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## 21st Century Stewardship: The Role of Educational Equity in School Sustainability Programs

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## **21<sup>st</sup> Century Stewardship**

The Role of Educational Equity in School Sustainability Programs

Marissa Parrinello Page

A culminating thesis submitted to the faculty of Dominican University of California in partial fulfillment of the requirements for the degree of Master of Science in Education

San Rafael, CA  
May 2018

**Thesis Advisors' Page**

This thesis, written under the direction of the candidate's thesis advisor and approved by the department chair, has been presented to and accepted by the Department of Education in partial fulfillment of the requirements for the degree of Master of Science in Education. The content and research methodologies presented in this work represent the work of the candidate alone.

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**Abstract**

In light of the increasingly devastating consequences of climate change and the generational inequity involved, there is an urgent need to educate our youth on environmental issues and empower them with opportunities to effect positive change. This research focuses on the problem of inconsistent sustainability programs on school campuses, investigates causal factors and identifies areas for transformation. While many prior studies address the significance of sustainability and the key components of successful school waste reduction, energy conservation and environmental education, this study builds on prior research by considering school sustainability programs through a lens of equity and organizational systems. This research utilizes a mixed methods approach, including open-ended interviews and non-experimental survey data, to provide a multi-dimensional view of the state of sustainability programs from a site, district and county systems level. The results of this study reveal how a trajectory of local political decisions and processes contributed to an inequitable structure of school sustainability programs across one county. Within this structure, schools in the same region have substantially different access to resources, support and practice opportunities related to sustainability. Despite the inequity inherent in the structure, individual schools have made significant progress to effect change. Individual and collaborative agency at one school in particular demonstrates how factors such as buy-in, communication, coordination and priorities can contribute to a comprehensive



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sustainability program. Information gained in this study will benefit school leaders, science teachers and policy makers alike in providing students with equitable opportunities to both learn about environmental responsibility and engage in stewardship for a more sustainable future.

Key Words: middle school; sustainability; environmental program; zero waste program; equity; environmental justice; compost; recycling; education

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I don't think I would have survived this last year without the support of my husband or family. Words cannot begin to describe my love and appreciate for them. Their unceasing encouragement, generosity and patience meant that I kept putting one

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foot in front of the other and one word after the other. I also would not have eaten much other than arugula salad or granola cereal for dinner in the last year were it not for my husband's willingness to cook meal after meal while I worked on my thesis.

Thank you, my best friend, for encouraging me, feeding me and praying me through this process.

Last but not least, I want to thank my Project Green School students, whose passion for learning and changemaking is the true inspiration for this work.

## **Chapter 1 Introduction**

*Typically, our society does not invest much trust or responsibility in the hands of middle-schoolers. Modern media often portrays young teenagers as wasteful kids who care little about the way their actions affect the environment and the globe. But the media is wrong! The reality is that you have the power to change the world. Now it's time to use that power to change our school for good. As you have already begun to discover, our campus is in need of an environmental makeover. In this project, you will identify environmental problems or issues that need to be addressed on our campus. Your team will then investigate an issue of your choice, identify a plan of action to address the problem, and create an iMovie to present your findings to the school community. In the process, you will analyze our role in the local ecosystem, assess the ongoing relationship between humans and their environment, and explore natural resources in our school community. The question that drives us is this: What is our role in the world as 7th graders and humans? Remember, real change won't happen at our school without you. So be the world-changer you were made to be.*

*– Project Green School, 7<sup>th</sup> Grade Project Overview, Oak Middle School*

Three years ago, a colleague and I decided to create Project Green School. We designed this project-based learning unit to engage students in taking ownership of environmental problems in our daily lives. Students immediately identified the lack of outdoor recycling bins on campus and we set about trying to resolve the issue. As citizens of the 21<sup>st</sup> century and part of one of the most environmentally conscious counties in the state of California, it was difficult for students and teachers alike to comprehend the absence of consistent recycling on campus. Not only that, but compost was nonexistent and communication about environmental issues minimal. Brimming with ideas, the students set about creating plans for change. Meanwhile, my colleague and I attempted to help make that change a reality. In the process, we encountered a surprising number of obstacles and discovered an equally surprising disparity among

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sustainability efforts at schools in the area. Three years later, much progress has been made and many questions have emerged. The need to provide students with opportunities to learn about and engage in sustainable behavior is real. Given the escalating global and local consequences of climate change, an understanding of sustainability is needed now more than ever.

Not far from our school, the Bay tide ebbs and flows. According to the recent Shoreline Sea Level Rise Vulnerability Assessment, our water level has risen 8 inches in the past 100 years – a direct result of rising global temperatures and the melting of glacial ice (BayWAVE, personal communication, September 1, 2017). Assuming global temperatures continue unabated, the sea level may rise up to 70 inches by the end of this century. In other words, the effects of climate change are not distant and vague. They are clear, and clearly of concern to our immediate geographic area. A sea level rise of only 10 inches could directly affect 5000 acres of land, 1300 parcels and 700 buildings in our county. Tens of thousands of residents, visitors and employees would be harmed (BayWAVE, personal communication, September 1, 2017). By virtue of geography, it is the socio-economically underserved neighborhoods that will be most vulnerable to severe flooding.

Beyond the local context, the consequences of climate change are vast. Despite the climate deniers and recent anti-environmental federal policies in the United States, the scientific consensus is undeniable. Temperatures will continue to rise for decades to

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come. Growing seasons will lengthen. Weather, including droughts, hurricanes and precipitation, will become increasingly severe. Sea levels will continue to rise. Arctic sea ice will further decline. By mid-century, we will likely have an ice-free arctic during the summer months (NASA, 2017). Combined, these effects exacerbate the already widespread problems of global instability, hunger, poverty and conflict.

This is the world that our students will inherit. This world of increasingly convoluted problems is one they must be equipped to manage and steward. Certainly our students did not create the brunt of this mess, but they will bear the full weight of its consequences. The future of our community and our planet depends of whether every student receives the opportunity to learn about sustainability and live it out.

### **Statement of Problem**

Given the increasingly devastating consequences of climate change and the generational inequity involved, there is an urgent need to educate our youth on environmental issues and empower them with opportunities to effect positive change. This research seeks to address the problem of inconsistent and inadequate sustainability programs on school campuses, investigate causal factors and identify areas for transformation.

For the purpose of this study, “sustainability programs” are defined as the synergistic multi-level efforts of waste management, resource conservation and

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environmental education that seek to minimize human environmental impacts and protect environmental resources for future generations. (Schelly, Cross, Franzen, Hall & Reeve, 2012; Lyons Higgs & McMillan, 2006; Shelburne Farms' Sustainable Schools Project, 2015). School, district and countywide programs are crucial given the worsening consequences of climate change and the influential role academic institutions have in communities.

### **Theoretical Frameworks**

The theoretical frameworks guiding this research integrate multiple angles of analysis. First, the components of environmental programs at academic institutions, namely the processes and strategies utilized to support academic institutions in sustainability efforts, are considered (Schelly et al., 2012; Lyons Higgs & McMillan, 2006). Research suggests that effective environmental sustainability programs incorporate a synergistic combination of waste management, resource conservation and cross-curricular environmental education that emphasizes environmental literacy (Schelly et al., 2012; Lyons Higgs & McMillan, 2006).

Based on Lyons Higgs' and McMillan's findings (2006), it is evident that modeling is an essential component in school sustainability programs. In my research, I explore four aspects of modeling described by Lyons Higgs and McMillan for the school site context, including individual role models, school facilities and operations, school

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governance and school culture (2006.) Following Schelly and colleagues (2012), I also consider the extent to which a “synergy” of modeling, district-school alignment and participatory governance is present at local school sites.

Second, the lens of organizational change, or the strategies and processes involved in transforming an organization’s vision, institutional structure and culture, are also applied to this research problem (Kotter, 1996; Brown, 2012). Existing research indicates that lasting organizational change occurs through shared vision, collaborative decision-making, consistent communication and institutionalizing the changes as part of the organizational culture (Kotter, 1996; Brown, 2012). The key concepts of organizational change are certainly transferable to academic institutions. These concepts provide the primary lens through which to view past and future sustainability efforts on school campuses.

Finally, a conceptual understanding of environmental justice and equity adds a previously unexplored layer of analysis to better understand inconsistent and inadequate sustainability programs across middle school campuses. The underlying principle of environmental justice is that “all people – regardless of their race, color, nation or origin or income – are able to enjoy equally high levels of environmental protection” and environmental health (California Energy Commission, 2018). Environmental justice issues include the extent and experience of environmental harm, access to environmental resources and intergenerational differences in resource use



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over time (Narksompong & Limjirakan, 2015; Weiss, 2008; Braveman & Gruskin, 2003). This inherently involves issues of social justice and the fair allocation and distribution of resources.

Studies on environmental justice indicate that a child's access to education, training and participation in environmental issues is not only an issue of resource equity, but also a human right (Narksompong & Limjirakan, 2015; Weiss, 2008; Wilkinson & Freudenburg, 2008). Combined with Braveman and Gruskin's (2003) conceptual model of equity, I investigate the role of equity in the distribution of and access to sustainability programs on school campuses.

A review of the literature reveals limited research on the relationship between school sustainability programs and equity issues, specifically in regards to programs that include education, training and active engagement of students. While many studies address the significance of sustainability and the key components of successful waste reduction, energy conservation and/or environmental education elements at schools, there are minimal case studies that consider school sustainability programs through a lens of equity and environmental justice. Moreover, there is a lack of research that examines sustainability programs at more than one school site or within the district and county context.

My research builds on the existing literature by examining school sustainability programs beyond organizational change processes, specifically through the context of

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environmental justice and equity. The concepts of environmental justice and equity are typically not applied to schools outside the realm of experiencing environmental harms or teaching environmental curriculum. In contrast, this study considers sustainability programs as a barometer for equitable access to training and resources.

Additionally, the literature contains many studies on the integral components of successful school sustainability programs, particularly at single school sites. In contrast this research examines three middle schools in the same district and their relationship to broader county sustainability efforts. A framework of environmental justice and equity guides the analysis of the study findings.

### **Purpose Statement**

Global environmental concerns, state legislation, and local context set the stage for this research. Specifically, the purpose of the research is to better understand the current sustainability efforts in Alder School District (ASD) schools in the light of the district's recent adoption of the Equity Imperative. I investigate the relationship between educational equity and school sustainability programs. In doing so, I consider the successes and challenges of existing sustainability efforts. Additionally, the research aims to provide information and impetus for transformation towards more comprehensive sustainability programs.

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### **Research Question**

The central question posed in this research is: What is the relationship between educational equity and school sustainability programs? In other words, the research explores how sustainability programs can be used as a barometer for equitable access to training and resources, and a tool for civic engagement. Because the central question inherently involves multiple levels of organization, my research considers phenomena at the school, district and county levels. Specifically, the study investigates the state of sustainability programs at the three middle schools in the Alder School District (ASD): Oak Middle School (OMS), Pine Middle School (PMS), and Sequoia School (SS; Kindergarten through 8<sup>th</sup> grade). District office, sanitation and environmental non-profit professionals are also engaged to provide big picture context. For confidentiality purposes, all names of organizations and individuals used in this research are pseudonyms.

In addition to being personally meaningful, my research is significant for several audiences. Students and teachers have the opportunity to share opinions and experience in environmental issues affecting them at school on a daily basis. The opportunity to be heard and understood is one that teachers and students alike appreciate. For Alder school and district administrators, this study provides a much-needed analysis of the current state of sustainability programs at each organizational

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level. The acknowledgement of successes and identification of opportunities for growth offers clarity for making further progress. Additionally, the study also directly addresses the ASD priority of equity.

My research also addresses Grove County's sustainability resolution and strategies. The findings in this study can be beneficial in informing future city and countywide school sustainability measures. The analysis of expertise from local sanitation and environmental non-profit professionals may also contribute to more coordination between various districts in the county.

### **Methodology**

This research engages mixed methods to provide a multi-dimensional view of the state of sustainability programs. Non-experimental survey data was collected from middle school teachers at each school site to ascertain individual opinions and experiences of sustainability programs. This numerical data provides for comparison between school sites and sets the context for qualitative insights.

To gain a more in-depth perspective at each school site, semi-structured interviews were conducted with principals and custodians. Follow-up interviews also occurred with teachers based on the survey results. Visual observation of waste disposal efforts, specifically solid waste management locations and supporting resources, served as another source of qualitative data. Open-ended interviews with professionals

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involved in district school maintenance, local waste disposal, and environmental education provided insight beyond the school sites. The collection of data from teachers, administrators and professionals at the district and county level provide a comprehensive view of sustainability successes and challenges.

### **Summary**

The findings in this study offer compelling evidence for the need to improve school, district and countywide sustainability programs. An analysis of the evidence yields three primary findings. First, a trajectory of local political decisions and processes has contributed to an inequitable structure of school sustainability programs across Grove County. Within this structure of inequity, schools in the same region have substantially different access to resources, support and practice opportunities related to sustainability. Second, the piecemeal state of sustainability in the Alder School District can be characterized by a variety of challenges, including mixed messages, inconsistent communication, conflicting priorities, and lack of stakeholder buy-in and coordination. Despite these hindrances, individual Alder schools have made significant progress to effect change. This agency has emerged through student-driven change and environmental education in the science classroom. Additionally, individual and collaborative agency at one school in particular demonstrates how factors such as buy-

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in and coordination, consistent communication and stewardship as a priority contribute to a comprehensive sustainability program.

The multi-faceted nature of these findings indicates several implications. Most importantly, the structure of inequity must to be repaired. The Alder Sanitary District, with the support of the school district and city, needs to be held accountable. The sanitary district should provide the resources, funding and support necessary for Alder students to have equitable opportunities to engage in environmentally sustainable behavior. In contrast to the current 'scattershot approach, the Alder School District must design and implement a systematic approach to sustainability. This should include an official sustainability policy, an action plan and designated funding, a planning committee of stakeholders, consistent communication about priorities, and formal education for all stakeholders. Clarification and modernization of the roles and responsibilities of custodians, yard duties and lunch staff will further support successful implementation. Stronger leadership from school site administrators, increased participation from school staff, as well as the designation of an official 'sustainability coordinator' at the school or district level, will help in providing the direction necessary for success. In order to effectively resolve the current structure of inequity, a clear partnership between all stakeholders, including the school sites, school district, sanitary district, city of Alder and Grove County, is essential.

## **Chapter 2 Review of the Literature**

### **Introduction**

This research investigates the relationship between educational equity and school sustainability programs. In other words, the study evaluates the degree to which sustainability programs are distributed throughout Grove County, as well as the successes and challenges related to sustainability programs within the Alder School District. Current Grove County and Alder District sustainability efforts will be examined through the lenses of program components, organizational change, and equity and environmental justice. In what follows, I first review the significance of sustainability in the current political and educational climate. I then turn to a discussion of the distinguishing characteristics of successful environmental sustainability programs in schools. This is followed by an overview of the literature on organizational change processes and strategies for effecting lasting change. I conclude with an examination of the issues surrounding environmental justice and equity.

### **Background, Context and Significance**

The term “sustainability” derives from the Latin verb *sustenerere*, meaning “to hold up” or support. (Shelburne Farms’ Sustainable Schools Project, 2015) When taken in this context, our modern day understanding of sustainability connotes a word picture of “humanity holding itself up,” being stewards of our environment and communities

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(Shelburne Farms' Sustainable Schools Project, 2015). While there are a variety of working definitions, the most commonly accepted meaning of sustainability comes from *Our Common Future*, the 1987 World Commission on Environment and Development (WCED). Also called the Brundtland Report, the WCED distinguishes sustainability as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (para. 27). Inherent in this definition is the understanding that our modern world has become increasingly "interlocked." Crises are no longer distinct phenomena, merely environmental, social or economic. Rather, they are undeniably integrated and interdependent (para. 11). In other words, sustainable development ensures the environmental, social and economic choices of the present do not compromise those of the future.

In the context of this influential report, the U.S. has taken a different approach to sustainability. For example, the U.S. has not ratified the United Nations Framework Convention on Climate Change (UNFCCC). The multi-dimensional purpose of the UNFCCC is to collectively reduce greenhouse gas (GHG) emissions and minimize increases in global temperature. The Commission places the burden for leadership and mitigation on developed countries as they are primarily responsible for past and present GHG levels. The UNFCCC also establishes guidelines for adapting to the environmental, economic and social realities of climate change (UNFCCC, 2015).



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The 1997 Kyoto Protocol and the 2015 Paris Accord fall within the framework of the UNFCCC. The U.S. became signatories of the Paris Climate Accords under the Obama Administration but the agreement was not ratified because it was not submitted to Congress. In June 2017, the U.S. withdrew from the agreement under the Trump Administration (The White House, Office of the Press Secretary, 2017). The U.S. is now one of only three nations (the other two being Nicaragua and the Syrian Arab Republic) to not be signatories of the Paris Agreement.

In comparison to national commitment, the state of California has emerged as a leader in addressing climate change. California has passed landmark legislation, including the Global Warming Solutions Act of 2006 (AB 32). AB 32 established strict statewide limits on GHG emissions. The passage of SB 32 in 2016 expanded the state's goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. In 2015, the state passed the Clean Energy and Pollution Reduction Act (SB 350), which compels the state to increase its renewable energy mix to 50 percent and double the energy efficiency of buildings by 2030.

Since resource production and consumption is directly linked to climate change, California has also passed legislation regarding the disposal of solid waste. On January 17, 2012, the state adopted the mandatory commercial recycling law AB 341. This legislation mandates recycling for commercial businesses and public entities, such as schools and multi-family dwellings, that produce four or more cubic yards of solid waste

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per week. According to 2008 State Characterization data, the commercial sector, including schools, produces nearly 75% of the solid waste in California. The majority of this waste is easily recyclable (California Department of Resources Recycling and Recovery (CalRecycle), March 20, 2017) Diverting recyclables from the landfill directly contributes to a reduction in greenhouse gas emissions.

The Mandatory Commercial Organics Recycling (AB 1826) law took effect in 2016. This law requires commercial and public entities to divert solid organic waste instead of disposing it in the landfill. As of January 1, 2017, all schools that produce four or more cubic yards of solid organic waste are mandated to comply. This is especially significant given the 2014 Waste Characterization Study. According to CalRecycle (October 6, 2015), the state disposes of 30 million tons of waste in landfills each year, 30% of which could be composted. This compost could be used for renewable energy and fuel. When left in the landfill, the decomposition of organic waste results in methane production. Methane from landfills is a substantial contributor to GHG emissions and thus climate change (CalRecycle, May 9, 2017).

Even within California, Grove County has become a leader in sustainability efforts. Building on previous sustainability programs, the Grove County Board of Supervisors adopted a resolution on October 2, 2017 to develop policies and create incentives to dramatically reduce GHG emissions. In doing so, Grove intends to become a leader in California's efforts to combat global warming. This resolution is based on five

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primary strategies recommended in Paul Hawken's new book, *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse global Warming*, published April 2017.

Grove County launched this resolution by hosting a "Drawdown Grove" conference to encourage support from businesses, residences and local government. According to the official County website (2017), the proposed strategies are further outlined: 1) shift to 100% renewable energy; 2) engage in fuel-efficient transportation; 3) increased energy efficiency by turning off appliances when not in use; 4) compost regularly and purchase locally grown food to promote carbon sequestration; 5) foster climate resilient communities by understanding climate risks. Examples of sustainable development suggested for Grove schools include the use of solar panels, green building design, reducing consumption of nonrenewable resources (such as plastic packaging), compost and recycling programs, and energy efficient transportation (such as carpooling).

The Alder School District (ASD) is located in northern Grove County. On March 1, 2016, the district Board of Trustees approved a collaborative agreement with to install solar panels at 10 ASD schools. This agreement, at minimal cost to the district, represents significant progress toward increased energy efficiency. Even with this progress, however, other sustainability efforts have been minimal and inconsistent. Solid waste reduction and disposal efforts, including recycling and compost, are lacking. Moreover, district communication and coordination for sustainability is minimal.

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As one of the more socio-economically diverse districts in the county, ASD prioritizes equity in education. In January 2017, the district Board of Trustees approved the Equity Declaration. In this Declaration (2017) the district defines equity as providing every student with access to the educational opportunities that will equip him or her for a “strong future.” The broad-reaching impact of equity is underscored in the Declaration’s assertion that failing to educate any individual student affects the entire community. The Declaration specifically emphasizes enabling all students to master grade-level content and 21<sup>st</sup> century skills, as well as to meet CSU/UC entrance requirements. Given that an understanding of sustainability issues and opportunities for practical application are emphasized in the Next Generation Science Standards (NGSS), and that 21<sup>st</sup> century citizenship in a climate-changing world now necessitates such learning in order to be prepared for a “strong future,” issues related to campus sustainability are inherently related to the -Imperative.

Beyond the direct relevance to Grove County and ASD schools, this topic is meaningful within the broader context of educational trends and research. The NGSS for California Public Schools, adopted September 24, 2013, place a significant emphasis on environmental issues and human impacts on the environment, including climate change, ocean acidification, sea level rise, and environmental solution design. Accordingly, teachers and organizations are in the process of crafting new curricula to implement these standards. NGSS lesson design and implementation provide schools with the

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unique and timely opportunity to coordinate new curricula with school waste reduction and energy conservation efforts. Alternatively, inadequate waste reduction and energy conservation efforts can undermine student learning and result in missed opportunities for putting new learning into practice.

Schools not only reflect our present but also shape our future. Given the vast number of people and resources involved, public schools are institutions that have a profound impact on society and the environment. Thus, public schools have the capacity to effect transformative and lasting change at the local, state, national and global level. Moreover, as sizeable institutions, public schools are substantial consumers of resources and generators of solid waste. Consequently, any actions taken or not taken at schools inherently have a significant impact on the environment. Furthermore, schools are the primary educators of our youth, training students who will become future adults – adults who will be responsible for leading our people and our planet, adults who will inherit climate change and all of its consequences. Since public schools are public, paid for and designed to benefit the people, they have an intrinsic responsibility to serve the current and future public good.

### **Overview of Literature**

In the academic literature, issues related to sustainability programs are examined through a variety of perspectives. The literature discussed in this chapter

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represents a combination of quantitative, qualitative and mixed methods designs. In addition to historical context, the chapter evaluates literature findings about the synergistic components of sustainability programs, the benefits and characteristics of environmental education, and the necessary processes to effect lasting organizational change. Further, the literature highlights the relationship between youth, environmental justice issues and principles of equity.

**Environmental sustainability programs in schools.** Local, national and international context provides the setting for literature on current environmental sustainability programs in schools. Effective environmental sustainability programs incorporate a “synergistic” combination of waste management, resource conservation, and cross-curricular environmental education that emphasizes environmental literacy. Contributing factors to success include committed participation and modeling at all levels of the community, engaged participatory governance, educational support, and the communication of vision, expectations and results.

In “How to Go Green,” Schelly and her colleagues (2012) identify several components of effective environmental programs through their exploration of electrical energy reduction and conservation education at a Rocky Mountain High School in Colorado. The research attributed the successful energy conservation efforts to several essential components: role of vision and “buy-in;” the significance of communication across various methods; the influence of role models; and the steps to enact

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organizational change. The study attributes Rocky Mountain's conservation success to its "synergistic and holistic" program. This program intertwined the efforts of individual role models (principal, teachers, students, custodians), the clarification of expected conservation behaviors and program successes, the leadership of district operations and facilities, the school participatory governance, and the intentional transformation of school culture. Further, the study reveals the reciprocal, holistic relationship between conservation programs and environmental education (Schelly et al, 2012).

Lyons Higgs and McMillan (2006), arrive at similar findings in their analysis of successful sustainability implementation at schools. They argue that the role of teaching through modeling was the most integral factor in successful programs (Lyons Higgs & McMillan, 2006). Four key aspects of modeling were determined. First, individual role models were identified as leading and reinforcing positive change. These individuals include teachers, staff and everyone on campus who engaged in sustainable behavior. Second, sustainable facility initiatives (such reduced electricity use, installation of solar panels, hybrid school buses, etc.) and the leadership of operations were essential. Third, the self-identification of custodians, students and the entire campus community as caretakers fostered a school culture of sustainability and stewardship. Finally, engaging in participatory school governance practices strengthened the sustainability programs.

While Lyons Higgs and McMillan (2006) and Schelly and colleagues (2012) assess sustainability programs that occur on a top-down or multi-level approach, Mason and

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colleagues (2003) document the bottom-up creation and implementation of a zero waste program at a university campus in New Zealand. Mason and colleagues (2003) demonstrate that grassroots efforts initiated by students and faculty can result in highly effective systems. The process began with preliminary discussions between stakeholders at a forum, the establishment of a working group, a funding proposal, and the collection of quantitative data on solid waste generated over time. Training on implementation practices was provided to all. Campus leadership and facilities staff provided support and feedback on an ongoing basis, and a committee was created to coordinate the communication between all parties involved. Similar to Lyons Higgs and McMillan (2006) and Schelly et al. (2012), Mason et al. attribute the “buy-in” that students generated through their grassroots activism and participatory process, as well as the level of organization and emphasis on data, as integral factors in the successful implementation of the program.

In addition to these contributing factors, James (2006) emphasizes the importance of a partnership with local organizations in implementing school sustainability programs. This partnership can provide the programmatic support and resources for schools that may not have the capacity to design and implement programs on their own. A Green Team (including students, teachers and administrators), the collection of data to measure progress, and educational support were also necessary



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components (James, 2016). This education came in the form of clearly labeled waste bins, descriptive and easily visible signs, as well as the communication of successes.

While a general consensus exists in the research concerning the importance and components of school sustainability programs, some debate still remains. These debates include whether behavior changes can happen without a change in attitude, the degree to which environmental education actually motivates sustainable behaviors, and whether environmental education is within the context of the classroom or the school culture at large (Schelly, Cross, Franzen, Hall & Reeve, 2012).

Even amidst the debate, the academic literature reveals that environmental education is an essential component of effective sustainability programs. The findings of Giannoulis, Marcinkowski, McBeth, and Volk (2014) indicate that environmental education occurs most effectively when integrated in school classrooms and culture. The authors of this work present findings on their extensive multi-phase study of environmental literacy among middle school students in the United States. Several factors were identified as predictive of higher environmental literacy. The extent of verbal commitment, environmental feeling (positive feelings toward the environment) and environmental sensitivity (concern for environmental issues) were strong predictors of actual practice of sustainable behavior. Cognitive skills among middle school students, such as the ability to analyze issues and draw conclusions, were also predictive of environmental literacy. Students demonstrated higher environmental literacy in

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schools where environmental education was taught in two or three grade levels (ex: 7<sup>th</sup> and 8<sup>th</sup> grade; 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade) as opposed to only one level. Higher environmental literacy was also associated with curriculum that included the use of projects, cooperative learning and discussion, as well as campus environmental clubs. Students scored higher if they had teachers with more classroom experience and environmental education training. It is significant to note that student demographics, the location of the school, and socio-economic status did not appear to be strong predictors of environmental literacy.

The findings on the predictive factors of environmental literacy are based on McBeth and Volk's (2010) prior study to ascertain a baseline measurement of environmental literacy among 6<sup>th</sup> and 8<sup>th</sup> graders in the United States. Environmental literacy was measured as a composite score of ecological knowledge, environmental affect (verbal commitment to act, sensitivity toward environmental issues, general feelings), cognitive skills (identification, analysis and solution planning for environmental issues) and behavior (actual practice of sustainable behaviors).

Overall, middle school students demonstrated a moderate to high level of knowledge about ecological relationships, were somewhat positive in regards to feelings about the environment and showed interest in taking action steps to improve environmental problems. Eighth graders had a higher level of cognitive skills, specifically the identification, analysis and design of solutions, while 6<sup>th</sup> graders were more positive,

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and willing to act in sustainable ways. Sixth graders also exhibited more actual participation in sustainable acts. In general, all students displayed higher verbal commitment of and positive feelings toward sustainable behavior than actual practice of sustainable behavior. Critical thinking, particularly the analysis and action-planning skills to resolve environmental issues in communities, was comparatively inadequate (McBeth & Volk, 2010).

Environmental education has also been evaluated from the teacher perspective. Blanchet-Cohen and Reilly (2013) highlight several strategies and challenges for the implementation of culturally responsive environmental education. Successful strategies included promoting behavior change to empower students as change agents, engaging in hands on learning and practicing critical thinking through discussion and directed research. The study also highlighted the benefits of sharing student and teacher experiences, strengthening connections between school and home, and the cross-discipline approach to environmental education. In contrast, the values and assumptions of teachers, as well as the lack of common experience between teachers and students, were obstacles to program success. For example, many teachers assumed immigrant families did not know enough about, prioritize or value conservation efforts at home due to socio-economic differences. As a result, teachers frequently assumed sustainability was a novel or unappreciated concept for immigrant students (Blanchet-Cohen & Reilly, 2013).

**Organizational change processes.** Research indicates that lasting organizational change occurs through shared vision, collaborative decision-making, investment in stakeholder relationships, consistent communication and institutionalizing the changes as part of organizational culture. In *Leading Change*, Kotter (1996) argues that there are eight reasons why organizational change processes fail and proposes consequent strategies to effect lasting transformation. Kotter describes organizational change as a process of phases that require time, commitment and perseverance. In other words, the change process is not one to be entered lightly or adopted as a quick fix. Stated positively, the first step of organizational change is to create a sense of urgency. This is done through the examination of circumstances and assessment of critical issues and opportunities. Next, an influential coalition of leaders needs to be formed. This coalition must be equipped with enough power, collaborative effort and overall influence to guide the change effort. A vision must then be established. This vision directs changes and determines strategies. The coalition, empowered by this vision, will empower others to act by removing barriers, changing underlying systems and encouraging novel ideas. Short-term wins, enabled through designing and creating visible measures of success, should be recognized and celebrated. The momentum must then be harnessed to inspire more progress even while leaders are careful not to declare victory prematurely. Finally, the changes need to be institutionalized as part of the culture. Put another way, new behaviors need to become part of the system (Kotter, 1996).

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Similar themes of organizational change processes emerge with the recent phenomenon of the Changemaker™. The Ashoka Foundation originally coined the term Changemaker™ in 1981 and it has achieved increasingly common usage in the past few years. The term denotes individuals involved in social entrepreneurship, who use innovative strategies, a business mindset and problem-solving techniques to solve social issues. The term changemaker is “inherently ethical” as it involves engaging in intentionally positive change that benefits communities (Bandinelli & Arvidsson, 2013, p. 68). This concept is applicable to school sustainability programs in that schools can conceptualize themselves as environmental changemakers that can strategically effect positive change for the benefit of their local and global communities.

Brown (2012) summarizes changemaking as “the roles and practices beyond grantmaking through which a foundation advances its goals” (p. 82). Changemaking is viewed as a tool that, when effectively utilized, can facilitate an organization’s success. According to Brown, changemaking needs to be context specific. An organization should obtain intimate knowledge of its local context and tailor strategies accordingly. In other words, what worked for an organization in one city would not necessarily work in a different organization and city. Changemaking also requires consistent and up-front communication about goals and practices, as well as opportunities for feedback throughout the process. This provides clarity and direction for all involved. Other components of changemaking include investing in relationships, integrating staff and

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board leadership through shared goals and decision-making, and cross-department work where collaboration occurs across programs that do not typically work together. Brown's research also underscores the importance of listening to and analyzing stakeholder opinions and motivations. This listening should inform strategies, especially in the case of resistant or hesitant opinions. Moreover, such strategies as listening to stakeholders, engaging in clear and consistent communication, and creating context-specific plans of action provide insight into how to more effectively design and implement school sustainability programs.

### **Strategies and considerations for change implementation in schools.**

Transforming culture is an integral component of organizational change. Organizational culture is the combination of shared beliefs, values and practices in an organization (Hill & Jones, 2008). Peterson and Deal (2002) elaborate further, adding that a school culture also includes the shared sense of purpose and vision, rituals and traditions, and architecture and artifacts. School principals lead the process of understanding, assessing, and reinforcing or transforming school culture even when it may be distinct from other schools in the district (Peterson and Deal, 2002).

The need for buy-in – the personal commitment to an idea or cause – is one of the essential components in transforming school organization and culture. While buy-in is important in effecting change, Reeves (2009) contends that most leaders make the mistake of waiting to begin the change process until all stakeholders have committed.

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The reality is that buy-in is never completely universal. According to Reeves, authentic buy-in happens through getting results that prove the change is beneficial to all stakeholders. This means buy-in happens through the process of implementation rather than because of seminars or inspirational programs. It is the evidence of the benefits of the change that amasses buy-in. Buy-in is the product of measurable, meaningful and comprehensible results (Reeves, 2009).

**Environmental justice and equity.** Even as organizational change can be strengthened by buy-in, it can be impeded by a sense of cultural alienation within an organization. Brown, Higgins and Pierce (2003) demonstrate a correlation between student perceptions of alienation in school life with disability, gender and race. Study results showed that male students identified a greater sense of alienation than females, while students with disabilities expressed heightened alienation when compared to general education students. Contrary to previous research studies, Caucasian students reported higher alienation when compared to African American students. These findings pose several implications for school reform in regards to equity issues. School reforms must intentionally address ways to reduce alienation and increase a sense of belonging. Actions must be taken to evaluate the impact of such reforms in the context of disability, gender and race. Reforms to be considered should include strengthening relationships between students, teachers and administrators, cultivating a sense of school spirit and maintaining healthy teacher and administrative attitudes. School

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programming needs to include relevant curriculum and collaborative decision-making that involves all students and families in the process, rather than only a few. Combined, such actions can increase the overall sense of inclusion and belonging (Brown, Higgins & Pierce, 2003). Opportunities to play an active role in school sustainability programs, as discussed in this study, may help to increase reduce alienation and increase a sense of belonging.

Beyond organizational change processes, the academic literature reveals that equitable access to education, training and participation in societal issues that affect children is not only an issue of environmental justice, but also a human right. Narksompong and Limjirakan (2015) argue that governments have the obligation to educate youth on sustainability issues and provide opportunities for them to actively engage as informed citizens. This argument is founded on human rights principles and agreements from the United Nations (UN). UN Agenda 21 designates youth and children as one of nine major groups that have the right and responsibility to participate in sustainable development. In this article, youth participation is defined as young people participating as active citizens in communicating perspectives and influencing policy decisions on environmental issues. Furthermore, the UN Framework Convention on Climate Change, Article 6, on Education, Training and Public Awareness states that governments are responsible for implementing climate change education and training programs to inform and equip all stakeholders. Youth are included in this group of



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stakeholders. Youth are primary stakeholders not only because of global citizenship, but also because younger generations will bear the brunt of the consequences of climate change despite the fact that they were not its primary cause (Narksompong and Limjirakan, 2015).

Similarly, Weiss (2008) claims that children not yet born will be unable to fulfill their rights to equality and non-discrimination under the UN Convention on the Rights of the Child (UNCRC) if climate change continues at the predicted rate. All children (including those not yet born) have the right to climate justice as a result of international law. The United Nations Framework Convention on Climate Change Convention (UNFCCC) and the UN Convention on the Rights of the Child (UNCRC) guarantees these rights, which inherently involve issues of environmental justice, at a national level. According to Weiss:

- Children (under 18, unless specified as younger by a country's laws) have the right to be listened to and actively participate in issues that affect them, including climate change – something that affects them disproportionately when compared to other stakeholder groups.
- Children have the right to health, survival and development. This is already jeopardized because of the increased risks associated with the effects of climate change, including worsening natural disasters, the spread of disease through imbalanced ecosystem dynamics and worsening air pollution.
- Children have the right to equality and non-discrimination. Compared to developed nations, developing nations face the most extreme consequences of climate change due to limited resources and capacity to respond. The result is that children in developing nations are exposed to a disproportionate level environmental harm associated with climate change.

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Other issues associated with environment, equity and international law include legal accountability and finance. The CRC requires states parties to provide financially to meet children's economic, social and cultural rights, with developed nations expected to take the lead. Unfortunately, this has not yet occurred to the extent required and it is difficult to hold states accountable (Weiss, 2008). It should also be noted that the United States is one of only two countries (Somalia is the other country) that have not ratified the nearly universally accepted CRC.

Because of the intergenerational inequity (between members of the different generation) in the distribution of climate change consequences (Weiss, 2008; Narksompong and Limjirakan, 2015) youth must be involved in decision-making processes. This inequity is also a factor because developing nations are more vulnerable to the effects of climate change while developed nations are chiefly responsible for such consequences. Weiss (2008) reasons that although all children have the right to equality and non-discrimination developing nations face the most extreme consequences of climate change with the least resources and capacity to respond. As stakeholders, youth have a right to participate in sustainable development and policy. Likewise, governments have the responsibility to provide education, training and public participation to enable the engagement of all stakeholders, especially youth, in environmental public policy (Narksompong and Limjirakan, 2015).

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Similarly, Wilkinson and Freudenburg (2008) contend that equity issues are central to understanding the relationship between humans and the environment. The 1969 Santa Barbara oil spill repositioned environmental issues as issues of public policy and society. The result was the creation of environmental studies programs at academic institutions. Yet issues of equity were, and still are, relegated to special environmental ethics classes rather than integrated into an overall conceptual understanding of the environment. Wilkinson and Freudenberg (2008) identify three primary components of environmental inequity:

1. The disparity between those who experience environmental harm and those who do not;
2. The degree of access to crucial environmental resources (water, land, clear air) among populations throughout the world; and
3. The disproportionate use of resources by certain generations over time

Using these components, Wilkinson and Freudenberg (2008) identify environmental inequity as one of the critical causes of environmental problems in the modern world.

This idea dispels the stereotype that people will only care about environmental sustainability when they obtain a certain degree of wealth. Rather, people of impoverished and wealthy countries indicate similar degrees of concern over the environment (Wilkinson & Freudenburg, 2008). Such findings apply to the research in this study, in which Grove County professionals of varying socioeconomic backgrounds exhibit concern over environmental issues. An understanding of environmental justice and equity issues suggests that it is a human right for Grove county students to have

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equitable access to education, training and participation in the sustainability issues that affect them. Not only that, but governments—and arguably public organizations that receive government funding—have the obligation to provide students with opportunities for education and participation in sustainability issues. Failing to provide adequate opportunities only exacerbates the three primary components of environmental inequity described by Wilkinson and Freudenberg (2008).

**Distinguishing terms and related principles.** Research from other disciplines can provide further insight into the meaning of equity. Writing for the field of health care, Braveman and Gruskin (2003) refer to equity as an ethical concept inherently connected to principles of distributive justice and human rights. Equity, the authors argue, is defined as social justice or fairness. In regards to community health, equity is the absence of systematic disparities between people groups with differing degrees of social advantage or disadvantage, namely that of wealth, power or prestige. Braveman and Gruskin (2003) argue that an evaluation of health equity requires comparing health systems and the extent of wealth, power and prestige present in different groups. They also clarify that equity is not the same as equality. This is because equity is value-based in its concern for the distribution of and access to resources where unequal distribution results in injustice. Inequality can be fair (such as unequal levels of health in a population because some members are older and some are younger), while inequity is

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never fair (unequal levels of health because some members have access to infant vaccinations while others do not).

Debnam, Waasdorp and Bradshaw (2014) define equitable education as education that provides the resources and strategies each student needs to be successful. Equity does not mean equal treatment for all; it means that all students are given what they need to experience success. There is a correlation between students' perceptions of equity and their perception of their own connection to and engagement in their school community. In other words, the greater the sense of equity, the stronger the sense of school belonging and commitment. The sense of connection is described as the belief that students are cared for by their school community, including peers and adults. Engagement is referred to as the active involvement in school life through behavioral, emotional and cognitive participation. Debnam, Waasdorp and Bradshaw (2014) also note that minorities indicated a comparatively lower sense of equity, connection and engagement than their peers.

Issues of fairness have also been analyzed in the context of academic organizations, justice and the environment. Parris, Hegtvedt, Watson and Johnson (2014), demonstrate a positive relationship between academic organizational context and student perceptions of environmental and ecological justice. In their 2014 study, the authors compared procedural environmental justice (decision-making processes about resource use and distribution of harms), distributive environmental injustice

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(distribution of environmental harms) and ecological injustice (actual behavior toward environment). Student perceptions were evaluated based on their degree of environmental motivation (beliefs and actions in support of natural world), political beliefs (conservative vs. liberal) and environmental identity (the role of environment in the sense of self; the sense of connection between self and environment).

Based their evaluation of these student perceptions, Parris and colleagues conclude that students with strong environmental identity are more likely to recognize instances of unfair decision-making processes, disproportionate distribution of environmental harms and situations of unjust treatment of the environment.

Additionally, the perception of university support for sustainability improves students' own understanding of environmental and ecological justice. As a result, universities and organizations can strengthen students' own perceptions of injustice and consequently motivate environmentally responsible behavior by creating stronger environmental identities for students. In other words, universities can focus on using curriculum and programs that strengthen environmental identity rather than environmental motivation or political activism. For example, students can learn about their relationship within the local ecosystem by going on nature walks, analyzing the distribution of environmental harms in their local neighborhoods and examining the university's carbon footprint and role in climate change issues (Parris, Hegtvedt, Watson, and Johnson, 2014).

**Education and implementation issues.** Through activities like nature walks and carbon footprint calculations, schools can bridge students perceptions of justice with the environment. According to Lowenstein, Martusewicz, & Voelker (2010), ecojustice education is an essential component of environmental education. Ecojustice education is described as education that challenges students to assess the environmental, societal and cultural effects of a worldview of domination and empowers them to act to improve their own communities. Worldviews of domination include anthropocentrism, ethnocentrism, racism, sexism and individualism. By investigating issues of dominance, Lowenstein, Martusewicz and Voelker (2010) assert that students gain a deeper understanding of environmental justice and are thereby empowered to take steps toward the protection of biological and cultural diversity. Ecojustice inherently includes the acknowledgement and valuing of environmental and cultural commons-based cultures. Environmental commons refers to land, water, air and the biosphere. Cultural commons include the behaviors, traditions, ways of knowing and styles of relating that build sustainable community. Because community is a central focus of ecojustice, community-based learning is fundamental part of education programs. In this style of learning, students identify problems in the local community, analyze the causes of the problem in light of socio-economic and cultural contexts, and partner with their community to create solutions that contribute to a sustainable community.

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Minkler, Vasquez, Tajik and Petersen (2008) also document the benefits and critical factors in community-based learning. In this community-based participatory research (CBPR), Minkler and colleagues investigate community environmental health issues and community capacity for change. Several factors play a role in community capacity including strong community leadership, participation of stakeholders, the skills and resources of those involved and the establishment and sustaining of community networks. Shared values among participants, as well as mutual respect, expressed appreciation, consistent dialogue and a sense of community, were especially crucial in enabling the success of the CBPR. Successful CBPRs also involved participants taking the time to understand their local context, utilizing mass media as needed to gain support and design plans for lasting program implementation.

### **Conclusion**

The selection of literature reviewed in this chapter provides meaningful contributions to educational research. Specifically, these studies expand and build on previous themes in educational research on sustainability programs, organizational change, and environmental justice by utilizing a variety of research methods and theoretical frameworks.

The lenses of organizational change, equity and environmental justice add dynamism to research on environmental education and school conservation programs.



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Other strengths of the literature include a clarification of key terms and processes related to this project, as well as an overview of primary issues and specific examples from case studies.

The existing research also exhibits several limitations. First, the selected studies typically prioritize one single research approach rather than a combination of both quantitative and qualitative methods. In addition, existing research primarily focuses on components of successful environmental education curriculum and conservation programs as distinct entities rather than from a holistic, programmatic perspective. My research seeks to address the apparently minimal research on the relationship between school sustainability programs and equity issues, particularly in regards to student access to opportunities for education, training in and active engagement in environmentally responsible behaviors.

Accordingly, the purpose of this research is to investigate the role of educational equity in school sustainability programs. Specifically, the study seeks to better understand the current sustainability efforts in Alder District middle schools in the light of the District's adoption of the Equity Imperative Declaration on January 1, 2017. This analysis of sustainability programs will serve as a barometer for the degree of equity in access to training and resources within the county

**CHAPTER 3 METHOD**

**Introduction**

Compared with other regions in the United States, Grove County appears far ahead of its peers in its focus on sustainable living. Awareness of environmental issues and activism to resolve those issues is cultural commonplace. Despite such efforts, there remains an inconsistent, often inadequate presence of sustainability programs across Grove County school campuses. While some campuses have active recycling and compost programs, and others have embedded environmental education curriculum, there is an overall lack of coordination and comprehensive approach at the school, county and district levels. (For the purpose of this research, sustainability programs are defined as the synergistic multi-level efforts of waste management, resource conservation and environmental education.) In light of the escalating consequences of climate change, a better understanding of school sustainability issues in our county is urgently needed.

This study seeks to understand, appreciate, inform and transform. The aim is to better comprehend the current sustainability efforts in ASD middle schools within the current socio-political and environmental context, particularly in light of the District's 2017 Equity Imperative and the broader context of sustainability in Grove County

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schools. The central issue facing this research is to investigate the relationship between educational equity and school sustainability programs.

The first component of this research compares school sustainability programs across Grove County and focuses on possible explanations for any similarities and differences in these programs between schools and regions in the County. The second component considers the waste reduction and resource conservation efforts among ASD middle schools, with a focus on how perceptions of these efforts vary across schools sites. For schools that have already implemented programs, the research will examine how these programs were initiated and sustained over time. Finally, the relationship between school culture and sustainability will be explored, especially the extent to which an understanding of environmental issues and environmentally responsible behavior is incorporated into school culture. Overall, the research intention is to appreciate the successes and consider challenges of existing sustainability efforts, as well as to provide information and impetus for transformation towards more comprehensive sustainability programs. Specifically, the research addresses the following central questions and sub-questions:

Central Question: What is the relationship between educational equity and school sustainability programs?

1) How do sustainability programs compare across schools in Grove County?

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- a) What explanations exist for any similarities and differences in sustainability programs between schools and regions in the County?
- 2) How do waste reduction and resource conservation efforts compare among middle schools in the Alder School District?
  - a) How do perceptions of these efforts compare across Alder middle schools?
  - b) For schools that have already implemented programs, what initiated these programs and how have these programs been sustained over time?
- 3) To what extent is an understanding of environmental issues and environmentally responsible behavior incorporated into school culture at Alder middle schools?
  - a) How does this compare between schools sites?

### **Research Approach**

This study engages a variety of approaches. As a pragmatist, my research embraces a focus on identifying problems, crafting practical solutions and proposing possible applications. My research methods are driven by questions and intended consequences (Creswell, 2014). I also embrace a humanized approach in my desire to understand systems and people through shared meaning, interactions of mutual care, and collaborative solutions (Paris & Winn, 2014). Authentic emotion engages us in the

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research, shaping our mindset and our process (Paris & Winn, 2014). Further, my rationale is transformative in its desire to both understand sustainability issues through the lens of equity issues and utilize the research to promote positive change. The integration of transformative, humanized and pragmatist approaches offers nuance and insight to guide my research on sustainability efforts in Grove County schools.

### **Research Design**

**Research sites.** The research design considers Grove County at large and then focuses on three school sites in particular. These sites are located in ASD and include Oak Middle School (OMS), Pine Middle School (PMS), and Sequoia School (SS), which serves kindergarten through 8<sup>th</sup> grade.

Compared to Grove County, ASD is characterized by a higher rate of ethnic and socioeconomic diversity among enrolled students. As indicated in Table 1, 49.6% of the ASD population self-identifies as White while 57.2% of students are reported as White in Grove County. Most notably, 35.2% of ASD students are Hispanic or Latino in contrast to only 28.7% in Grove County. For other ethnicities, ASD has either a slightly higher or comparable percentage to Grove County enrollment numbers.

**Table 1: 2016 - 2017 Enrollment by Ethnicity**

Ethnicity	Grove County (%)	Alder School District (%)
African American	2.00%	2.80%
American Indian or Alaska Native	0.40%	0.60%
Asian	5.10%	5.00%
Filipino	0.60%	0.90%
Hispanic or Latino	28.70%	35.20%
Pacific Islander	0.30%	0.20%
White	57.20%	49.60%
Two or More Races	4.30%	5.40%
Not Reported	1.50%	0.30%
Total	100.00%	100.00%
<i>Note.</i> Data from California Department of Education (2017)		

In addition to differences in ethnicity, a comparison of ASD and Grove County reveals other demographic insights. As demonstrated in Table 2, ASD has a markedly higher population of students who receive Free and Reduced Lunch, a program that students qualify for if their family’s annual household income falls below a certain threshold. For example, a student who belongs to a four-member household with a combined annual income of \$31,980 or below would be eligible for free lunch. In comparison, a student from a four-member household with a combined annual income of \$45,510 or below would be eligible for reduced lunch (California Department of Education, 2017). While at ASD, 32.6% students receive Free and Reduced lunch -

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6.6% more than in Grove County overall. While ASD and Grove County have similar proportions of English Learners, ASD has substantially more students. 19.6% of ASD students have been redesignated as Fluent Proficient compared to 9.3% in Grove County. Based on this data, it is reasonable to infer that ASD has a proportionally higher population of students who have been and/or are learning English as a second language. Moreover, the data suggests that comparably more ASD students come from households whose primary language is not English.

**Table 2: 2016 - 2017 Enrollment by Demographic**

Demographic	Grove County	Alder School District
Enrollment	33,633	7869
Free and Reduced Lunch	26.00%	32.60%
English Learners	15.50%	15.80%
Redesignated Fluent Proficient	9.30%	19.60%
<i>Note.</i> Data from Education Data Partnership (2018)		

Beyond education demographics, the city of Alder and Grove County exhibit other socioeconomic differences. In general, home prices and median household incomes are highest in the southern region of the county and decrease northward. As seen in Table 3, southern Grove County has the most expensive homes (with a high of \$3.98 million) and the most significant average household income (\$148,480). In contrast, the city of Alder (the only city in north Grove County), has the lowest median home price at \$880,000 and the lowest average household income at \$83,895. As seen

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in the table below, while ‘City I’ and ‘City J’ both have comparable home prices and median household incomes to Alder, the data still reveals a meaningful socioeconomic disparity between southern, central and northern Grove County.

**Table 3: Median Home Prices and Household Income**

Geographic Location	City/Town	2017 Home Price	2016 Household Income	Average Household Income
South	A	\$3.98 million	\$178,750	\$148,480
	B	\$1.81 million	\$116,325	
	C	\$2.7 million	\$149,510	
	D	\$1.74 million	\$149,336	
Central	E	\$1.45 million	\$125,915	\$116,428
	F	\$1.8 million	\$91,848	
	G	\$2.64 million	\$192,188	
	H	1.19 million	\$107,818	
	I	\$880,000	\$99,438	
	J	\$1.1 million	\$81,360	
North	K (Alder)	\$860,500	\$83,895	\$83,895

*Note.* Data for 2016 Household Income from United States Census Bureau (2017), for 2017 Home Price from K. Brenner, personal communication, February 17, 2018).

Based on this data, it is reasonable to infer that students in the Alder School District hail from families with lower household income and fewer financial resources than their counterparts in central and southern Grove.

**Participants.** In order to achieve as comprehensive perspective as possible given the time constraints of the study, a variety of participants were recruited for research.



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Administrators, teachers and custodians were recruited at each school for participation. Specifically, three principals, three primary daytime custodian and all teachers were involved. In addition, four professionals involved in waste disposal, school maintenance and environmental education were interviewed to provide broader county and district context.

**Sampling procedure.** Participants were recruited in several ways for this research. All OMS, PMS and SS teachers were invited to voluntarily complete an anonymous online survey to ascertain their perceptions of school sustainability issues. This invitation was done in person during staff meetings and/or department meetings at each school site. Interviews with principals, custodians and other professionals, as well as follow-up interviews with individual teachers, were sought by individual request. All individuals speak English as their primary language and do not constitute a particularly vulnerable population.

**Methods.** Given the research questions selected and the study timeframe constraints, a mixed methods approach was the most compelling direction for study. Specifically, I utilized a Convergent Parallel design in which both quantitative and qualitative data collection occurred simultaneously. Data analyses were compared and related, leading to a working interpretation of explanatory processes and overarching themes. (Creswell, 2014) Follow-up interviews with teachers occurred after analyses were compared and related. The survey results offered a mode of comparison and the

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opportunity for greater breadth, while case studies revealed the distinct and in depth characteristics of each school site.

My qualitative data centered on a case study approach. This included semi-structured interviews and first-hand observations. I conducted semi-structured interviews with principals and custodians at each school site to learn more about their experience with and perspective on sustainability related issues. These interviews lasted approximately 20 to 40 minutes, including conversations based on open-ended questions. I also conducted a visual observation of each school site, with particular focus on solid waste management locations and supporting resources.

To gain insight into district and county issues, I also interviewed four non-school site professionals. These professionals included an ASD facilities administrator, individuals from local sanitary disposal services and a leader of a local environmental organization. The interviews occurred at a time, date and location chosen by the participants. Written notes were recorded at the time of the interview but exclude any names or other personal identifying information beyond school site and position. Digital voice recordings of interviews and images of schools sites were also obtained according to individual permissions.

Through this case study method, I focused on the interrelatedness of different factors within a phenomenon, as well as the situational context and embedded processes (Bazeley, 2013). Through the interview process, I engaged in the dialogic

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spiral articulated by Paris and Winn (2014) in which intentional conversation creates meaning, trust, and shared experience. In prioritizing such reciprocal relationships, I sought to dissociate from the dichotomy of researcher versus participant and become the “researcher as participant as listener as learner as advocate.” (p.28) It is through this collaborative process of sharing that I sought to be a “worthy witness” of personal experiences with sustainability in Grove County schools (xiv).

While my research involved many qualitative components, I also utilized quantitative methods in the form of a non-experimental survey to broaden my findings and provide opportunities for objective comparison between schools sites. The survey was completed by a total of 77 staff members from all three sites, the vast majority of which were teachers. The purpose of this cross-sectional, anonymous survey was to gauge staff perceptions and experiences with sustainability-related issues. An online platform was selected as the survey instrument to facilitate a more efficient process for data collection, organization and analysis. I encouraged survey participation by attending staff/department meetings at each school and personally inviting staff to complete the survey. In addition to the initial surveys, I engaged in follow-up discussions with five teachers based on the survey results.

It should also be noted that this research has been received approval from the university institutional review board. All identifying names pertaining to the schools and participants were altered in order to protect the participants of the study.

**Research positionality.** As much as researchers strive for even a semblance of objectivity, the reality is that we cannot for all practical purposes actually separate ourselves from our research. According to Bazeley (2013), research is “not a neutral activity” because of the roles, responsibilities and relationships of the researcher (p.51). Similarly, Paris & Winn (2014) reject the dichotomy of researcher versus participant and argue that we embrace the role of the “researcher as participant as listener as learner as advocate” (p.28). I wholeheartedly agree with this view.

In order to research the distinct layers and systems involved in a phenomenon, it is necessary to engage participants who are both easy and challenging to access. Since meaning is created through the context of relationship, pre-existing relationships can both enhance and inform research goals. Such is the case with this research. The topic was inspired by my own personal experience. The data collection is enabled by my current context of relationships.

In *Humanizing Research* (Paris and Winn, 2014), Maria Luna Duarte and her colleagues reveal how personal connection to our topic can engage and motivate us in the process. Of her research, Duarte writes “I cannot detach it from who I am.” (p. 6) Similarly, it was my personal connection to this topic that initially engaged me and continues to motivate the work. My love for the natural world is fueled by a longing to be outside, a passion for science, and a heart to equip students for stewardship.

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As a researcher, it is essential to acknowledge my own personal values and bias. When I was one and half years old, I went on my first camping trip. Since then I have been an avid outdoorswoman, running along Grove County coastal trails, paddling the Bay and hiking Mt. Grove. I have been a resident of Grove and its natural beauty for my entire life, with the exception of my undergraduate education. It is no surprise then that my longtime love for the outdoors inspired an interest in the conservation and preservation of natural resources.

My research is founded on the assumption that climate change is evidence-based and human-caused, and that despite escalating consequences there are many possible solutions. Several of these solutions can and should be addressed by students, individuals and academic institutions. I believe in the power of individuals and communities, especially youth, to effect positive and meaningful change. Moreover, I am abundantly aware that my students will soon find themselves as adults living in the climate-compromised world left by my generation and those before me.

Duarte describes being “too close to the work” as a critical component of the humanized research approach (Paris and Winn, 2014, p. 5). In acknowledging our feelings and intimate personal connection to our research, we find meaning and engagement in the process. It is because of my own emotions and personal experience that I have selected this topic. My research is informed by a lifetime love for the natural world and the longing to see it thrive. In teaching, I have spent the last five years as a

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middle school science teacher. In my third year of teaching, a colleague and I designed a Project Based Learning unit called Project Green School where students identified environmental issues on campus, collected data on those issues and then created an action plan to solve them. It was through this project that we began the process of trying to implement our own recycling and compost programs. The students and I encountered first hand the difficulties with coordination of efforts, bureaucratic organization, and school buy-in for the program. I was utterly shocked at the difficulty and resistance involved in establishing a program that had seemed to me a given in the 21<sup>st</sup> Century amidst Grove County's perceived culture of sustainability. Three years into Project Green School, we now have the beginnings of a compost and recycling program.

In the midst of my frustration, surprise and exhaustion at the process, I was also impressed by the commitment of student, school and district leaders to support our students and see us move forward. In fact, it was through the support of our school principal and superintendent that we finally made progress.

With this in mind, it is essential to be transparent about the intended audience of this research. In addition to each of the individual school sites, this research is intended for district and county leaders in education. It is my hope to provide evidence-based analyses, rationale and recommendations for an ASD sustainability initiative beyond what currently exists. Ultimately, this research project is motivated by and

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dedicated to my Project Green School students- all those who experienced first-hand how essential and challenging it is to effect positive change.

### **Data Analysis**

My research follows Creswell's (2014) recommended steps for data analysis and interpretation. Regarding qualitative methods, the raw data was first organized and prepared for analysis. Recorded interviews were transcribed and integrated with interview notes. I then reviewed all data for a general understanding and coded data sets using inductive and deductive data analysis. That is, I organized and coded the data to identify broader themes, patterns and concepts. Afterward, I reexamined the data to confirm whether there was adequate evidence to support the themes identified earlier or if more research was required. I began with some initial codes and expanded this list based on research. The analysis was then used to craft a general description of the people, places and events involved in the study, as well as a list of categories, themes and subthemes with supporting examples from multiple perspectives.

For quantitative survey data, I provided a descriptive analysis of the survey data, including means by category and school site. However, a check for response bias was not practical given the anonymous nature of the survey.

A side-by-side analysis approach was utilized to merge qualitative and quantitative data. In the analysis, I compared qualitative findings with quantitative

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survey results. Quantitative and qualitative data results were assessed for convergence and divergence to determine overarching themes and generate nuanced findings.

### **Validity and Reliability**

Validity and reliability are integral to an effective research study. In this study, I checked for qualitative validity by using several strategies. First, data from multiple sources were triangulated to determine themes based on convergence of concepts. Second, as recommended by Creswell (2014), a “rich, thick description” was utilized to communicate findings (p. 202). Third, a discussion of researcher bias, as well as a presentation of any contradictory or divergent evidence was also detailed in the interpretation of findings. Finally, I engaged in consistent peer debriefing to review and reflect on the process. Qualitative reliability results from fidelity to my research approach, which is consistent with other research.

Quantitative validity derives from the degree to which the researcher can draw meaningful conclusions from data. In this research, I focused on construct validity, or whether scores were useful and insightful for authentic conclusions and the extent to which survey items actually measured concepts of study. Reliability stems from the consistency of responses to survey items, as well as uniformity in the scoring and administration of the survey itself.



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It is important to note that the convergent research design presents certain challenges for analysis. These constraints include unequal sample sizes and a minimal opportunity for follow-up when data does not converge. In the case of this study, the benefits of a mixed methods convergent design outweigh the limitations. Even so, efforts were taken to minimize the impact of such limitations on the analysis and interpretation of data, including comparing codes from qualitative data and conclusions from quantitative data, and conducting follow-up discussions based on survey results.

It should be also noted that due to the limited timeframe for this research, as well as the multifaceted nature of sustainability programs (waste management, energy conservation and environmental education), I decided to focus this investigation primarily on waste management, with energy conservation and classroom-based environmental education as secondary issues.

## **Chapter 4 Findings**

### **Overview**

The purpose of this research is to better understand the current sustainability efforts in Alder School District (ASD) schools in the light of the district's recent adoption of the Equity Imperative. Overall, the evidence reveals a trajectory of local political decisions and processes resulting in an unintentionally inequitable structure of school sustainability programs across Grove County. This structure of inequality includes resource allocation, program coordination and access to opportunities to engage in environmentally responsible behavior. The result is that ASD students do not have the same opportunities to engage in sustainability practices as students in the rest of Grove County. While all schools in the county face similar obstacles to the creation and implementation of sustainability programs, ASD schools do so without a comparable level of support. Obstacles facing ASD schools include mixed district messages, communication, school priorities, community buy-in and a lack of consistent coordination. Seen together, these obstacles reveal a piecemeal, or "scattershot approach," to school sustainability.

Despite the inequity inherent in the structure, individual ASD schools have made marked progress to effect change. Patterns of individual and collaborative agency demonstrate how specific factors, namely student driven change, environmental

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education, community buy-in and coordinated efforts, consistent communication, and stewardship as a priority can contribute to a more effective and robust sustainability program. In what follows, I explore the current sustainability efforts in both ASD and Grove County by first examining the processes that contributed to the unintentional structure of inequity. Next, I discuss the ASD approach to sustainability and obstacles shared among middle schools in the district. Finally, I examine patterns of individual agency amidst the broader structure of inequity.

### **Unintentional Structure of Inequity**

Political decisions often have unintended consequences, especially for those who are not given a voice at the beginning of the process. For Grove County, evidence indicates that the current differences in school sustainability programs can be explained by the unintentional consequences of local political processes. Indeed, when asked about the origins of the current distribution of school sustainability programs, one Alder waste management professional reflected, “It’s complicated, it’s political.” In fact, the issue is so complicated that most of the individuals interviewed in this study were unaware of the processes involved. I remained unaware even throughout the initial design and implementation of Project Green School three years ago. It was not until I spoke with the coordinators for Alder and Grove County solid waste for the purpose of this research that explanations for the current programs became apparent.

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Conversations with the solid waste coordinators for Alder and Grove County confirmed that the processes leading to the structure of current school sustainability programs were set in motion as a response to California legislation on waste management. Two pieces of legislation, AB 939 and SB 1322, were signed into law as the Integrated Waste Management Act of 1989. The law required each county to create a task force to oversee waste reduction, as well as to divert 25% of all solid waste from landfill by 1995 and 50% by 2000. Each city was then required to prepare and submit a plan for waste characterization, source reduction (including recycling and compost), public education, funding, and household hazardous waste. Additionally, cities and counties were required to provide regular and thorough reports of their compliance with state mandates (California Department of Resources Recycling and Recovery (CalRecycle), March 20, 2017).

Due to the comprehensive requirements of the Integrated Waste Management Act of 1989 and the limited resources of smaller cities in the county, Grove cities and towns decided to collaborate to fulfill the new mandate. This prompted the county, cities and towns of Grove to enter a Memorandum of Understanding in 1990. The Memorandum was formalized in 1996 with the establishment of the Grove Hazardous and Solid Waste Joint Powers Authority (JPA), also called Zero Waste Grove. Zero Waste Grove is governed by a board of city and town managers from all incorporated areas in the county, as well as a county administrator. The board collaborates with a local task

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force composed of haulers and facility operators, sanitary districts, environmental organizations, and public members.

As described by the county sustainability coordinator, the JPA has three “tenets”: 1) administration and state compliance; 2) household hazardous waste; and 3) educational programs. Every town and city had the option to opt into the entire agreement, or only part of the agreement. Towns and cities were required to pay into the system to the extent that they agreed to each of the three primary components. In the case of the Alder, waste management falls within the purview of the Alder Sanitary District (SD) rather than the city. The SD is an independent agency governed by a publicly elected board of directors. The agency is responsible for solid waste collection and disposal in Alder, as well as wastewater treatment. Because SD officials are not eligible for JPA board membership, which is restricted to town and managers only, and funding was required participate in the three components of the agreement, the SD only opted into the administration and compliance portion of the agreement. One solid waste coordinator explained, the SD “decided to not fund that because they would have no say in fund allocation.” Additionally, the SD already had programs in place for hazardous waste collection and education. Consensus among solid waste coordinators suggests that it did not make sense for the SD to fund a program that would both duplicate what it already offered its residents and eliminate its primary role in decision-making. A review of the factors involved indicates that the decision to opt out of the

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agreement was the best option for the SD at the time – the decision was financially beneficial and made organizational sense.

Yet this decision also had unintended consequences. Because the SD opted out of the educational programs component in the JPA, all students who live in the Alder do not have access to any sustainability education programs offered by the JPA. It was only until recently that this in difference in levels of access became significant. Around 2015, the JPA launched a fully funded Zero Waste Schools Program (also referred to as Zero Waste Grove) to provide comprehensive waste management support for schools. This program, including its staffing and resource support, free of charge to schools. With the formation of ZWG, there are now two very different zero waste programs for Grove County schools – one for all of Grove County except Alder students, and one for only Alder students. A description of the programs and the issues involved provides clarity on the comparison, or lack thereof, between ZWG and SD programs.

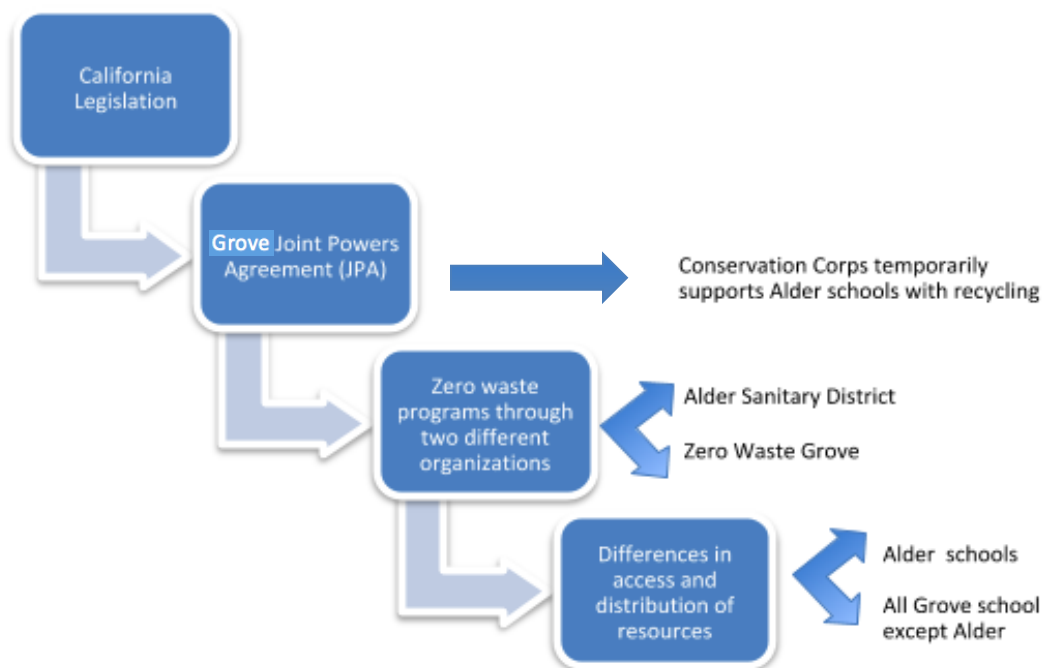


Figure 1 Political Processes and Unintended Consequences

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**Alder Sanitary District (SD).** Through 2017, the SD held a contract, termed the Zero Waste Franchise, with Alder Disposal to do waste hauling for all businesses, organizations and residents in the Alder. This contract included diversion requirements, education and outreach, and composting. Alder Disposal was owned by the Rossi Corporation, which was in turn owned by the Lido Group. Prior to 2007, remembers one interview participant, the Rossi Corporation paid the landfill waste fees for all ASD schools. Around 2007, ASD was informed it now needed to pay for landfill waste disposal. Faced with impending trash bills, the school district decided to implement recycling programs across all campuses since no fee would be charged for recycling disposal. As a result, recycling bins were placed in every ASD classroom as one way of defraying the cost of looming landfill bills. At the same time, the school district engaged stakeholders, including district maintenance, haulers, interested parents and community members, and the Conservation Corps, to discuss sustainability issues. Topics included solar panels (installed in 2016), waste disposal, integrated pest management and the internal health of buildings. The district committee was later disbanded, although it is unclear as to why. One community member who participated recalls that the committee was “very effective” because it helped set a priority for district sustainability.

At the time, the Conservation Corps, through a grant, supported the implementation of recycling at school sites, and even compost at select sites. This

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support included conducting waste audits and emptying recycling bins at all ASD schools on a regular basis. Not long after implementation, the Conservation Corps lost its funding to support the ASD recycling program. One community partner describes the result, “That’s when most of the schools dumped their recycling bins.” Even though schools were provided with data on their savings from diverting recycling from the landfill, most schools decided to deemphasize the recycling program or end it entirely. For example, at Oak Middle School, school custodians continued to empty classroom recycling bins but outdoor recycling bins in the student lunch areas and rest of the school were removed.

Apart from the district committee and Conservation Corps, education and outreach was a required component of the franchise agreement between SD and the Rossi Corporation. Yet interview participants involved with SD and the school district have described this support as minimal. Evidence suggests this limited support can be attributed to issues with manpower, funding, and capacity for outreach.

While instances of public outreach, such as tabling at senior health fairs, school district fundraisers, and recycling games for kids at city events, are more evident, school support is less so. For example, the SD and Rossi Corporation have worked with Alder teachers when the teachers reach out and show they “want to get involved,” in the words of one SD official. This support includes providing recycling and/or compost bins and helping interested teachers or administrators identify the best locations on campus



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to station the bins. In 2017, the SD and Rossi Corporation did school “walk-throughs” to identify the current status of recycling and/or compost at each school site. (Walk-throughs are also planned for 2018). Classroom presentations and even field trips to the SD site are available for teachers who ask for them. There are several examples of Alder elementary school teachers or administrators who have reached out for support in engaging students in compost or recycling. However, this trend is not apparent with middle schools or high schools. Interview participants attribute this increased demands on time and resources for teachers, students and administrators. Overall, the dominant characteristic the SD’s outreach is that schools receive support if they have someone who is passionate enough (and not already too busy) to consistently seek it out. If the schools are doing the reaching out, then the service provided by the SD and Rossi Corporation may be educational but it is not actually outreach.

Additionally, classroom visits and the infrastructure of waste bins is not the same as a comprehensive waste management program. As one SD official puts it, “Educational programs and outreach in Grove should be comparable to the Alder Sanitary District.” She goes on, “but we don’t have a full time [sustainability coordinator] like Zero Waste Grove.” Instead, the person who coordinates SD solid and hazardous waste is also tasked with leading education and outreach. In other words, the coordinator must “wear many hats,” so many, in fact, that the SD has needed to “rely on Alder Disposal’s outreach.” With one person in charge of so much, and a limited budget to match, there

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is minimal manpower to devote to comprehensive support for schools. In the words of the ZWG coordinator, SD and the Rossi Corporation “just didn’t have the bandwidth to do that.” When an SD official was asked what it would take engage more schools in comprehensive recycling and compost programs, the official seemed to underscore this idea by recommending the creation of a “sustainability coordinator” position who would be in charge of coordinating, reaching out to, and supporting Alder schools with program initiation and implementation.

Despite limited support, Alder schools have progressed with sustainability. All schools do have recycling bins in their classrooms. Regarding food waste, about 50% of elementary schools reportedly have compost programs. An SD official summarizes, “elementary schools do a fairly good job with that, the middle schools – meh, and the high schools – not so much at all.” As of the 2017-2018 school year, one middle school had begun implementing a compost program, while no high schools have done so. The only other secondary school to have a compost program is a kindergarten through 8<sup>th</sup> grade school. The school district has, however, established an agreement to donate unused lunch food to local non-profit organizations. Still, there are mixed feelings about the school district’s progress in comparison to other areas in the county. One official’s overview reveals this well: “The schools are doing a fine job. They can always do more. I think we’ll be looking for them to do more. Definitely.” Inherent in her statement is

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contradiction: she acknowledges what has already been done, but strongly implies that what has been done is not enough – more is definitely needed.

In addition to limitations on SD staffing, budget and time, there is a limited relationship between the SD and the school district in regards to school sustainability. While there is some coordination with district maintenance officials, the SD reports little to no interaction with the school district board. This limited contact may be understandable given the amount of initiatives and priorities involved in such a large school district, but the lack of interaction may also indicate that school waste programs are not currently considered an issue of significance.

As of 2018, the landscape of waste management in Alder is changing. The last three to five years were fraught with internal disputes, public fines and political controversy for the Rossi Corporation. As a result, in January 2018 Rossi was sold to Calcycle, an organization regarded for its comprehensive waste management and hauling services. Calcycle is also recognized for its support of school waste programs. SD is hoping that this change in haulers will provide more support to its schools. In the words of one SD official, “the future looks bright.”

Yet the issue of whether schools will receive enough support to implement comprehensive recycling and compost programs remains. In other areas of Grove County, organizations like SD and Rossi have been required to contribute funding towards comprehensive school programs. One community member questions: “If Alder

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Sanitary isn't going to put into their franchise agreement this really in depth support to schools, then how can those schools get that support? It's Alder Sanitary that's the deciding factor there." This begs the question: to what extent is the SD responsible for the current state of school waste programs? While SD certainly plays a primary role in the issue, it is also true that the school district may have more sway in the process than they have utilized. Some interview participants emphasized that the school district could do more to persuade SD to provide comprehensive support. "The school district has some power to push Sanitary District further," explained one Alder community member. If sustainability were more of a district priority, they argue, then the district would more actively seek out support from the SD.

**Zero Waste Grove (ZWG).** The name 'Zero Waste Grove' is actually a misnomer. One teacher embodied this quite memorably when she held up her fingers in quotation marks for the county name. According to her, the organization should be called Zero Waste "Grove" since its programs are not actually accessible to all of Grove County. The ZWG coordinator echoes this distinction: "It is literally everyone except the city of Alder." The goal of ZWG is to implement a comprehensive zero waste program at every school, both public and private, in Grove County in the next 10 years—every school, that is, except the city of Alder. This is dependent on county budgeting allocations. However, given the success of the program thus far, the outlook for consistent future funding is promising.

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ZWG initially began its efforts with two pilot schools that expressed interest when asked about the program. The ZWG coordinator explained, “I figured if you start with the schools that are interested and passionate about it, then you have a domino effect with the other schools of not feeling left out.” The success of these pilot schools, in conjunction with networking by ZWG, created “a sort of organic buzz” such that now 17 schools have either been enrolled or are currently enrolled in the program.

Depending on budget and other factors, ZWG focuses on serving 7 schools at a time per school year. The program involves a comprehensive yearlong seven-phase plan. The plan is coordinated by ZWG staff at no cost to the school and is implemented on school campuses with the support of the principal, custodian, teachers and students. The seven phases, outlined in the “Zero Waste Schools Action Plan & Timeline,” (Hazardous and Solid Waste JPA, 2017) include:

1. Initial meeting with stakeholders: discuss program overview, timeline, planning, and formation of Green Team
2. Waste audit: collaboration with custodians to audit waste in specific locations for one 24 hour period
3. Presentation of waste audit results to staff during staff meeting or other venue
4. Classroom and/or assembly education: instruction on how and why to properly sort waste
5. Training for staff, parents, custodians and Green Team
6. Implementation of infrastructure, including waste stations (compost, recycling and landfill), lunchtime monitors to help students properly sort waste, etc.
7. Celebration of successes: school waste audit (used as comparison to initial audit); evaluate and implement any necessary program revisions; publicly recognize successes

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While these phases form an initial broad outline, the program is then tailored to meet the needs of each individual school site. In the words of the ZWG coordinator, “You can’t cookie cutter something like this. Every school is completely different.” In addition to the grade levels, physical layout and degree of student engagement at the school, “it is important to be very mindful of the culture of that school,” explains the coordinator. Because of this, the 7 phases are used as a template that is then modified to work for each school. Such a site-specific approach fosters buy-in from all stakeholders from the inception of the program. Buy-in begins at the initial stakeholder meeting, where the principal, custodian, and interested students and teachers work together with ZWG staff to “create the base of the program.” From there, the ZWG team collaborates with schools to implement the multi-phase program.

In addition to the comprehensive phases, the level of support and resources also distinguishes the ZWG program. While both ZWG and the SD appreciate just how little time schools have to devote to sustainability even when the desire to engage in such programs is present, ZWG has the support available to actually engage in program planning and implementation. The ZWG coordinator explains, “We create the program so that my team does all the work,” or at least most of it. “We just need the point people on campus to give us access.” By access, she means the opportunity to work on the school site, participate in staff meetings, collaborate with stakeholders and offer educational presentations during classes or assemblies. Doing “all the work” also

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includes funding the work. This involves prizes for students, incentives for the Green Team, appreciation events for custodians, waste station infrastructure, and explanatory signage. This combination of organizational support and funding enables schools that would not otherwise have the resources, time or manpower to engage in robust sustainability programs.

Apart from the number of Grove County schools who have participated in ZWG, there are several other successes worth highlighting. First, the program has substantially decreased the landfill service level for individual schools and the county overall. For example, the ZWG coordinator described a Title I school that used to pay over \$2000 a month for landfill disposal services. Through participation in the ZWG program, the school reduced its landfill disposal in half. As a result, the school is now saving one thousand dollars a month, for a total of 12 thousand dollars a year in savings. This is savings they were “just literally putting into the garbage,” adds the ZWG coordinator, with an ironic smile. Second, engagement in school sustainability practices has resulted in district policy change. Inspired Green Team students at one school presented their campus zero waste resolution to their district’s school board. The school board decided to adopt the resolution for the entire district, resulting in broad-sweeping policy change. “It’s amazing what adults will do when kids are involved,” when they are fully engaged in advocating for themselves and their environment. By providing students the opportunity to learn about and engage in sustainable practices on campus, ZWG

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empowered students to effect positive change for themselves, their peers, and their future.

ZWG's success can be explained in part by the way it consciously acknowledges and overcomes obstacles. Consensus among interview participants in this study indicates custodian buy-in is a common hurdle for program success. This "push back," or resistance to buy-in, is often because of the amount of work custodians are already asked to do as well as the fact that compost and comprehensive recycling is not officially part of the union contract. Many custodians are initially unwilling to "do what they see as extra work." One way the program addresses this obstacle is through education. The ZWG coordinator explains, "What we try to do is let them know that it actually isn't extra work." Instead, custodians involved in ZWG programs typically service fewer landfill waste bins than before, as well as less waste overall. On a few occasions, ZWG has spoken directly with school maintenance officials (custodians' bosses) to help clarify misconceptions and roles.

Custodian buy-in is also fostered through partnership. Custodians are invited as stakeholders to the initial Phase 1 meeting. Throughout the process, custodians are actively engaged in designing the program, especially since they will play a crucial role in the coordination of campus waste disposal. Ongoing communication about the logistics of waste disposal and the benefits of waste reduction between school custodians and ZWG staff is essential. In the words of one interview participant, custodian buy-in comes



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though learning “why they’re doing it and why it’s important.” Positive incentives are also utilized to show support and appreciation for custodian commitment to the program. These incentives include custodial awards and custodial luncheons. By expressing appreciation, engaging in partnership and addressing misconceptions, custodians from ZWG schools develop strong buy-in for the program.

ZWG also faces the obstacle of principal buy-in. In fact, the ZWG coordinator attributes principal buy-in as the most significant barrier to program success. We won’t have the success we need unless we have the principal’s involvement.” Often, teachers, parents and students will try to circumvent the principal by asking to join the program anyway. Because principal commitment to the program is so crucial for its success, ZWG now only accepts schools if their principal is fully invested. It is also the case, however, that teacher, parent and student passion can persuade a change in the principal’s perspective.

“I think the hard thing – it’s tough – it’s hard to do a sustainability program without someone in house. And it’s especially hard in schools because most schools, wherever you go, they’re strapped for time, they’re strapped for money, they’re juggling a thousand different things. So without having the proper buy-in and support at a school, it’s really hard to get a sustainability program to stay in place. It’s pretty easy to start something, and a lot of schools have been doing this on their own for years, where a kid or a parent says ‘Oh my God, I want to start recycling bottle caps.’ But then that kid graduates or they move, and everything falls apart. *So the hardest piece is making a sustainability program sustainable.* It’s super hard to do that without actually having boots on the ground, humans there, people who are there consistently. And that’s what ZWG provides – people that are there at lunch with the kids, talking to the custodian,

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talking to the Green Team leads, talking to the principal—where I don't know if Alder has that yet." – ZWG official

**Comparison and Perception.** When asked to compare Alder school sustainability programs with others in the district, one interview participant responded, "Alder is not that different from other jurisdictions in that Alder has some schools that are doing a great job and others that aren't." However, an overview of ZWG and SD programs does reveal markedly different levels of access to support, staffing, funding and other resources. The evidence reveals a structure of inequality. Though likely unintentional, the consequences remain: Alder schools receive comparably fewer opportunities to learn about and engage in environmentally responsible behavior than in other Grove County schools. As a result, students at most Alder schools do not currently have the support and opportunities they need to successfully learn about and engage in environmentally responsible behavior. In other words, the system is not merely unequal; it is also inequitable.

In addition to comparing program components, perceptions of Alder administrators and teachers point to this sense of division. Many interview participants described a geographic divide between northern Grove County (the city of Alder) and southern Grove County. An Alder school district administrator echoes this: "There's a little bit of separation between south Grove and north Grove." In addition to differences in school funding for sustainability programs, the administrator attributes the

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geographic divide to socio-economic differences. “[There’s] more people with time on their hands to participate in those programs and to advocate for those programs down there. I think most of our parents and everybody - they’re working or they’re traveling somewhere to work.” It is possible that the difference in amount of income, and thus the amount time available for advocacy, has contributed to the disparity between school programs in north and south Grove County. Regardless of the explanation, the sense of a divide persists.

The perception of a geographic divide is common among staff members at the three different Alder middle schools. According to Table 4, the average Alder middle school staff member does not feel students currently have adequate opportunities or necessary resources to learn and engage in environmentally responsible behavior, with an agreement score of 2.39 and 2.4, respectively. (Numerical scores are based on a scale of 1 through 4, where 1 = strongly disagree; 2 = disagree; 3 = agree, and 4 = strongly agree.) This perception is consistent across all school sites, although slight variation does exist. There is also a correlation between average staff opinion and the degree of recycling and compost programs at each site. For example, Pine Middle School, with only minimal recycling, shows a stronger level of disagreement regarding opportunities and resources than at the other two schools, both of which have compost and recycling programs.

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Additionally, consensus among staff at all three sites demonstrates the perception that to some degree students do not have the same opportunities to learn about and engage in environmentally responsible behavior (score of 2.47) when compared to other Grove County schools. Again, variation in perception may correlate with the extent of recycling and compost programs at each site. The average staff member at Pine, for example, indicates a slightly stronger level of disagreement of 2.31 with the notion that students have the same opportunities across the county. In contrast, the average staff member at Sequoia School, home to a coordinated recycling and compost program, expresses a slightly stronger level of agreement (score of 2.7) that Alder students have the same opportunities as other students in the county.

**Table 4: Staff Perceptions of Opportunities and Resources**

Site	Adequate opportunities to learn about and engage in environmentally responsible behavior	Necessary resources to learn about and engage in environmentally responsible behavior	Compared to other Grove County schools, students have the same opportunities to learn about and engage in environmentally responsible behavior
Sequoia	2.35	2.35	2.7
Oak	2.72	2.76	2.4
Pine	2.09	2.13	2.31
All Sites	2.39	2.4	2.47

*Note.* Average calculated from sample size of 77 (total) voluntary participants on a scale of 1 – 4, where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree)

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While further data analysis can always be beneficial, the initial findings in this study reveal a structure of inequality among school sustainability programs in Grove County. Unintended consequences of political processes have resulted in a system in which the majority of students benefit while the minority are excluded. A comparison of program elements and staff perceptions indicate that Alder students do not yet have equitable access to opportunities to learn about and engage in environmentally responsible behavior. Yet even in the midst of this divided structure, individual and collaborate agency has yielded meaningful successes for Alder middle schools. A case study of the three middle schools in the city of Alder reveals patterns of common obstacles and areas of success.

### **Scattershot Approach and Shared Obstacles**

When asked to discuss his perception on sustainability in the Alder school district, one middle school principal reflected, “Our efforts towards sustainability are scattershot.” In other words, efforts have involved unsystematic or partial measures at the school and district level. Initiatives are often based “solely on the energy of a person or small group of people and when those people run out of energy or move on, the initiative goes away.” Inherent in this approach is the reliance on individuals with enough time and passion to exert enough pressure to make a change. Thus, sustainability is “important when someone’s loud about it...whether it’s parent pressure

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or student pressure, it's sustainable as long as those parents or kids bring it to the forefront." In this context, sustainability initiatives depend on individuals who are 'loud enough' to effect change and then sustain that change over time. Once the individual graduates or the energy wanes, the initiative flounders. The principal echoes the ZWG coordinator's perspective: "the hardest piece is making a sustainability program sustainable." In this 'scattershot approach', well-meaning sustainability initiatives may occur periodically, but they are apt to become temporary. Such measures wane when loud voices fade, unless they are integrated into an intentional, systematic and long-term plan for sustainability. Four primary obstacles characterize the ASD's 'scattershot approach': mixed district messages; inconsistent communication; present priorities; and stakeholder buy-in and coordination.

**Obstacle 1: mixed messages.** The lack of clear and systematic direction at the school and district level has resulted in an undefined message on the value of sustainability. Vague views have created mixed messages. Pine Middle School is a case in point. Solar panels were installed on campus, as well as at all schools in the district, in 2016 – a milestone for the district in terms of energy efficiency and cost savings. Recycling bins are in every classroom, but there is minimal signage or education about exactly how to sort properly. There are garbage bins outside on campus, but few with corresponding recycling bins. Food waste is dumped in the trash. Classroom heating is regulated remotely through a web-based system to minimize electricity usage and cost.

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The administration office has such little insulation that an outdated “power sucker” of a space heater is necessary during winter months.

The presence of solar panels and regulated heating reveals district efforts to promote sustainability, or at least cost savings. Yet the lack of robust recycling and compost programs, as well as other energy waste, simultaneously contradicts this view. When asked about his perception of district sustainability, one district maintenance administrator seemed uncertain. “It’s sort of mixed. I’m an advocate of sustainability, you know, I would love to push a certain agenda at each one of the sites, but it has to be site-driven because the site needs to have buy-in.” Certainly, buy-in and site-specific programs are essential. However, this tension between a district-driven or site-driven approach has contributed to the communication of mixed messages on sustainability. The result is a system in which district-driven and site-driven efforts are seen as opposites on a programmatic spectrum, rather than integrated for a coordinated approach to sustainability. In this system, schools rely on ‘loud enough’ voices to effect site-specific change and district sustainability related measures focus on initiatives that do not necessarily require school support, such as solar panels, campus heating systems and outdoor fluorescent lighting.

The absence of a systematic plan for sustainability does not mean there is no support for sustainability. Successes like district-wide solar panels and compost at elementary schools are significant. Yet these measures are piecemeal rather than part

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of any official policy. In fact, no interview participants were aware of any district policy on sustainability or any official messages on the value of sustainability. “But I feel like this is something district-wide that more and more schools are connecting with,” added one middle school principal. “And that this is also a sign of us trying to help our students to be more globally aware of their own impacts.” The increased connection and interest described by the principal was exemplified during a recent district issue with recycling. The school district had planned to work with a couple of schools to help them restart their recycling programs, but several schools, including one middle school that had been trying for more than a year to start its own program, said “no, we want in too.” The superintendent agreed and the schools that spoke up were included.

Staff survey comments also reveal mixed messages from the school district. Specifically, comments indicate the perception that sustainability is not considered an important aspect of district culture. “Only energy conservation has been mentioned, and I'd hardly call that part of our culture,” comments one teacher. Table 5 shows that the average staff member at all middle schools perceive sustainability as more a part of their own school culture than district culture. Staff at all three sites perceive sustainability as being slightly more a part of district culture than it is expressed in district communications. Only Sequoia School indicates agreement with the statement that environmentally responsible behavior is a part of their school culture.



**Table 5 Staff Perceptions of Environmentally Responsible Behavior as a Priority in Culture and Communication, by School and District**

Site	School Culture	District Culture	School Communication	District Communication
Sequoia	3	2.4	2.7	2.2
Oak	2.44	1.72	2.72	1.44
Pine	2.34	2.16	1.84	1.81
All Sites	2.59	2.09	2.42	1.82

Note: Average calculated from sample size of 77 (total) voluntary participants on a scale of 1 – 4, where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree)

**Obstacle 2: inconsistent communication.** Beyond the minimal role of sustainability in school district culture, a lack of consistent communication is also of concern. In 2017, a science teacher at Oak Middle School received a grant for four water bottle fill stations. (This idea for fill stations was inspired by a student project a few years earlier.) Although the fill stations arrived in December, they are still in boxes waiting to be installed by a district plumber two months later. Two other schools have also been waiting for months for their recently purchased fill stations to be installed. His frustration clear, the Oak principal exclaimed, “I don’t know what we’re waiting on...I don’t understand what the slow down is.” Meanwhile, the students and teachers wondered how long their efforts for sustainability would be postponed and whether they would actually see their efforts become reality. When asked more broadly about his experience with communication with the district on sustainability issues, the Oak principal observed, “We’ve had some conversations but I’m finding that it’s a slow

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process.” Such slow communication can hinder school momentum to engage in new sustainability initiatives.

In addition to slow communication, a lack of communication is also common. Custodians at all three schools expressed having “very little” communication with the district regarding sustainability issues. Staff survey comments reveal similarly minimal communication by the district regarding sustainability. One teacher writes, “The only real place I have seen anything about this is the once in a while emails that tell us to turn things off before a break. But that is probably more money than sustainability.”

(This comment refers to the periodic emails asking teachers to unplug all electrical appliances to save energy and money over school breaks longer than four days.)

According to Table 5, the average staff member disagrees that the district has clearly and consistently communicated that acting in environmentally responsible ways is a priority. Averages for Oak and Pine Middle School staff fall within the range of “strongly disagree.” While many contributing factors may explain the reason for this level of disagreement, the data is clear that communication about the environmentally responsible behavior as a priority is lacking.

Communication is also inconsistent at the school site level. According to Table 5, the average staff member at Pine Middle School indicates a very strong (1.84) level of disagreement that school communication about sustainability is a priority. Further, the custodian at Pine Middle School, who has worked at the school for 18 years, could not

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recall a time when he was asked to discuss school recycling issues or consider the possibility of a compost program. School announcements to the student body about recycling are minimal. The situation at Oak Middle School is somewhat different. The average staff member at Oak Middle School has a 2.72 level of disagreement that school communication about sustainability is a priority. This is noticeably higher than at Pine, likely due to the recent progress the Oak has made in compost and recycling. While the custodian feels “word of mouth from the administration hasn’t been strong,” some conversations and coordination have occurred. Additionally, several teachers have regularly communicated with the custodian about sustainability issues. It was the Oak principal who communicated with the evening custodians to obtain their help in taking recycling bins out to the street on a weekly basis. In addition, administrators and students frequently share morning announcements about recycling and compost to the campus community. Communication between custodians, administrators and the campus community at Sequoia School is another story entirely, which will be discussed at length later in this analysis.

Communication issues are also common with outside organizations. When the Conservation Corps implemented outdoor recycling at Oak Middle School, there was minimal conversation with the custodian. The custodian recalls, “There was mention of, ‘we’re going to start this,’ but again it was like ‘take the ground and run with it.’ There could have been more communication.” Essentially, the perception that an outside

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organization would provide the infrastructure – the recycling bins – but it would be up to the custodian and the school to do the rest. The custodian recalls his perception: “Just like, here it is, go to it.” He felt the organization had good intentions, “but there was no consistency.” In other words, providing the recycling bins was not the same as establishing a lasting recycling program. Without a coordinated approach by multiple stakeholders, there was no consistent implementation on campus. When the Conservation Corps lost its funding for the program, the recycling bins were removed. The Oak principal and custodian describe two reasons for this removal. First, the bins could not be emptied because Conservation Corps had the only key that could open them and the organization would not respond to attempts to obtain the key. Secondly, the bins were effectively being used as trash receptacles. Whether due to lack of training, reinforcement or interest, students did not sort their recyclables properly.

Communication between the school sites and waste haulers is also infrequent. For example, a couple of years ago a teacher tried on repeated occasions to contact Alder Disposal. The teacher, along with several students, hoped to obtain outdoor recycling bins since most students enjoyed their break and lunch time outside on campus. When calls and emails from both the teacher and the school principal proved ineffective, the principal suggested the teacher ask the district superintendent for help. The superintendent was immediately supportive. The teacher received a response within a day of the superintendent’s email to Alder Disposal and SD.

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Another challenge is the communication of logistical information. Since the school district is responsible for waste disposal finances, schools do not have access to waste disposal bill information. This means that schools, by default, do not know how much they are spending on waste disposal or the extent to which they have saved money by diverting landfill waste as recycling or compost. Since this data is not communicated between the district and individual school sites, it is difficult for schools to measure their progress in waste diversion. The ZWG coordinator explains this common problem, “You’ll start saving the schools money as they reduce their waste, but they won’t see it.” While financial savings is not the only reason to divert waste, it is significant one. In Alder, recycling disposal is free, while compost is around 70% of the cost of landfill disposal. Yet, there is no direct financial incentive for schools to divert more waste because they do not receive the money they saved back from the district. While school principals could ask for this data from the district or push to be reimbursed for their diversion savings, such a task is less pressing when compared to everything else a principal is responsible for on a daily basis.

**Obstacle 3: Conflicting priorities.** Principals, teachers, custodians or even students, face seemingly endless to do lists. The strain of “doing more with less” was present in almost every interview conducted for this project. “Everybody has so much going on. How much more can you add to someone’s plate?” wondered a district maintenance official when asked about school sustainability programs. Limited time and

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resources are commonplace, from the principal who oversees the entire school to the SD solid waste coordinator who wears “so many hats.” Faced with a multitude of needs and limited resources, schools are forced to prioritize the important and urgent. The result is that, in the midst of seemingly conflicting priorities, sustainability issues can quickly fade into the background.

It is understandable then that issues like academic standards, student safety and teacher support take precedence. Indeed, they should. The words of one principal exemplify the situation: “My number one goal is kids’ academic achievement. My number two goal is that they feel safe and socially-emotionally adjusted...Really everything else falls down to a lower tier.” This need to prioritize provides some explanation for why school sustainability programs have occupied a “lower tier” for most schools and district administrator. While such programs are important, as argued elsewhere in this research, they can be less important and urgent in comparison to the more pressing daily needs of students and staff. This is also the case regarding school and district budgeting. One district administrator feels that funding is a significant challenge facing school sustainability programs. “We’re coming into a really bad stretch financially for schools.” Because of this, the district and schools alike must prioritize their budget accordingly, leaving little room for the possibility of adding to waste disposal infrastructure or providing financial incentive for someone to take a lead on sustainability issues. The combination of too many tasks and not enough time or

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resources means that school sustainability is typically low on the priority list and few people have the time or resources to take charge. While some Alder principals have made it more of a priority, many have not. As evidenced by one principal, “I think it’s a lot of work. And while I would be happy to support someone else doing it, it is not in the top two-thirds of my priorities.”

Sustainability as priority is also a broader issue within the city of Alder. According to the official city website (2018), it has been a “sustainability leader for many years” and was among the first Grove cities to adopt a Climate Action Plan. Yet these sustainability efforts have focused primarily on increasing energy efficiency and decreasing energy-related greenhouse gas emissions for the city. The city website (2018) also mentions offering “a range of education outreach programs” and lists steps to “Green Your Schools,” but there appears to be a disconnect between intention and experience.

Science teachers at Oak Middle School reveal that school sustainability and waste diversion seem to be less of priority. Teachers expressed confusion when they heard about the existence of a city sustainability program and coordinator. “I’ve worked at this school for 12 years and I live in Alder. I had no idea.” Another teacher confirms, “If I hadn’t received an email about a city event earlier this year, I still wouldn’t know about it.” Concern about community priorities for schools was common among several teachers. One science teacher, who lives in a nearby city, described comprehensive

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compost and waste programs at her middle and high schools more than ten years ago. In comparison, she comments, “Alder, I would say, is way behind. And that’s not necessarily the school or the district’s fault, it’s our community.” One principal attributes this to a lack of awareness or sensibility surrounding compost and waste diversion. “We’ve had the culture shift” about recycling because “the sensibility around recycling was present and the system followed the sensibility.” But sensibility for compost and waste reduction overall is not yet commonplace for most schools and businesses in Alder. As such, limited community awareness, support and pressure to improve school programs has played a substantial role in the current state of school sustainability programs.

**Obstacle 4: stakeholder buy-in and coordination.** In every interview conducted for this research, the need for buy-in and coordination among stakeholders was mentioned as one of the greatest challenges to school sustainability. Without engagement from all levels of an organization, buy-in becomes subject to the energy and time of a single individual or small group. “The liftoff point comes from the person that is passionate about it, is willing to put energy into it and work to make it sustainable,” elaborates one principal. “But this system is only sustainable for so long.” Without the buy-in of all stakeholders, the system and its failure or success depends entirely on the individual or small group. This phenomenon is common among schools in general, and regarding school sustainability in particular. In order for a school



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sustainability program, such as recycling, compost and waste reduction, to function effectively, buy-in must be integrated at every level. This means students, teachers, principals, other school staff, waste haulers, district officials, and community members must be engaged in the process.

Additionally, there is the need for coordination among these different levels to manage logistics, educate stakeholders, make program improvements and maintain a consistent message. For example, the coordination of waste logistics requires buy-in and commitment from multiple stakeholders. The waste stations (compost, recycling and landfill bins) need to be obtained and placed in the best locations on campus. Students and staff need to be educated on how and why to correctly sort their waste. Explanatory signage needs to be posted near the stations to reinforce this education. The stations (or just their waste) need to be moved curbside every week for hauler pickup and then returned back to their location on campus. Involvement from many stakeholders is essential for these steps to be completed effectively and in such a way that the program becomes sustainable.

While programs run best when all stakeholders are truly bought-in, interview data indicates that buy-in is especially crucial for three groups: principals, custodians and students. A zero waste program, like any program or initiative, cannot occur on campus without the approval of the principal. While a principal may approve of the presence of the program, his or her leadership and communication of support can make

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the difference between a successful program and a less effective one. Consensus among staff survey comments reveals a need for more leadership from administration, particularly in regards to attention and follow-through on campus waste management efforts. As one representative survey comment explains, “We need more focus on it and it needs to be ingrained.” Since school administrators play such an integral role in setting campus priorities and representing the school as a whole, their consistent communication and commitment is necessary for an effective sustainability program.

Leadership from school administrators is not just essential for students, but also for teachers and staff as a whole. For all three schools in this study, the average staff member does not agree that school administrators discuss the importance of environmentally responsible behavior with teachers on a regular basis. The average Sequoia School staff member disagrees that communication occurs regularly, while the average Oak and Pine staff member strongly disagrees. The issue of school priorities and the sheer amount of responsibility taken on by principals, as discussed earlier in this chapter, may be one explanation for this data. However, the data does provide insight into staff perceptions of principal buy-in.

The data also sheds light on teacher buy-in. Teacher buy-in can be evidenced in a variety of ways, including the degrees to which teachers model environmentally responsible behavior and consistently discuss such behavior in their classrooms. As shown in Table 6, the average staff member at each school site did not feel he/she

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discussed environmentally sustainable behavior on a regular basis. Sequoia School indicated a slightly more positive perception, with a score of 2.7, while Oak and Pine were lower, with scores of 2.16 and 2.41 respectively. (This data set uses the same 4 point scale as previous tables, where 1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree.) Since the vast majority of survey respondents were teachers, it can be inferred that teachers in general feel they do not discuss environmentally sustainable behavior with students on a regular basis. The reportedly minimal discussion with students reveals the need for more teacher buy-in and a consistent message of sustainability both inside and outside the classroom.

Acquiring and maintaining student buy-in is also a common barrier. Staff survey comments highlight concern over whether students are truly engaged in school sustainability programs. Table 6 indicates that the average staff member at all three schools feels that student knowledge of and motivation to engage in environmentally responsible behavior is low. In the words of one principal, “having [recycling and compost] available and actually utilizing it are two different things.” The mere presence of green and blue bins is not enough to convince students of the importance of waste reduction. Not only that, but bins and signage are not enough to educate students and staff on how to properly sort their waste. Custodians at Oak Middle School and Pine Middle School report daily contamination of the recycling bins. At Oak Middle, Alder Disposal has not emptied the compost bins on multiple occasions due to contamination.

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Despite efforts since the beginning of the school year to educate students and staff about the 'hows' and 'whys' of waste reduction, it has been difficult to maintain consistent engagement from students. Some of this can be attributed to too much emphasis on the how and not enough emphasis on the why. At Oak Middle, announcements to the student body are shared on a fairly regular basis, but the reminders have been primarily focused on how to sort waste correctly. By focusing on waste sorting, "they're communicating the smaller picture, but not the bigger picture" of how students are helping the environment, reflects on one teacher. "Otherwise it seems like it's just another rule to follow."

Student buy-in is also connected with how students view their role within the campus community. On a daily basis, students see their school custodian collect trash off the ground. The message is that dealing with trash and taking care of the campus is the custodian's job. When asked to pick up trash on the ground, "it's not mine – it's not my job" is a common response. Students frequently use the garbage can as a basketball hoop, notes one custodian. "If it doesn't make it in, they don't go pick it up." Certainly, some students do properly dispose of their 'basketballs,' but the inattention by many does suggest an issue with student buy-in. The custodian adds, "students should be more attentive to what's going on with their classmates, and speak up" when they leave trash on the ground or do not sort waste properly. Likely due to concerns over what others will think, many students do not speak up when their peers leave trash behind.

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At some school sites, teachers and administrators intentionally model picking up and correctly disposing of waste to send a positive message to students. However, helping students learn to see their role as caretakers remains a challenge when the custodian is seen as being primarily responsible for the job and peer pressure or inattention prevents students from speaking up.

Custodian buy-in is also a crucial factor in the outcome of a sustainability program. While active custodian participation can be a positive predictor of program success, the lack thereof can also be a substantial hindrance. Much of the reason for this involves the controversy surrounding custodian participation. A common belief is that participation in a zero waste program results in more work without more pay for the custodian. According to one district administrator, emptying recycling and compost “increases the workload for the custodian. It’s a container issue, it’s a quantity issue. There’s so much, they can’t do it all.” Yet many stakeholders, including the Sequoia School custodian and those who work with ZWG, disagree. The custodian at Sequoia School, who coordinates the district’s most effective school waste program, explained, “it will help you with less lifting, less carrying. Like at the end of the day your back will have to work less even though you walk more to the bins. But the main thing is you start doing it and then you feel proud of your work.” The Sequoia custodian is one of many who has found that participating in a comprehensive recycling and compost program is not actually extra work because it results in a reduction of overall waste.

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Moreover, the total amount of waste is divided into three receptacles instead of one, reducing the weight of the containers and thus the strain on back muscles.

Certainly, perceived increased workload and amount of time is a common concern. At one school, the principal asked the evening custodians to move the compost and recycling bins from the back of the school to the street one day a week. There was pushback about timing, but the principal was persuasive. "I actually don't think they don't have enough time. I just think it's an additional duty they might not be all that excited about doing." The daytime custodian, who helps return the bins from the street to the back of the school the following day, agreed. He adds, "It's a given -- they have plenty of time for that." While the daytime custodian is supportive of the program, and considers it "part of the job," it is the students who do most of the work regarding compost and outdoor recycling - the students moving the bins from their campus locations to and from the back of the school. Regarding compost, the daytime custodian wonders, "You've got the greens. But once they're full, who's going to empty them?" The lack of clarity about who is actually responsible for the day-to-day logistics of zero waste programs makes buy-in and consistency and challenge. Moreover, while engaging students is certainly beneficial, students are so busy at the middle school level that they often forget to help even with frequent reminders from teachers. Additionally, students miss out on class time to move the bins. Meanwhile, the daily classroom demands on teachers make it difficult to coordinate such programs.

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Much of the controversy about custodian involvement stems from issues with the labor union. Currently, the union contract does not appear to include outdoor recycling and compost as part of the custodian job description. Because of this, many custodians do not consider this type of waste management to be part of their job and are resistant or hesitant when asked to be involved. One community environmental leader recalls what happened several years ago when the Conservation Corps lost its grant to empty ASD outdoor recycling bins. Although ASD schools were invited to continue the program independently, custodians at most of the schools said that, “since emptying the bins wasn’t in their union contract, they wouldn’t do it.”

In addition to contract issues, custodian commitment to recycling and compost programs can also be hindered by perceptions of student apathy. Two of the three custodians interviewed indicated concerns that most students did not seem to care about disposing their waste properly. Both custodians described seeing contaminated recycling bins and recyclables in trash cans on a daily basis. Whether due to apathy or inadequate training, a perceived lack of student buy-in can minimize custodian support for the program. When students do not correctly dispose of their waste, one science teacher explains, “It makes the custodian’s jobs a little bit more challenging to the point where they’re not super willing to participate in our waste management efforts. This is because “they are aware of the fact that students are not totally bought in and are not taking individual responsibility, for the most part.” In fact, the average staff member at

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all three school sites disagrees or strongly disagrees that students currently have the knowledge and motivation to actively engage in environmentally responsible behavior (See Table 6). Understandably, when students are informed and committed to sorting their waste properly, they communicate that recycling and compost efforts are a valuable and worthy investment of time. Not only that, but custodians feel their efforts are an effective rather than wasted use of time.

Survey data reflects the custodians' limited role in recycling and compost at ASD middle schools. As shown in Table 6, the average staff member at two of the three middle schools disagrees with the statement that "custodians are actively involved in our school's efforts to engage in environmentally responsible behavior." A representative survey comment from Oak Middle School reflects this sentiment: "At our school, responsibility for sustainability programs has been falling largely on the teachers and students. I wonder if the custodial staff could be more involved or if the district could take the lead." In other words, there is a strong need for more active engagement and buy-in on the part of the custodians at two of the three middle schools.



**Table 6 Staff Perceptions of Involvement in Environmentally Responsible Behavior on Campus, by Group**

Site	Communication of Importance by <b>School Administrators</b>	Active Involvement by <b>Custodians</b>	<b>Staff Members</b> Discuss with Students on Regular Basis	<b>Student</b> Knowledge and Motivation
Sequoia	2.2	3.1	2.7	2.7
Oak	1.56	2.44	2.16	1.96
Pine	1.5	2.25	2.41	2.5
All Sites	1.75	2.6	2.42	2.37

*Note.* Average calculated from sample size of 77 (total) voluntary participants on a scale of 1 – 4, where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree)

**Individual agency in structures of inequity**

Despite the obstacles facing ASD schools and the inequitable structure of county sustainability programs, ASD middle schools are making progress. Interview data indicates that progress is directly attributable to individual and collective agency at school sites. This individual and collective agency is the result of student-driven change and environmental education at multiple school sites, as well as a model coordinated sustainability program at one site in particular. This model program, essentially an outlier among the district, provides meaningful insight into how a school can create a robust sustainability program through buy-in, consistent communication and the priority of stewardship.

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**Student-driven change.** Project-Based Learning (PBL) at Oak Middle School has inspired individual agency among students and teachers alike. Through Project Green School and other curriculum, students have learned more about their own relationship with the environment. In an interview, one 7th grade teacher described her students' project reflection survey results. She revealed, "Eighty-three percent of students, the vast, vast majority of them, agreed or strongly agreed that 'my actions have a direct impact on the environment and its future.'" Consequently, students are now more aware of the specific ways their actions can negatively and positively affect the environment. Moreover, they learned to see themselves as agents for positive change. The teacher adds, "That's what a lot of them said in their written [survey] response: 'Now I know that I can make a difference;' 'we can try harder;' 'we have an impact,' 'we must change;' 'we're affecting the ecosystem;' 'we're using too much non-renewable energy,' and so on and so forth."

Such heightened awareness among students not only resulted in increased personal agency among those who participated in the project, but also inspired broader awareness among the campus at large. During the project, 7th graders collected qualitative data by interviewing the principal, custodian, teachers, and other staff and students. This interview process created a sense of mutual engagement in environmental issues that had not previously existed on campus. In addition, adults who had been hesitant to begin sustainability programs in the past due to lack of support

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now witnessed greater buy-in. Discussing the impact of Project Green School, the principal explained, “I think our students are more aware of sustainability issues and solutions, and I think that they have been able to really come up with some good, concrete ideas for things.” Student project ideas have included outdoor recycling and compost, water bottle fill stations, reusable or compostable lunch utensils, a rainwater containment system, and a synthetic track. While many of these ideas will require time and funding to be implemented, the process of generating ideas has been enough to increase environmental awareness and buy-in on campus. As a result of this momentum, a few teachers and students were able to begin a school-wide compost and recycling program, as well as receive a grant for water bottle fill stations.

**Environmental education in the science classroom.** In addition to the influence PBL curriculum, the implementation of the Next Generation Science Standards (NGSS) has also resulted in an increased awareness of issues related to sustainability. While the previous California state science standards did cover some environmental issues, the NGSS more clearly integrates sustainability into the science classroom. In addition to clarifying the content students must master, NGSS incorporates performance expectations that specify *how* students must master the content. For example, the middle school Earth and Human Activity Standards (NGSS Lead States, 2013) include the following performance expectations:

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- (MS-ESS3-3) Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]
- (MS-ESS3-5) Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. [Clarification Statement: Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.]

In addition to the NGSS emphasis on the relationship between humans and the Earth, the standards also prioritize the integration of content with skills, namely science and engineering practices. These practices, like solving problems, designing solutions, considering criteria and constraints, and evaluating multiple competing solutions, equip students with the skills to be change agents. Moreover, curriculum that incorporates such practices also typically provides students with the opportunity to be change agents. Overall, NGSS implementation has reinvigorated the role of sustainability in the ASD middle school science curriculum. The principal at Pine Middle School elaborates, “Our environmental education is probably the most solid area [of school sustainability]

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because I think our science team does a good job of working it into the curriculum.”

Even at schools that do not yet have comprehensive sustainability programs, NGSS implementation is resulting in an increased awareness of sustainability among students and their school community.

### **Modeling a coordinated sustainability program.**

*It's a typical day at Sequoia, a K-8 Alder school. Middle-schoolers race to the gym for their morning snack. One pig-tailed girl grabs a blueberry muffin when a kitchen aid with a warm smile stops her. "You need a fruit. You guys know that – every morning you have to get a fruit." Nearby, a 5th grader fills his cup with milk from the dispenser of Strauss Organic – no cartons needed. During morning break, kindergarteners eagerly ask the principal who is helping with yard duty, "Can we go dance? Can we?" With a nod of the head and a big grin, the principal waves them over to the Zumba workout, a twice-weekly activity led by a PE teacher. During lunch, students eagerly chomp and chat away with their classmates in the common area. Some of their lunch may even be grown on campus, thanks to a partnership between science teachers, students and kitchen staff. Once finished with lunch, the students walk over to see Gabby, the yard duty supervisor, who helps them properly dispose of their waste into recycling, compost and landfill containers. Leftover food is placed in cardboard boxes, extras from the kitchen, and then moved by the custodian into the compost bins. Over the weekend, some students, including those without homes, may travel with school staff to a nearby food kitchen to serve the local homeless population. Next year, the entire school community will be surrounded by orchards and caring for baby chicks, thanks to a recently won grant.*

Sequoia School is a place where mutual care, stewardship and service are cultural commonplace. Among Alder schools in general and middle schools in particular, Sequoia is known for having the most comprehensive waste program. A district maintenance administrator describes Sequoia as “the one school that has a culture of sustainability.” This success can be understood through the interplay between three

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primary factors: buy-in and coordination, consistent communication, and making stewardship a priority.

***Buy-in and coordination.*** When the Conservation Corps lost its funding to support Alder schools and stopped maintaining campus waste bins, most schools decided to end their programs. Yet Sequoia chose to continue. This decision was motivated by the buy-in of key stakeholders. At Sequoia, the custodian, yard staff and principal coordinate the compost and recycling program. The school custodian describes a key to the program's success, "You have to be on the same page – everybody." Or at least, the key players. After eating lunch, students of all grade levels deposit their waste in a specified lineup of compost, recycling and landfill containers. A yard duty staff person helps students properly sort their waste. The custodian sets up the containers and deposits their contents into the larger compost, recycling and landfill bins for street pickup. Science teachers and others reinforce the importance of this program through classroom curriculum.

At Sequoia, the coordinated effort and active participation from a small group of stakeholders drives the program's success. The custodian emphasized, "At the end of the day you feel very proud of doing the right thing. But that will happen not just [with] the custodian, but also the yard duties and everyone." His appreciation for the yard duty is clear, "She's really dedicated with what she does." The integral role of the custodian and yard duty is a key factor in the program's success. One district administrator

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remarked, "It's really cool. I don't think there's any other site that does that. They've got it all set up. Even the custodian helps with it." Indeed, the custodian takes a leading role. For example, the custodian recognized that having multiple locations for students to eat lunch meant that not all students had access to utilize the compost and recycling bins, or receive the help of the yard aid. Thus, the custodian recommended students eat lunch in the same location. The result is a more streamlined waste disposal process, making it easier to monitor students and help them dispose of waste correctly. The commitment of the custodian, and the entire school community, to restructure the lunch routine resulted in a more effective and coordinated program. Consequently, the program not only models the importance of such efforts, but also engages students with the opportunity to learn about and practice environmentally responsible behavior.

The service-oriented culture at Sequoia also reinforces buy-in for school sustainability. The principal, who has been at the school for 11 years, has driven this emphasis on service and stewardship. He described his "longevity" as a "key part" in sustaining school culture and buy-in. Teachers and administrators consistently emphasize the importance of serving others and being a positive change in the world. Inherent in such an approach is caring for the world beyond the self, specifically, for people and the planet. Because of this, the school principal elaborated, "our culture naturally lends itself to protecting the Earth." The principal recalled when student-led garbage pickup teams spontaneously formed. These teams now help clean the campus

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on a regular basis. Since service is a community value that students consistently engage with from kindergarten through 8th grade, commitment to programs like sustainability is a overflow of prior learning. This buy-in is also reinforced year after year because students build on their learning through middle school, rather than needing to transition between different elementary and middle school cultures.

***Consistent communication.*** Consistent communication is another integral factor to the success of the Sequoia waste program. Effective communication is the result of commitment to the program, intentional planning, and the small group of leaders of involved. Since the custodian and yard duty have incorporated the program into their job responsibilities, they take a leading role in communicating together, as well as with the principal and with the students. The yard duty talks with students every lunch, helping them properly dispose of their waste. Because she is bilingual, she can support the large Spanish-speaking student population in their heart language. Additionally, the custodian sets up the lunchtime waste disposal line and coordinates with the yard duty about needs and issues. The custodian and principal have a planned meeting once a month, in addition to day-to-day check-ins, to discuss campus needs like recycling and compost. “We get along very good,” the custodian noted, “I ask him what I need to work on and he ask me what he can do for me.” This ongoing conversation creates a continuous feedback loop in which both participants feel mutually supported and



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invested in each other's success. Frequent and intentional conversations also provide opportunities to reflect on logistical issues and areas for school improvement.

This emphasis on communication and growth is also evidenced by the relationship between the custodian and the waste hauler. At the other Alder middle school sites, the custodians and principals described a minimal relationship with the hauler company. However, the custodian at Sequoia has utilized his interactions with the hauler to elicit feedback. The custodian explained, "When they come I ask all these questions. And they tell me what ideas they have." On one occasion, the custodian asked for suggestions about how to reduce the food leftovers on the bottom of the compost toter bin. The hauler recommended leaving the bins open during rainy days to help loosen some of the container residue. Since then, the compost containers have been much cleaner.

***Stewardship as priority.*** In the words of one principal at another middle school, "As an educational system, we really need to work on teaching our kids to be good stewards. If we were going to put our time and energy into that, it would dovetail a lot of the things that we do." This is the case with Sequoia. At Sequoia, it is clear that service to others and the planet is a top priority. Because of his passion and 'longevity' in leadership, the Sequoia principal plays a pivotal role in driving the school emphasis on stewardship. When asked to explain why this was so important him, the principal responded, "It's just who I am--it's part of my belief system." He emphasized his

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commitment to helping students see themselves “as agents of change to sustain...our planet” and the significance of modeling stewardship by “giving back to the world around me.” Stewardship is not just another school initiative or something secondary to student academic achievement. Rather, it is an essential component of academic achievement. When students see they have a bigger purpose as change agents, their learning has deeper purpose. They become empowered to utilize their learning to serve present and future communities.

The priority of stewardship is also evident in the custodian’s comments. “I think it’s doing the right thing, and also to look ahead, like for your kids, your grandkids...at the end of the day you feel proud of what you did and trying to save the Earth. Plus it’s helping our community also to be more healthy.” The custodian’s words reflect pride in his own work and in the waste program at his school. His description of his own role reveals a sense of vision, purpose and passion beyond ‘I clean the bathrooms and empty the garbage.’ The custodian’s role in the waste program imbues his job with a sense of meaning. This meaning comes from providing students with opportunities to learn about and practice environmentally responsible behavior, and in doing so, to reduce their environmental impact on a daily basis. This experience of added meaning is similar for the yard duty monitor. Her job is no longer solely to supervise lunchtime behavior. Rather, she educates students on how to care for their world and gives them opportunities to actually take care of it. The shared vision among the yard duty monitor,

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custodian and principal, as well as teachers and students, has created a service-oriented culture in which students learn how to be stewards for people and the planet. The result is a sense of ownership and community.

Certainly, Sequoia School and its sustainability program are works in progress. Even so, the school sheds light on what it takes to implement and maintain a robust zero waste program. The priority of stewardship, consistent communication, and community buy-in and coordination are integral components to the success of the program. In addition to the role of student-driven change and environmental education at other schools in the district, these factors reveal how individual and collective agency can result in meaningful change within broader structure of inequity.

**Chapter 5 Discussion**

The meaning in this research is found in its examination of the underlying processes and programmatic phenomena surrounding sustainability programs. The findings point to three primary themes, all of which pose compelling implications for scholars, schools and policy-makers alike. First, students in Grove County do not have equitable access to educational opportunities surrounding sustainability. County and city political processes have directly contributed to the creation and perpetuation of this structure of inequity. While such inequity was not intentionally created, Grove County, the Alder Sanitary District (SD) and the Alder School District (ASD) nonetheless remain complicit in perpetuating inequity by ignoring and failing to address the issue. Second, the lack of equitable access to county programs and the absence of any systematic plan for sustainability has resulted in a scattershot approach within ASD. This piecemeal approach, in which partial measures toward sustainability are periodically implemented, can be characterized by mixed messages, inconsistent communication, conflicting priorities, and challenges with stakeholder buy-in and coordination. Consequently, a systemic approach is necessary to address the problem.

Despite the structure of inequity, individual agency has created notable progress towards sustainability at Alder middle schools. Evidence of individual and collective agency can be seen through student-driven change, environmental education in the

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science classroom and the modeling a comprehensive sustainability program at one outlier school. Key factors in the success of this outlier school program include buy-in and coordination, consistent communication among stakeholders and stewardship as priority.

### **Implications for the Literature**

The academic literature has much to say about the significance of sustainability programs and the components of successful programs. Findings from this study align with the literature in several ways. The findings parallel the literature regarding the importance of engaging key stakeholders, such as principals and custodians, eliciting buy-in, and maintaining consistent communication for program success. The role of environmental education, specifically through Project-Based Learning and the Next Generation Science Standards, in promoting environmental behavior is also a similarity.

Amidst similarities, the findings in this research are unique in their emphasis on educational equity. While Volk and colleagues (2014) conclude that student demographics, the location of the school and socio-economic status do not appear to be strong predictors of environmental literacy, this study considers how a broader structure of educational inequity can minimize opportunities to engage in environmentally sustainable behavior and thus hinder environmental literacy. While the academic literature discusses equity issues from the perspective of environmental

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justice and the experience of environmental harms, this research pushes the conversation on sustainability to include the significance of educational access and the political processes that underpin such access. Moreover, implications of these findings call on the responsibility of stakeholders in providing equitable access to sustainability programs for all students and challenge stakeholders to consider the present and future consequences that may result from varying levels of access to opportunities to learn about, practice and engage in environmentally sustainable behavior.

It is no surprise that political decisions and resulting processes affect educational systems. Yet what is surprising in this study is the extent to which these processes have created such a disparity of access to educational sustainability programs in Grove County. Zero Waste Grove is a misnomer. Indeed, it is Zero Waste 'everyone but Alder.' Even more concerning than the existence of the disparity is the realization that such a structure of inequity has been allowed to persist, particularly in a county that is already divided along socio-economic lines. If sustainability programs are re-conceptualized as a barometer for equity, rather than just another school or county initiative, then our air pressure readings are telling of a broader systemic issue.

This study originally sought to consider the gap of minimal research on the relationship between school sustainability programs and equity issues in the academic literature. The findings not only address this gap by evaluating the degree of educational equity among sustainability programs across Grove County, but also point to ways

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individuals and school communities have sought to transcend that structure. The examples of individuals and communities to effect positive change from within systems of inequity offer insight into how issues related to sustainability and beyond can be successfully addressed.

The findings in this study build on the discussion of sustainability in the academic literature and the Grove County conversation on sustainability. Political decisions, motivated by the financial gain of some parties, had a direct impact on the degree to which Alder students could access opportunities to engage in environmentally sustainable behavior. Consequently, Alder students have less access to zero waste practices and education than central and southern Grove schools. The Alder School District, whose families already have fewer socioeconomic resources than the rest of the County, is likely spending more money per capita on waste disposal than other Grove County schools because of there are comparatively fewer programs for recycling and compost. Ironically, the problem with limited resources to support schools is resulting in an overabundance of resources wasted at schools.

When the existence of sustainability programs is hindered by a lack of intentionality and systematic planning by schools, districts and local organizations, students miss out on meaningful learning opportunities to improve their present and future. Inadequate waste reduction and energy conservation efforts can undermine student learning and result in missed opportunities for putting new learning into

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practice. Moreover, reliance on a 'scattershot approach' means that some students have access to effective programs and others do not, and that individuals attempting to implement such programs without support can burn out in the process.

### **Implications for Practice and Policy**

For the sake of our students, our communities and our environment, the structure of inequitable sustainability programs must be addressed. The findings of this study suggest multiple avenues for progress. A lack of responsibility and ownership of the problem is a common thread throughout the research. As a result, taking responsibility is an excellent starting place. Since the SD originally opted out of the educational programs provided by the Joint Powers Authority yet did not provide comparable programs, the SD needs to be held accountable for providing equitable opportunities to students to engage in environmentally sustainable behavior.

Responsibility should include both financial and programmatic support. Moreover, the ASD needs to utilize its own influence on the SD for garnering this support. If the SD is unable to provide comparable sustainability programs with the rest of the county, then it should be required to pay into JPA educational programs so that Alder students have access to Zero Waste Grove resources.

While successes from individual agency have resulted in forward momentum towards sustainability, the ASD 'scattershot approach' is not an actual solution. Rather



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than vague and disconnected efforts, the ASD needs to make its view on sustainability official and invest accordingly. Specifically, ASD should engage stakeholder support to establish a formal sustainability policy and then educate district and school administrators accordingly. This policy fits in well with the district's graduate profile (cultural competence, character, conscientious learning, etc.), the equity imperative and other site initiatives. As part of this formal policy, the district should re-establish its sustainability committee to address ongoing issues and identify areas for continuous progress. This committee should consist of key stakeholders, including students, teachers, parents, district staff and administrators. More consistent communication regarding the importance of sustainability, including regular communication to all staff, is also essential. Educating all staff on the significance of sustainability, its direct connection to learning and its importance in equipping our students as engaged 21st century learners, will increase buy-in and overall support. This systematic approach, in contrast to the 'scattershot approach,' will help to make sustainability programs sustainable and to ensure that the success or failure of such programs does not hinge on the periodic interests of a few individuals.

Partnership is also essential to move forward. The ASD, SD and city of Alder need to partner together to establish a comprehensive sustainability program, including zero waste efforts at all school sites. This partnership should include explicit designation of roles and responsibilities at the school district and site level. Specifically, greater buy-in

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and role clarity for school custodians is imperative. The custodian job description in ASD, as with most organizations, is outdated and must be clarified to fit the 21<sup>st</sup> century needs of waste diversion. This includes modernizing the custodian union contract to include addressing all types of waste, including indoor/outdoor school recycling and compost. While this study's data indicated some debate over the amount of time custodians have to deal with recycling and compost, other programmatic changes could be made to facilitate this role transition. For example, at Oak Middle School, students could take on the primary responsibility of picking up campus debris instead of the custodian. Meanwhile, the custodian could manage the emptying of recycling and compost bins.

A simple change in contract or job responsibility is not enough to guarantee authentic buy-in. Buy-in can be achieved by engaging custodians in the process from the beginning and providing support throughout. The ASD, SD and city of Alder could provide professional development opportunities, stipends for successful programs and consistent acknowledgement of progress. Such opportunities may help to expand perception of the role of the custodian from the person who is in charge of trash to the change agent who provides students with opportunities to engage in environmentally responsible behavior. The roles of other campus employees, including yard duty and lunch staff, could also be expanded. Instead of only monitoring behavior or managing

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lunch, these employees could take an active role in teaching students how and why to dispose of their waste correctly.

A common challenge of sustainability programs, as evidenced by ASD middle schools, is the lack of coordinated leadership. While sustainability programs (including compost and recycling efforts) can be initiated by students and teachers, the principal remains the lynchpin for setting and maintaining school priorities. Engaged support from the principal is crucial. Yet principals and teachers have such little time and so many commitments. Accordingly, it is unrealistic to expect that principals and teachers take on the brunt of the work to coordinate sustainability efforts. If the ASD, SD and city of Alder truly believe sustainability is a priority, then they need to designate someone or many people officially responsible for implementing and maintaining sustainability programs. This could be done in a variety of ways, such as a 'sustainability coordinator' position that supports all schools in Alder and a 'site lead' who focuses on his or her own school. While budgeting is always a concern, funding for such positions could be supplemented through savings from comprehensive waste diversion as well as the funds that would have been contributed to the JPA.

In addition to school districts, the findings in this study have specific implications for school sites and teachers. Students need consistent messages about sustainability both inside and outside the classroom. In addition to posting signs about how to recycle and compost effectively, school staff need to model how to engage in environmentally

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sustainable behavior. Students need to see that all community members, not just the custodians, are responsible for caring for our environment. Further, students need to see that picking up debris or disposing of waste correctly is not a punishment but rather a characteristic of a responsible and engaged citizen. Just as with expository writing or public speaking, students need to see teachers modeling environmentally responsible behavior. Additionally, teachers can integrate an understanding of sustainability into their own content area to demonstrate how such issues are relevant across disciplines.

At some Alder middle schools, progress in modeling is already being made. Next steps include establishing a school (or district) sustainability coordinator to oversee the logistics of waste disposal and lead education on the 'whys' and 'hows' of recycling and composting effectively. More significant leadership from school administration and the entire community of teachers would go a long way in moving programs forward. There is also a significant need for more active involvement from custodians, specifically in the logistics of emptying waste bins and moving them for curbside pickup. Schools should also reevaluate the waste bin infrastructure to identify a more effective system for student use. (For example, at Oak Middle School, funds could be used to purchase the three-part recycling, compost and landfill system bins suggested by Project Green School students. Due to their smaller size and space for clearer signage, these bins would likely promote more effective use by students and staff alike.)

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### **Rationale for Policy Change**

To be sure, designing and implementing a coordinated district-wide sustainability program will require a significant investment in time, energy and resources. But unlike some educational initiatives, this one will be worth the effort as it will benefit our schools, communities and planet. As seen in this research, sustainability programs can serve as a tool to evaluate educational equity. In establishing comprehensive sustainability programs, school districts like ASD can provide more equitable educational opportunities for students to learn about and engage in sustainable practices. School sustainability programs can also be utilized as a tool to cultivate environmental equity. Our generation can help minimize our current and future environmental impact by engaging in environmentally responsible behavior now. When we fail to provide students with adequate opportunities to learn and engage in sustainable practices, we are unintentionally perpetuating a system of environmental inequity in which our students – the very one we are trying to help succeed – will suffer in the future. Today’s actions have a direct impact on the extent of climate change and environmental health our students inherit in the future. Thus, school sustainability is not only a barometer for educational equity. It is also a tool to foster generational environmental equity and civic engagement.

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While it is understandable that schools and districts may be hesitant to invest in sustainability programs given already strapped budgets, the direction of the tide remains. Sustainability is the direction our county and state are already moving. As evidenced by state legislation, the Drawdown Grove movement, and the Zero Waste Grove schools program, the priority of sustainability is clear. Since this is the case, why not be intentional about school sustainability programs now instead of waiting? At the very least, starting a comprehensive district sustainability program now will result in greater cost savings from waste diversion. At the most, we will transform the way students see their own role in their environment and their communities.

In a broad sense, education is all about stewardship. Merriam Webster defines stewardship as “the conducting, supervising, or managing of something, *especially*: the careful and responsible management of something entrusted to one’s care.” As educators, our role is to teach students how to be stewards - how to be careful and responsible managers of their time, energy, learning, relationships and opportunities. We want to teach our students how to be good caretakers of themselves and each other. In providing students the opportunity to learn about and engage in environmental sustainability, students practice the skills of self-awareness, personal responsibility, service-mindedness, and understanding their relationship to the world around them. If education is a kind of stewardship, then our schools should be about stewardship too.

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Fundamentally, we need to change our message about school and sustainability programs. At districts like ASD, many students recycle and compost at home but at school, trash cans are the only, or most prevalent, option. The implicit message is that sustainability is not important enough to do at school, in public or on a large scale. Also common, students have ample opportunity to recycle and compost in elementary school but see that option disappear in middle and high school. The implicit message is that caring for the environment is fine for little kids but is not important enough for older students or adults. We cannot expect our students to suddenly become environmentally conscious when they reach adulthood. Rather, a stewardship mindset must be cultivated. Authentic education engages students in real world problems like climate change and waste management, and empowers students with the skills, knowledge and opportunities to address those problems. As such, schools must provide students with consistent opportunities to learn about and engage in environmentally responsible behavior. In doing so, they develop habits of stewardship that improve their own lives, their communities and their planet.

If we are to change our message about schools and sustainability, we must also change the way we see the role of the education system. Traditionally, teachers are seen as the educators on campus. Yet everyone on a school campus, whether in the classroom, the office or the yard, has a role in educating students. The custodian and yard duty at Sequoia School are prime examples. They do not see themselves as on the

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sidelines of education. Rather, they are educators. They teach students about sustainability and provide them with the opportunity to both to utilize that learning to benefit the planet. How different schools would be if we re-conceptualized the role of the educator -- if every person on every campus viewed their interactions with students as opportunities to educate, equip and transform. Similarly, students need to catch a vision for themselves beyond their role as students — a purpose that both includes and transcends academic success. How different our schools would be if students learned to see themselves as stewards and changemakers.

### **Limitations of the Study**

While this study yields meaningful findings, it also presents several limitations. The restricted timeframe to complete the study necessitated certain decisions regarding data collection methods. Specifically, I did not have the time or bandwidth to acquire the permissions necessary to collect data from students. The lack of student voice in my research resulted in a limited perspective through which to view school sustainability. Furthermore, the research is limited in its data from non-school site professionals. Additional data from school district employees, waste haulers and county leaders would provide a more nuanced perspective. This research is also narrow by its emphasis on school waste management programs. While school sustainability programs can be examined through the integration of waste management, energy conservation and



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environmental education, this study is missing a comprehensive evaluation of the state of environmental education and energy conservation efforts at ASD and Grove County.

Because of the limited scope and timeframe of this research, my study participants provide a partial, albeit compelling, perspective on school sustainability. Certainly, the lack of student voice is apparent. Further, administrators from the school sites and school district, as well as the sustainability coordinators, were all white, middle-aged and a majority male. While this pattern is reflective of county demographic trends, it does mean that perspectives from a diversity of socio-economic and ethnic backgrounds were not available. For the staff survey, it is likely that perceptions about sustainability were heavily influenced by more general feelings of positivity and/or negativity towards school and district administration. Finally, my own bias and positionality influenced the analysis of data and generation of findings. My own views on the significance of sustainability, as well as my prior knowledge of the county context, affected the way interview and survey questions were phrased and the interpretation of responses. While interview questions were designed for open-ended responses, the phrasing of the questions themselves may have unintentionally shaped participant responses. Additionally, my own pre-existing relationships with interview participants may have also influenced responses. When I asked colleagues about our school sustainability programs they may have answered according to what they thought I wanted to hear, although this is not necessarily reflected in the data.

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In addition to biases, this research is also narrow in its specificity. The findings are highly specific to the three sites in ASD, as well as to the political processes that have occurred in Grove County. While this specificity leads to practical and focused implications for ASD and the county, readers outside of this area will need to consider how these findings can apply to their own context. Even so, the study's overarching themes can be applied to any other organizations in which there is lack of systematic structure for sustainability programs or where there is inequitable access to such programs.

### **Direction for Future Research**

In addition to findings, further gaps in the research were also uncovered. Future research might explore whether and the degree to which school sustainability programs actually promote educational equity. This could be done through a student action project or longer period of study. Also, researchers might consider the effect of NGSS on sustainability awareness in schools, as well as the relationship between school sustainability programs and various factors, including a sense of belonging in school culture, academic achievement and community engagement. As the effects of climate change mount, studies on school sustainability will become increasingly beneficial for educators and administrators alike.

**Chapter 6 Conclusion**

According to the Alder School District's Equity Declaration (2017), educational equity means that every student has access to the opportunities that will equip him or her for a "strong future." Yet our actions and their contribution to climate change are currently threatening that future. Given the escalating effects of climate change, school sustainability programs are urgently needed to educate students on environmental issues and equip them with opportunities to effect positive change. In other words, such programs are necessary to inspire and prepare students for a strong future. Because of the significance of sustainability programs in minimizing environmental harm and increasing environmental health, an understanding of the current state of school sustainability programs is essential. Accordingly, this study sought to better understand the current local layout of sustainability programs, investigate the problem of inconsistent and inadequate sustainability programs on school campuses and identify areas for transformation. Specifically, the purpose of the research was to better understand the current sustainability efforts in the Alder School District (ASD) schools in the light of the district's recent adoption of the Equity Imperative.

The findings in this study reveal evidence for the need to significantly improve school, district and countywide sustainability programs. Although unintentionally created, an inequitable structure of sustainability programs currently exists in Grove County as a consequence of local political decisions and processes. The result is that

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schools in central and southern Grove County have access to a comprehensive zero waste program while Alder city schools do not. Within the Alder School District, sustainability efforts are piecemeal - a 'scattershot approach' that can be described by mixed district messages, inconsistent communication, present school priorities, and inadequate stakeholder buy-in and coordination. Even within this structure of inequity, individual agency at Alder schools has resulted in significant progress. This agency is seen through student-driven change and environmental education at all three middle schools. Further, we can learn from the successes of the Sequoia School waste program by emphasizing buy-in and coordination, consistent communication and stewardship as a priority.

The original question facing this research was the relationship between educational equity and school sustainability programs. Typically, equity and school sustainability are viewed as discrete and unrelated concepts. Yet the findings in this study demonstrate their inherent connection. Educational programs consist of all learning opportunities that prepare students for their future, including learning about and engaging in sustainability. In Grove County, all students except those at Alder schools can participate in a comprehensive zero waste program that provides the resources, staffing and support to effect significant positive change. In contrast, ASD schools have minimal support from the school district, sanitary district or city. While some progress has been made, the problem remains - Alder students have neither

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comparable nor equitable access to resources to learn about, practice and engage in environmentally responsible behavior. This geographic distribution of sustainability parallels the socioeconomic divide that already favors central and southern Grove County over the city of Alder. Not only does the rest of the county have substantially higher home prices and median household incomes, its schools also have significantly more resources for educational programs such as school sustainability.

The primary explanation for the differences in sustainability programs in Grove County is political. When the Alder Sanitary District decided to save money by opting out of the educational program component of the Joint Powers Authority, it did so with the intention of continuing its own programs to support schools. Yet these programs do not offer Alder schools the support they need to implement comprehensive waste programs. Not only that, but Alder schools are unable to participate in the more substantive Zero Waste Grove school program because the JPA did not contribute financially. While this structure of inequity was not intentionally created, the SD and ASD are still complicit in perpetuating inequity by allowing the problem to persist. Since both the SD and ASD are public organizations, paid for and designed to benefit the people, they have an inherent responsibility to serve the current and future public good by addressing the problem. In other words, they have a responsibility to serve the good of the environment by establishing and maintaining comprehensive sustainability programs.

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In addition to the disparity within the county, waste reduction and resource conservation efforts among ASD middle schools also vary. All three school sites, as well as the rest of the schools in the district, have solar panels and other energy saving measures. Sequoia School, district outlier for successful waste management, has a comprehensive and effective recycling and compost program. This program is coordinated by a strong partnership between the custodian, principal and yard duty, as well as through teacher and staff support. Additionally, efforts have been made to conserve resources in a variety of ways, including the use of a bulk milk dispenser instead of milk cartons and growing food in the garden for school lunches. In contrast, Oak middle school has a fledgling recycling and compost program with minimal but growing buy-in from students and staff. Sequoia School has classroom recycling bins but the absence of any other programmatic support.

Generally speaking, staff perceptions at all three school sites are negative regarding the active involvement of school administrators, custodians, teachers and students in environmentally responsible behavior. Perceptions at Sequoia School are comparatively higher towards involvement of each group, particularly the custodian. This makes sense given that Sequoia has the most robust recycling and compost program among the three schools. The data also shows the degree to which environmentally responsible behavior is a priority in school culture and school communication. Staff at Sequoia School perceive environmentally responsible behavior

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more as part of their school culture and communication than the other two middle schools, although overall perceptions at all three sites are still mostly negative.

However, staff perceptions are even more negative in regards to environmentally responsible behavior as part of district culture and communication. Overall, the data suggests that staff do not yet perceive sustainability as being a significant priority for individual sites or the school district.

Despite negative perceptions, progress has been made in a variety of ways. At Oak Middle School, student engagement through Project Green School earned the buy-in from the school community to introduce a compost and outdoor recycling program. The coordinated partnership and community buy-in, as well as consistent communication and the priority of stewardship, continues to support the successful compost and recycling program at Sequoia School. At all three school sites implementation of the Next Generation Science Standards has resulted in a renewed emphasis on sustainability in the classroom.

The specific nature of this study means highly practical implications for local school sustainability programs. The research is clear that ASD students are not yet receiving the opportunities they need to learn about, practice and engage in environmentally responsible behavior. As a result, the first step is for the SD and ASD to take responsibility for their role in perpetuating the structure of educational inequity. Both organizations can do this by partnering together to create an official sustainability

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policy for the school district and fund programmatic efforts accordingly. ASD, SD and the city of Alder can establish a meaningful partnership to provide the tools, resources and funding for Alder schools to have zero waste programs that are actually comparable to schools in the rest of the county. The role of school custodians and yard duties needs to be modernized to include comprehensive waste management and supporting students with disposing of waste properly. Further, consistent program leadership is a necessity. This includes a district school sustainability coordinator and/or school site leaders. It is unrealistic to expect that school administrators and teachers, already strapped for time and resources, will have the bandwidth to initiate and maintain programs without support or funding. Alternatively, SD and ASD could provide financially to enable Alder schools to fully participate in the Zero Waste Grove schools program.

At the same time, school sustainability programs should not be perceived as just another initiative. Rather, such programs serve as a barometer for educational equity and a tool to cultivate environmental equity. When schools provide students with the opportunities to learn about and practice environmentally responsible behavior, they are also helping to minimize environmental harm in the present and the future. Additionally, school sustainability programs should be seen as part of a broader county and statewide effort to engage in sustainable living. Sustainability is the direction of the present and future; Alder schools can either join the effort now or be among the few who are ultimately compelled to participate. Finally, there is a need to re-conceptualize



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the implicit messages communicated by school system. Rather than simply academic success, students need to see their role as stewards—of themselves, others and their planet. School employees, whether in the classroom, the office or the yard, need to see their role as educators of students. How different our schools would be if every adult on campus saw their role as investing in the success of their students, as scholars, stewards and changemakers.

Typically, environmental responsibility has been seen as a side issue. As 21st century citizens, we can no longer afford to view sustainability as a secondary issue or an additional initiative. The consequences of human action, such as climate change, marine plastic pollution and declining biodiversity, are severe. Consequently, sustainability needs to be integrated into daily life, including our school system. Sustainability must become part of everything schools do, interwoven into the fabric of our vision, mission and daily practices. In order to make this a reality, school sustainability programs must be re-conceptualized as an integral part of raising engaged and intentional 21st century students. Counties and schools have a responsibility to provide equitable educational access to sustainability programs for the sake of ensuring educational equity and creating environmental equity - to protect our students' present and future. According to the ASD Equity Declaration (2017), failing to adequately educate any one student affects the whole community. Indeed, the community and the

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planet. In the words of 7th grade Project Green School students, “We can try harder. We have an impact. We must change.”

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January 17, 2018

Marissa Page  
50 Acacia Ave.  
San Rafael, CA 94901

Dear Marissa:

I have reviewed your proposal entitled *Project Green School: The Role of Sustainability Programs in Fostering Equitable Communities* submitted to the Dominican University Institutional Review Board for the Protection of Human Participants (IRBPHP Application, #10633). I am approving it as having met the requirements for minimizing risk and protecting the rights of the participants in your research.

In your final report or paper please indicate that your project was approved by the IRBPHP and indicate the identification number.

I wish you well in your very interesting research effort.

Sincerely,



Randall Hall, Ph.D.  
Chair, IRBPHP

Cc: Jennifer Lucko

**Institutional Review Board for the Protection of Human Participants**  
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