadership qualities required to develop those schools were identified. Through the research of 56 schools Birney and Reed (2009) revealed the following seven characteristics of sustainable schools:

1. Give attention to their broader social and ecological footprint
2. View their ethos and purpose within a broader global context and develop an understanding among stakeholders, including students, of the purpose
3. Create positive benefits for pupils including student engagement, participation and leadership
4. Allow the development, integration and connection with other educational policies and initiatives
5. Provided direction and focus that bring about school improvements, including the Every Child Matters (ECM) outcomes and supports raising achievement and attainment
6. Focus specifically on improving the learning of children
7. Engage in curriculum change and development as sustainability is embedded across the whole curriculum. (pp. 5–7)

These seven characteristics help guide and shape policy for educational leaders that want to implement green school practices at their school. Leaders must involve as many stakeholders as possible, plan, develop and share their vision and then evaluate and reflect on the results. "The practice for leadership for sustainability shows that there is no single approach, journey, or person or even school that can take it on" (Birney & Reed, 2009, p. 51). It is a process of change and one that takes time and the influence of many individuals.

In the United States, Poudre School District (PSD) located in Fort Collins, Colorado is an example of environmental stewardship as it promotes energy conservation in all 50 of their schools. Researchers used qualitative data collection procedures that included individual interviews, focus groups with relevant stakeholders and the review of various types of

documents, to try and determine why PSD was successful in their endeavors. The district's achievements were "based on structural changes, individual behavioral change and, most important, the weaving of both into a cohesive organizational culture emphasizing conversation" (Schelly et al., 2011, pp. 316–317). Conversations led to 64% (32 out of 50) of PSD schools earning the ENERGY STAR label and one of the districts four high schools becoming LEED Certified (Schelly et al., 2011, p. 320). The Poudre School District is a case in which creating a conservation culture in an organization led to a reduction in energy consumption and annual budget savings.

An examination of four secondary schools in North America and their attempts to model sustainable practices in key areas of their schools provides great examples of current sustainability initiatives in secondary schools in the United States (Higgs & McMillan, 2006). This was a qualitative study in which observations and interviews were conducted in addition to the researcher's review of supporting documentation. The four schools were different in size and location, but all have a desire to increase environmental sustainable education. The modeling approach being utilized at these schools provided an interesting examination of one of the processes of implementing green school initiatives in a secondary school. These schools practiced modeling through facilities, governance, individual behavior patterns and culture which touch upon all aspects of a normal school day. Sustainable initiatives in facilities and operations aimed at catching the student's eye and have them realize that things they are learning in a textbook are actually taking place on their campus. Also, that they are part of a modeling system that is taking place as part of the operational side of their school. Governance differed from school to school with various types of involvement from the administration, faculty and students. In one school, all employees possessed the same positional power and there was no apparent

administration, while another school used a typical top down governance approach. Student involvement varied from being part of the decision making process on multiple school-wide issues to being laughed out of a City Hall for voicing their opinion. This involvement or lack of involvement can disenfranchise students or promote them to greater role in their school's sustainable programs. In addition, this can have long term affects as to whether or not the students at a later point in life decide to play a role in the sustainability movement. School culture can have a lasting influence on students as they a large role in developing that characteristic of their school. While administrators and faculty also play a role in establishing school culture students have the unique ability to accept or inhibit it from taking form.

> It appears that modeling allows schools to foster learning about sustainability and the adoption of sustainable behaviors without the need to preach or proselytize, thus avoiding the problems associated with over advocacy. If students learn through direct and continual observation that the people and institutions they respect engage in sustainable practices, rather than simply being told of their value, they may be more likely to adopt such behaviors. (Higgs & McMillan, 2006, p. 50)

Modeling can be a very valuable approach to promoting sustainable programs within a secondary school. Students that observe adults performing sustainable acts that they are taught about in class will see validity in this type of action and mimic it.

Sustainability in Independent Schools

An independent school is a school that does not receive financial assistance or governance from the government. Independent schools are funded by tuition, fees, gifts, and in some cases the investment yield of an endowment. These intuitions are governed by a board of trustees or directors that are elected or appointed to achieve an independent operation of the

school. Some independent schools are non-sectarian while others have a religious affiliation or denominational alignment. A distinction between independent schools and other private or parochial schools are that these institutions are typically owned, governed and financed by religious organizations such as a diocese or parish. A true independent school is governed by a local board of trustees or directors. There are independent school associations on the state, regional and national level to promote collaboration and relationship building amongst its member institutions.

To achieve a diverse view of independent schools in terms of size, location and level of green school practices, I conducted my research within the institutions of the National Association of Independent Schools (NAIS). The NAIS promotes five areas of sustainability for their member schools: financial, demographic, programmatic, environmental and global. This research focused on the environmental aspect and what the NAIS does to encourage this type of behavior. NAIS "schools committed to environmental sustainability emphasize an interdisciplinary and holistic approach to fostering the knowledge, skills and attitudes needed to build a sustainable world for present and future generations. Such schools meet the following principles of good practice" (NAIS, 2012, "Environmental," para. 3):

1. Demonstrate a commitment to sustainability through their mission, strategic planning and administration.
2. Incorporate environmental sustainability into all aspects of their institutions, including curriculum; professional development; student and residential life; physical operations, procurement, construction and renovations; and dining services.
3. Encourage and enlist parents to support sustainability policies and practices that uniquely reflect institutional and educational philosophies.

4. Collaborate with external communities to advance environmental sustainability efforts.
5. Institutionalize recognition and assessment of their sustainability efforts by regularly demonstrating achievements to stakeholders

Independent schools typically promote a holistic approach to education and this being the case, have the opportunity to take the lead in the push for environmental stewardship in the younger citizens in our country. "They consistently aspire to instill in graduates such qualities as good citizenship, moral integrity, leadership, critical thinking and indeed, care for the environment" (Calder, 1998, p. 215). The NAIS assists its member schools by providing numerous resources including publications, presentations and action steps to help facilitate the growth of environmental sustainability programs.

This document will employ the National Association of Independent Schools Model of Environmental Sustainability and its commitment to member schools. Their goals as an organization are to:

1. Advocate for principles of good environmental sustainability practice at independent schools;
2. Encourage independent schools to become better stewards of our planet by modeling sustainable behavior and practice;
3. Promote the integration of sustainability into a school's mission, curricula, operations and relevant activities;
4. Provide learning resources and opportunities to support school sustainability efforts; and
5. Partner with member schools and associations on sustainability initiatives.

From their objectives stems their definition and the one utilized in this paper, that independent schools "can work toward environmental sustainability by becoming more green, reducing school and personal carbon footprints, promoting a commitment to life-long environmental responsibility and incorporating environmental education into the curriculum" (NAIS, 2012, "Environmental," para. 2).

Sustainability in Management/Leadership

Leadership is the key to the success or failure of any organization. As we progress further and further into the 21st century we are faced with complex issues and problems never seen before. All societies will look to their leaders for direction in overcoming any and all challenges we face in this new century. To be successful, our leaders must be open to new ideas and problem solving techniques (Anderson, 1998). There are numerous articles on educational leadership (Day & Leithwood, 2007; Harris, Leithwood, Day, Sammons & Hopkins, 2007; Leithwood & Beatty, 2009; Leithwood & Riehl, 2003; Wahlstrom, Louis, Leithwood & Anderson, 2010), and numerous articles on sustainability (Ackley & Begley, 2010; Birney & Reed, 2009; Higgs & McMillan, 2006; Pepper & Wildy, 2008; Schelly et al., 2011); however, articles addressing both topics are limited. This section will address management/leadership change, educational leadership and leadership and sustainability.

Ray Anderson of Interface, is an example of a leader that developed and adapted over time. In 1994, Anderson decided to change the business model of his carpet tile company and move toward one that had the environment in mind. Interface established a task of eliminate any negative impact the company has on the environment by 2020 (Anderson, 1998). Interface is an example of a corporation that practices corporate social responsibility (CSR). These corporations

promote the triple bottom line (TBL) of environment, economy and equity. Corporate executives that promote the TBL has shown a shift in traditional leadership to one that can be adaptive.

Allen, Stelzner and Wielkiewicz (1999) posited that "traditional, mechanistic models of leadership are inadequate for dealing with the serious adaptive challenges facing the modern world" (p. 1). They do not address education specifically but rather the role of all types of leadership positions around the world. One of the most notable topics facing educational leaders is the implementation of sustainability programs and curriculum in their school. All leaders within a school must begin to think in a new way in order to solve the upcoming problems facing our world. Allen et al. continued by stating that there must be a fundamental shift in the culture of leadership in order to accommodate the issues in our ever changing world. They put forward five adaptive challenges and what leaders need to do in order to manage them.

First, "Living and working in a global perspective" (p. 1) gives us the idea that we as inhabitants of planet earth live in a world of interdependence. Leaders cannot think that what they do only affects a small number of individuals because at this point in time that is simply not the case. Second, "Living within environmental limits" (p. 2) makes leaders realize that decisions they make or do not make can affect the environment and have lasting consequences for future generations. Third, "Transforming information into knowledge and wisdom" (p. 2) challenges leaders to discern between all the information that is being created and reported and communicating said information effectively. Fourth, "Developing the wisdom and ethics to respond to scientific discoveries" (p. 2) allows leaders to stay with the curve of knowledge and assist them in their decision making process. The fifth and final challenge, "Developing the capacity to adapt to changes in our social ecology" (p. 2), charges leaders with the task of facilitating the consent changes in the environments in which people live and work. Educational

leaders must continually adapt themselves to a changing world and prepare students for the world of tomorrow, not today. Leaders must continue to learn and grow in their role, just as they teach their students to do.

Allen et al. (1999) noted: "The interactive effect of the aforementioned five adaptive challenges triggers at least seven emergent patterns which have many direct implications for leadership" (p. 3): Increasing change, increasing diversity in our daily lives, increasing tensions around value differences, increasing requirement for organizational learning and personal development, increasing power of relationships, increasing need for a long-term perspective and increasing need for leadership processes that match the complexity of the systems. These patterns will affect the way in which leaders lead their organizations and therefore have an effect on the ecology of our world.

Allen et al. (1999) continued and suggested the "mechanistic metaphors" associated with leadership needs to evolve to more of an "ecological approach to leadership." With this new vision, they suggested an "ecological theory of leadership" comprised of seven main points.

1. Leadership is a process that emerges from individual actions and interactions which influence systems both inside and outside an organization. Each individual action in the system potentially influences the leadership process. Thus, leadership processes evolve in a context of continuous interactions involving the systems in which the organization is embedded (p. 8).
2. Leadership occurs within a wider web of social and biological systems and the individual actions that influence leadership processes take place within the context of these interdependent systems (p. 8).

3. The adaptability of an organization will be determined by the richness of the feedback loops that influence leadership processes and individual actions.
4. The effectiveness of leadership actions needs to be evaluated in terms of how adaptively an organization responds to the challenges of the ecosystem (p. 8).
5. Many systemic effects and interactions evolve over the long term, implying that leadership actions can only be understood fully when they are evaluated from a long term perspective (p. 9).
6. Effective leadership processes are characterized by a sharing of responsibility among all participants. This requires a consistent emphasis on human development in order to have the skills present within the organization to recognize, analyze and adapt to emerging adaptive challenges. The greater the diversity, in terms of skills, cultures, interests and passions, the more adaptive the organization will be (p. 9).
7. Organizations can be categorized along a continuum anchored at one end by the descriptor 'open leadership processes' and at the other end by the descriptor 'closed leadership processes' which reflects the degree to which organizational systems are open or closed to feedback loops, diversity, human development, a long term perspective, cooperation and free flow information. The greater extent to which leadership processes can be characterized as 'open,' the more effective is the organization (p. 9).

As is the case with any substantive change within an organization or process, the transformation takes time. Allen et al. (1999) posit seven guidelines for leaders to implement: "Connection is key; leadership needs to facilitate an environment that fosters individual growth, trust and organizational learning; tension is a positive force in organizational learning; reflect on

the process; articulate the core purpose and values of the organization; attach the form of your organization to your purpose instead of your purpose to the form; reward risk-taking" (p. 12). Leadership is a process and like any process must develop and adapt over time to remain effective. In particular, educational leaders must understand their role as change agents in order to educate 21st century students.

Further to Allen, Stelzner and Wielkiewicz (1999), Day and Leithwood suggested that educational organizations are exactly what their leaders metaphorically view them to be: "machines" or "living systems" (2007). Successful leaders view their organization as a "living systems metaphor that encourages a view of an organization as a process one of constant adaptation, growth and becoming one that occurs naturally an inevitable in response to a strong desire for learning and survival" (p. 200). In contrast, the "machine metaphor" is viewed as a "fixed structure of some sort, a structure that consisting of parts that need to be oiled if they are to function together smoothly" (p. 200). Leadership is one of the most important aspects of change in a school (Hargreaves & Fink, 2003) and in promoting quality teaching and learning (Leithwood & Beatty, 2009). Sustainability is a part of a living system that requires adaptation by humans of the present in or for the survival of humans in the future. Leaders of every type of organization, including educational institutions, will play a vital role in generating workable and sustainable solutions (Ferdig, 2007).

Through the investigation of three Western Australian Government secondary schools, Pepper and Wildy (2008) posited that leading sustainability initiatives requires "a combination of deep knowledge of sustainability, forward thinking and the ability to imagine a different future, the interpersonal and networking skills to build strong relationships and the energy and capability of taking action to achieve the imagined different future" (p. 613). Whole-school

approaches to sustainability have been reviewed in various countries around the world to document and share success stories (Henderson & Tilbury, 2004). This has led to the research of integrating democratic and ecological principles for green schools (Kensler, 2012) and developing a sustainability ethic in leaders (Middlebrooks et al., 2009). As leaders, school principals are in a position to act as initiators in the promotion of environmental education within their schools (Wenzhong, 2004). Ackley and Begley (2010) posited that schools are changing the way they educate students, providing them a new lens in which to view the world. They observed and interviewed five school principals numerous times to gain an understanding of their leadership style and influence on their school. They determined that in order for educational leaders to promote sustainable change in their schools, they must understand and promote environmental behavior and demonstrate environmentally significant individual behavior.

Stern (2000) provided a conceptual framework for the promotion of theories of environmentally significant individual behavior and the current state of such theories. He posited it's a "dauntingly complex" issue with a "general theory" lying in the future (pp. 421). He lists causal variables as attitudinal, personal capabilities, contextual factors and habit and routine while environmentally significant behaviors are environmental activism, private-sphere environmentalism and behaviors affecting organizational decisions. Stern (2011) also posited that "psychology can make a significant contribution to limiting the magnitude of climate change by improving understanding of human behaviors that drive climate change and human reactions to climate-changed technologies and policies and by turning that understanding into effective interventions" (pp. 303).

Chawla and Cushing (2007) determined through their reviews of research that "environmental education, as well as measures of behavior in environmental education research, typically emphasize private sphere environmentalism at the expense of preparing students for public action and environmental educators often fail to engage students in a strategic analysis of the most effective ways to address problems" (pp. 448). Due to the increasingly complex environment that we live in, educational leaders must direct their institutions through these challenges (Leithwood & Riehl, 2003). Teacher preparation, continuing education, curriculum revisions and a continued promotion of quality teaching and learning will ensure educational leaders are agents of change during this process. Through the TPB this paper examined the behavioral, normative and control beliefs of educational leaders in their relationship to environmental sustainability initiatives.

Theory of Planned Behavior

This research study utilized Icek Ajzen's (1985) TPB to examine the role of educational leaders in the promotion of environmental sustainability initiatives at independent schools. I will give a brief history of the Theory, its main points and studies from various disciplines in which the Theory has been used. Finally, a connection will be made between the Theory of Planned Behavior and educational leadership studies from the past, as well as potential for studies in the future.

The TPB stems from an article Ajzen published in 1985, which expanded on his and Martin Fishbein's Theory of Reasoned Action by including perceived behavioral control. "The theory of reasoned action applies to behaviors that are under volitional control and its predictive accuracy diminishes when the behavior is influenced by factor over which at least some people have only limited control" (Ajzen, 1985a, pp. 35–36). The TPB was developed to take into

account these behaviors. The Theory "has been the most influential attitude-behavior model in social psychology—probably because they developed a mathematical equation that expressed their model which led researchers to conduct empirical studies" (Kollmus & Agyeman, 2002, p. 243).

The TPB is designed to predict and explain specific human behaviors in certain context. As a general rule, "the stronger the intention to engage in a behavior, the more likely should be its performance" (Ajzen, 1991, p.181). The TPB states that human action is guided by three kinds of considerations: beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (behavioral beliefs), beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs) and beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (control beliefs) (Ajzen, 2002b). Therefore, behavioral beliefs produce a favorable or unfavorable attitude toward a specific behavior. Normative beliefs result in perceived social pressure from groups or individuals or the subjective norms of performing an action. Control beliefs contribute to perceived behavioral control which is the individuals' perception of how easy or difficult it will be to perform the behavior (Ajzen, 2002).

Use of the Theory of Planned Behavior

The TPB has been used across multiple disciplines in the attempt to explain human behavior. Ajzen (2002) himself has employed the Theory in basic and applied psychology, health, policy evaluation, environmental economics and management. The TPB has also been applied to predict the likelihood of health behavior, product choice, supportive behaviors and voting (Cooke & Sheeran, 2004).

In regards to environmental behavior, the Theory has been used to determine pollution reduction preferences of U.S. environmental managers (Cordano & Frieze, 2000), in understanding cultural differences in the antecedents of pro-environmental behavior (Cordano et al., 2010), in the prediction of household recycling of newspapers (Boldero, 1995), with assessing the role of identification with "green consumerism" (Sparks & Shepherd, 1992) and in understanding wastepaper recycling (Cheung, Chan, & Wong, 1999). In addition, the TPB was used in the testing of household recycling and composting intentions (Taylor & Todd, 1995), for examining the rational choices associated with recycling and use of public transportation (Carrus, Passafaro, & Bonnes, 2008) and in measuring the attitudes of business students towards the legitimacy of environmental sustainability (Thomas, 2005). The TPB was also used to gauge the relationship between management's behavioral intentions toward the environment and environmental actions (Martin-Pena et al., 2010), for understanding the determinants of consumer composting behavior (Taylor & Todd, 1997), and in predicting proenvironmental behavior cross-nationally (Oreg & Katz-Gerro, 2006). The TPB is the basis for the integrated waste management model by (Taylor & Todd, 1995) and the Model of Responsible Environmental Behavior put forth by Hines, Hungerford and Tomera (Bamberg & Moser, 2007; Kollmuss & Agyeman, 2002).

The TPB has been applied in education in an attempt to predict the behavior of individuals in a variety of situations. Fang et al. (2010) used the TPB to explain the factors of primary school teachers choosing digitalized teaching materials when pushed by the government and private enterprise. Lee, Cerreto and Lee (2010) used the TPB to determine the predictors of teachers' intentions of using technology to create and deliver lessons. They concluded that

attitudes, subjective norms and perceive behavioral control all were significant predicators of teachers' intentions with attitudes be the strongest of all (Lee, Cerreto, & Lee, 2010).

In order to identify perceptions that may affect teachers' intention to use technology in secondary mathematic classes, Pierce and Ball (2009) used the TPB. Respondents indicated that they understood the positive outcomes of technology in the classroom but barriers such as time, cost and understanding stood in the way if implementation. Pierce and Ball (2009) determined that even with positive attitudes by teachers, there were still perceived behavioral control issues in using technology in math classes. These issues could be addressed in pre service and professional development meetings throughout the school year in order to assist teachers with implementing technology in their classroom.

In an attempt to determine if faculty will confront students who cheat, Coren (2012) used the TPB to predict the outcome. Faculty members from two universities were surveyed to investigate interaction, interpretation and perceptions of academic dishonesty. His research model explained 43% of the variance with subjective norms providing the most significant contribution followed by attitude and perceived behavioral control.

Connection between TPB and Educational Leadership

The connection between TPB and educational leadership is complex due to the multifaceted position of a school leader. Federal mandates, state regulations and local programs are all guidelines that educational leaders must follow in the promotion of teaching and learning. Independent school leaders typically have flexibility outside of these polices allowing for the possibility of a more rapid transformation of the educational process.

In the present study, I examined behavioral beliefs of educational leaders on environmental sustainability. These beliefs are typically governed by personal attitudes, social

pressures and sense of control. In relation to behavioral beliefs, independent school leaders possess a belief about the outcome of a particular behavior. In this case the behavior is promoting sustainability programs and the outcome, whether it is good or bad. The individual also has an attitude toward the behavior that can be positive or negative for any given reason. This attitude affects the behavioral belief as to what—good or bad—will be accomplished by this behavior of promoting sustainable initiatives.

The independent school leader's normative beliefs are his/her perception about a particular behavior that is influenced by others (board member, faculty, staff, students, parents, accrediting agencies, etc.). The subjective norm is his/her perception of normative pressures from the aforementioned individual(s) as to whether or not he/she should or should not perform the behavior of promoting sustainable initiatives. Control beliefs are the independent school leader's beliefs about his/her chances of succeeding at the behavior because of what could help or hinder the process. Perceived behavioral control is his/her belief that he/she can actually succeed at the behavior.

Fielding, McDonald and Louis (2008) utilized the TPB to research the intentions of individuals to engage in environmental activism. Studies show that many citizens are aware of environmental issues but do little to try and improve them because of a perceived notion that their actions will be in vain. This mentality exists even when there are numerous examples of individuals and groups pushing for environmentally awareness and sustainability. Contrary to prior research that investigates the factors that influenced a group's actions, this study examined whether an individual can have an influence on group-based decision making. As one would imagine, anyone that is part of a group that supports a cause would naturally have a higher

tendency to support that cause than an individual that is not part of the group. Educational leaders are no different in that they are a part of the group in which they are leading.

Fielding et al.'s (2008) study included both group members and non-members to determine "whether factors influencing decisions to engage in environmental activism differs according to group membership" (p. 318). General attitudes, attitudes, subjective norms perceived behavioral control, group membership and self-identify all emerged as predictors of environmental activism intentions on the part of the individual. "An environmental activist engages in environmental activism—to do so affirms this identity and to not do so results in identity-related discomfort" (Fielding et al., 2008, p. 324). As is the case with any group, they possess group norms and expect a certain behavior from their members and as the research confirms, environmental activism is no different. The Theory of Planned Behavior is depicted in Figure 1.

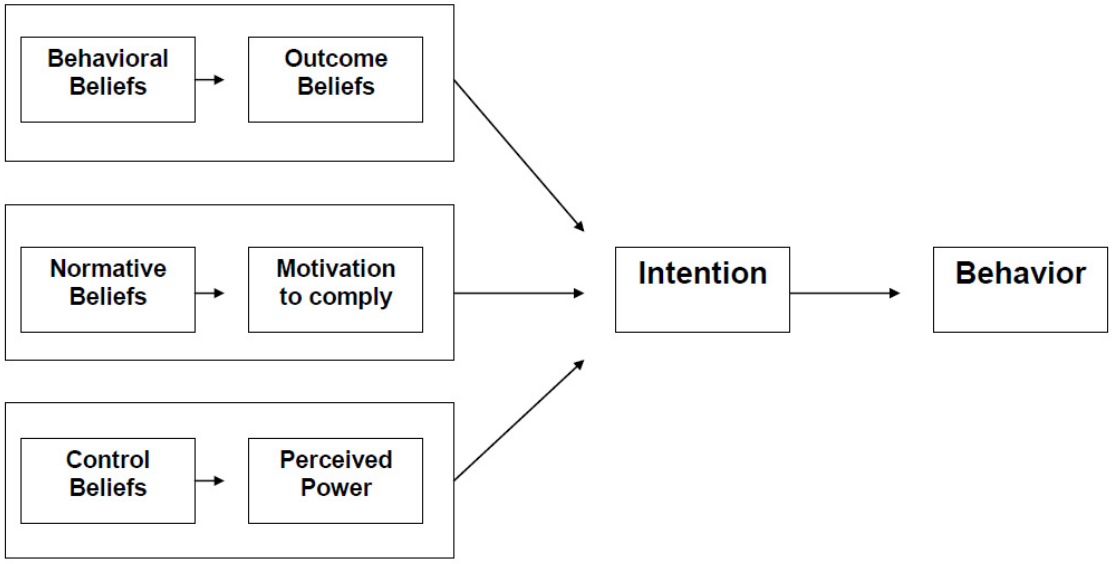

Figure 1. Adapted from Ajen (2006).

Summary

This chapter has presented an overview of sustainability and the Theory of Planned Behavior (TPB). The history of sustainability was discussed along with its growing presence in education and educational leadership. The TPB, its role in different fields and how it relates to this study, was also discussed. This chapter provides the necessary information to understand the sustainability movement and through the TPB can attempt to understand educational leaders' behaviors in this regard.

CHAPTER III. METHODS

There is not a significant body of research linking educational leaders' beliefs with their behavior in regards to sustainability initiatives in K–12 schools in the United States. The existing literature does, however, illustrate the importance of school leadership in the promotion of successful green schools (Birney & Reed, 2009; Higgs & McMillan, 2006; Pepper & Wildy, 2008; Schelly et al., 2011). The purpose of this study was to address the gap in research by presenting the connection between educational leaders' beliefs in environmental sustainability initiatives and their behavior towards these programs. This relationship, once understood, could potentially lead to an increase of green school practices and knowledge of environmental sustainability in K–12 schools around the country.

This chapter outlines in detail the research methodology used in this survey study. The first section describes the research design of this study. The second section states the research questions that are the foundation for this study. The third section describes the participants in the study and discusses the research instrument used in this study. The fourth and final section discusses data collection procedures, data analysis procedures and the limitations of this study.

Design of the Study

This study addressed a relatively new area in academia: researching educational leaders' attitudes and subsequent actions related to environmental sustainability. The Theory of Planned Behavior (TPB) provided the theoretical framework for this study as it has strong research support for explaining and predicating complex behaviors (Armitage & Conner, 2001). A cross-

sectional correlational research study was utilized and collected data from 115 independent school leaders in the United States.

Research Questions

1. How do educational leaders' attitudes (behavioral beliefs + outcome beliefs) about green school practices relate to their behavioral intentions towards implementing these practices at their school?

2. How do educational leaders' subjective norms (normative beliefs + motivation to comply) about green school practices relate to their behavioral intentions towards implementing these practices at their school?

3. How do educational leaders' perceived behavioral control (control beliefs + perceived power) about green school practices relate to their behavioral intentions towards implementing these practices at their school?

4. How do attitudes, subjective norms and perceived behavioral control predict unique variance within the current and planned green school behaviors of educational leaders?

Research Procedures

Participants

I obtained permission to conduct a research study with National Association of Independent Schools (NAIS) member schools from an NAIS Vice President. I selected a target population of all Heads of School within the 1,400 member schools of NAIS. The survey was designed for Heads of School only as it is the correlation between their beliefs and behavior that I wish to examine.

Description of the Instrument

The survey utilized in this research stems from an elicitation study in which school leaders' behavioral intentions in regards to green school practices were examined (Veronese & Kensler, 2013). Elicitation studies "develop indirect measures for all predictor constructs (attitude; subjective norm; and perceived behavioral control) in the TPB" (Francis, et al., 2004, p. 25). Veronese and Kensler followed the process of developing an elicitation study by selecting a sample for their study, in their case educational leaders; sending out a questionnaire in the form of an electronic survey and asking open-ended questions in their survey (Francis, et al., 2004; Veronese & Kensler, 2013). Their research was the first study to use the TPB to explore educational leaders' salient beliefs related to green school practices. Through the synthesis of these salient beliefs a forced response survey instrument was developed (Kensler, Uline, & Fathema, 2012) which was then modified to fit the purpose of the research and the independent school nomenclature. Future research is needed in the area of educational leadership and environmental sustainability and is the purpose of this study.

The survey's intention was to collect information about the relationship between educational leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions towards implementing these practices at their school. Questions were used verbatim from the previous instrument (Kensler, Uline, & Fathema, 2012) except in the case of altering specific words to correspond to independent school language. The survey was electronically designed using Qualtrics, a web-based survey software that allows the Auburn University campus community to create surveys, collect and store data, and produce reports (see Appendix 1). The final survey consisted of three major sections.

Section I was divided into two parts and designed to ascertain educational leader's current and future green school practices. In part I, respondents were asked about their current green school practices, and in part II they were asked about their future green school practices. Each part consisted of nine Likert-type questions and potential answers included energy conservation, indoor air quality, less or non-toxic cleaning supplies, water conservation/quality, waste reduction/recycling, food (for example: healthier, organic, local choices), outdoor classrooms/gardens, education/curriculum and green building standards. Part one had a four-point Likert-type scale: non-existent, in the early stages of implementation, well under way and established. Part two had a five-point Likert-type scale: never, four or more years from now, three years from now, two years from now, and next year (see Appendix 1).

Section II of the survey was comprised of six parts and designed to collect data on educational leader's attitude toward the behavior, subjective norms and perceived behavioral control. Section II, part I, attitude toward the behavior, consisted of two sections gauging attitude beliefs and outcome beliefs. The attitude beliefs section contained ten Likert-type questions asking respondents to indicate the degree to which they agree with each statement that completes the following stem: Implementing green school practices in my school.... A few example items were: models for students on how to live more sustainably, models for school community members on how to live more sustainably, saves money within three years, saves money over the long term (more than three years), and contributes to making the planet healthier. This section had a six-point Likert-type scale: strongly disagree, disagree, somewhat disagree, somewhat agree, agree and strongly agree. Section II, part II, outcome beliefs, contained 10 Likert-type questions asking respondents to indicate the degree to which they believe the following outcomes are important. A few example items were: saving money over the long term

(more than three years), managing our school in a way that contributes to making the planet healthier, managing our school in a way that makes our buildings healthier learning environments, conserving energy, and other resources. This section had a seven-point Likert-type scale: not at all important, very unimportant, somewhat unimportant, neither important nor unimportant, somewhat important, very important, and extremely important (see Appendix 1).

Section II, part II, subjective norms, consisted of two sections gauging normative beliefs and motivation to comply. The normative beliefs section contained seven Likert-type questions asking respondents: For each individual or group, indicate the degree to which you believe they would like you to implement green school practices at your school. A few example items were: members of your board of trustees, your students' parents, the teachers at your school and the students at your school. This section had a seven-point Likert-type scale: strongly against, against, somewhat against, neutral, somewhat supportive, supportive and strongly supportive/ encouraging. The motivation to comply section contained seven Likert-type questions asking respondents to indicate the degree to which they agree with the following statements. A few example items were: Generally, I want to do what the community members in my school would like me to do; generally, I want to do what the other Heads of School in NAIS would like me to do; and, generally, I want to do what NAIS would like me to do. This section had a seven-point Likert-type scale: strongly disagree, disagree, somewhat disagree, neither agree nor disagree, somewhat agree, agree, and strongly agree (see Appendix 1).

Section II, part III, perceived behavioral control, consisted of two sections gauging control beliefs and perceived power. The perceived behavioral control section contained seven Likert-type questions asking respondents to indicate the degree to which they agree with each of the following statements. A few example items were: I have the funding I need to implement

new green school practices at my school; I have access to the information I need to implement new green school practices at my school; I already know all that I need to know to implement new green school practices at my school; and, I have a board of trustees that is supportive of implementing new green school practices at my school. This section had a seven-point Likert-type scale: strongly disagree, disagree, somewhat disagree, neither agree nor disagree, somewhat agree, agree and strongly agree. The perceived power section contained seven Likert-type questions asking respondents to indicate the degree to which they agree with each of the following statements. A few example items were: If I had an administrative team capable of implementing new green school practices at my school, then doing so would be easy; if I had a business officer capable of implementing new green school practices at my school, then doing so would be easy; and, if I had the time, then implementing new green school practices at my school would be easy. This section had a seven-point Likert-type scale: strongly disagree, disagree, somewhat disagree, neither agree nor disagree, somewhat agree, agree and strongly agree.

Section III of the survey collected demographic information about the Heads of School such as number of years as an administrator, number of years as an administrator at their current school, gender and age. The purpose of this section was to ensure a diverse group of educational leaders responded to the survey. This would allow for a more accurate viewpoint of all current independent school leaders.

Data Collection Procedures

The instrument—Educational Leaders, Sustainability and Independent Schools (see Appendix 1)—was submitted and approved to collect data by the Auburn University Institutional Review Board for the Protection of Human Subjects in Research (see Appendix 2). On February

12, 2013, the survey was sent to all Heads of School via the NAIS heads listserv. One reminder email was sent out two weeks later on March 10, 2013. The instrument was sent out a second time on May 2, 2013. One reminder email was sent out two weeks later on May 16, 2013.

Analysis

Table 1 presents a summary of the research questions, data gathered and data analysis performed. Heads of school answered questions that stemmed from the below research questions and were based off the TPB. Data analysis was performed using IBM SPSS statistics. Bivariate correlation and hierarchical multiple regression were performed on the data collected.

Table 1

Summary of Research Questions, Data Gathered and Data Analysis Performed

Research Question	Data Gathered	Data Analysis
How do educational leaders' attitudes about green school practices relate to their behavioral intentions towards implementing these practices at their school?	Heads of School responses to survey aggregated to the school level.	Bivariate correlation IBM **SPSS** Statistics
How do educational leaders' subjective norms about green school practices relate to their behavioral intentions towards implementing these practices at their school?	Heads of School responses to survey aggregated to the school level.	Bivariate correlation IBM **SPSS** Statistics
How do educational leaders' perceived behavioral control about green school practices relate to their behavioral intentions towards implementing these practices at their school?	Heads of School responses to survey aggregated to the school level.	Bivariate correlation IBM **SPSS** Statistics
How do attitudes, subjective norms and perceived behavioral control predict unique variance within the current and planned green school behaviors of educational leaders?	Heads of School responses to survey aggregated to the school level.	Hierarchical multiple regression IBM **SPSS** Statistics

Correlation analysis was used to determine the strength of the relationship between attitudes, subjective norms, perceived behavioral control and current and planned green school practices. This relationship was investigated using Pearson product-moment correlation coefficient.

To further test the relationship between attitudes, subjective norms, and perceived behavioral control, two hierarchical regressions were performed using current and planned green school practices as dependent variables. These regressions were performed to determine how attitudes, subjective norms and perceived behavioral control predict unique variance within the current and planned green school behaviors of educational leaders. Each regression took the same form with attitude entered on the first step, perceived behavioral control entered on the second and subjective norms entered on the last step.

Limitations

The first limitation of this study is the limited sample size. Due to this size, the findings cannot be generalized to all independent school leaders. The second limitation of this study is the educational leaders' understanding of the terms and questions. Even though the instrument was developed from an elicitation study of educational leaders, this does not indicate that all members of this population have equal understanding of green school initiatives.

Summary

The purpose of the study was to use the TPB to explore independent school leaders' intentions of implementing green school practices in their school. An existing survey was modified to fit independent school nomenclature and sent electronically to independent school leaders in the United States. Each question of the survey was developed based on the TPB.

Bivariate correlation and hierarchical multiple regression were performed on the data collected. Results of the information presented in Chapter 3 will be analyzed and presented in Chapter 4.

CHAPTER IV. ANALYSIS OF DATA

Introduction

The aim of the present study was to test the degree to which the Theory of Planned Behavior (TPB) (Ajzen, 1985) explained independent school leaders' intent to implement green school practices at their school. The items comprising the TPB three constructs, attitude, subjective norms and perceived behavioral control, were developed from an earlier elicitation study (Veronese & Kensler, 2013). The final form was sent electronically to over 800 independent school leaders. An exact response rate could not be determined due to the lack of information regarding the number of emails that were not able to be delivered or bounced back. Precisely 126 individuals responded to the survey and of those, 11 were not complete enough to use for this study. Correlation analysis and regression analysis were used to answer the research questions. Results suggested an array of significant correlations among the variables, attitudes, subjective norms and perceived behavioral control, educational leaders' current and intended school practices and school leaders' individual environmental behaviors.

Demographics of Participants

One hundred and fifteen (115) heads of school from around the United States completed the survey instrument. Table 2 summarizes the demographics of the participants. Respondents were 70 males (60.87%), 43 females (37.4%) and 2 non-responses (1.74%), with ages varying from 40 to 71 with a mean of 54.89 years. Respondents' years as a head of school had a mean of 10.56, with years as head at current school with a mean of 7.88 years.

Table 2

Demographics

Description of Item	N	M	SD
Years as head	100	10.56	8.4
Years as head at current school	115	7.88	6.44
Age	107	54.89	8.01

Sustainability related issues have just recently begun to appear in educational leadership literature (Ackley, 2009; Birney & Reed, 2009; Higgs & McMillan, 2006; Kensler, 2012; Pepper & Wildy, 2008; Schelly, Cross, Franzen, Hall, & Reeve, 2010). Despite this recent occurrence in research, educational leaders across the country have been engaging in pro-environmental behaviors. Energy and water reduction, waste management and recycling are a few actions taken by leaders to aid in the environmental sustainability movement. The complexity of the relationship between the possession of environmental knowledge and the displaying of pro-environmental behavior has yet to be definitively explained (Kollmuss & Agyeman, 2002). However, research does indicate educational leaders have a major impact in implementing school change (Leithwood, 2007). Therefore, the individual environmental behaviors of the respondents were collected to gain information about their personal environmental habits or experiences. In addition, the researcher wanted a diverse group of educational leaders in regards to the level of their current and planned sustainability initiatives. This would allow for a more accurate view of all independent schools instead of focusing on institutions that may have very strong green school programs or those that do not have any green school programs. Respondents were asked to indicate the degree to which the following statements were true or false, with 1

designating definitely false and 4 designating definitely true. Table 3 reports the individual environmental behaviors.

Table 3

Individual Environmental Behaviors

Description of Item	N	M	SD
Science related degree	112	1.79	1.23
Environmentalist	112	2.91	0.88
Spend time outdoors	112	3.04	0.89
Green school workshops	112	2.64	1.16
Outdoor activities	112	3.63	0.7
Read sustainability books	112	2.85	1.04
Recycle at home	112	3.65	0.68
Compost at home	112	2.27	1.28
Energy reduction at home	112	3.45	0.6
Purchase green product	112	3.2	0.68

Assumptions

Preliminary analyses were performed to measure internal consistency of the instrument. The Cronbach's alpha coefficient of scale provided a measure of internal consistency for this study. Alpha coefficients range in value from 0 to 1and ideally should be above .7 (DeVellis, 2003) with higher scores indicating greater reliability (Santos, 1999). Cronbach's alphas for individual environmental behaviors, attitudes, subjective norms and perceived behavior control

were .81, .90, .90, .81 respectively, indicating that the scales had acceptable internal consistency. Cronbach's alphas for current behaviors and planned behaviors were.86 and .88 respectively, indicating that they too had acceptable internal consistency.

Results

The purpose of the present study was to test the degree to which the TPB (Ajzen, 1991) explained independent school leaders' intent to implement green school practices at their school. The TPB was designed to predict human behavior based on attitude, subjective norms and perceived behavioral control. Analysis of the responses and research questions are discussed according to each aspect of the TPB. Regression results are then presented followed by a summary of the research study's findings.

Attitude

The TPB puts forth the idea that one has beliefs about the likely outcomes of a behavior and the evaluations of those outcomes produce behavioral beliefs. Items below were designed to assess the strength of the behavioral beliefs and outcome beliefs. These behavioral beliefs produce a favorable or unfavorable attitude toward the behavior (Ajzen 2002b). Table 4 and Table 5 stem from the research question: How do educational leaders' behavioral beliefs correlate to their behavior in regards to sustainability initiatives at their school?

To determine behavioral beliefs, respondents were asked to indicate the degree, with 1 being strongly disagree and 6 being strongly agree, to which they agree with each statement that completes the following stem: Implementing green school practices in my school… The statement with the highest mean was …contributes to making the planet healthier (M = 5.41) and equates to educational leaders agreeing with this statement. Other statements respondents agreed with were …conserves energy and other resources (M = 5.38) …makes our school building a healthier learning environment for our students (M = 5.34), …models for students how to live more sustainably (M = 5.25), …models for school community members how to live more sustainably (M = 5.2), and …saves money over the long term (over three years) (M = 5.01). Statements respondents somewhat agreed with were …is too hard because it requires individuals to change personal habits (M = 4.03) and …saves money in the short term (within three years) (M = 4.59). Statements respondents somewhat disagreed with were …costs too much (M = 3.66) and …requires a lot of time (M = 3.24). Table 4 presents the degree in which respondents believe that implementing green school practices at their school effect the listed items.

Table 4

Attitudes–Behavioral Beliefs

Description of Item	N	M	SD
Models for students	114	5.25	0.96
Model for community	113	5.2	0.95
Save money short term	112	4.59	1.23
Save money long term	113	5.01	1.07
Healthier planet	113	5.41	0.95
Healthier school	114	5.34	0.94
Energy conservation	114	5.38	0.95
Money	114	3.66	1.38
Personal habits	114	4.03	1.41
Time	114	3.24	1.37

To determine outcome beliefs, respondents were asked to indicate the degree, with 1 being not at important at all and 7 being extremely important, to which they believe the following outcomes are important. The outcome with the highest mean was conserving energy and other resources is… (M = 6.38) and equates to educational leaders believing this is a very important outcome. Other outcomes respondents believed were very important were, modeling for students how to live more sustainably (M = 6.24), managing our school in a way that makes the building a healthier learning environment (M = 6.24), saving money over the long term (more than three years) (M = 6.23), managing our school in a way that contributes to making the planet healthier (M = 6.2), saving money in the short term (less than three years) (M = 6.11), and modeling for school community members how to live more sustainably (M = 6.04). Outcomes that respondents believed were somewhat important include: encouraging everyone to

change many of their personal habits for a greener school (M = 5.83), spending time on implementing new green school practices (M = 5.75) and spending money in order to implement green school practices (M = 5.23). Table 5 presents the degree in which educational leaders believe the listed outcomes are important.

Table 5

Attitudes–Outcome Beliefs

Description of Item	N	M	SD
Models for students	115	6.24	0.82
Model for community	114	6.04	0.93
Save money short term	114	6.11	0.94
Save money long term	115	6.23	0.89
Healthier planet	115	6.2	0.82
Healthier school	115	6.24	0.73
Energy conservation	115	6.38	0.68
Money	115	5.23	1.13
Personal habits	115	5.83	0.96
Time	115	5.75	1

The relationship between educational leaders' behavioral beliefs, current behaviors and planned behaviors, in regards to sustainability initiatives, was investigated using Pearson product-moment correlation coefficient. Results indicate there is a strong positive correlation between educational leaders' attitudes and current behaviors, $r = .627$, $n = 114$, $p < .05$ and

attitudes and planned behaviors, $r = .522$, $n = 100$, $p < .05$. The researcher calculated the overall mean for attitude which included behavioral beliefs and outcome beliefs $M = 28.80$. This data answers the research questions in that the more educational leaders' agree that implementing green school practices in their school are important the more likely they will have a favorable attitude of doing so. Table 6 presents these results.

Table 6

Attitudes, Current Behaviors and Planned Behaviors

Measure	1	2	3	M	SD
1. Attitude		.63**	.52**	28.8	6.46
2. Current Behaviors			.53**	2.7	0.65
3. Planned Behaviors				3.8	0.96

** Significance at the 0.01 level

Subjective Norms

The TPB posits that there are beliefs about the normative expectations of others and the motivation to comply with these expectations. Together, they produce normative beliefs. Items below were designed to assess the strength of the normative beliefs and motivation to comply with an individual or group. These normative beliefs result in perceived social pressure or subjective norms (Ajzen 2002b). Tables 7 and 8 stem from the research question: How do educational leaders' normative beliefs correlate to their behavior in regards to sustainability initiatives at their school?

To determine normative beliefs, respondents were asked to indicate the degree to which they believe the following individual or group would like them to implement green school practices in their school. For this question, the scale was 1 strongly against to 7 strongly supportive/encouraging. The individual or group with the highest mean was NAIS (M =6.04) which equates to supportive. This was the only group or individual, that according to the respondents, were supportive. All other individuals and groups were deemed somewhat supportive and include: the teachers at your school (M = 5.98), the students at your school (M = 5.9), other heads of school (M = 5.88), community members associated with your school (M = 5.58), your students' parents (M = 5.49) and members of your board of trustees (M = 5.37). Table 7 presents the results to the degree in which the educational leader believe the listed individual or group would like them to implement green school practices at their school.

Table 7

Subjective Norms–Normative Beliefs

Description of Item	N	M	SD
Board of Trustees	115	5.37	1.27
Parents	115	5.49	1.08
Teachers	115	5.98	0.92
Students	115	5.9	0.91
Community Members	115	5.58	1.01
Other Heads of School	110	5.88	0.85
NAIS	112	6.04	0.87

To determine an educational leaders' motivation to comply, respondents were asked to agree with the stem that generally they want to do what the following group or individual would like me to do. For this question, 1 represents strongly disagree and 7 represents strongly agree. The seven items were: (1) board of trustees (M = 5.41), (2) parents (M = 5.19), (3) teachers (M = 5.39), (4) students (M = 5.25), (5) community members (M = 5.11), (6) other heads of school (M = 4.65), and (7) NAIS (M = 4.72). Table 8 describes the degree in which educational leaders agree or disagree in the listed statements.

Table 8

Subjective Norms–Motivation to Comply

Description of Item	N	M	SD
Board of Trustees	114	5.41	0.99
Parents	114	5.19	0.96
Teachers	114	5.39	0.96
Students	114	5.25	1.02
Community Members	114	5.11	1.07
Other Heads of School	113	4.65	1.18
NAIS	113	4.72	1.15

The relationship between educational leaders' normative beliefs, current behaviors and planned behaviors, in regards to sustainability initiatives, was investigated using Pearson product-moment correlation coefficient. Results indicate there is a strong positive correlation between educational leaders' subjective norms and current behaviors, $r = .404$, $n = 114$, $p < .05$and subjective norms and planned behaviors, $r = .263$, $n = 100$, $p < .05$. This data answers the

research question in that educational leaders' that have a higher motivation to comply with stakeholders will be more likely to implement green school practices in their school. The researcher calculated the overall mean for subjective norms which included normative beliefs and motivation to comply M = 29.55. Table 9 presents these results.

Table 9

Subjective Norms, Current Behaviors and Planned Behaviors

Measure	1	2	3	M	SD
1. Subjective Norms		.40**	.26**	30.0	6.94
2. Current Behaviors			.53**	2.7	0.65
3. Planned Behaviors				3.8	0.96

** Significance at the 0.01 level

Perceived Behavioral Control

The TPB's final premise is that one has beliefs about the presence of factors that may facilitate or impede performance of a behavior and the perceived power of these factors produce control beliefs. These control beliefs give rise to perceived behavioral control or the perceived ease or difficulty of performing the behavior (Ajzen 2002b).

Items below were designed to assess the likelihood of the control beliefs and the perceived power over a behavior or action. Table 10 and Table 11 stem from the research question: How do educational leaders' control beliefs correlate to their behavior in regards to sustainability initiatives at their school?

To determine educational leaders' control beliefs, respondents were asked to indicate the degree to which they agree with the following statement. For this question, 1 represents strongly disagree and 7 represents strongly agree. The statement with the highest mean was: I have an administrative team that is capable of implementing new green school practices at my school (M = 5.35) and this equates to somewhat agree. Respondents also somewhat agree with the following statements: I have business officer team support that is capable of implementing new green school practices at my school (M =5.15) and I have access to the information I need to implement new green practices at my school (M = 5.02). Respondents neither agreeded or disagreed with the following statements: I have a board of trustees that is supportive of implementing new green school practices at my school (M = 4.93) and I do not have time to implement new green school practices at my school (M = 4.74). Respondents somewhat disagreed with the following statements: I already know all that I need to know to implement new green school practices at my school (M = 3.77) and I will have the funding I need to implement new green school practices at my school (3.36). Table 10 presents the results to the degree in which the educational leader believe the following items are important in regards to control beliefs.

Table 10

Perceived Behavioral Control–Control Beliefs

Description of Item	N	M	SD
Funding	115	3.36	1.83
Access to information	115	5.02	1.6
Knowledge	115	3.77	1.81
Board support	114	4.93	1.53
Administrative team support	115	5.35	1.4
Business officer team support	114	5.15	1.52
Time	115	4.74	1.6

To determine educational leaders' perceived power, respondents were asked to indicate the degree to which they agree with the following statement. For this question, 1 represents strongly disagree and 7 represents strongly agree. The statement with the highest mean was, If I had enough funding, then implementing green school practices at my school would be easy (M = 5.74) and equates to leaders somewhat agreeing. Respondent neither agree nor disagree with remaining statements that if they had enough time (M = 4.63), board support (M = 4.61), access to information (M = 4.53), knowledge (M = 4.5), administrative team support (M = 4.49) and business officer team support (M = 4.42) then implementing new green school practices at my school would be easy. Table 11 presents the results in which educational leaders believe the following items are important in regards to perceived power.

Table 11

Perceived Behavioral Control–Perceived Power

Description of Item	N	M	SD
Funding	115	5.74	1.36
Access to information	114	4.53	1.37
Knowledge	113	4.5	1.34
Board support	114	4.61	1.38
Administrative team support	114	4.49	1.36
Business officer team support	112	4.42	1.38
Time	113	4.63	1.48

The relationship between educational leaders' control beliefs, current behaviors and planned behaviors, in regards to sustainability initiatives, was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to measure internal consistency. Results indicate a strong positive correlation between educational leaders' perceived behavioral control and current behaviors, $r = .517$, $n = 115$, $p < .05$ and perceived behavioral control and planned behaviors, $r = .431$, $n = 101$, $p < .05$. This data answers the research question in that the more perceived behavioral control that educational leaders' have in implementing green school practices in their school the more likely they will do so. The researcher calculated the overall mean for perceived behavioral control which included control beliefs and perceived power ($M = 20.61$) The researcher calculated the overall mean for attitudes ($M = 20.61$). Table 12 presents these results.

Table 12

Perceived Behavioral Control, Current Behaviors and Planned Behaviors

Measure	1	2	3	M	SD
1. Perceived Behavioral Control		.52**	.43**	20.6	7.01
2. Current Behaviors			.53**	2.7	0.65
3. Planned Behaviors				3.8	0.96

** Significance at the 0.01 level

To test the relationship between attitudes, subjective norms and perceived behavioral control with the outcome variables–current and intended behaviors, two regressions were performed using current and planned green school practices as dependent variables. These regressions were performed to assess whether attitudes, subjective norms and perceived behavioral control predict unique variance within current and planned green school behaviors.

A hierarchical multiple regression analysis was performed between the dependent variable current green school practices and the independent variables attitude, subjective norms and perceived behavioral control. Hierarchical regression involves theoretically based decisions for how predictors are entered into the analysis. Based on research, the order of entry was attitude at step one, perceived behavioral control at step two and subjective norms at step three. Analysis was performed using SPSS REGRESSION. Regression analysis revealed that the attitude model significantly predicated current practices, $F(1,111) = 18.5$, $p = .001$; r^2 adjusted for the model was .39, suggesting that the model explained 39% of the variance in school leaders' current practices. After entry of perceived behavior control at Step 2 the total variance explained by the model was 44.3%, $F(2,110) = 10.6$, $p = .001$. In Step 3 subjective norms was

added the total variance explained by the model was 44.5%, F(3, 109) = 7.2, p =.001. R^2 change for attitudes, perceived behavioral control and subjective norms were .39, .06 and .007 respectively. Attitudes (Sig. F change .000) and perceived behavioral control (Sig. F change .001) contributed significantly to the model whereas subjective norms (Sig. F change .238) did not.

A second hierarchical multiple regression analysis was used to determine the relationship between the dependent variable planned green school practices and the independent variables attitude, subjective norms and perceived behavioral control. Hierarchical regression involves theoretically based decisions for how predictors are entered into the analysis. Based on research, the order of entry was attitude at step one, perceived behavioral control at step two and subjective norms at step three. Regression analysis revealed that the model (attitude and PBC) significantly predicated planned practices $F(2, 97) = 22.2$, $p < .001$. Adjusted R^2 for the attitude model was .265, suggesting that the model explained nearly 27% of the variance in school leaders' planned behaviors. After entry of perceived behavior control at Step 2 the total variance explained by the model was 30%. In Step 3 subjective norms did not contribute further to the model. R^2 change for attitudes, perceived behavioral control and subjective norms were .27, .04 and .00 respectively.

Attitudes (Sig. F change .000) and perceived behavioral control (Sig. F change .016) contributed significantly to the model whereas subjective norms (Sig. F change .845) did not. Table 13 displays the adjusted R-squared value, the F value and standardized regression coefficients (β) for each variable. The data answers the research question in that attitudes, subjective norms and perceived behavioral control explained 45.5% of variance within

educational leaders 'current green school behaviors and 30% of the variance within planned green school behaviors.

Table 13

Regressions of Attitudes, Subjective Norms and Perceived Behavioral Control on the Current and Planned Green School Practices Scores

	Dependent Measures					
		Current Practices			Planned Practices	
	R^2 (adj.)	F-Value	β	R^2 (adj.)	F-Value	β
Attitude	.39	71.88	.47	.27	36.67	.41
Perceived	.44	45.59	.25	.30	22.25	.24
Subjective	.45	30.97	.10	.29	14.70	-.02

N = 115; *Significance at the 0.05 level

Summary

The purpose of the present study was to test the degree to which the TPB (Ajzen, 1991) explained independent school leaders' intent to implement green school practices at their school. Correlation analysis results revealed that there was a strong positive correlation between educational leaders' attitudes, subjective norms, and perceived behavioral control with their current and planned school practices. In addition, regression analysis indicated the model explains 44.5% of current behaviors and 30% of planned behaviors.

CHAPTER V. DISCUSSION

Introduction

The Theory of Planned Behavior (TPB) (Ajzen, 1991) provided the theoretical framework for the present study. The survey used in the present study was developed from an earlier elicitation study of green school practices (Veronese & Kensler, 2013). One-hundred and fifteen (115) independent school leaders from around the United States responded to an electronic survey exploring the behavioral intentions of independent school leaders and green school practices. The survey's intention was to collect information about the relationship between educational leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions towards implementing these practices at their school. The present study was the first in educational leadership to use the TPB, beyond an elicitation study, to explore school leadership and sustainability.

Problem

Sustainability's frequency of use has increased in the educational leadership literature over the past decade. There have been publications in educational leadership/administration articles and books addressing a variety of topics associated with educational organizations and processes dealing with "sustainable development" and "sustainability". In addition, there is growing research focusing on the significance of educational leaders and green schools (Kensler, 2012) but only one study was found focusing on the TPB and educational leaders' green school practices (Veronese & Kensler, 2013).

Purpose Statement

The purpose of this study was to explore the beliefs and practices of educational leaders in regards to environmental sustainability initiatives. The study used the TPB to explore the relationships among independent school leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions towards implementing these practices at their school. There is little research using the TPB to find the correlations between educational leaders and green school practices. The TPB was chosen as the theoretical framework for this study because of its ability to predict behaviors across multiple disciplines in various research studies. The TPB has been an effective model for determining the predictors of environmental behaviors (Fielding et al., 2008) and decision making in education (Kersaint, Lewis, Potter & Meisels, 2005; Lee, Cerreto & Lee, 2010; Pierce & Ball, 2009). In regards to management, the TPB provided the necessary framework to determine the relationship between 184 managers in the automobile industry and their behavioral intentions toward the environment and environmental actions (Martin-Pena, Diaz-Garrido & Sanchez-Lopez, 2010). Cordano and Frieze (2000) used the TBP to determine the behavioral preferences of environmental managers and stated, "Ajzen's TPB provides a useful foundation for research that investigates any managerial decisions that impact environmental performance" (p. 638).

Research Questions

1. How do educational leaders' attitudes (behavioral beliefs + outcome beliefs) about green school practices relate to their behavioral intentions towards implementing these practices at their school?

2. How do educational leaders' subjective norms (normative beliefs + motivation to comply) about green school practices relate to their behavioral intentions towards implementing these practices at their school?

3. How do educational leaders' perceived behavioral control (control beliefs + perceived power) about green school practices relate to their behavioral intentions towards implementing these practices at their school?

4. How do attitudes, subjective norms and perceived behavioral control predict unique variance within the current and planned green school behaviors of educational leaders?

Methodology

This was a quantitative study based on Ajzen's TPB. The TPB assesses the attitudes, subjective norms and perceived control beliefs of a population (Ajzen, 1991). The present research study was developed from an earlier elicitation study (Veronese & Kensler, 2013). In order to elicit salient outcomes, respondents answered open ended questions stemming from the three constructs—attitude, subjective norms and perceived behavioral control. Through the synthesis of these salient beliefs a forced response survey instrument was developed (Kensler, Uline & Fathema, 2012). The final survey also included measures of personal environmental behaviors and demographic characteristics. The survey was distributed through, Qualtrics, which is web-based survey software that allows the creation of surveys, the collection and storage of data and the production of reports.

Major Findings

Demographics

The instrument was sent to over 800 heads of independent schools around the United States. Schools were not randomly selected and it was not a representative sample. One hundred

and fifteen heads of school completed the survey. Respondents included 70 males (60.87%), 43 females (37.4%) and 2 non-responses (1.74%), with ages varying from 40–71 years with a mean of 54.89 years. Respondents' years as a head of school ranged from less than a year to 33 years and had a mean of 10.56 years. Years as head of current school ranged from less than a year to 33 years with a mean of 7.88 years. Participants' ages varied from 41 years old to 72 years old and also provided a mixture of timeframes spent as a head of school and working at current school.

Leaders' Attitudes

Attitudes are produced by two components: beliefs about consequences of the behavior and the corresponding positive or negative judgments about each of these features of the behavior (Ajzen 1991). Of the educational leaders that responded, they agree that implementing green school practices will contribute to making the planet healthier, conserve energy, will make their school a healthier learning environment, will model for students how to live more sustainably, will model for the community to live more sustainably, and save money in the long term. The respondents also indicated they somewhat agree that implementing green school practices will save money in the short term and that it is too hard because it requires individuals to change personal habits. In addition, of the educational leaders that responded, they somewhat disagree that implementing green school practices cost too much money and requires a lot of time.

One point of interest is that educational leaders only somewhat agree that money could be saved within three years (M = 4.59). With the proper knowledge and program placement, money can be saved within the first year of implementing an energy savings program. The literature provides examples of energy saving programs that schools and school districts have implemented

with savings within the first three years (Energy Star, 2012; Kensler & Uline, 2014; Schelly, Cross, Franzen, Hall & Reeve, 2011). If educational leaders were informed about the potential savings, this might change their attitude about implementing such practices.

In regards to educational leaders' outcome beliefs of implementing green school practices respondents indicated the following actions are very important: energy conservation, modeling for students how to live more sustainable, making a healthier school, saving money in the long term, making the planet healthier, saving money in the short term, and modeling for the community to live more sustainably. Educational leaders also indicated that they believe the outcome beliefs of encouraging everyone to change their personal habits, spending money to implement new practices and spending time to implement new practices somewhat important.

Two points of interest were, spending money in order to implement new green school practices is … somewhat important (M = 5.23), and spending time on implementing new green school practices is … somewhat important (M = 5.75). Time and money are key in the implementation of green school practices yet of the leaders that responded, they somewhat agree with them being important. There are numerous examples in the U.S. Department of Education Green Ribbon Highlights that indicate the value of time and money in the implementation of green school practices (U.S. Department of Education, 2014, "Highlights"). New schools or schools that are being retrofitted will benefit financial from investment of time and money into green school practices. Overall, results indicated there is a strong positive correlation between educational leaders' attitudes and current behaviors and attitudes and planned behaviors.

Whose Opinion Matters

Subjective norms are produced by two components: beliefs about how other people, who may be in some way important to the person, would like them to behave and the positive or

negative judgments about each belief (Ajzen, 1991). Respondents indicated that they believe the NAIS is supportive of them implementing green school practices. They also believe that teachers, students, other heads of school, community members, parents and the board of trustees are somewhat supportive of them implementing green school practices.

One point of interest is that of the educational leaders that responded, they believe that their Board of Trustees are "somewhat supportive" of implementing green school practices. Boards of trustees are the policy setting entity of independent schools and would play a large role in the development of new programs. There are examples in the U.S. Department of Education Green Ribbon Highlights, (U.S. Department of Education, 2014, "Highlights") of policy setting entities, playing a large role in new green school programs. Heads of school must have more than somewhat supportive boards in order to be successful at a policy level with sustainability initiatives.

In regards to motivation to comply, respondents somewhat agree with the statement; generally they do what the following groups/individuals want them to do: board of trustees, teachers, students, parents and community members. In addition, they neither agree nor disagree with the statement that generally they do what the following groups/individuals want them to do: NAIS and other heads of school.

One point of interest is that educational leaders 'neither agree nor disagree' with the statement, "Generally, I want to do what NAIS would like me to do." In the previous paragraph it was noted that leaders believe the NAIS would like them to implement green school practices but data respondents suggest that they do not agree they necessarily would implement the practices. Overall, results indicated there is a strong positive correlation between educational leaders' subjective norms and current behaviors and subjective norms and planned behaviors.

Power to Change

The perceived behavioral control of individuals is produced by two components: how much a person has control over the behavior and how confident a person feels about being able to perform or not perform the behavior (Ajzen, 1991). Respondents indicated they somewhat agree that they have access to the information they need, have an administrative team that is capable of and have a business officer that is capable of implementing new green school practices at their school. Educational leaders also indicate that they neither agree nor disagree with the following statements: I have a board of trustees that is supportive of implementing new green school practices at my school, and I do not have time to implement new green school practices at my school. In addition, they somewhat disagree with the following statements: I already know all that I need to know to implement new green school practices at my school, and I have the funding I need to implement new green school practices at my school.

Points of interest are time (M = 4.74), knowledge (M = 3.77), and funding (3.36). These three items are imperative to the implementation of green school programs. If leaders do not believe they possess these items it makes it more difficult to put them into action for sustainability initiatives. Knowledge is the most important of these three items because it effects time and funding. With the proper knowledge, educational leaders would know that some green school practices do not require much time or funding but could produce savings for the school and have a positive impact on the environment (Henderson & Tilbury, 2004).

In regards to perceived power, educational leaders indicated they somewhat agree that if they had enough funding then implementing new green practices would be easy. They also reported, they neither agree nor disagree with the following statements: If I had enough funding; access; knew more; a board of trustees that was supportive; an administrative team capable; a

business officer capable; and the time then implementing new green practices at my school would be easy.

It appears to be a grey area of perceived power by the respondents. Results indicate that educational leaders are uncertain if or how they would implement green school practices if they had all of the resources necessary. Knowledge is key here in that if leaders possessed all of these items, it would be very easy to implement new practices. Overall, results indicate there is a strong positive correlation between educational leaders' perceived behavioral control and current behaviors and perceived behavioral controls and planned behaviors.

Unanticipated Outcomes

As the green school movement is gaining momentum in the United States and the NAIS is committed to educating member schools on environmental sustainability, I expected to have a much higher response to the questionnaire. An accurate response rate could not be determined due to the lack of information regarding the number of many emails that were not able to be delivered or bounced back. The survey was electronic and relatively short in length but heads of school are busy individuals and there is the potential of them not having the time to complete the survey. The instrument was not sent at the beginning or end of the academic years which tends to be the busiest for administrators. There could be a lack of interest, social bias, more important concerns, or the feeling it is not important on the part of the heads of school. Due to the busy nature of heads of school and the uncertainty as to the number of email surveys that were not delivered, perhaps a follow up qualitative study would yield higher response rates.

Conclusions

This study contributes to the emerging research on the TPB, school leadership and sustainability. The research explored the relationships between educational leaders' attitudes,

subjective norms and perceived behavioral control with their current and planned behaviors. Attitudes and PBC contributed significantly to explaining planned behaviors whereas subjective norms did not. Attitude, perceived behavioral control and subjective norms all contributed significantly to explain current behaviors. Attitude explained 38.8% of the variance in school leaders' current practices. After entry of perceived behavior control the total variance explained by the model was 44.3 %. In Step 3, subjective norms was added, the total variance explained by the model was 45%.

The model explained 30% of the variance in reported planned behaviors, leaving 70 % unexplained. The model also explained 45% of the variance in current behaviors, leaving 55% unexplained. What explains the other 70% of the variance in planned behaviors and 60% in current behaviors? Other TPB studies report a range of overall variance explained by the model. Teacher retention and resignation (Kersaint, Lewis, Potter, & Meisels, 2005) reported 61.0% of the overall variance, and faculty willingness to confront cheating (Coren, 2012) reported 43.0% of the overall variance, with attitude accounting for 26.8% of the variance. In addition, management's behavioral intentions toward the environment (Martin-Pena, Diaz-Garrido, & Sanchez-Lopez, 2010) reported 50% of the overall variance was explained by the model.

Recommendations for Practice

This study sought to explore school leader beliefs, practices and intentions 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. In order to be change agents, educational leaders must have a basic knowledge of sustainability or green school practices. Professional development, conferences and seminars in this area would greatly expand the knowledge on the green schools movement.
2. Independent school leaders place great value on the community and thus would benefit from a whole school approach to sustainability. This approach should involve all stakeholders as the school seeks to implement new sustainability initiatives and green schools practices (Henderson & Tilbury, 2004).

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

1. Participants in this study relayed their attitudes towards implementing sustainability initiatives in their school. Researchers can now focus on the areas that affect attitudes to determine the best way to encourage leaders to join the green school movement.
2. Participants in this study relayed their subjective norms towards implementing sustainability initiatives in their school. Researchers can now focus on the areas that effect the beliefs of educational leaders to determine the best way to encourage leaders to join the green school movement.
3. Participants in this study relayed their attitudes towards implementing sustainability initiatives in their school. Researches can now focus on the areas that affect the perceived behavioral control of educational leaders to determine the best way to encourage educational leaders to join the green school movement.
4. More research needs to be conducted on the role and impact of educational leaders on the green schools movement. This information will allow practitioners to be informed on how they can play a role in the green school movement.

Recommendations for Further Research

My recommendations for further research as it relates to this study are as follows: My first recommendation would be to replicate this study in a state or regional independent school association in an attempt to increase the response rate. The second recommendation I would make would be to replicate this study in a public school setting. The third recommendation I would make would be to reduce the number of constructs to achieve a better understanding of how school leaders perceive their current and planned behaviors.

Future Research Questions

1. What knowledge about sustainability initiatives do educational leaders possess?
2. Do the past experiences of educational leaders play a role in their decision making process to initiative green school practices?
3. Does school policy effect the decision making process of educational leaders?
4. Do the career plans/aspirations of educational leaders dictate behavior in regard to implementing new green school practices?
5. Are there differences in perceived behaviors and actions between public and independent schools?
6. Are there policy implementation differences between public and independent schools?

The study of the relationship between educational leaders and their behaviors can be expanded to all facets of the educational system. In K–12 public schools, from the state superintendent, to local superintendent, to principals, there are many avenues for research on the role of the educational leader. In higher education, from the chancellor of a university system to

a university president, to the dean of college there are different types of educational leaders and all play various roles.

Summary

This study is important as it will add to the limited amount of research connecting educational leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions of implementing these practices at their school. I utilized the TPB for this study as it posits a model about human action and behavior (Ajzen, 1985, 1992, 2001) that has been used in numerous studies across various disciplines.

This study contributed to the emerging research on school leadership and whole school sustainability by exploring the relationship between educational leaders' attitudes, subjective norms and perceived behavioral control about green school practices and their intentions of implementing these practices at their school. The understanding of this relationship will provide a foundation for continued exploration of the impact educational leaders have on promoting green school practices. Future research could provide information that would help develop and strengthen K–12 leadership programs.

Results indicated that attitude, perceived behavioral control and subjective norms all contributed significantly to explain current behaviors. Educational leaders take all three factors into account in their current decision making process. Results indicated attitudes and perceived behavioral control contributed significantly to explaining planned and behaviors. Subjective norms did not contribute significantly to explaining planned behaviors. Therefore, it is the educational leaders' attitude and perceived behavioral control that will determine their behavior in implementing sustainability initiatives at their school. Results indicate that the perceived peer pressure did not play a significant role in their decision making process.

If green school practices are to be implemented or supported by educational leaders, research indicates the more positive their attitude the more likely they will support the change. In addition, their perceived behavioral control of the issue will also determine if they support the new initiatives at their school. This new information will allow researches and sustainability experts to focus professional development and leading for sustainability programs in these areas.

The United Nations Decade of Education for Sustainable Development (DESD) (2005–2014) (United Nations, 2005) will come to an end this year. It was the beginning of what many hope will be a lifetime of sustainability initiatives and education around the world. The decade was successful in that it brought sustainability into conversations and into action in the boardroom and classroom alike. Education is the key to promoting sustainability for the next generation and educational leaders play a vital role in that process.

REFERENCES

Ackley, C. R., & Begley, P. T. (2010). The changing face of purpose-driven school administration: Green school leadership. *Advances in Educational Administration, 11*, 377–396.

Allen, K. E., Stelzner, S. P., & Wielkiewicz, R. M. (1999). The ecology of leadership: Adapting to the challenges of a changing world. *Journal of Leadership & Organizational Studies, 5*(2), 62–82.

Ajzen, I. (1985). From intentions to action: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), Action control: *From cognitions to behavior* (pp. 11–39). New York: Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*(2), 179–211

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control and the theory of planned behavior. *Journal of Applied Social Psychology*, 32, 665–683.

Anderson, R. C. (1998). *Mid-course correction: Toward a sustainable enterprise: The interface model* (Vol. 36). Atlanta, GA: Peregrinzilla Press.

Arizona State University. (2012). Retrieved November 22, 2012 from http://schoolofsustainability.asu.edu/about/school-of-sustainability.php

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40*, 471–499.

Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, *27*(1), 14–25.

Birney, A., & Reed, J. (2009). Sustainability and renewal: Findings from the leading sustainable schools research project. Nottingham: National College for Leadership of Schools and Children's Services.

Brundtland, G. H. (1987). *Report of the World Commission on environment and development:" our common future.* United Nations.

Boldero, J. (1995). The prediction of household recycling of newspapers: The role of attitudes, intentions and situational factors. *Journal of Applied Social Psychology*, *25*, 440–462.

Carrus, G., Passafaro, P., & Bonnes, M. (2008). Emotions, habits and rational choices in ecological behaviours: The case of recycling and use of public transportation. *Journal of Environmental Psychology*, *28*(1), 51–62.

Center for Environmental Education. (2012). Retrieved October 3, 2012, from http://www.tbilisiplus30.org/Ahmedabad%20Declaration.pdf

Chawla, L., & Cushing, D. F. (2007). Education for strategic environmental behavior. *Environmental Education Research*, *13*(4), 437–452.

Cheung, S. F., Chan, D. K. S., & Wong, Z. S. Y. (1999). Reexamining the theory of planned behavior in understanding wastepaper recycling. *Environment and Behavior*, *31*(5), 587–612.

Cooke, R., & Sheeran, P. (2004). Moderation of cognition-intention and cognition-behaviour relations: A meta-analysis of properties of variables from the theory of planned behaviour. *British Journal of Social Psychology*, *43*(2), 159–186.

Cordano, M., & Frieze, I. H. (2000). Pollution reduction preferences of US environmental managers: Applying Ajzen's theory of planned behavior. *Academy of Management Journal*, 627–641.

Cordano, M., Welcomer, S., Scherer, R., Pradenas, L., & Parada, V. (2010). Understanding cultural differences in the antecedents of pro-environmental behavior: A comparative analysis of business students in the United States and Chile. *The Journal of Environmental Education*, *41*(4), 224–238.

Coren, A. (2012). The Theory of Planned Behaviour: Will faculty confront students who cheat? *Journal of Academic Ethics*, 1–14.

Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning for Higher Education*, *31*(3), 15–22.

Day, C., & Leithwood, K. A. (Eds.). (2007). *Successful principal leadership in time of change : an international perspective*. Dordrecht, The Netherlands: Springer.

Dernbach, J. (Ed.). (2009). *Agenda for a sustainable America*. Environmental Law Institute.

Downs, D. S., & Hausenblas, H. A. (2005). Elicitation studies and the theory of planned behavior: A systematic review of exercise beliefs. *Psychology of Sport & Exercise*, *6*, 1–31.

ENERGY STAR Program (2014). Retrieved January 14, 2012, from http://www.energystar.gov/about/

Fang, R. J., Tsai, C., & Lee, C. (2010, April). Explain the factors of primary school teachers choosing digitalized teaching materials with theory of planned behavior. In *Proceedings of the 10th WSEAS International Conference on Multimedia Systems and Signal*

Processing (pp. 77–83). World Scientific and Engineering Academy and Society (WSEAS).

Fielding, K. S., McDonald, R., & Louis, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. *Journal of Environmental Psychology*, *28*(4), 318–26.

Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., Grimshaw, J., Foy, R., Kaner, E., Smith, L., & Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behavior: A manual for health services researchers*. Newcastle upon Tyne: Center for Health Services Research.

Green, B., & Reid, J. A. (2004). Teacher education for rural–regional sustainability: changing agendas, challenging futures, chasing chimeras? *Asia-Pacific Journal of Teacher Education*, *32*(3), 255–73.

Green Education Foundation. (2012). Retrieved October 12, 2012 from http://www.greeneducationfoundation.org/greenweek

Goldsmith, E., Allen, R., Allaby, M., Davoll, J., & Lawrence, S. (1972). *Blueprint for survival*. Boston: Houghton Mifflin.

Gough, A. (2005). Sustainable shools: Renovating educational processes. *Applied Environmental Education and Communication*, *4*(4), 339–51.

Harris, A., Leithwood, K., Day, C., Sammons, P., & Hopkins, D. (2007). Distributed leadership and organizational change: Reviewing the evidence. *Journal of Educational Change*, *8*(4), 337–47.

Harvard University. (2012). Retrieved November 22, 2012, from http://www.extension.harvard.edu

Hales, D. (2008). Sustainability and higher education. *The New England Journal of Higher Education*, 23–4.

Henderson, K., & Tilbury, D. (2004). Whole-school approaches to sustainability: An international review of sustainable school programs. *Report Prepared by the Australian Research Institute in Education for Sustainability (ARIES) for Te Department of the Environment and Heritage, Australian Government. ISBN*, *1*(86408), 979.

Higgs, A. L., & McMillan, V. M. (2006). Teaching through modeling: Four schools'experiences in sustainability education. *The Journal of Environmental Education*, *38*(1), 39–3.

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of environmental education*, *18*(2), 1-8.

Hungerford, H. R., & Volk, T. L. (1990). Changing learner behavior through environmental education. *Journal of Environmental Education*, *21*(3), 8–22.

International Union for Conservation of Nature and Natural Resources. (1972). *IUCN Yearbook: Annual Report*.

Johnston, P., Everard, M., Santillo, D., & Robèrt, K. H. (2007). Reclaiming the definition of sustainability. *Environmental science and pollution research international*, *14*(1), 60.

Kersaint, G., Lewis, J., Potter, R., & Meisels, G. (2007). Why teachers leave: Factors that influence retention and resignation. *Teaching and Teacher Education*, *23*(6), 775–794.

Kensler, L. A. (2012). Ecology, democracy and green schools: An integrated framework. *Journal of School Leadership*, *22*(4), 789–814.

Kensler, L. Uline, C. & Fathema, N. (2012, November). *Green school practices among public school leaders: Applying the theory of planned behavior*. Paper presented at the Annual Convention of the University Council of Educational Administration. Denver, CO.

Kidd, C. V. (1992). The evolution of sustainability. *Journal of Agricultural and Environmental Ethics, 5*(1), 1–26.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research, 8*(3), 239–260.

Kowalczyk, J. (2010). The curriculum at higher education institutions is turning green. *Journal of Student Affairs, 19*, 31–36.

Lee, J., Cerreto, F. A., & Lee, J. (2010). Theory of planned behavior and teachers' decisions regarding use of educational technology. *Educational Technology & Society, 13*(1), 152–164.

Leithwood, K., & Beatty, B. (2009). Leadership for emotionally hot climates. *ISEA, 37*(1), 91–103.

Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claims about successful school leadership. *School Leadership and Management, 28*(1), 27–42.

Leithwood, K., & Riehl, C. (2003). What we know about successful school leadership (pp. 152–164). Pennsylvania: Laboratory for Student Success.

Lindsay, N., Harrell-Blair, K., McDaniel, L., Williams, C., & Reed, D. (2010). "Green on the screen": Promoting sustainability through a campus film series. *About Campus, 15*(2), 26–29.

Hartig, G. L. (1808). *Anweisung zur Holzzucht für Förster*. Akad. Buchhdlg.

Martin-Pena, M. L., Diaz-Garrido, E., & Sanchez-Lopez, J. M. (2010). Relation between management's behavioural intentions toward the environment and environmental actions. *Journal of Environmental Planning and Management*, *53*(3), 297–315.

Mebratu, D. (1998). Sustainability and sustainable development: Historical and conceptual review. *Environmental Impact Assessment Review*, *18*(6), 493–520.

Metzger, A. B. (2011). Five successful strategies for greening your school. Educational Facility Planner, 45(3), 20–23.

McGraw Hill Construction. (2012). *New and retrofit green schools: The influence of a green school on its occupants.* New York City, NY: McGraw-Hill Construction.

Middlebrooks, A., Miltenberger, L., Tweedy, J., Newman, G., & Follman, J. (2009). Developing a sustainability ethic in leaders. Journal of Leadership Studies, 3(2), 31–43.

Miami Dade Government. (2012). Retrieved November 21, 2012, from www.miamidade.gov

National Association of Independent Schools. (2012). Retrieved August 15, 2012, from http://www.nais.org

National Center for Education Statistics. (2012). Retrieved September 5, 2012 from http://nces.ed.gov/programs/digest/d11/tables/dt11_001.asp

National Center for Education Statistics. (2012). Retrieved September 5, 2012 from http://nces.ed.gov/programs/digest/d11/tables/dt11_005.asp

Newport, D. (2012). Campus sustainability: It's about people. *Chronicle of Higher Education.* Retrieved from http://chronicle.com/article/Campus-Sustainability-Its/131370/

Newport, D., Chesnes, T., & Lindner, A. (2003). The “environmental sustainability” problem: ensuring that sustainability stands on three legs. *International Journal of Sustainability in Higher Education*, *4*(4), 357–363.

Oreg, S., & Katz-Gerro, T. (2006). Predicting proenvironmental behavior cross-nationally values, the theory of planned behavior and value-belief-norm theory. *Environment and Behavior*, *38*(4), 462–483.

Pepper, C., & Wildy, H. (2008). Leading for sustainability: Is surface understanding enough? *Journal of Educational Administration*, *46*(5), 613–629.

Pierce, R., & Ball, L. (2009). Perceptions that may affect teachers’ intention to use technology in secondary mathematics classes. *Educational Studies in Mathematics*, *71*(3), 299–317.

Posch, P. (1999). The ecologisation of schools and its implications for educational policy. *Cambridge Journal of Education*, *29*(3), 341–348.

Rauch, F. (2000). Schools: A place of ecological learning. *Environmental Education Research*, *6*(3), 245–258.

Rogers, K. R., & Pleasants, R. (2011). Greening community colleges: An environmental path to improving educational outcomes. *Jobs for the Future.*

Schelly, C., Cross, J. E., Franzen, W. S., Hall, P., & Reeve, S. (2011). Reducing energy consumption and creating a conservation culture in organizations: A case study of one public school district. *Environment and Behavior*, *43*(3), 316–343.

Schmandt, J. (2010). *George P. Mitchell and the idea of sustainability*. TAMU Press.

Seghezzo, L. (2009). The five dimensions of sustainability. *Environmental Politics*, *18*(4), 539–556.

Sibbel, A. (2009). Pathways towards sustainability through higher education. *International Journal of Sustainability in Higher Education*, *10*(1), 68–82.

Sobel, D., Gentile, S.J., & Bocko, P. (2014). National action plan for educating for sustainability. Retrieved May, 1, 2014 from http://www.centerforgreenschools.org/nationalactionplan

Sparks, P., & Shepherd, R. (1992). Self-identity and the theory of planned behavior: Assessing the role of identification with "green consumerism." *Social Psychology Quarterly*, *55*, 388–399.

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, *29*(3), 309–317.

Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, *56*(3), 407–424.

Stern, P. C. (2011). Contributions of psychology to limiting climate change. *American Psychologist*, *66*(4), 303–314.

Taylor, S., & Todd, P. (1995). An integrated model of waste management behavior a test of household recycling and composting intentions. *Environment and Behavior*, *27*(5), 603–630.

Taylor, S., & Todd, P. (1997). Understanding the determinants of consumer composting behavior 1. *Journal of Applied Social Psychology*, *27*(7), 602–628.

Thomas, T. E. (2005). Are business students buying it? A theoretical framework for measuring attitudes toward the legitimacy of environmental sustainability. *Business Strategy and the Environment*, *14*(3), 186–197.

U.S. Partnership for Education for Sustainable Development (2012). Retrieved October 11, 2012 from http://www.uspartnership.org/main/view_archive/1

United Nations Decade of Education. (2012). Retrieved October 1, 2012 from http://www.desd.org/About%20ESD.htm

United Nations Documentation Research Guide. (2012). Retrieved October 1, 2012 from http://www.un.org/Depts/dhl/resguide/specenv.htm

United States Department of Education. (2014). Retrieved January 22, 2014 from http://www2.ed.gov/programs/green-ribbon-schools

United States Department of State. (2012). Retrieved October 2, 2012 from http://www.state.gov/e/oes/

United States Department of State. (2012). Retrieved October 2, 2012 from http://www.state.gov/e/oes/sus/releases/176863.htm

United Nations Documentation Research Guide. (2012). Retrieved October 1, 2012 from http://www.un.org/Depts/dhl/resguide/specenv.htm

United States Environmental Protection Agency. (2012). Retrieved October 4, 2012 from http://www.epa.gov/sustainability/

US Green Building Council. (2012a). Retrieved August 18, 2012, from http://new.usgbc.org/leed

US Green Building Council (2012b). Retrieved December 6, 2012, from http://www.centerforgreenschools.org/studies.aspx

US Green Building Council. (2012c). Retrieved December 6, 2012, from http://www.centerforgreenschools.org/studies.aspx

Veronese, D., & Kensler, L. (2013). School leaders, sustainability and green school practices: An elicitation study using the theory of planned behavior. *Education, 2013*.

Wahlstrom, K. L., Louis, K. S., Leithwood, K., & Anderson, S. E. (2010). Learning from Leadership: Investigating the Links to Improved Student Learning. The Informed Educator Series. *Educational Research Service*.

Wang, T. (2013). *Chinese school principals' behavioral intentions in relation to green school practices* (Doctoral dissertation, Auburn University).

Wenzhong, C. (2004). School principal wants to spearhead environmental education. *Chinese Education & Society, 37*(3), 86–90.

Appendix 1

Educational Leadership and Sustainability Survey

Educational Leadership and Sustainability in Independent Schools III

Educational Foundations, Leadership, and Technology 4036 Haley Center ~ College of Education Auburn University, AL 36849 (Note: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THE END OF THIS DOCUMENT.) INFORMATION LETTER for a Research Study entitled "Educational Leadership and Sustainability in Independent Schools" Please find an agreement to participate and the link to start the survey at the bottom of this page. You are invited to participate in a research study to explore the behavioral intentions of school leaders related to environmental sustainability. Mr. John Mehaffey, a graduate student in the Auburn University Department of Educational Foundations, Leadership, and Technology is conducting this study. You were selected as a possible participant because you are a Head of School and are older than 19 years old. What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete an electronic survey. Your total time commitment will be less than 15 minutes. Are there any risks or discomforts? The risks associated with participating in this study are minimal and may include the discomfort of adding one more activity to your already full and demanding schedule. To minimize this risk, I have designed the survey to be as brief as possible. Your survey responses will be anonymous . Are there any benefits to yourself or others? If you participate in this study, you can expect benefits related to reflecting on your leadership and management practices related to environmental sustainability. I certainly cannot promise you that you will receive any or all of the benefits described. Your participation in this study will provide the foundation for a new line of research to develop and to inform the practice of school leadership. Will you receive compensation for participating? You will not receive any compensation for participating in this survey study. Are there any costs? If you decide to participate, you will not incur any costs beyond your investment in time to complete the online survey. If you change your mind about participating, you can withdraw at any time by closing your browser window. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Once you have submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Educational Foundations, Leadership, and Technology. Any data obtained in connection with this study will remain anonymous. We will have no way of identifying you or the computer you used to respond, as the server we use does not record computer IP addresses. Information we collect during this study may be published in a professional journal and/or presented at a professional meeting. If you have questions about this study, please contact John Mehaffey (jmm0021@auburn.edu) (334)-844-8682 or Lisa Kensler (lak0008@auburn.edu) (334)-844-3020. If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone at (334)-844-5966 or email at hsubjec@auburn.edu or IRBChair@auburn.edu HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP. John Mehaffey Nov. 5,

2012 Investigator Date Lisa Kensler Nov. 5,
2012 Co-Investigator Date The Auburn University Institutional Review Board has approved this document for use from November 29, 2012 to November 28, 2013. Protocol #12-371

I agree to participate in this survey and confirm that I am a Head of School.

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Survey

Q1 Please select the most accurate answer for your "current" green school practices for each of the following areas. The U.S. Green Building Council (USGBC) 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. Green school practices include a broad set of practices such as (but are certainly not limited to): reducing energy consumption, water consumption, use of pesticides, waste production, etc.; purchasing sustainably produced products, locally grown produce, local materials, and less toxic cleaning supplies, etc.; building and retrofitting school buildings according to green building standards such as LEED certification; recycling paper, plastics, aluminum, and electronics, etc.

	Our current green school practices in each area are...			
	non-existent (1) (1)	in the early stages of implementation (2) (2)	well under way (3) (3)	established (4) (4)
Energy Conservation (1)	○	○	○	○
Indoor Air Quality (2)	○	○	○	○
Less or Non Toxic Cleaning Supplies (3)	○	○	○	○
Water Conservation/Quality (4)	○	○	○	○
Waste Reduction/Recycling (5)	○	○	○	○
Food (for example: healthier, organic, local choices) (6)	○	○	○	○
Outdoor Classrooms/Gardens (7)	○	○	○	○
Education/Curriculum (8)	○	○	○	○
Green Building Standards (9)	○	○	○	○

Q2 Please select the most accurate answer for your "new" green school practices for each of the following areas. The U.S. Green Building Council (USGBC) 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. Green school practices include a broad set of practices such as (but are certainly not limited to): reducing energy consumption, water consumption, use of pesticides, waste production, etc.; purchasing sustainably produced products, locally grown produce, local materials, and less toxic cleaning supplies, etc.; building and retrofitting school

buildings according to green building standards such as LEED certification; recycling paper, plastics, aluminum, and electronics, etc.

	We are planning to implement new green school practices in each area...				
	never (1) (1)	four or more years from now (2) (2)	three years from now (3) (3)	two years from now (4) (4)	next year (5) (5)
Energy Conservation (1)	○	○	○	○	○
Indoor Air Quality (2)	○	○	○	○	○
Less or Non Toxic Cleaning Supplies (3)	○	○	○	○	○
Water Conservation/Quality (4)	○	○	○	○	○
Waste Reduction/Recycling (5)	○	○	○	○	○
Food (for example: healthier, organic, local choices) (6)	○	○	○	○	○
Outdoor Classrooms/Gardens (7)	○	○	○	○	○
Education/Curriculum (8)	○	○	○	○	○
Green Building (9)	○	○	○	○	○

Q3 Please indicate the degree to which you agree with each statement that completes the following stem. Implementing green school practices in my school...

	Strongly Disagree (1) (1)	Disagree (2) (2)	Somewhat Disagree (3) (3)	Somewhat Agree (4) (4)	Agree (5) (5)	Strongly Agree (6) (6)
...models for students how to live more sustainably. (1)	○	○	○	○	○	○
...models for school community members how to live more sustainably. (2)	○	○	○	○	○	○
...saves money within three years. (3)	○	○	○	○	○	○
...saves money over the long term (more than three years). (4)	○	○	○	○	○	○
...contributes to making the planet healthier. (5)	○	○	○	○	○	○
...makes our school building a healthier learning environment for students. (6)	○	○	○	○	○	○
...conserves energy and other resources. (7)	○	○	○	○	○	○
...costs too	○	○	○	○	○	○

much. (8) ...is too hard because it requires individuals to change personal habits. (9)	○	○	○	○	○	○
...requires a lot of time. (10)	○	○	○	○	○	○

Q4 For each individual or group below, please indicate the degree to which you believe they would like you to implement green school practices at your school.

	Strongly against (1) (1)	Against (2) (2)	Somewhat against (3) (3)	Neutral (4) (4)	Somewhat supportive (5) (5)	Supportive (6) (6)	Strongly supportive/encouraging (7) (7)
Members of your board of trustees (1)	○	○	○	○	○	○	○
Your students' parents (2)	○	○	○	○	○	○	○
The teachers at your school (3)	○	○	○	○	○	○	○
The students at your school (4)	○	○	○	○	○	○	○
Community members associated with your school (5)	○	○	○	○	○	○	○
Other Heads of School in NAIS (6)	○	○	○	○	○	○	○
NAIS (7)	○	○	○	○	○	○	○

Q5 Please indicate the degree to which you agree with each of the following statements.

	Strongly Disagree (1) (1)	Disagree (2) (2)	Somewhat Disagree (3) (3)	Neither Agree nor Disagree (4) (4)	Somewhat Agree (5) (5)	Agree (6) (6)	Strongly Agree (7) (7)
I have the funding I need to implement new green school practices at my school. (1)	❍	❍	❍	❍	❍	❍	❍
I have access to the information I need to implement new green school practices at my school. (2)	❍	❍	❍	❍	❍	❍	❍
I already know all that I need to know to implement new green school practices at my school. (3)	❍	❍	❍	❍	❍	❍	❍
I have a board of trustees that is supportive of implementing new green school practices at my school. (4)	❍	❍	❍	❍	❍	❍	❍
I have an administrative team that is	❍	❍	❍	❍	❍	❍	❍

capable of implementing new green school practices at my school. (5)							
I have a business officer that is capable of implementing new green school practices at my school. (6)	○	○	○	○	○	○	○
I do not have time to implement new green school practices at my school. (7)	○	○	○	○	○	○	○

Q6 Please indicate the degree to which you believe the following outcomes are important.

	Not at all Important (1) (1)	Very Unimportant (2) (2)	Somewhat Unimportant (3) (3)	Neither Important nor Unimportant (4) (4)	Somewhat Important (5) (5)	Very Important (6) (6)	Extremely Important (7) (7)
Modeling for students how to live more sustainably is... (1)	○	○	○	○	○	○	○
Modeling for school community members how to live more sustainably is... (2)	○	○	○	○	○	○	○
Saving money over the next three years is... (3)	○	○	○	○	○	○	○
Saving money over the long term (more than three years) is... (4)	○	○	○	○	○	○	○
Managing our school in a way that contributes to making the planet healthier is... (5)	○	○	○	○	○	○	○
Managing our school in a way that makes our buildings healthier learning environments is... (6)	○	○	○	○	○	○	○
Conserving	○	○	○	○	○	○	○

energy and other resources is... (7)							
Spending money in order to implement new green school practices is... (8)	○	○	○	○	○	○	○
Encouraging everyone to change many of their personal habits for a greener school is... (9)	○	○	○	○	○	○	○
Spending time on implementing new green school practices is... (10)	○	○	○	○	○	○	○

Any data obtained in connection with this study will remain anonymous. We will have no way of identifying you or the computer you used to respond, as the server we use does not record computer IP addresses. Information we collect during this study may be published in a professional journal and/or presented at a professional meeting.

If you have questions about this study, please contact John Mehaffey or Lisa Kensler by phone at (334)-844-3020 or email at jmm0021@auburn.edu lak0008@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone at (334)-844-5966 or email at hsubjec@auburn.edu or IRBChair@auburn.edu

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

John Mehaffey **Nov. 5, 2012**
Investigator Date

Lisa Kensler **Nov. 5, 2012**
Co-Investigator Date

The Auburn University Institutional Review Board has approved this document for use from November 29, 2012 to November 28, 2013. Protocol #12-371.

Link to Survey

https://auburn.qualtrics.com/SE/?SID=SV_bfNZVyLq6iCkuEI

The Auburn University Institutional Review Board has approved this document for use from 11/29/12 to 11/28/15 Protocol # 12-371 EX 1211

Appendix 2

Auburn University Institutional Review Board (IRB) Approval

AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMANSUBJECTS

RESEARCH PROTOCOL REVIEW FORM

For Information or help contact **THE OFFICE OF HUMAN SUBJECTS RESEARCH**, 307 Samford Hall, Auburn University
Phone: 334-844-5966 **e-mail:** hsubjec@auburn.edu **Web Address:** http://www.auburn.edu/research/vpr/ohs/

Complete this form using Adobe Acrobat Writer (versions 5.0 and greater). Hand written copies not accepted.

1. PROPOSED START DATE of STUDY: January 9, 2012

PROPOSED REVIEW CATEGORY (Check one): ☐ FULL BOARD ☑ EXPEDITED ☐ EXEMPT

2. PROJECT TITLE: Educational Leadership and Sustainability In Independent Schools

3. John Mehaffey	Graduate Student	COE - EFLT	4-3020	jmm0021@auburn.edu
PRINCIPAL INVESTIGATOR	TITLE	DEPT	PHONE	AU E-MAIL
4002 Haley Center		4-3072		jmm0021@auburn.edu
MAILING ADDRESS		FAX		ALTERNATE E-MAIL

4. SOURCE OF FUNDING SUPPORT: ☑ Not Applicable ☐ Internal ☐ External Agency: _____ ☐ Pending ☐ Received

5. LIST ANY CONTRACTORS, SUB-CONTRACTORS, OTHER ENTITIES OR IRBs ASSOCIATED WITH THIS PROJECT:
None

6. GENERAL RESEARCH PROJECT CHARACTERISTICS

6A. Mandatory CITI Training

Names of key personnel who have completed CITI:
John Mehaffey
Lisa Kensler

CITI group completed for this study: ☑ Social/Behavioral ☐ Biomedical

Protocol-Specific modules completed:
- ☐ Genetic
- ☐ International
- ☐ Public School Students
- ☐ Vet.'s Administration
- ☐ Prisoner Research
- ☐ Pregnant Women/Fetuses

Other _____

6B. Research Methodology

Please check all descriptors that best apply to the research methodology.

Data Source(s): ☑ New Data ☐ Existing Data

Will data be recorded so that participants can be directly or indirectly identified? ☐ Yes ☑ No

Data collection will involve the use of:
- ☐ Educational Tests (cognitive diagnostic, aptitude, etc.)
- ☑ Surveys / Questionnaires
- ☑ Internet / electronic
- ☐ Audio / Video / Photos
- ☐ Interview / Observation
- ☐ Physical / Physiological Measures or Specimens (see Section 6E.)
- ☐ Private records or files

The Auburn University Institutional Review Board has approved this document for use from 11/29/12 to 11/28/13 Protocol # 12-371 EX 1211

6C. Participant Information

Please check all descriptors that apply to the participant population.
☑ Males ☑ Females ☐ AU students

Vulnerable Populations
- ☐ Pregnant Women/Fetuses
- ☐ Prisoners
- ☐ Children and/or Adolescents (under age 19 in AL)

Persons with:
- ☐ Economic Disadvantages
- ☐ Educational Disadvantages
- ☐ Physical Disabilities
- ☐ Intellectual Disabilities

Do you plan to compensate your participants? ☐ Yes ☑ No

6D. Risks to Participants

Please identify all risks that participants might encounter in this research.
- ☑ Breach of Confidentiality*
- ☐ Deception
- ☐ Psychological
- ☐ None
- ☐ Coercion
- ☐ Physical
- ☐ Social
- ☐ Other _____

Received
NOV 06 2012
Research Compliance

*Note that if the investigator is using or accessing confidential or identifiable data, breach of confidentiality is always a risk.

6E. Institutional Biosafety Approval

Do you need IBC Approval for this study? ☑ No ☐ Yes - BUA # _____ Expiration date _____

FOR OHSR OFFICE USE ONLY

DATE RECEIVED IN OHSR: 11/6/12 by QB
DATE OF IRB REVIEW: 11/29/12 by CC
DATE OF IRB APPROVAL: _____ by _____
COMMENTS: revisions in 12/7/12 - OK-SRA 12/10/12

PROTOCOL # 12-371 EX 1211
APPROVAL CATEGORY: 45 CFR 46.101(b)(2)
INTERVAL FOR CONTINUING REVIEW: 3 years

7. PROJECT ASSURANCES

PROJECT TITLE: Educational Leadership and Sustainability in Independent Schools

A. PRINCIPAL INVESTIGATOR'S ASSSURANCES

1. I certify that all information provided in this application is complete and correct.
2. I understand that, as Principal Investigator, I have ultimate responsibility for the conduct of this study, the ethical performance this project, the protection of the rights and welfare of human subjects, and strict adherence to any stipulations imposed by the Auburn University IRB.
3. I certify that all individuals involved with the conduct of this project are qualified to carry out their specified roles and responsibilities and are in compliance with Auburn University policies regarding the collection and analysis of the research data.
4. I agree to comply with all Auburn policies and procedures, as well as with all applicable federal, state, and local laws regarding the protection of human subjects, including, but not limited to the following:
    a. Conducting the project by qualified personnel according to the approved protocol
    b. Implementing no changes in the approved protocol or consent form without prior approval from the Office of Human Subjects Research
    c. Obtaining the legally effective informed consent from each participant or their legally responsible representative prior to their participation in this project using only the currently approved, stamped consent form
    d. Promptly reporting significant adverse events and/or effects to the Office of Human Subjects Research in writing within 5 working days of the occurrence.
5. If I will be unavailable to direct this research personally, I will arrange for a co-investigator to assume direct responsibility in my absence. This person has been named as co-investigator in this application, or I will advise OHSR, by letter, in advance of such arrangements.
6. I agree to conduct this study only during the period approved by the Auburn University IRB.
7. I will prepare and submit a renewal request and supply all supporting documents to the Office of Human Subjects Research before the approval period has expired if it is necessary to continue the research project beyond the time period approved by the Auburn University IRB.
8. I will prepare and submit a final report upon completion of this research project.

My signature indicates that I have read, understand and agree to conduct this research project in accordance with the assurances listed above.

John Mehaffey		Nov 5, 2012
Printed name of Principal Investigator	Principal Investigator's Signature	Date

B. FACULTY ADVISOR/SPONSOR'S ASSURANCES

1. By my signature as faculty advisor/sponsor on this research application, I certify that the student or guest investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accord with the approved protocol.
2. I certify that the project will be performed by qualified personnel according to the approved protocol using conventional or experimental methodology.
3. I agree to meet with the investigator on a regular basis to monitor study progress.
4. Should problems arise during the course of the study, I agree to be available, personally, to supervise the investigator in solving them.
5. I assure that the investigator will promptly report significant adverse events and/or effects to the OHSR in writing within 5 working days of the occurrence.
6. If I will be unavailable, I will arrange for an alternate faculty sponsor to assume responsibility during my absence, and I will advise the OHSR by letter of such arrangements. If the investigator is unable to fulfill requirements for submission of renewals, modifications or the final report, I will assume that responsibility.
7. I have read the protocol submitted for this project for content, clarity, and methodology

LISA KENSLER		11/5/12
Printed name of Faculty Advisor / Sponsor	Signature	Date

C. DEPARTMENT HEAD'S ASSSURANCE

By my signature as department head, I certify that I will cooperate with the administration in the application and enforcement of all Auburn University policies and procedures, as well as all applicable federal, state, and local laws regarding the protection and ethical treatment of human participants by researchers in my department.

Sherida Downer	Sherida Downer	11/5/12
Printed name of Department Head	Signature	Date

8. **PROJECT OVERVIEW: Prepare an abstract that includes:**
(400 word maximum, in language understandable to someone who is not familiar with your area of study):

I.) A summary of relevant research findings leading to this research proposal, (*Cite sources; include a "Reference List" as Appendix A.)*
II.) A brief description of the methodology,
III.) Expected and/or possible outcomes, and,
IV.) A statement regarding the potential significance of this research project.

I. "None of us asked to be born at this time in history, but here we are. We are the first generation of people capable of destroying the world, and we may be the last generations who can save it. Much will depend on how we educate our people. Education is that important, and the future is coming at us at warp speed. There is no place to hide" (Marx, 2006). Growing scientific evidence (Diamond, 2005; Meadows, Randers, & Meadows, 2004) suggests that Marx did not overstate the importance of education to the future of our planet, in the introduction to his book related to future focused educational leadership. Calls for democratic leadership and democratic community in schools are often strengthened with a deep sense of moral purpose (Murphy, 2002; Philip A. Woods, 2004; Philip A. Woods, 2005). However, very few scholars in educational leadership have addressed the role school leaders have to play in addressing local and global environmental challenges, a critical moral issue of our time (Brooks, 2010; Furman & Gruenewald, 2004) even though doing so is in direct alignment with the assumptions and purpose of democracy. Presently, the economic crisis is forcing schools all over the country to re-assess their budget allocations and find creative ways to do more with less. Energy efficiency and other ecological 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, 1999; Sack-Min, 2007). This survey study seeks to understand the behavioral intentions of independent school leaders related to their school building leadership and management. What enablers and barriers will independent school leaders identify?

II. The purpose of the study is to survey independent school leaders' beliefs and practices relative to ecological sustainability and school building leadership and management . The theory of planned behavior (Ajzen, 1991) provides the theoretical underpinning for the study, as this survey study seeks to understand the the attitudes, normative beliefs, and control beliefs of independent school leaders and their involvement in the ecological sustainability movement. This study will follow quantitative survey design. The sampling method will be purposeful sample of independent school leaders that are member of the National Association of Independent School. Data will be collected from all participants using Qualtrics.

III. From this survey study, I will begin to develop a model of independent school leadership that includes leading and managing school resources for ecological sustainability.

IV. "Facing the challenging questions related to global environmental, societal, economic issues is the critical work of our time" (Diamond, 2007). This research attempts to draw attention to a blind spot in educational leadership literature and practice, as well as present theoretical and practical suggestions for educational leaders at all levels to expand their contributions to the "critical work of our time." By collecting current independent school leaders' perspectives relative to their beliefs, intentions, and actions related to the ecological sustainability movement, I will be able to begin to build a model for how independent school leaders might better participate in this movement through the leadership and management of schools.

9. **PURPOSE.**
   a. **Clearly state all of the objectives, goals, or aims of this project.**

The purpose of this study is to explore independent school leaders' beliefs and practices relative to ecological sustainability and school building leadership and management . This quantitative study will provide a foundation for future survey development and research.

   b. **How will the results of this project be used? (e.g., Presentation? Publication? Thesis? Dissertation?)**

The results of this study will be shared publicly via dissertation, presentations, and publications.

10a. KEY PERSONNEL. Describe responsibilities. Include information on research training or certifications related to this project. **CITI is required.** Be as specific as possible. (Attach extra page if needed.) *All non AU-affiliated key personnel must attach **CITI certificates of completion.***

Principle Investigator John Mehaffey Title: Graduate Student E-mail address jmm0021@auburn.edu
Dept / Affiliation: College of Education / Educational Foundations, Leadership, and Technology (EFLT)

Roles / Responsibilities:

John Mehaffey will be the primary investigator for this study and will take responsibility for recruiting participants, collecting data, storing and analyzing data and reporting results.

Individual: Lisa Kensler Title: Assistant Professor E-mail address lak0008@auburn.edu
Dept / Affiliation: College of Education-EFLT

Roles / Responsibilities:

Lisa Kensler will be assisting John Mehaffey in this study and will take secondary responsibility for recruiting participants, collecting data, storing and analyzing data and reporting results.

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

Individual: _____ Title: _____ E-mail address _____
Dept / Affiliation: _____

Roles / Responsibilities:

11. **LOCATION OF RESEARCH. List all locations where data collection will take place.** (School systems, organizations, businesses, buildings and room numbers, servers for web surveys, etc.) **Be as specific as possible. Attach permission letters in Appendix E.**
(See sample letters at http://www.auburn.edu/research/vpr/ohs/sample.htm)

This study will include an online/electronic survey and data collection will therefore take place at the computer. Participants will be able to participate where ever they have internet access. The survey data will be collected via a third party system, Qualtrics which is a web-based survey software that allows the Auburn University campus community to easily create surveys, collect and store data, and produce reports.

12. PARTICIPANTS.

a. **Describe the participant population you have chosen for this project.**
(If data are existing, check here ☐ and describe the population from whom data were collected.)

The participant population for this study is a group of United States independent school leaders that are members of the National Association of Independent Schools

b. **Describe why is this participant population is appropriate for inclusion in this research project.** (Include criteria for selection.)

The purpose of this study is to survey independent school leaders' beliefs and practices relative to ecological sustainability and school building leadership and management decisions. The participant population who will have the perspective necessary to explore these concepts are independent school leaders that are members of the National Association of Independent Schools.

c. **Describe, step-by-step, all procedures you will use to recruit participants.** *Include in Appendix B a copy of all e-mails, flyers, advertisements, recruiting scripts, invitations, etc., that will be used to invite people to participate.*
(See sample documents at http://www.auburn.edu/research/vpr/ohs/sample.htm.)

1. Jefferson Burnett - Vice President, Government and Community Relations of the National Association of Independent Schools (NAIS) has agreed to administer the survey to Heads of School via the NAIS listserv. 2. He will email the identified school leaders and request their participation (see Appendix B for the Recruitment Script) in this study. 3. Upon acceptance to participate, a link will be provided to the electronic survey via email to the participant. 4. Sampling will continue until saturation.

What is the minimum number of participants you need to validate the study? 100

Is there a limit on the number of participants you will recruit? ☑ No ☐ Yes – the number is 1,700

Is there a limit on the number of participants you will include in the study? ☑ No ☐ Yes – the number is _____

d. **Describe the type, amount and method of compensation and/or incentives for participants.**
(If no compensation will be given, check here ☑.)

Select the type of compensation: ☐ Monetary ☐ Incentives
- ☐ Raffle or Drawing incentive (Include the chances of winning.)
- ☐ Extra Credit (State the value)
- ☐ Other

Description:

13. PROJECT DESIGN & METHODS.

a. Describe, step-by-step, all procedures and methods that will be used to consent participants.
(☐ Check here if this is "not applicable"; you are using existing data.)

1. The electronic survey will have an information letter as the first page (See Appendix B Electronic Information Letter for Adult Participants). The participant will confirm their consent by participating in the survey.

b. Describe the procedures you will use in order to address your purpose. Provide a step-by-step description of how you will carry out this research project. Include specific information about the participants' time and effort commitment. (*NOTE: Use language that would be understandable to someone who is not familiar with your area of study. Without a complete description of all procedures, the Auburn University IRB will not be able to review this protocol. If additional space is needed for this section, save the information as a .PDF file and insert after page 6 of this form.*)

1. The group of school leaders will be obtained from Jefferson Burnett of the National Association of Independent Schools (See Appendix B - Recruitment Script). School leaders who choose to participate will be directed to an informed consent page on which they will 'click the survey link' thereby stating that they have read the informed consent and would like to participate in the survey.

2. Participants will complete the online survey (see survey questions in Appendix C (Educational Leadership and Sustainability in Independent Schools). The survey should take no more than 15 minutes of participants' time.

3. Upon completion of data collection, I will use statistical software (SPSS) to analyze all of the independent school leader responses for statistically significant relationships among variables.

4. The results will add to the extant literature by providing information on the environmental sustainability movement in independent schools throughtou the United Sates.

13c. List all data collection instruments used in this project, in the order they appear in Appendix C.
(e.g., surveys and questionnaires in the format that will be presented to participants, educational tests, data collection sheets, interview questions, audio/video taping methods etc.)

Appendix C includes:
1. The Instrument, Educational Leadership and Sustainability in Independent Schools

d. Data analysis: Explain how the data will be analyzed.

The data will be analyzed using statistical software (SPSS) for statistically significant relationships among variables.

14. RISKS & DISCOMFORTS: List and describe all of the risks that participants might encounter in this research. ***If you are using deception in this study, please justify the use of deception and be sure to attach a copy of the debriefing form you plan to use in Appendix D.*** *(Examples of possible risks are in section #6D on page 1.)*

The study will engage willing participants only and will not use any form of deception. The topic, ecological sustainability, is not a sensitive topic and should elicit no discomfort in the participants. School administrators, although not a vulnerable population, have extraordinary pressures and time demands related to their work - simply providing the time to respond to the survey's questions may be a very minor discomfort to some participants.

15. **PRECAUTIONS.** Identify and describe all precautions you have taken to eliminate or reduce risks as listed in #14. If the participants can be classified as a "vulnerable" population, please describe additional safeguards that you will use to assure the ethical treatment of these individuals. ***Provide a copy of any emergency plans/procedures and medical referral lists in Appendix D.***

I have designed the survey to be as short as possible to reduce the time demands for the school administrators. The survey should not take any more than 15 minutes for participants. Participants may withdraw their participation in the study at any time without risk of penalty for doing so.

If using the Internet to collect data, what confidentiality or security precautions are in place to protect (or not collect) identifiable data? Include protections used during both the collection and transfer of data.
(These are likely listed on the server's website.)

All electronic data will be aggregated and password protected on Lisa Kensler's computer in 4002 Haley Center. Qualtrics provides secure web link and anonymous connector technology, which enables the users to access the survey without the database server collecting IP addresses or any other identifying information.

16. **BENEFITS.**
    a. **List all realistic direct benefits participants can expect by participating in this specific study.**
    (Do not include "compensation" listed in #12e.) Check here if there are no direct benefits to participants. ☐

This survey study asks independent school administrators to reflect on their building leadership and management practices related to ecological sustainability. Taking time to reflect on one's practice often results in new insights and awareness of new possibilities. Participants may benefit from an increased awareness of ecological sustainability after participating in this study.

    b. **List all realistic benefits for the general population that may be generated from this study.**

The ecological crisis, as described briefly in the literature review, is a critical issue of our time. Presently, little research explores or articulates the important role that school leaders are and could be playing in addressing the issue through school building leadership and management practices. This study, upon public sharing through conferences and peer-reviewed publications, will expand the public's awareness and may eventually lead to a line of research that influences policy and school leader preparation and performance standards.

17. PROTECTION OF DATA.

a. **Will data be collected as anonymous?** ☑ Yes ☐ No *If "YES", skip to part "g".*
("Anonymous" means that you will not collect any identifiable data.)

b. **Will data be collected as confidential?** ☐ Yes ☑ No
("Confidential" means that you will collect and protect identifiable data.)

c. **If data are collected as confidential, will the participants' data be coded or linked to identifying information?**
☐ Yes (If so, describe how linked.) **No** ☑

d. **Justify your need to code participants' data or link the data with identifying information.**

e. **Where will code lists be stored?** (Building, room number?)

f. **Will data collected as "confidential" be recorded and analyzed as "anonymous"?** ☐ Yes ☑ No
(If you will maintain identifiable data, protections should have been described in #15.)

g. **Describe how and where the data will be stored** (e.g., hard copy, audio cassette, electronic data, etc.), **and how the location where data is stored will be secured in your absence. For electronic data, describe security. If applicable, state specifically where any IRB-approved and participant-signed consent documents will be kept on campus for 3 years after the study ends.**

The electronic survey data will remain electronic and will be stored on Lisa Kensler's computer in her office (4002 Haley Center). Dr. Kensler's office, 4002 Haley Center, is locked in her absence. All data will be collected and stored as anonymous data.

h. **Who will have access to participants' data?**
(The faculty advisor should have full access and be able to produce the data in the case of a federal or institutional audit.)

John Mehaffey and Lisa Kensler will be the only people with access to the participants' data.

i. **When is the latest date that confidential data will be retained?** (Check here if only anonymous data will be retained. ☑)

j. **How will the confidential data be destroyed?** (*NOTE: Data recorded and analyzed as "anonymous" may be retained indefinitely.)*

All data will be collected and stored as anonymous data.

Educational Foundations, Leadership, and Technology
4036 Haley Center ~ College of Education
Auburn University, AL 36849

(Note: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THE END OF THIS DOCUMENT.)

INFORMATION LETTER
for a Research Study entitled
"Educational Leadership and Sustainability in Independent Schools"

You are invited to participate in a research study to explore the behavioral intentions of school leaders related to ecological sustainability. Mr. John Mehaffey a graduate student in the Auburn University Department of Educational Foundations, Leadership, and Technology is conducting this study. You were selected as a possible participant because you are a school leader and are older than 19 years old.

What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete an electronic survey. Your total time commitment will be approximately 15 minutes.

Are there any risks or discomforts? The risks associated with participating in this study are minimal and may include the discomfort of adding one more activity to your already full and demanding schedule. To minimize this risk, I have designed the survey to be as brief as possible. Your survey responses will be anonymous .

Are there any benefits to yourself or others? If you participate in this study, you can expect benefits related to reflecting on your leadership and management practices related to ecological sustainability. I certainly cannot promise you that you will receive any or all of the benefits described. Your participation in this study will provide the foundation for a new line of research to develop and to inform the practice of school leadership.

Will you receive compensation for participating? You will not receive any compensation for participating in this exploratory study.

Are there any costs? If you decide to participate, you will not incur any costs beyond your investment in time to complete the online survey.

If you change your mind about participating, you can withdraw at any time by closing your browser window. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Once you have submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Educational Foundations, Leadership, and Technology.

The Auburn University Institutional Review Board has approved this document for use from 11/29/12 to 11/28/15
Protocol # 12-37 EX 1211

Any data obtained in connection with this study will remain anonymous. We will have no way of identifying you or the computer you used to respond, as the server we use does not record computer IP addresses. Information we collect during this study may be published in a professional journal and/or presented at a professional meeting.

If you have questions about this study, please contact John Mehaffey or Lisa Kensler by phone at (334)-844-3020 or email at jmm0021@auburn.edu lak0008@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone at (334)-844-5966 or email at hsubjec@auburn.edu or IRBChair@auburn.edu

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

John Mehaffey **Nov. 5, 2012**
Investigator Date

Lisa Kensler **Nov. 5, 2012**
Co-Investigator Date

The Auburn University Institutional Review Board has approved this document for use from November 29, 2012 to November 28, 2013. Protocol #12-371.

Link to Survey

https://auburn.qualtrics.com/SE/?SID=SV_bINZVyLq6iCkuEI

The Auburn University Institutional Review Board has approved this document for use from 11/29/12 to 11/28/15 Protocol # 12-371 EX 1211