

## **School leaders, sustainability, and green school practices: An elicitation study using the Theory of Planned Behavior**

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**Abstract:** Little research in educational leadership has addressed school leaders, sustainability, and green school practices. State policies requiring green building and management practices are rapidly becoming more common. However, we know little about school leaders' attitudes, subjective norms, and perceived behavioral control beliefs relative to green school practices. This study begins a line of research investigating the behavioral intentions of school leaders to engage in green school practices. We report on an elicitation study including a diverse sample of 71 U.S. K-12 school leaders' responses to open-ended survey questions designed following Ajzen's Theory of Planned Behavior. In general, the study suggests that participating school leaders believe there are benefits to going green and most stakeholders will support greening efforts. However, limited resources (money, time, information, and personnel) present substantial barriers to leading and managing greener schools.

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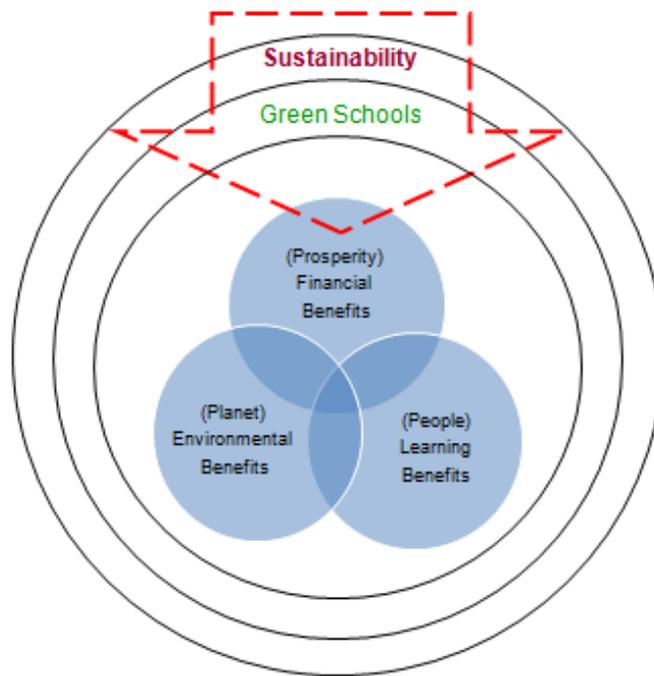
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The United Nation's Decade of Education for Sustainable Development (2005-2014) is more than half over (website: <http://www.desd.org/>) and school leader practice and policy is increasingly engaging in local and international efforts related to the sustainability movement. The U.S. Department of Education, in April 2011, announced a Green Ribbon School (GRS) award for those schools leading the way in sustainability related stewardship and education. The GRS award aims to both recognize and draw attention to outstanding PK-12 school practices across three primary pillars: 1) environmental impact and energy efficiency; 2) healthy environment; and 3) environmental literacy (website: <http://www.ed.gov/blog/2011/09/ed-encourages-public-comment-on-plans-for-green-ribbon-schools-award/>). Additionally, state governments are increasingly encouraging and/or requiring schools to build school buildings that meet healthier, higher performing standards (Bernstein, 2010). These policy initiatives follow the lead of innovative school leaders and educators who have extended environmental education beyond the classroom and practiced pro-environmental behaviors at the school level, through building design, management, and leadership. Although practice and policy contexts are shifting towards more sustainable practices, educational leadership scholarship remains nearly void of research related to green schools and leadership for sustainability (Bottery, 2008, 2009; Kensler, 2012).

The purpose of the present study was to explore the behavioral intentions of K-12 school administrators related to sustainability and green school practices. We report the findings from a qualitative elicitation study based on the Theory of Planned Behavior (Ajzen, 1991). This study provides new insights and a foundation for further investigating school leaders' behavioral intentions relative to green school practices and continues the emergent line of research related to school leadership and the sustainability movement (Ackley, 2009; Bottery, 2008, 2009; Furman & Gruenewald, 2004; Granados & Gamez, 2010; Kensler, 2012; Pepper & Wildy, 2008). Sustainability, as used here, refers to the capacity of living systems to satisfy their needs in the present without diminishing their capacity to do so in the future and integrates ecological, social and economic needs. Green schools include one way that the field of education is responding to and participating in the broader sustainability movement (Figure 1). Green school practices or leadership for sustainability include a broad set of pro-environmental practices related to designing, leading, and managing more sustainable school buildings and communities and they address social and economic aspects of the school, in addition to the environmental. These practices may include (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/non-toxic cleaning supplies; building and retrofitting school buildings according to green building standards such as Leadership for Energy and Environmental Design (LEED) certification; and recycling paper, plastics, aluminum, and electronics (Stone, 2009).

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



Kensler (2012) presented a theoretical framework that integrated democratic and ecological principles for describing, explaining, and predicting a continuum of development from more traditional schools to green schools. The article, written for educational leadership scholars and practitioners not necessarily familiar with the sustainability movement, set the proposed framework in the context of a detailed discussion of sustainability and shifting worldviews. The present article shifts the focus from the organizational level to individual school leaders and their behavioral intentions relative to green school practices, a very new area of research. Thus, the literature review will first examine pro-environmental behaviors within non-educational organizations. We then shift to pro-environmental behaviors in schools, reviewing available literature and highlighting trends in practice. Finally, we end the review with our rationale for using the Theory of Planned Behavior to explore school leaders' behavioral intentions relative to green school practices.

### LITERATURE REVIEW

Environmental, social, and economic challenges that are both local and global are demanding innovative approaches to organizational design, management, and leadership in all organizations (Doppelt, 2010) and in schools (Kagawa & Selby, 2010). In 1994, Shrivastava & Hart noted that, "Environmentalism will be one of the most potent forces of economic, social, and political change in this decade. By the year 2000, organizations and organizational theory will need to transform themselves dramatically to accommodate environmental concerns" (p. 607). More than a decade into the 21<sup>st</sup> century and this transformation is still emerging. Organizational scholars have referred to these efforts as green organizations (Bansal & Roth, 2000; Shrivastava & Hart, 1994), corporate environmentalism (Hoffman, 2001), sustainable industries (Russo, 2003), corporate social responsibility (CSR) (Lee, 2008), and corporate

sustainability (Sharma, Starik, & Husted, 2007), as a few examples. Regardless of the labels, the literature described and explained, from different perspectives, trends associated with transforming organizations for sustainability. In particular, one area of this research has focused on pro-environmental behaviors among managers in organizations. This research is most relevant to the present study's focus on the green school practices among school administrators and its review precedes the review of relevant educational literature.

### **Pro-environmental Behavior in Organizations**

In explaining why organizations go green, Shrivastava & Hart (1994) presented five imperatives or driving forces for the greening of organizations: competitive (customers increasingly want and demand environmentally friendly products), political (public social and policy pressures), ethical (moral responsibilities to consider and reduce negative environmental impacts), global (interdependencies among environmental issues and economic development within developing countries), and sustainability (economic growth within the constraints of ecological limits) (summarized from page 616). In summary, they argued that, "Only when environmental concerns are integrated into day-to-day operations can an organization be 'green'" (p. 624). Since their work nearly two decades ago, researchers have continued to explore the individual and organizational factors that facilitate and impede the greening of organizations (Etzion, 2007).

Etzion's (2007) review of the literature revealed four primary attributes of organizations' improved environmental performance: "innovation, the cognitive inclinations of employees, integration of multistakeholder perceptions and concerns, and organizational information flow" (p. 639). Particularly relevant to the discussion in the present paper is the role of the individual cognitive inclinations. Individuals conduct organizational operations and "the way organizational members perceive environmental issues is crucial" (Etzion, 2007, p. 640). Positional leaders and managers influence the organizational culture within which people act and their views on environmental issues directly facilitate or impede necessary learning and innovation (Bansal & Roth, 2000; Senge, Smith, Kruschwitz, Laur, & Schley, 2008). A recent study supported a causal relationship between managers' behavioral intentions toward the environment and related organizational actions in the Spanish car industry (Martín-Peña, Díaz-Garrido, & Sánchez-López, 2010). However a broad array of questions remain relative to organizational leadership and environmental action (Vithessonthi, 2009). Thus, research related to understanding leaders' and managers' organizational behaviors related to sustainability will continue to inform necessary and ongoing transformation (Hoffman & Bazerman, 2007).

Early research in the Canadian oil and gas industry by Sharma, Pablo, and Vredenburg (1999) found that organizational strategy or responsive approach to environmental issues directly reflected the degree to which managers conceived of environmental issues as threats or opportunities. In addition, organizational context and design (information flow, managerial discretion, and control systems) appeared to influence managers' perceptions of environmental issues (p. 101). Managers saw environmental issues more as opportunities in organizations where the norms reflected (1) broadly sharing information and continuously learning about the relevant environmental issues, (2) appropriately sharing decision making power and responsibility throughout the organization, and (3) valuing measures of environmental performance in addition to the more traditional economic indicators of economic performance. Their summary of findings remain relevant to school leaders today,

Organizations that create a context within which their employees are influenced to embrace environmental issues as opportunities stand to reap significant benefits from a number of sources – lower costs of input materials, higher process efficiencies, lower energy use, waste reuse and recycling, differentiated products, and higher levels of corporate reputation and goodwill. (p. 106)

Although some of the specific benefits of going green may be different for K-12 educational institutions, overlap certainly exists. Research within the school context is necessary in order to further explore and understand the processes, facilitators, barriers, costs, and benefits associated with developing green schools.

### **Pro-environmental Behavior in Schools**

Although the educational leadership scholarly literature is just beginning to address sustainability related issues (Ackley, 2009; Bottery, 2008, 2009; Furman & Gruenewald, 2004; Granados & Gamez, 2010; Kensler, 2012; Pepper & Wildy, 2008), school leaders across the United States are engaging in pro-environmental behaviors. These behaviors include green school practices such as recycling, energy savings initiatives, and LEED building certification. It is difficult to quantify the level of participation in these behaviors. However, the U.S. Green Building Council (USGBC) maintains public databases on their website (<http://centerforgreenschools.org/press.aspx>) listing the numbers of LEED registered and LEED certified K-12 school building projects. A review of these databases revealed an increase in registered LEED school projects from 1 in 2000 to 133 in 2011 and an increase in certified LEED school buildings from 4 in 2000 to 108 in 2011. This measure alone indicates growing awareness and participation in pro-environmental behaviors among school leaders.

Less quantifiable than the USGBC's database, but also indicative of the growing trend towards more pro-environmental behaviors among school leaders are the increasing news stories related to green schools. Google Trends is a specialized search application and a search in Google Trends during January 2012 on "green schools" revealed a generally increasing trend in both news stories and number of user searches. Non-scientific tracking of news articles related to "school energy savings" has revealed savings due to teacher and student projects within a single school to district-wide initiatives in partnership with energy companies and/or consultants. From such a partnership, Metro Nashville Public Schools (MNPS) reported 2.9 Million dollars in savings over five years (2004-2009). The MNPS executive director of Facilities & Operations, said, "It has definitely been a massive project. But the school district is not only saving millions of dollars as a result of reducing energy consumption, the improvements to our schools are providing more comfortable learning environments for students, teachers, and everyone who works in or visits public schools in Nashville" (Kollie, 2009). School leaders at all levels including students, teachers, and administrators are embracing efforts to green their classrooms and schools.

School administrators play an essential role in leading change in schools (Day & Leithwood, 2007; Harris, Leithwood, Day, Sammons, & Hopkins, 2007; Moolenaar, Daly, & Slegers, 2010). Research in the U.S. environmental education field (Higgs & McMillan, 2006; Schelly, Cross, Franzen, Hall, & Reeve, 2010) and internationally (Birney & Reed, 2009; Edwards, 2006; Gough, 2005; Pepper & Wildy, 2008) also identified the critically important role played by school principals in facilitating school-wide transformation toward more sustainable schools. The work of designing, leading, and managing green schools remains outside the

explicit guidance of policy for most school leaders and yet the leaders featured in the just referenced articles took on the additional challenge. They integrated a message of conservation and sustainability into their regular communications with their school communities; they modeled sustainable behaviors in their daily practice; and they empowered teachers and students to identify and act on opportunities for improvement (see Kensler, 2012, for a more detailed discussion of these findings).

It is not yet clear whether these emerging findings related to leading change for sustainability will remain consistent across future studies. Although increasing attention and activity related to green schools is visible in policy and practice domains, we do not yet have any studies that describe the behavioral intentions of school leaders on a larger scale. In order to conduct such studies, we first need to elicit and understand the salient beliefs related to green school practices that are common among a diverse population of school leaders. Because the issues of green schools and sustainability may be influenced heavily by national policy and context, we focused this initial elicitation study on school leaders in the U.S. It will be appropriate to conduct future elicitation studies in other countries and then compare results. (Kensler and her colleagues are currently conducting elicitation studies in China and Vietnam.)

### **The Theory of Planned Behavior**

Icek Ajzen's (2002) Theory of Planned Behavior (TPB) serves as the theoretical framework for this study. The TPB is a widely used explanatory model for predicting behavioral intentions and subsequent behaviors (Armitage & Christian, 2004). The TPB is an extended model of Ajzen and Fishbein's (1980) Theory of Reasoned Actions (TRA). Both theories state that an individual's attitude toward a behavior and the perceived attitudes of others relate to their behavioral intentions. The TPB goes beyond the TRA in that it includes an individual's perception that they have the ability and/or choice to engage in the behavior under study. This additional element of the TPB is especially important to our study of principals' behavioral intentions because principals typically must lead within broader district and state policy guidelines. Therefore, it may be possible that a school leader would have positive attitudes regarding green school practices (attitudes); and would have the support of students and faculty to engage in green school practices (subjective norms); but not believe that the decision making power to do so was his/hers (perceived behavioral control).

According to the TPB, to predict whether a person intends to do something, we need to know (1) whether the person is in favor of doing it (attitude); (2) how much the person feels social pressure to do it (subjective norm) and (3) whether the person feels in control of the action in question (perceived behavioral control) (Francis et al., 2004). These three predictors: attitude, subjective norm and perceived behavioral control, are the 3 main determinants of behavioral intentions. Modal salient beliefs influence each of these three direct determinants of behavioral intention (Lee, Cerreto & Lee, 2010). This elicitation study collected these modal salient beliefs from a diverse group of school leaders across the United States.

## Method

### Research Questions

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

A qualitative survey approach was used in this elicitation study with 71 school leaders in U.S. The guidelines for elicitation studies using the TPB (Ajzen & Fishbein (1980) suggested that 25 respondents should be enough to reach saturation, the point when additional responses do not continue to contribute new information. However, the study of principals and green school practices is so new that we collected open-ended responses from nearly three times that number. A snowball sampling method allowed us to collect data from school leaders across the United States. Respondents included school leaders recognized for their green school practices and others who may know very little about the topic, so that our data would represent a wide range of school leader perspectives.

Salient beliefs are the first thoughts that come to a person's mind when that person is asked open-ended questions related to performing some behavior (Armitage, & Christian, 2004). In an online survey, we aimed to capture school leaders' salient beliefs relative to their attitudes, subjective norms, and perceived behavioral control and green school practices. The open-ended survey contained 12 questions to elicit accessible and affective beliefs. Additionally, we included 13 questions to collect demographic data. The following are a few examples of the elicitation survey questions:

1. What do you believe are the advantages of leading and managing your school to be a green school?
2. Within or outside your organization, who are the individuals, if any, who would disapprove of you leading and managing your school to be a green school?
3. What factors or circumstances would enable you to lead and manage your school to be a green school?

## Results

### Demographics

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

Thirty-four of the participants were male; thirty-two of the participants were female; and five participants did not report their gender. The respondents ranged in age from thirty five to sixty-seven years of age, with 70.43% of the respondents between thirty-six and fifty-five years of age. The experience of the respondents ranged from brand new to their position, to more than fifteen years of experience, with 38.03% between 4-7 years, 25.35% between 0-3 years, and 19.72% between 8-11 years of experience. The professional position of the top five categories of respondents were principals, assistant principals, superintendents, assistant superintendents, and chief financial officers with 36.62%, 12.68%, 8.45%, 7.04%, and 5.63% respectively.

The respondents were from public, private, and independent schools, 87.32%, 2.82%, and 4.23%, respectively with 5.63% unreported. Of the respondents, 43.66% percent work at the district level, 15.49% in a high school, 22.54% in an elementary school and 2.82% in a junior high school. The respondents worked at various types of schools or at the district level. The schools were located in urban (14.08%), suburban (36.62%), and rural areas (33.80%), with high and low poverty levels (Table 1). There was a cross-section of representation throughout the United States including respondents from Oregon, California, New York, Michigan, Pennsylvania, Ohio, Maryland, Virginia, Missouri and Arkansas, with a majority of the respondents reporting their school location in the South. Eight respondents were from Mississippi, thirty-five of the respondents were from Alabama and three of the respondents were from Georgia.

Of those respondents reporting how they obtained any prior knowledge regarding sustainability, 61% learned through informal education and 34% learned through a formal education program. Respondents planning to learn about sustainability in the future, 83% plan to learn through informal education and 28% plan to learn through formal education. Of the respondents, 65 reported a total of 118 current practices believed to be consistent with green school practices. Based on our classification of the practices, 56% reported energy management practices, 51% reported recycling practices and 20% reported resource conservation practices. When considering the number of current practices reported by each individual respondent, 55% reported more than one, and 30% reported between three and four current practices and approximately 10% reported five to six. There were no respondents that reported currently practicing seven or more green practices.

Table 1.

*Present School Metropolitan Area Location of Respondents Including Poverty Level*

| School Metropolitan Area Location | Response Percent | Response Count |
|-----------------------------------|------------------|----------------|
| urban area with high poverty      | 5.63%            | 4              |
| urban area with low poverty       | 8.45%            | 6              |
| suburban area with high poverty   | 9.86%            | 7              |
| suburban area with low poverty    | 26.76%           | 19             |
| rural area with low poverty       | 15.49%           | 11             |
| rural area with high poverty      | 18.31%           | 13             |
| other (please specify)            | 9.86%            | 7              |
| unknown                           | 5.63%            | 4              |

**Survey Responses**

There were seventy-one respondents to the nine open ended questions grounded in the Theory of Planned Behavior, with a total of 839 responses elicited (Table 2). As Table 2 shows, the total number of responses to each question ranged from 50 on the “Other associated with other people’s views” question to 189 on the “approve” question. The mean number of beliefs reported for each question ranged from 0.70 to 2.66 responses per person. A limited number of

people listed five or more responses, suggesting that participants were not constrained by the response format.

Table 2  
*Descriptive Statistics for Responses (Beliefs) Elicited by the Nine Open-Ended Questions*

| Question                                   | Total Responses | Mean                 | Standard Deviation | No. of People              | % of People who            |
|--|-----------------|----------------------|--------------------|----------------------------|----------------------------|
|  |                 | Responses per Person |                    | who gave 5 or more beliefs | who gave 5 or more beliefs |
| Advantages                                 | 139             | 1.96                 |                    | 1                          | 1.41%                      |
| Disadvantages                              | 89              | 1.25                 |                    | 0                          | 0.00%                      |
| Other associated with your views           | 58              | 0.82                 |                    | 0                          | 0.00%                      |
| Approve                                    | 189             | 2.66                 |                    | 8                          | 11.27%                     |
| Dissapprove                                | 83              | 1.17                 |                    | 0                          | 0.00%                      |
| Other associated with other people's views | 50              | 0.70                 |                    | 0                          | 0.00%                      |
| Difficult/Impossible                       | 89              | 1.25                 |                    | 0                          | 0.00%                      |
| Enable                                     | 91              | 1.28                 |                    | 1                          | 1.41%                      |
| Other issues that come to mind             | 51              | 0.72                 |                    | 0                          | 0.00%                      |

*Attitudes*

Table 3 shows the coding frame for the advantages, disadvantages, and other questions related to the behavioral beliefs of the respondents, and, for each category the number and percentage of participants who gave a response that fell into that category. Salient behavioral beliefs, beliefs about the consequences of performing the behavior, contribute to determining the attitude toward the behavior (Azjen, 1991). The response count of Table 3 conveys the number of individuals out of seventy-one who reported on each coded item. The following three columns of the table report the number of responses out of seventy-one for each coded item for each survey question and the corresponding response percentage. Examination of Table 3 shows that, for “advantages,” disadvantages,” and “other” the percentage responses which could not be classified were 7.04%, 2.82% and 12.68%, respectively,

Assessment of Table 3 shows, that for “advantages,” 39.44% of the respondents considered financial savings as an advantage for leading and managing a green school. Student modeling of green practices was seen as an advantage by 21.13% of the respondents, leading to the development of the next generation of sustainable user, in which, 32.39% of the respondents considered the second most significant advantage of leading a green school.

Review of Table 3 shows that for “disadvantages,” 54.93% of the respondents considered cost as the most significant disadvantage for leading and managing a green school. Time and resistance to change represented 19.72% and 14.08% of the responses for disadvantages, respectively. These responses suggest that school leaders believe that there is limited money and time for implementing new ideas and programs, causing teachers and staff to resist change and limit buy-in, which would make it difficult to lead change toward a green school.

Table 3  
*Attitudes: Coding Frame for the “Advantages, Disadvantages, and Other” Questions and Numbers/Percentages of Participants Who Gave Responses in Each Category*

| Item Codes                              | ATTITUDES         |            |                     |               |                     |       |                     |
|---|-------------------|------------|---------------------|---------------|---------------------|-------|---------------------|
|   | Response<br>Count | Advantages | Response<br>Percent | Disadvantages | Response<br>Percent | Other | Response<br>Percent |
| Costs                                   | 40                |            |                     | 39            | 54.93%              | 1     | 1.41%               |
| Financial Savings                       | 28                | 28         | 39.44%              |               |                     |       |                     |
| Next Generation of Sustainability       | 24                | 23         | 32.39%              |               |                     | 1     | 1.41%               |
| NO                                      | 17                |            |                     |               |                     | 17    | 23.94%              |
| Resource Conservation                   | 17                | 16         | 22.54%              |               |                     | 1     | 1.41%               |
| Time                                    | 17                |            |                     | 14            | 19.72%              | 3     | 4.23%               |
| No Code Assigned                        | 16                | 5          | 7.04%               | 2             | 2.82%               | 9     | 12.68%              |
| Student Modeling                        | 15                | 15         | 21.13%              |               |                     |       |                     |
| Change Resistance/Habits/Buy-in         | 11                |            |                     | 10            | 14.08%              | 1     | 1.41%               |
| Environmental Benefits                  | 10                | 10         | 14.08%              |               |                     |       |                     |
| Health Benefits/Healthy Environment     | 10                | 10         | 14.08%              |               |                     |       |                     |
| Environmental Preservation              | 8                 | 8          | 11.27%              |               |                     |       |                     |
| Lack of Information/Knowledge           | 8                 |            |                     | 5             | 7.04%               | 3     | 4.23%               |
| None                                    | 7                 |            |                     | 7             | 9.86%               |       |                     |
| Community Leadership                    | 6                 | 6          | 8.45%               |               |                     |       |                     |
| Stewardship                             | 6                 | 5          | 7.04%               |               |                     | 1     | 1.41%               |
| Responsibility                          | 5                 |            |                     |               |                     | 5     | 7.04%               |
| Curriculum Integration                  | 4                 | 2          | 2.82%               |               |                     | 2     | 2.82%               |
| Environmental Awareness                 | 4                 | 4          | 5.63%               |               |                     |       |                     |
| Lack of Human Resources                 | 4                 |            |                     | 4             | 5.63%               |       |                     |
| Recycling Benefits                      | 3                 | 2          | 2.82%               |               |                     | 1     | 1.41%               |
| Stakeholder Support                     | 3                 |            |                     |               |                     | 3     | 4.23%               |
| Advocate                                | 2                 |            |                     |               |                     | 2     | 2.82%               |
| Facilities - NEW Construction           | 2                 |            |                     |               |                     | 2     | 2.82%               |
| Green Technology Changes                | 2                 |            |                     | 2             | 2.82%               |       |                     |
| Overreacting                            | 2                 |            |                     | 2             | 2.82%               |       |                     |
| Politically Correct                     | 2                 |            |                     |               |                     | 2     | 2.82%               |
| Social Preservation                     | 2                 | 2          | 2.82%               |               |                     |       |                     |
| Training Staff/Professional Development | 2                 |            |                     | 2             | 2.82%               |       |                     |
| Effective Learning Environment          | 1                 | 1          | 1.41%               |               |                     |       |                     |
| Efficient Sustainable Practices         | 1                 |            |                     | 1             | 1.41%               |       |                     |
| Facilities - OLD                        | 1                 |            |                     |               |                     | 1     | 1.41%               |
| Leading by Example                      | 1                 |            |                     |               |                     | 1     | 1.41%               |
| Open Minded                             | 1                 |            |                     |               |                     | 1     | 1.41%               |
| Public Perception                       | 1                 | 1          | 1.41%               |               |                     |       |                     |
| Student Achievement                     | 1                 |            |                     |               |                     | 1     | 1.41%               |
| Student Attendance                      | 1                 | 1          | 1.41%               |               |                     |       |                     |
| Unconclusive Effects                    | 1                 |            |                     | 1             | 1.41%               |       |                     |

### *Subjective Norms*

Table 4 shows the coding frame that was used for the “approve,” “disapprove,” and “other” related to the salient normative beliefs, representing the respondents belief’s about the views of significant others related to leading and managing a green school. Salient normative beliefs are held to determine the subjective norm (Azjen, 1991). The response count of Table 4 conveys the number of individuals out of seventy-one who reported on each coded item. The following three columns of the table report the number of responses out of seventy-one for each coded item for each survey question and the corresponding response percentage.

Examination of table 4 shows that, for “approve,” disapprove,” and “other” the percentage responses which could not be classified a code based on the respondents’ salient beliefs as reported were, 4.23%, 5.63% and 4.23%, respectively. Assessment of table 4 shows, that for “approve” 46.48% of the respondents indicated the School Board would approve of leading and managing a green school followed by the Superintendent at 40.85%. Approval by the School Board and Superintendent would be extremely important to the implementation of green technologies since the Superintendent develops and recommends policy and the School Board approves policy. Over 22% of the respondents indicate teachers would approve of the principal leading and managing a green school. Teacher and staff buy-in and ownership would be critical for such a cultural change. A substantial number of respondents believed parents (35.21%) and students (21.13%) would approve. Parent and student support, along with community (21.13%) and community leadership support (12.68%) would be critical to the successful implementation of green school practices. Only 9.86% and 8.45% of the respondents indicated Principals and Central Office staff would approve of leading and managing green school, respectively. Further review of Table 4 shows, that for “disapproves” 40.85% of the respondents believe no one will disapprove of leading and managing a green school. However, several respondents indicated in their comments that this does not necessarily mean no one will disapprove of the implementation of green school practices. And, nearly 10% of the respondents believe the school board, superintendent, parents, community, and departmental manager will disapprove. All other “disapproves” responses were much lower.

Table 4

*Subjective Norms: Coding Frame for the “Approve, Disapprove, and Other” Questions and Numbers/Percentages of Participants Who Gave Responses in Each Category*

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

*Perceived Behavioral Control*

Table 5 shows the coding frame for the “difficult/impossible,” “enable,” and “other” questions related to the control beliefs of the respondents, and, for each category the number and percentage of participants who gave a response that fell into that category. Salient control beliefs, beliefs about factors that may facilitate or impede the performance of the behavior are assumed to determine a respondent’s perceived behavioral control (Ajzen, 1991). The response count of table 5 conveys the number of individuals out of seventy-one who reported on each coded item. The following three columns of the table report the number of responses out of seventy-one for each coded item for each survey question and the corresponding response percentage. Examination of table 5 shows that, for ““difficult/impossible,” “enable,” and “other” the percentage responses which could not be classified with a code based on the respondents’ salient beliefs as reported were, 1.41%, 4.23% and 9.86%, respectively.

Assessment of table 5 shows that 36.62% of the respondents see lack of resources and 14.08% of the respondents see costs as major factors that would make it difficult or impossible to implement green school practices. Respondents, 16.90% and 14.08%, see time and stakeholder support as factor that would make it difficult or impossible to implement green school practices. Further review of table 5 shows that for “enable” 28.17 % of the respondents see funding as an enabler to leading a green school. District level cooperation was seen as important to managing a green school by 22.54% of the respondents. While, 19.72% of the respondents reported information and knowledge as a key factor to enabling school leaders to lead and manage green schools.

Table 5  
*Perceived Behavioral Control: Coding Frame for the “Difficult/Impossible, Enable, and Other” Questions and Numbers/Percentages of Participants Who Gave Responses in Each Category*

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

## **Discussion**

This study is the first of its kind; the first study we know of to use Ajzen's Theory of Planned Behavior (TPB) to explore school leaders' salient beliefs related to green school practices. Seventy-one school leaders from across the United States responded to open-ended questions about their attitudes, subjective norms, and perceived behavioral control beliefs relative to green school practices. The TPB has strong research support for explaining and predicting complex behaviors (Armitage & Christian, 2004; Armitage & Conner, 2001). School administrators have positional power in schools and thus, make and/or facilitate decisions that lead towards a more sustainable future or, instead, maintain the status quo. A few studies have emphasized the importance of the school leader's attitudes and behaviors for the success of sustainability educational initiatives (Birney & Reed, 2009; Higgs & McMillan, 2006; Schelly, et al., 2010). This study provides a foundation for further investigation of school leaders' behavioral intentions relative to green school practices by providing an overview of a diverse array of leaders' salient beliefs.

We intentionally gathered responses from school leaders who were known for their efforts in the green school movement as well as those who probably knew very little about green school practices because we wanted to capture a diverse set of salient beliefs. Of the 71 respondents, 55% reported practicing more than one school practices such as energy management, recycling, and other resource conservation efforts. The school leaders in this study reported that they had primarily learned about green school practices through informal means (61% of participants) and would likely use informal means to learn about these issues in the future (83% of participants). Most school leaders reported learning about sustainability through informal pathways and tended not to report either the need or the opportunity for future formalized learning about sustainability. Transforming organizations, in particular schools, for whole-scale approaches to sustainability require deep, integrated learning about environmental, social, and economic issues and their relationship to organizational goals and practices; informal means may not be the best source for this type of learning. Pepper and Wildy (2008), in their study of school leadership in Australia, concluded that leading for sustainability requires, among other things, a deep knowledge of sustainability (p. 627). Researchers have the opportunity to further explore where current leaders in the green schools movement acquired their understanding of sustainability and how learning about sustainability might be integrated into educational leadership preparation and professional development.

The results to the open ended questions related to attitudes, subjective norms, and perceived behavioral control suggest that school leaders see advantages, disadvantages, individuals who approve, those who disapprove, barriers, and enablers associated with green school practices. Each of the following sections will present our discussion of the participants' reported salient beliefs for the three domains of the TPB: attitudes, subjective norms, and perceived behavioral control.

### **Attitudes**

If we look more closely at the results for attitudes, we find that the top five advantages of leading and managing a school as a green school were saving money, developing the next generation, conserving resources, modeling sustainability, and improving environmental and health conditions. The top five disadvantages that participants reported for leading and managing a green school were high financial costs, investment of time, resistance to change, lack of

information, and “none.” Ten percent of the responses provided suggested that there were no disadvantages to going green at school. The majority of respondents reported that the cost of implementing green school practices was a barrier, even though many indicated that an initial investment may likely result in future savings. These findings suggest that school leaders participating in this study seem generally unaware that many green school practices require little to no cost to implement and the savings often far outweigh any initial costs (Alban & Drabick, 2003; Katz, 2003; Vujovic & Ogurek, 2005). Additional research needs to be done to clarify the extent to which low/no cost strategies for greening schools result in significant savings and to document the return on investment related to higher cost strategies. Targeted school leader preparation and professional development will be needed to overcome the prevailing perception that costs make it difficult or impossible to implement green school practices.

The next most common benefit of green school practices, after potential financial savings, that these participants reported was developing awareness and understanding of sustainability within the next generation (32% of the responses fell into this category). Others have written with a sense of urgency about the need to educate the next generation so that they understand and choose to live more sustainably (Kagawa & Selby, 2010; Orr, 1992, 2009; Sterling, 2002), as well as about strategies for doing so (Burns, 2011; Church & Skelton, 2010; Nolet, 2009; Sterling, 2002). Whole-school sustainability models hold promise for addressing facility management, organizational culture, and student curriculum (Barr, Leigh & Dunbar, 2011; Kensler, 2012) and 21% of the responses suggested that modeling sustainability practices for children was an advantage to leading and managing a green school.

According to the responses in our sample, the sense of urgency communicated by the authors just listed (as well as many others) does not seem to reflect the dominant mindset of those leading schools in the United States. There were a relatively low number of responses that identified resource conservation (23%), environmental benefits (14%) and health benefits (14%) as advantages for going green. Of course, our sample was not representative of all school leaders and further research will need to investigate the degree to which school leaders find need and reason to educate the next generation about sustainability and if they do, how they do it.

### **Subjective Norms**

Subjective norms include the social pressure that one may feel from different individuals to engage, or not, in green school practices. The participants in this study reported a familiar set of stakeholders for school communities: school board members, superintendents, principals, parents, teachers, students, departmental managers, community members, and so on (Table 4 lists all of the groups). Of all of the responses, 41% suggested that nobody would disapprove of engaging in green school practices. And, in all but one case, the number of responses that suggested a stakeholder group would approve of green school practices was at least double that of the number of responses suggesting the same group would disapprove. The responses about the Chief Financial Officer (CFO) deviated from this pattern, with an equal percentage of the responses (6%) suggesting that CFOs would approve and disapprove. This suggests, again, a general concern about the cost of implementing green school practices. Generally, these results suggest that school leaders may very well feel social support from important educational community stakeholders to lead and manage their schools as green schools. As the sustainability movement, already the largest social movement in history (Hawken, 2007), continues to grow,

this social pressure for greener, more sustainable schools is likely to increase. As social pressure grows, the need for information, support, and professional development will also grow.

### **Perceived Behavioral Control**

Perceived behavioral control is a measure of participants' salient beliefs related to those factors that may enable or make impossible the greening of one's school. Participants' salient control beliefs fit into 28 different categories and the most common categories included funding, district level support, information/knowledge, stakeholder and community support, and time. Participating school leaders reported that a lack of resources, time, funding, information, and resistance to change would make greening one's school difficult to impossible. These results reflect today's pressures on school leaders. Principals feel extraordinary pressure to improve student achievement scores (Daly, 2009; Fuller & Young, 2009) and certainly feel financial stress as many state educational funds secure fewer tax dollars during the Great Recession and slow economic recovery. The most common enabling factors included funding, stakeholder and community support, district level support, information and knowledge, and time. Striving towards a vision of a sustainable future for our world will require whole-scale transformation of our society, communities, and organizations; the necessary changes are not simple tweaks, but include deep changes at every scale, from the individual to the collective.

### **Conclusion**

The TPB provides a practical approach to understanding behavioral intentions and identifying opportunities for targeting interventions aimed at changing behavior (Ajzen, 1991; Armitage & Christian, 2004). In general, this study suggests that participating school leaders reported benefits to going green and most school community stakeholders will likely support greening efforts, suggesting relatively positive attitudes towards and social pressure for green schools. However, perceived limited resources (money, time, information, and personnel) present substantial barriers to leading and managing greener schools. Some of these reported barriers such as higher initial financial costs may be more misperception than reality and additional research is needed to document the financial realities. The sustainability movement requires making information visible that has traditionally been invisible and even unavailable to all of us (for example: Goleman, 2009). Thus, school leaders will need professional development for accessing and using new information for learning whole-school approaches to practicing, teaching, and modeling sustainability. School leadership preparation programs will also need to integrate sustainability across their curriculum and program faculty will likely also have new learning to do. Sustainability presents a learning challenge for all of us.

Future research is needed to continue informing individual and collective learning. In particular, research related to sustainability educational efforts in PK – 12 schools needs to include and address school administration, management, and leadership. From the synthesis of these salient beliefs discussed in the present study, we have developed a forced response survey instrument that we are currently using to capture school leader pro-environmental behavioral intentions on a larger scale.

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