

**PARTICIPATORY LANDSCAPE DESIGN WITH URBAN MINORITY  
TEENS:  
BUILDING COLLECTIVE EFFICACY FOR LANDSCAPE  
STEWARDSHIP**

**by**

**M'Lis Bartlett**

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**Doctoral Committee:**

**Associate Professor MaryCarol R. Hunter, Co- Chair  
Professor Dorceta E. Taylor, Co-Chair  
Associate Professor Donald Freeman  
Professor Robert E. Grese**

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## **DEDICATION**

For Dad 1938-2015  
Who loved people and nature.

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## **ABSTRACT**

Participatory landscape design, a collaborative form of place making, has the potential to build an ethic of care and community capacity for local landscape stewardship. In particular, participatory landscape design provides an opportunity to build participants' collective efficacy for future landscape stewardship efforts. Drawing from three fields of study - landscape architecture, environmental education and environmental justice, and their respective practices regarding community stewardship--participatory design, stewardship education and activism--this dissertation seeks to understand how participatory design practices can support the stewardship of local landscapes. Utilizing a school-based participatory design project with urban teens of color, living in a low income, post-industrial community, this dissertation examines how participation in the re-design and construction of one's school yard contributes to collective efficacy for landscape stewardship. The study employs quantitative and qualitative methods to a) understand the contributing factors of such an experience to collective efficacy construction for landscape stewardship; b) explore teen's preferences for and perceptions of their local landscapes as a basis for understanding efficacy for making landscape changes and c) provides suggestions to practitioners and educators working in similar communities for how we can enhance teens' sense of collective efficacy for landscape improvements through participatory processes. Three studies were conducted in conjunction with a seven month participatory design project in Beecher, Michigan during which students in their first year of high school re-designed and built a new outdoor classroom and garden on school grounds.

The first study examined changes in self and collective efficacy during the early phases of the participatory design program based on student responses to pre and post program surveys. Findings highlight how of a teen's sense of being able to play an integral role in a collaborative effort to improve local landscapes enhances his/her perception of collective ability to initiate landscape change. Teens' perception of their collective efficacy is related to their confidence in finding the necessary help to start such a project. The results also suggest that certain competencies, like gardening and construction, can play a role in self-efficacy construction which in turn plays a role in one's perception of collective efficacy. Finally, the results provide evidence that school-sited greening programs can play a role in building capacity for offsite projects.

The second study, also facilitated in the early phase of the design process used photographs of landscapes similar to those found in the teens' community to guide interviews that asked a) what kinds of outdoor spaces these teens liked, or disliked and why b) their suggestions for improving these green spaces and c) who could they draw on to help them make these change. This study deepens our understanding of how these teens use public green space as places to play, to relax and to build or strengthen important social relationships with friends and family. This study also illuminates how landscape appearance may be associated with a sense of personal and community level pride. Finally, it demonstrates that simple, low cost design solutions recommended by the teens can easily improve local landscapes, thereby providing immediate access to the benefits of safe health green spaces.

Utilizing the combined methods of participant observation and post program interviews, the third study explores how participating in the physical construction of one's school yard may

influence efficacy construction. The study combines a description of students' participation in the summer program along with their reflections on the experience. Findings illuminate the interplay between self and collective efficacy in a collaborative design project. For instance skill building competencies supported self and collective efficacy for future projects, but concern related to the collective abilities of one's peer group mitigated that sense of collective efficacy. Alternatively, support from adults in the community seemed to bolster perceived collective efficacy, highlighting the need to incorporate intergenerational experiences into youth focused stewardship projects. Furthermore students considered intergenerational support essential to the long term care and sustainability of a newly built space.

This dissertation uses a multi-tiered approach to weave together existing research regarding participatory design, self-efficacy, and collective efficacy in the context of landscape stewardship and among urban minority teens. Findings across these studies enhance our understanding of efficacy construction through participatory design programs that can promote environmental action and landscape stewardship. Furthermore they suggest that collective efficacy for the often simple interventions of local landscape stewardship may enhance community pride, build community capacity and resilience.



## **CHAPTER I INTRODUCTION**

Landscape architecture, environmental education, and environmental justice are all fields of study that draw on a variety of academic disciplines to address concerns about social and ecological sustainability. Each of these fields of study have parallel practices, namely design, education, and activism. These practices vary widely in focus and approach, but share the common interest of supporting the creation and care of sustainable urban communities (Hester, 2006; Taylor, 2000; Tidball & Krasny, 2011) and a focus on understanding the human and ecological needs of local places. To varying degrees, design, education, and activism integrate the ideas that environmental stewardship requires collective action and that participation is essential to the creation of just, sustainable communities that support human and ecological systems. Thus, a core questions in these fields of study are how to access local expertise and how to create agency among local actors which by extension addresses the broader question of how to engage people in positive environmental behaviors.

However, these fields of study and parallel practices are often organized and facilitated differently, making it difficult to access and utilize the knowledge and understandings. This dissertation weaves together these disciplines, with their common objectives but disparate approaches, to form an interdisciplinary foundation for scholarship and action in participatory design, collective action, and sustainable community building. It is in this interface of practice and scholarship that this dissertation seeks to understand how participatory design practices can

support the care and stewardship of local place. In particular it utilizes a school-based participatory design project with urban teens of color, living in a low income, post-industrial community, to explore how participation in the re-design and construction of one's school yard builds collective efficacy for landscape stewardship.

***Connecting practices:***

Implicit across the practices of participatory design and environmental education is the concept that participation in making change matters. The social justice movements of the 1960's precipitated the emergence of participatory design, especially urban landscape design through the efforts of landscape architects, urban planners and architects who supported the democratic engagement of local people in making decisions about their own communities; in particular it was an effort to support the agency of communities of color to improve the environments in which they lived (Sanoff, 2000). (Hester Jr, 1987). From community greenway planning, to restoring a city park or creating a playground for elementary school children, participatory design continues to play an important role in engaging people in the shared process of place-making. However, there is much to learn about how participation can support the future engagement of young people in future stewardship practices. There are few empirical studies that examine the outcomes for those engaged in the process of designing, creating and caring or their local environment. From practitioners' experiences and existing research, we know that the participatory design process plays an important role in creating urban spaces that improve human lives and ecological systems. We have also learned that when young people participate in design processes they develop confidence and skills useful for future civic engagement (Breitbart, 1995; Chawla & UNESCO, 2002; Hart, 2013). Additionally in the process of planning a new green

space, young people increase their ecological knowledge through observation and restoration practices (Rottle & Johnson, 2007).

Participatory design projects that have engaged young people in activities of information sharing, learning, and caring about one's environment have much in common with the tenants of environmental education discourse that suggest caring and knowledge are necessary to support future environmental stewardship (Hollweg et al., 2011; Hungerford & Volk, 1990). As a process that entails skill building and action while deeply grounded in place, the participatory design process also has parallels to recent environmental education research that calls for engagement of students in culturally sensitive, local, place-based explorations of environmental issues (Lewis, 1995; Sobel, 2004), and shows that such projects can provide students with the opportunity to practice skills for future engagement in environmental advocacy and stewardship (Schusler & Krasny, 2008). Examining the experience of low-income urban minority teens in a school-based participatory design project helps us understand more about how such processes can support teen's collective efficacy for future stewardship activities.

Despite an extensive environmental education literature discussing what factors move people from caring and knowing about environmental issues to acting on them (Chawla, 1999; Rickinson, 2001), there is little research addressing how efficacy may play a role in such a process. Self-efficacy is a person's perception about their abilities to address and complete a goal. Self-efficacy is constructed from a combination of a person's individual experiences with related activities, the vicarious experience of seeing a peer complete a similar goal, a supportive and encouraging social environment and a positive outlook (Bandura, 1977, 1986). Self-efficacy is a key component of social cognitive theory, which assumes that people are pro-active agents

of change in their environment; self-efficacy is thought to play an integral role in a person's motivation and perseverance to complete a task or goal (Bandura, 1982). One of the few studies of pro-environmental behaviors in youth suggests that self-efficacy plays a significant role in their motivation to engage in such activities (Meinhold & Malkus, 2005). Understanding how self-efficacy plays a role in pro-environmental behaviors may help us to better understand what moves a person to action. A participatory design project provides an opportunity to explore what factors of participation might support self-efficacy construction for landscape stewardship.

Recent environment education discourse argues that to address interwoven social, economic and environmental disparities, environmental education must move beyond individual action and teach the skills of collective action through advocacy and stewardship (Chawla & Cushing, 2007; Tidball & Krasny, 2011). By nature, the participatory design process is not something done alone, it requires collective, collaborative action. Again the nature of the participatory design process provides a context in which to examine the construction of collective efficacy relating to landscape stewardship in teens. With a better understanding of what experiences might support collective efficacy, designers and environmental educators may better support young people's ongoing participation in the care and stewardship of their community.

### ***Research Design: Community Based Participatory Research***

This study utilized a community-based participatory research approach which is a process that engages researchers and community members in a shared goal of using research to better understand and address a community concern (Israel, Schulz, Parker, & Becker, 1998). My research involved two community partners: initially East Michigan Environmental Action

Coalition and secondly UM Flint Outreach /Discovering Place. In the fall of 2009 I began a collaboration with East Michigan Environmental Action Coalition (EMEAC) on series of school-based gardens across Detroit, MI. EMEAC was interested in providing safe, pretty, green spaces for urban children; at the time I was interested in how participatory design could increase environmental literacy. Diana Copeland (EMEAC's Director), Lizzy Baskerville (EMEAC's Greening Program Coordinator), and I spoke extensively about our shared goals: helping urban young people have access to safe green nature and empowering them to care about and for urban nature. We also spoke of our different approaches to these issues (activism / academic study), our available resources (community connections / the University) and constraints (academic time lines and money). What emerged from our early planning conversations was much richer than our initial plan to build gardens *for* students, where they could be *taught about* gardening. What evolved was a participatory design project in which students would work *with* each other, school staff and the researcher/designer to *co-create* a new green space on school grounds. Conceived as a way to teach ecology through the creative arts, early feedback from students suggested that this participatory process had more to offer than ecological knowledge. It seemed participatory landscape design has the potential to acted as a type of critical pedagogy in which participants learn and act collectively upon an issue of social concern. After the first two garden projects, student evaluations and project staff discussion helped to re-frame the research study from one that explored participatory design and knowledge acquisition to one exploring how participatory design might build collective efficacy for landscape stewardship. Unfortunately, after several years of work in Detroit, a planned study there fell through. Through the help of UM Flint Outreach / Discovering Place, which supports schools in Genesee County to engage in place-based education environment projects, I was connected the staff at the 9<sup>th</sup> Grade Academy in

Beecher, MI. It is at this school that the research project and related design project were completed.

In community-based participatory research projects, partnership roles may vary based on expertise and resources. These include ensuring that the study addresses a community need or concern, participating as interested in the development of research questions, data collection instruments and the representation of data to the public (Bordeaux et al., 2007; Wallerstein & Duran, 2003). In this project, partners' roles varied throughout the needs of the project. As the founding partner, EMEAC grounded the study in a community concern - minority youth in the communities EMEAC served did not have access to safe green space in which to play, explore and learn about nature. This concern was shared by the new partners Discovering Place and the 9<sup>th</sup> Grade Academy. Like EMEAC, Discovering Place was interested in outcomes related to the parts of the program focused on knowledge acquisition as well as supporting career development for environmental jobs. Discovering Place had a long history of collaboration with community members, scientists and institutions interested in the restoration of the Flint River through the Flint River Restoration Plan and was supportive of the participatory focus of the project and the research study. They were able to provide significant funding and staff to help with program implementation and project construction. The School District welcomed us to collaborate with the 9<sup>th</sup> Grade Academy, through an on-going enrichment program. The school supervisor provided feedback on survey questions, recruited students for a pilot test of the questions, helped with in classroom logistics, permissions for field trips, and connections to the staff and school board as needed. Throughout the process EMEAC and Discovering Place staff were available for consultation on the representation of the data.

### *Overview of the chapters*

The research study and parallel design project evolved from a four-year collaboration with the Detroit-based environmental justice organization, East Michigan Environmental Action Coalition that was described briefly above. Chapter II describes these early projects in Detroit and the evolution of the initial research question. The following chapters (III, IV and V) use quantitative and qualitative methods to explore the construction of self and collective efficacy through the re-design and construction of a school yard in Beecher, Michigan.

The research study was run in conjunction with the participatory design project in Beecher and follows the arc and timeline of that process. This participatory design project was conducted three phases: design conception, in which the students explored their local social and ecological environment; design development, during which students applied what they had learned to the creation of three-dimensional models depicting a new schoolyard space; and design build, in which students de-constructed the old school yard and constructed a new outdoor classroom. Chapters III and IV align with the first two design phases which were conducted from in a classroom setting from early February to late May 2013. The last phase of project construction was facilitated from June to August, 2013; Chapter V focuses on this phase of the project.

Using and pre- and post-program surveys involving the whole school population, Chapter III explores how participation in the design conception and development stages of a design project might influence self and collective efficacy. The survey was designed to examine the relationship between students' experiences (personal or vicarious) with particular skills related to landscape design and stewardship (art making, gardening, construction and community service)

and their efficacy (self and collective) for particular landscape types (home, church, school, empty lot, local park). One important component of participatory design practice, initiated during the early phases of the project, is the activity of asking the participants what kinds of spaces in their community they hold dear and want to preserve or improve. Utilizing a series of photographic images, representative of their community and a semi-structured interview process, Chapter IV sought to understand students' preferences for urban landscapes as well as their efficacy for making changes to those they did not prefer. Chapter V, a case study of eight students who helped construct the outdoor classroom utilizes participant observation and post program semi-structured interviews to examine the particular experience of construct an outdoor space. Chapter VI closes with an overview of the findings across the studies, implications for further study and suggestions for designers who are interested thinking about collective efficacy for landscape stewardship as one possible outcome of a participatory design process.

This research study and the related design projects offer a variety of contributions and extensions to the current literature on collective efficacy for landscape stewardship. By exploring the process of efficacy construction through participation in a school yard re-design, the study offers insights into the specific experiences that can support self-efficacy for landscape stewardship practices. By grounding the research in a community-based participatory research process, the research addresses the concerns of environmental justice advocates working with youth in communities with few safe green space for play, exploration and relaxation by providing additional rationale for projects that engage young people in the thoughtful design and care of their communities. Furthermore, drawing across the fields of study and the practices of landscape architecture, environmental education and environmental justice, this study expands our understanding of what kinds of urban green spaces support teen interests and how our varied



practices might engender a sense of collective efficacy for collaborative community care and local landscape stewardship.

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## **CHAPTER II**

### **The Ugliest School Yard Detroit: Environmental Education & Action through Participatory Landscape Design<sup>1</sup>**

***Abstract:***

While landscape architects use participatory landscape design to engage communities in the creation of new outdoor spaces, environmental educators and activists across the country are engaging young people in similar gardening projects to improve the urban environment. These hands-on experiences can build students' connection to, and understanding of their environment, thereby supporting future environmental stewardship. This paper describes the evolution of community based participatory research collaboration which utilized a participatory landscape design program, called The Ugliest School Yard, to explore how the participatory design process may be used to enhance environmental literacy. The pilot project revealed that the participatory process may do more than increase knowledge. It may provide a platform for collective action for landscape regeneration and stewardship.

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(<http://quod.lib.umich.edu/m/mjs/12333712.0002.008/--participatory-landscape-design-detroit-a-tool-for?rgn=main;view=fulltext>)

*Our schools are like jails, there are bars on windows and security guards through the hall. And we have no place to play.* These oft repeated comments came from a series of neighborhood meetings held by East Michigan Environmental Action (EMEAC). These discussions came as no surprise to the staff at EMEAC, a Detroit based not-for-profit that addresses environmental justice concerns through southeast Michigan. They had seen firsthand how in some Detroit neighborhoods dilapidated streetscapes and overgrown parks have changed the quality and safety of outdoor open spaces for youth. Inspired by the Canadian Biodiversity Institute's Ugliest School Yard Contest, EMEAC decided to pilot the Ugliest School Yard, Detroit in order to address their communities' requests for more supportive school environments.

In the early stage of my doctoral program I had been exploring parallels between participatory landscape design processes and best practices in environmental education. When EMEAC asked me to be the lead designer for Ugliest School Yard it seemed like a useful platform from which to explore my research interests. For two years EMEAC staff and I piloted the Ugliest School Yard program – a participatory landscape design program to help students learn about and steward new schoolyard green spaces. The evolution of EMEAC's Ugliest School Yard and an application of theoretical discourse regarding participatory design and environmental education were tightly interwoven through a community-based participatory research process. Community-based participatory research engages community members and researchers in a shared process of research and action in which the researcher addresses an issue of interest to the community and the community capacity is strengthened via engagement in various parts of the research process (Israel, Eng, Schulz, & Parker, 2005). Through extensive conversations regarding our different skill sets and needs as an environmental justice organization and as a

doctoral student, we made several key changes to EMEAC's initial program. First we would work collaboratively with students co-create new outdoor spaces – not make gardens for them, and second we would work with 8-10<sup>th</sup> graders rather than elementary school youth. These changes enabled us to explore how greening one's school landscape might increase student learning outcomes in terms of environmental knowledge and stewardship. This paper describes the piloting of a participatory landscape design program that laid the groundwork for a subsequent study of minority youth and collective action for landscape regeneration and stewardship.

## **2-1. Participatory Design and Teens**

Participatory landscape design (PLD) is one of many participatory design processes that engages stakeholders and designers in a shared creative process that enhances outcomes for end-users. Participatory design employs a variety of techniques including stakeholder meetings, workshops, and making in which designers learn from user experts (Yamauchi, 2012). It is a challenging process requiring deft facilitation balancing various strands of expertise and power (Juarez & Brown, 2008). Specifically, PLD is a collaborative process of place-making that draws on expert and local knowledge supporting local ecological systems and illuminating historic human relationships to place (Hayden, 1995; Hester, 2006). Essentially, PLD engages participants in a collaborative process for environmental change. In large scale landscape improvement projects PLD has been shown to elicit a sense of ownership and stewardship that supports the sustainability of place (Crewe & Forsyth, 2003). In youth environments, landscape designers have utilized PLD to engage youth and families in the construction of playgrounds and skate parks. This type of participatory process, while not always identified as such, is also being used by environmental educators and classroom teachers working with students to create

butterfly habitat, raised vegetable beds and outdoor classrooms. Enthusiastic anecdotal accounts of these programs describe their influence on youth and the local environment. Yet there are few critical examinations specifically of the PLD process in environmental justice contexts and how the collaborative design process might benefit the young people who participate. When I described the potential of the PLD process to EMEAC staff, they were excited as it aligned closely with their mission to empower youth to learn about and act to change their communities.

We chose to work with young teens for several reasons. EMEAC was aware of extensive academic and professional discourse that asserts the need for elementary school aged children to engage with the natural world for health, social and cognitive development (Francis, 1995; Louv, 2005; Taylor, Wiley, Kuo, & Sullivan, 1998). We discussed how the availability of safe green space supports an early relationship with nature and how it is known to be influential in future environmental concern and civic action (Bixler & Floyd, 1997; Wooley et al., 2008). Less is understood about teenagers' relationships to nature. A recent national study argues that while teens may have knowledge of environmental problems, they do not feel confident in their ability to address these issues (McBeth, 2010). Other studies suggest that teens, focused on other social needs, may need to take a break from nature (Kaplan & Kaplan, 2002). Even less is known about a minority teen's relationship to nature; especially those living in urban contexts. For these teens, daily contact with landscapes and communities stressed by social and environmental inequities may add to a sense of powerlessness that mitigates their interest and engagement in environmentally responsible behavior (Strife, 2008). Additionally, a lack of experience with nature and the way outdoor education experiences are framed may leave minority teens feeling disconnected from nature (Bixler & Floyd, 1997). Upon further discussion, EMEAC noted that in their experience funding for elementary school gardens was often readily available, and that

the focus on teens would fill a hole in their programming and respond to needs expressed by older students.

## **2-2. Ugliest School Yard, Detroit**

These frank discussions of on-the-ground experience and academic discourse helped frame our pilot gardens. To start, EMEAC sponsored the Ugliest School Yard Contest through their community networks in Southwest Detroit and Brightmore. The competition required that schools demonstrate a need for schoolyard improvement, an interest in the collaborative process as well as capacity and commitment for maintaining the site post installation. As a group, the schools were enrolled with students from low socio-economic backgrounds and of African-American descent. Two schools were public; two were charter, each serving neighborhood youth. Each was distinct in educational programming with varied school-wide themes including technology, afro-centric learning and community service.

Given teacher turnover and other administrative challenges, we often did not know what grade or subject our collaborating teachers would be teaching. Therefore the 16-week program was designed to work in a variety subject areas– English, science, art – at grade levels 8-10. Topics were loosely divided into two content units, covering urban ecology and cultural connections to landscape and facilitated in 40-50 minute periods once a week. The project included hands-on workshops, opportunities for student based inquiry and focus groups for student sharing and time for expert sharing. Field trips and power point presentations showed students a series of landscape design alternatives.



Best practices in environmental education describe how effective environmental education supports caring for and learning about the environment, analyzing environmental issues, and participating in environmental actions (NAAEE, 2013; UNESCO, 1977). Theorists Hungerford and Volk (1990) have proposed that environmentally responsible civic behavior evolves from a combination of variables that parallel these educational goals. These variables include sensitivity or care towards the environment, in-depth knowledge of an issue, and the knowledge of the skills needed to act. The PLD process provided a scaffold for building a connection to place, knowledge about place and application of knowledge through design. Throughout the program students kept journals of drawings, poetry and interviews. The journals provided a way to express previous experience and apply new competencies. For example following a lesson on urban agriculture, they were asked to draw and describe how they might they enhance their schoolyard for pollinators.

Following the content units, students worked in small groups to create 3-D models of their ideal school landscapes. Their models became the basis on which a functional schoolyard garden design was created. This design was reviewed by students, staff and administrators and then adjusted according to feedback. Participatory processes can suffer from an imbalance of power and this is especially true with a youth centered process (Hart, 2008; Woolner, Hall, Wall, & Dennison, 2007). Periodic reflection sessions with EMEAC staff and teachers attempted to address a balance of student voice, school staff needs and designer expertise. This was not a perfect solution, but it was a check point from which to make sure this issue stayed in the forefront of our process. We wanted the design to be driven by student ideas, but garden sustainability also required adult care and stewardship, and we needed to honor staff input as well as the students' ideas.

Depending on school needs, funding and staffing, each new school garden was built over the summer or through the following school year - sometimes with the help of EMEAC staff and the researcher, sometimes without. All sites were constructed with the significant involvement of students from the school. One construction project was woven into a summer school program, in another students were paid through a summer youth employment program. Projects included a new entryway, a several courtyard gardens, and a garden of meditation. Each garden design was driven by student ideas and expressed needs. They drew on themes of human health, habitat restoration and the students' desire for safe social spaces for learning and play.

### **2-3. Next Steps**

Following each project, students were asked to fill out a short evaluation describing their experience of the program. Their answers indicated that they had gained new environmental knowledge: "Birds eat insects." And perhaps they had built some connection to nature or at least to the new space they had designed: "I learned you could take ugly to pretty." Given the curriculum, this was not unexpected. It seemed PLD process had engaged students on many of these levels. What was unexpected was their expressed enthusiasm for working together to improve their school landscapes: "I liked putting my ideas together with a group and seeing how it turned out." Their comments indicate a desire to work collaboratively, specifically to make positive changes in their local environment.

In environmental education discourse, Hungerford and Volk (1990) have proposed that effective environmental education should support a sense of connection with the environment, in-depth knowledge about environmental issues, and a skill set for action. These variables along with a personal sense of responsibility and self-efficacy can support environmental literacy and

participation in environmental actions (Hollweg et al., 2011). Others describe the influence of a caring mentor on future environmental action (Chawla, 2007). Like much environmental education discourse, this work examines the impact of experience on individual behavior. Alternatively, students' feedback reflected the influence of the participatory design process on collective action.

EMEAC staff and I discussed student feedback as we prepared for the next project. The next program would incorporate a research study examining teens' relationship to collective action through PLD. Unfortunately due to a loss of funding and a changing school charter the next project in Detroit was not realized. Thanks to our working relationship, EMEAC and I were able to collaborate again in a school near Flint, MI using the methods described here to explore how PLD might influence collective action for environmental action. Environmental education discourse has focused on the relationship between individual knowledge and behavior change as a basis for future involvement in environmental stewardship. This next study departs from this theme by proposing that to concurrently address the pressing issues of social and environmental justice, we need to understand more about how people act collectively for environmental change – particularly youth.

In a declining economy, environmental justice communities need more than ecological knowledge to address pressing social and environmental concerns – understanding more about collective action may provide insight into community resilience and just sustainability through environmental restoration. The design and construction of a schoolyard habitat through a participatory landscape design program creates a context for examining of how re-building a

schoolyard influences teens' individual and collective efficaciousness for addressing other environmental concerns in their communities.

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### **CHAPTER III**

## **Participatory landscape design with urban minority teens: A tool for building collective efficacy for landscape stewardship**

*Abstract:*

Participatory landscape design projects, located on school grounds have the potential to empower students to act collectively to improve their local landscapes. This kind of participatory process has much in common with environmental education that seeks to teach young people to be active stewards of their environment. This study describes a participatory design program, called the Healthiest School Yard (HSY), set in a post-industrial Midwestern community. The design program engaged students in first exploring their local social and ecological environment and then envisioning and imagining a new schoolyard green space. It was hypothesized that through these types of participatory design activities teens would acquire the knowledge and skills needed to act as stewards of local landscapes, and that the process of doing these activities together would build their collective effectiveness for future stewardship activities. Pre- and post-program surveys were distributed to the participating class students and to their peers not directly engaged in the program. Results indicated that engagement in the program did not significantly influence collective efficacy for the participating population. However, combined results from students participating in the HSY project (n=12) and from the whole study population (n=28) uncovered several key factors supporting collective efficacy for landscape stewardship. These supporting factors included the feeling like one could play a significant role in stewardship project and the confidence that one could find the help needed to start such a

project. Additional results suggest that learning skills related to landscape stewardship may increase self-efficacy for landscape stewardship. Furthermore stewardship self-efficacy for improving one's school grounds was associated with collective efficacy for general landscape stewardship. Together these results suggest that school sited greening projects which support collaborative learning and skill building activities can support collective efficacy for future landscape stewardship engagement.



### **3-1. Introduction**

Collective action for environmental change, restoration and stewardship is necessary to support healthy human and ecological systems. Collective efficacy for local landscape stewardship is one way to examine the collective action taken by groups to care for their environment. Efficacy describes a person's perception of their ability to successfully complete a given task or goal (1977). Likewise, collective efficacy describes a group's perception of their ability to collaborate to address a common goal (Bandura, 2000). As a collaborative process, participatory landscape design engages landscape architects and designers with local residents in the process of envisioning, planning, creating and stewarding public open space. Participation in such projects may build a sense of shared ownership and an ethic of stewardship (Crewe, 2001; R. Hester, 1990). For youth, this kind of participatory process has much in common with environmental education that seeks to empower young people be active stewards of their environment. Recent environmental education discourse argues that urban environmental education needs to address the interwoven issues of environmental degradation and social inequality while teaching the needed skills to address those concerns (Krasny & Tidball, 2009; Tidball & Krasny, 2011). The very nature of the participatory landscape design process is organized to address these complexities. Case studies indicate that participatory design can increase an understanding of environmental systems and an ethic of stewardship, but there is little empirical research describing how this might happen. Understanding more about what young people take from a participatory design process sited on school grounds may help educators and designers alike in their efforts to provide educational experiences that engage students in learning about and caring for their local environment.

This paper describes a participatory design program, called the Healthiest School Yard (HSY), with an embedded research study that examined collective efficacy for landscape stewardship as one outcome for teens engaged in re-designing their school yard. It is hypothesized that through the participatory design process teens may acquire the knowledge and develop skills needed to act as stewards of local landscapes, and the process of doing this together may build teens' collective efficacy for future stewardship activities. Pre- and post-program surveys examine the efficacy outcomes for students participating in the design program. Additional insights from the greater study population indicate that particular skill-building experiences can support collective efficacy construction and that the school yard plays an important role as a place to practice these skills.

### ***Participatory landscape design for youth***

Participatory landscape design, is a collective process of envisioning, planning and creating new public spaces that are responsive to human needs and supportive of ecological systems (Hayden, 1997; R. T. Hester, 2006). In the United States participatory design dates back to the 1960's and much has been written about this process as a tool for community empowerment that engages community members in the democratic process of designing the public spaces that serve the needs of their communities (Francis, 1983; Hayden, 1997; R. T. Hester, Jr., 1999; Sanders & Stappers, 2008). Advocates of participatory design note that the participatory process may improve the final plan of a designed space by drawing on the shared local and expert knowledge to support local ecosystems at a variety of scales (R. Hester, 1990; Sanoff, 2000). This shared knowledge can also illuminate, celebrate and be sensitive to hidden human histories embedded in place (Hayden, 1997). When facilitated thoughtfully, it can also address inequities of access to space and teach civic engagement skills (Juarez & Brown, 2008;

Lawson, 2005). Additionally it is thought that engagement in the design of shared spaces from greenways to school yards can inspire a sense of ownership, increase environmental knowledge and support, and build an ethic of land stewardship, thereby supporting the long term sustainability of the site (Crewe, 2001; Danks, 2000; R. T. Hester, 2006; Rottle & Johnson, 2007).

With young people, the participatory design process has been used to create youth-focused spaces including outdoor learning environments, playgrounds, skate parks, school yards and schools themselves. Literature on youth participation in urban design and environmental decision making employs case studies to focus on importance of on equitable and thoughtful engagement processes (Chawla, Bartlett, Driskell, Hart, & Olofsson, 2006; Chawla & Heft, 2002; R. Hart, 2001; R. A. Hart, 2013); This work provides thoughtful insights and perspectives from young people about their experiences, but there is little empirical work describing how these experiences build efficacy for further engagement. Other studies focus on using participatory design for improved outcomes in the physical design of new green spaces. In particular, Susan Wake (2007) has challenged designers of children's gardens to move beyond tokenism in their engagement of young people in the design process, noting that educational spaces in botanic gardens would benefit from their insights and perspectives. Weinstein and Pinciotti (1988) describe a participatory design engaging elementary school children and parents in the redesign of a school playground. They note playground improvements, inspired by participatory process, encouraged more imaginative and inclusive play behaviors on the new playground; but their paper focuses on how the design improves behavior, not on the participatory design process itself.

In their historic overview of children's participation in urban design, Francis and Lorenzo (2002) critically examine the history of youth participation in city planning. They indicate that one outcome of participatory design is our improved understanding of the kinds of environments are good for children. Additionally they note that the process has evolved to be less about *advocating for* children than *empowering them to*. But even this overview does not clearly delineate outcomes for youth engaged in the participatory design experience. Some studies have begun to examine academic outcomes, like increased environmental literacy. For instance Rottle (2007) has described how a participatory design program for a learning laboratory increased the participating 6<sup>th</sup> grade students' care for and knowledge about the environment. She argues that the participatory design process can build competencies related to habitat restoration and stewardship.

Environmental education literature about school gardens tells a similar story. School garden literature, which often includes a component of garden design, has also tended to focus on learning outcomes for elementary aged school children; in particular on science and nutrition knowledge acquisition (Blair, 2009; Danks, 2000; Lautenschlager & Smith, 2007; Parmer, Salisbury-Glennon, Shannon, & Struempfer, 2008). Several review studies about school gardening suggest that learning more about outcomes for students, beyond garden knowledge, might provide a better understanding of the impact of such programs on students and nearby communities (Blair, 2009; Ozer, Wolf, & Kong, 2008). This study adds to this discourse with specific insights into how participatory design on school grounds can engage students in other stewardship projects.

### *Participatory design and environmental education for local action*

Landscape design projects that encourage young people to collaborate with community members and design experts to envision new public green spaces have much in common with the following current discussions in environmental education. The on-the-ground efforts of environmental educators and the parallel discourse of theorists each address efforts to build an environmentally engaged citizenry, one that cares about and acts on behalf of our environment. This work has long referenced the conceptual framework of Hungerford and Volk (1990) who argue that environmental education should include opportunities to connect with or care about the environment, to gather knowledge about environmental issues and to practice behaviors based on this care and knowledge. Building on this framework, other theorists have expanded on the application of knowledge for action stressing the need for students to build practical competencies to apply knowledge learned (Orr, 1992; Schusler & Krasny, 2008). Studies with young people have examined how environmental knowledge, a sense of place, relationships with mentors and experience in nature may affect future environmental action (Chawla, 1998; Kudryavtsev, Stedman, & Krasny, 2011; Sobel, 2004). A national study of 2,004 youth in grades 6-8 illustrates the importance of teaching young people the skills they need to act upon environmental knowledge (McBeth, 2010). In this study the authors indicate that the students had a fair grasp of environmental issues and that these understandings were more nuanced for older students. But they also report that these young teens had little ability to apply critical thinking skills related to acting on these issues. In light of this, some environmental education theorists and educators contend that given the complex intertwining of environmental, social and economic issues, environmental education may not provide the skill set needed to address these issues. They argue that we need education for collective action if we are to build resilient

communities supportive of natural and human systems (Krasny & Tidball, 2009). This critique may be extended to include the concern that environmental education may not fully address urban environmental contexts – particularly those stressed by economic and social inequities (Tidball & Krasny, 2011). Others have critiqued environmental education efforts as being insensitive to cultural and racial backgrounds and others have noted a need for a more nuanced pedagogy that addresses environmental education in urban contexts (Agyeman, 2003; Bixler, 1994; Finney, 2006; Lewis, 1995).

Participatory design can provide students with opportunities to care about and for nature, learn about local and regional ecological systems and explore human/nature interactions. While the details of any particular program may vary, this process of exploration combined with envisioning a new future provide a blueprint for action – the construction and stewardship of place. While certain aspects of the participatory process, especially in an educational setting, may be individual in nature – the structure of the process is focused on the common goal of creating a shared public good (R. T. Hester, 2006; Sanders & Stappers, 2008).

### ***Collective efficacy a theoretical framework***

Collective efficacy for landscape stewardship is one way to describe the confidence of a group to make and sustain changes to the outdoor space. Collective efficacy describes the perceived capability of a group to work together to achieve a task or a goal (Bandura, 2000). Similar to self-efficacy, the determinants of collective efficacy include personal experience (particularly the group's mastery of a particular skill or skill set), vicarious experience (watching a group struggle with and eventually complete a task or goal), having a supportive social environment (a social network that provides encouragement or help in when group is challenged)

and a positive affective state of mind (Bandura, 1977, 1986). Collective efficacy has been examined in a variety of contexts. Most pertinent for this study is research that examines the efforts of low-income and minority communities to create social and environmental change; studies examining collective efficacy in educational settings; and those examining efficacy construction for and with youth.

For instance, in environmental justice contexts, collective efficacy describes the way low income and minority communities have organized to prevent the placement of toxic producing factories, waste treatment plants and highways in their communities (Taylor, 2014). Recently studies are examining how collective efficacy may be a component of low income community resilience in the face of environmental disasters like fire (Benight, 2004). In a seminal study on neighborhood level collective efficacy indicating that the spatial location of a community could enhance or hinder collective efficacy for children's safety, the authors defined collective efficacy as the "linkage of mutual trust and willingness to intervene for the common good" (Sampson, Raudenbush, & Earls, 1997, p. 919). Comstock (2010) extended this application of collective efficacy in study that found that one's built environment, particularly public green spaces like community gardens could create a sense of place attachment and thereby support neighborhood level collective efficacy. In these studies, one's physical landscape may act as impetus for or a barrier to collective efficacy.

Utilizing Sampson et al.'s definition, a qualitative study of Denver community gardeners took a slightly different approach exploring how participation itself in community gardening can support neighborhood level collective efficacy to address other social concerns (Teig et al., 2009). Similarly, while not specifically examining greening programs, Mary Ohmer (2006) has

also shown that in poor and low income communities, participation in local community organizations can strengthen relationships and build collective efficacy for social change. These studies approach collective efficacy as an outcome of shared action rather than a prerequisite for such action. Finally, a study of Australian environmental activist authors indicated that environmental activists as opposed to non-activists, feel strongly that collective action will be integral to successfully solving environmental problems (Bonniface & Henley, 2008). These authors contend that understanding more about collective efficacy construction is needed to address complex environmental concerns. This study of participatory design and collective efficacy draws on these approaches, using the Sampson et al., (1997) definition of collective efficacy as concept of collaborative work for a common good and operationalizing collective efficacy as an outcome of participation in an activity for a shared goal – the designing of a new schoolyard.

Collective efficacy studies in educational settings have examined student academic achievement and teachers' collective efficacy to support academic improvement (Roger D. Goddard, Hoy, & Hoy, 2000; Roger D. Goddard, Hoy, & Hoy, 2004). Different than a sports team where collective action is implicit in one's work, collective efficacy for a group of teachers, working individually but towards a shared goal of student achievement, may evolve from self-efficacy and social norms (Roger D. Goddard et al., 2004). These authors propose alternative ways to measure collective efficacy: aggregating individual's self-efficacy or asking a group to come to a consensus regarding their collective efficacy. Drawing on Bandura's (2000) argument that collective efficacy is an emergent group level process, they argue that aggregating each individual's perception of group efficacy is that the most effective way to measure collective



efficacy (Roger D. Goddard et al., 2004). This study utilizes the method of aggregating individual responses to assess collective efficacy.

There are many studies examining the *self-efficacy* of youth for a variety of tasks. These include but are not limited to academic achievement (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996), career development (Lent, Brown, & Hackett, 1994), healthy behavior (Multon, Brown, & Lent, 1991), sports (Pajares & Urdan, 2006) and environmental behaviors (Chawla & Cushing, 2007; Meinhold & Malkus, 2005). There are few studies examining the *collective efficacy* of youth. One study of collective efficacy for behavior change comes from the field of public health in which the authors explore how to build peer level collective efficacy for interrupting dangerous behavior in teens (Berg, Coman, & Schensul, 2009). Berg, et al., (2009) hypothesized that particularly for low income, minority teens, a risk prevention program engaging students in individual and collective action related to sexual literacy would help build their collective efficacy for safer health behaviors. The authors followed teens exhibiting risky health behaviors through a program that offered individual support for changing these behaviors. The program helped students situate their individual struggles in a larger social context by providing opportunities for collective action in the form of a peer education project. The authors hypothesized that in the process of learning about unhealthy sexual behavior, and then educating others, students would increase both their self and collective efficacy for changing unhealthy behaviors.

It is from Berg's (2009) conceptual model for collective efficacy construction that this paper draws its conceptual framework which is that a participatory design program offers a platform from which teens can build collective efficacy for landscape stewardship. In this current

study a participatory design program acts as the framework for individual knowledge construction and collective action. It was hypothesized that participating in the program would increase student's collective efficacy for stewarding local landscapes. Additionally, the study examined the specific skill sets that might be more or less effective in building self-efficacy for landscape stewardship.

## **3-2. Methods and descriptive results**

### **3-2-1. Study location**

This study and participatory design project took place at the 9<sup>th</sup> Grade Academy, locally known as 9GA, in the Beecher School District, Beecher, Michigan. Beecher is an unincorporated community covering approximately 6 square miles in Genesee County. Located just north of Flint, MI, Beecher is home to a population of 10,232 that is 69% African American and 25% Caucasian. The final 6% of residents identify as Latino, American Indian/Native or mixed heritage (US Census Bureau, 2013a). The median income at the time of this study was \$25,568; 42% of residents were single parent households and 42.2% of the population were living below the poverty line (US Census Bureau, 2013b) (Table 1). Approximately 35% of the community over the age of 25 had earned a high school diploma and 4.7% had attained a bachelor's degree (US Census Bureau, 2013c).

Currently the Beecher School District is listed as one of the State of Michigan's Priority School Districts meaning that it has a graduation rate of less than 60% and ranks in the bottom 5% of schools on Michigan's Top to Bottom list ("Priority Schools," 2013). When designated as a Priority School, the school's administration must provide an improvement plan to be implemented over the next 3-5 years.

Table 3-1 Beecher School District U.S. Census demographic data  
 Beecher School District U.S. Census demographic data

<b>Income and Benefits</b>	<b>Est.</b>	<b>Percent</b>	<b>Total households</b>	<b>Est.</b>	<b>Percent</b>
Total Households	3,603		Family households (families)	3,603	68.7%
Less than \$10,000	694	19.3%	With own children under 18 yrs	1,068	29.6%
\$10,000 to \$14,999	357	9.9%	Married-couple family	963	26.7%
\$15,000 to \$24,999	733	20.3%	With own children under 18 yrs	411	11.4%
\$25,000 to \$34,999	585	16.2%	Male householder, no wife present, family	176	4.9%
\$35,000 to \$49,999	553	15.3%	With own children under 18 yrs	48	1.3%
\$50,000 to \$74,999	386	10.7%	Female householder, no husband present, family	1,336	37.1%
\$75,000 to \$99,999	203	5.6%	With own children under 18 yrs	609	16.9%
\$100,000 to \$149,999	47	1.3%	Nonfamily households	1,128	31.3%
\$150,000 to \$199,999	23	0.6%	Householder living alone	1,006	27.9%
\$200,000 or more	22	0.6%	65 years and over	272	7.5%
Median household income	\$ 25,568	(X)	<b>Educational Attainment</b>		
Mean household income	\$ 38,175	(X)	Population 25 years and over	6,053	
With cash public assistance	541	15%	Less than 9th grade	190	3.1%
With Food Stamp/Supplimental Nutritional Assisatance Program in past 12 months	1,704	47.3%	9th to 12th grade, no diploma	1,084	17.9%
<b>School Enrollment</b>			High school graduate (includes equivalency)	2,087	34.5%
Population 3 years and over enrolled in school	3,511		Some college, no degree	1,796	29.7%
Nursery school, preschool	210	6.0%	Associate's degree	531	8.8%
Kindergarten	164	4.7%	Bachelor's degree	287	4.7%
Elementary school (grades 1-8)	1,373	39.1%	Graduate or professional degree	78	1.3%
High school (grades 9-12)	858	24.4%			
College or graduate school	906	25.8%			

Part of the Beecher District's plan was the creation of 9GA, in which all 9<sup>th</sup> grade students were moved out of Beecher Middle-High School (grades 7-12) into another location. The 9<sup>th</sup> Grade Academy was housed on one floor of the Superintendent's office. This building was flanked by the high school football field and a new field house in which all 7-12 sports were played. The new physical environment was meant to provide a more intimate setting for learning. Combining special programs for academic and career development, the Academy was designed to provide personal and academic support for students during a crucial year for high school tenure.

### **3-2-2. The Healthiest School Yard Project**

The goal of this participatory landscape design program known as the Healthiest School Yard (HSY) Program, was to engage 9GA students in the re-design and eventual construction of a new green space on the school grounds. The program curriculum engaged students in green design experience while the school's goals related to hands-on learning, career education, and service learning. The new space would provide a safe outdoor green space for educational and recreational activities for 9GA students and staff. The project site and functional design goals (an outdoor classroom and eating area) were chosen by the 9GA Administrator in conjunction with the Beecher Superintendent and the Facilities Manager. The final design was informed by students' models created during the program and feedback from students not enrolled in the HSY. Student use patterns, the administration's educational goals and safety concerns, time and budget constraints were also taken into consideration.

The HSY program was placed in a first period enrichment class which was facilitated through a school partnership the Carrera Program<sup>1</sup>. The Healthiest School Yard Program and related study were facilitated over a 14 week period from mid-February to early June in 2013. During that time program participants met with the researcher/designer for ten one-hour sessions on Monday mornings. An additional 15 hours over a 3 day period were dedicated to three-dimensional model building. There were 27 students enrolled in the class, but attendance for any given meeting ranged from 6-30 students. Average class attendance was 17. Students were absent for a variety of reasons, including other enrichment programs, inappropriate behavior, health and field trips. Sometimes non-participating students joined the class for administrative reasons. Any student assigned to the enrichment class was welcomed to participate in the HSY design program activities, regardless of parental permission to participate in the research study.

The program was organized to engage students in an abbreviated but process similar to that of professional designers. The early phases of the design process are commonly referred to as design conception and design development (Figure 3-1). During the conception phase, designers explore the physical landscape and its surrounding areas to better understand the ecological system in which a site is located. They also explore the social history of the community in which the site is located. This can provide design inspiration and also provide insight into how the site might be utilized in the future. In this program, workshops, lectures, oral histories and group discussions helped students explore their social histories (family relationships to the land, city planning and development, food justice) and local ecology

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<sup>1</sup> The Beecher Carrera Program is part of a Children's Aid Society Program to prevent teen pregnancy. The program takes a holistic approach to pregnancy prevention providing students with career mentoring, health literacy, academic tutoring etc. For more information see <http://www.childrensaidsociety.org/news/evaluation-results-children%E2%80%99s-aid-society-carrera-teen-pregnancy-prevention-program>.

(pollinator needs, soil health, and urban wildlife). Similar to designers who use pictures of other sites as inspiration for their projects, students were exposed to a variety of green design materials (permeable pavers, rainwater harvesting systems) as well as contemporary schoolyard design ideas (outdoor seating and tables, solar lighting). Field trips provided hands-on experiences with gardening and construction at a local urban farm. These activities provided new knowledge, grew a sense of place and provided supportive relationships with adults in and out of the school setting, experiences considered to be foundational to developing a sense of stewardship (Chawla, 1999; Hungerford & Volk, 1990; Manzo & Perkins, 2006; Ryan, Kaplan, & Grese, 2001).

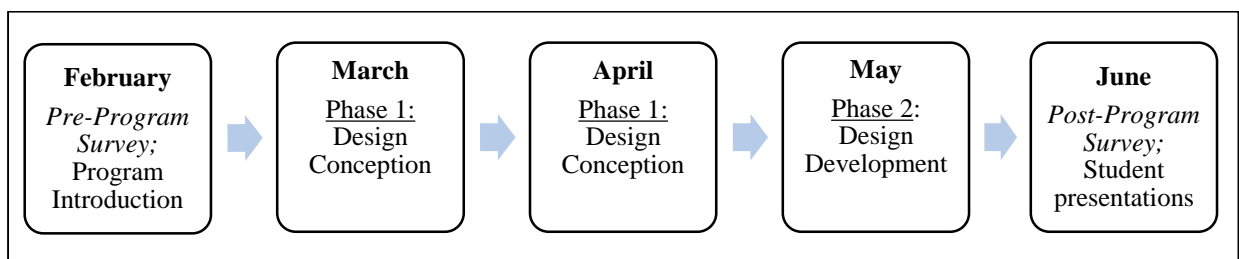


Fig. 3-1 Project and study time line

After learning about the history of a site, the design development phase begins. Design development is the process by which information gathered about a site is woven into a series of design ideas that are represented through drawings and/or three-dimensional models. During this phase students participated in an onsite photography workshop, practiced sketching outdoors, and discussed how to represent ideas and feelings through shape and color. Finally they applied what they had learned to the construction of three dimensional models for the new space. Working in small groups of three to five students, the class created five imaginative models for the new space. This process has parallels to environmental education programs that encourage

students to apply new environmental knowledge to an environmental concern. This application process is thought to be a key component of environmental education that supports future environmentally responsible behavior (Hungerford & Volk, 1990). In the participatory design, the model building process is one component of the process that allows students to integrate what they have learned and apply it to a new space (Rottle & Johnson, 2007).

Given staffing levels, time and funding constraints, in-depth participation in the design program for students not enrolled in this particular enrichment class was not possible. However, the general student population was welcomed to participate in a school-wide vote in which HSY students displayed their models for feedback via a design competition.

### **3-2-3. Sample Populations: HSY participants and 9GA student body**

While the HSY program was facilitated through one course, the survey was distributed to the general student population. Permission slips were sent home with children to be signed by parents or guardians and returned to the school. Additional follow up calls were made to parents of students wanting to participate but who had not returned permission slips in person. Of the 120 - 9GA students enrolled at the beginning of the school year, 109 remained the following June. From the student body of 109 students, 37% (n= 40) returned the necessary parental and personal permission slips. This group of 40 included 12 students from the Carrera class in which the HSY program was facilitated. Table 2 shows the demographic background of students validated to participate in the study.

Table 3-2 Demographic characteristics for study participants

Characteristic		HSY	General Student Body	Total
Gender	Male	4 (33.3%)	13 (46.4%)	17 (42.5%)
	Female	8 (67.7%)	15 (53.6%)	23 (57.5%)
	<b>Total</b>	12	28	40
Race	African American	10 (84%)	22 (78%)	32 (80%)
	Latino/a	1 (8.3%)	1 (3.6%)	2 (5%)
	Asian American	0 (0%)	1 (3.6%)	1 (2.5%)
	Caucasian	0 (0%)	1 (3.6%)	1 (2.5%)
	Multiple Heritage	1 (8%)	3 (11%)	4 (10%)
	<b>Total</b>	12	28	40

*N\** = sample size in statistical analyses may vary from these totals when students skipped questions.

### 3-2-4. Survey instrument

A survey was developed to understand the construction of collective efficacy for local landscape stewardship in teens participating in a school based participatory design program (Appendix 1). The surveys were administered before the HSY program began in mid-February (*pre-program survey*) and again when the program ended in early June (*post-program survey*). Survey questions explored the determinants of efficacy construction in terms of direct personal experience, vicarious experience, a supportive environment and how integral a student felt to the functioning of a group.

#### *Examining direct and vicarious experience*

Skill-building experiences are considered paramount to efficacy construction; self-efficacy built from these experiences is key to collective efficacy. The first series of questions asked students about their hands-on experiences with a set of activities related to designing and stewarding an outdoor space (Table 3). There is a broad and varied set of skills needed to design, build, and care for an outdoor space. For the survey these skill-building activities were collapsed



into one word activities representative of activities related to those skills. The activity of *construction* represented the skills needed for landscape stewardship and garden construction; *gardening* represented activities related to plant care, *art making* included aspects of the design process as well as the type of art making encountered in school; and *community service* experience paralleled the interaction students might have with their greater community in the process of stewarding a local landscape.

Table 3-3 Description of skill-building activity read to aloud to students before rating personal experience

<b>Skill-building activity</b>	<b>Description</b>
<i>Construction</i>	"I have experience with construction. I can build things. I am comfortable using tools like a hammer or saw."
<i>Gardening</i>	"I have experience gardening. I am comfortable planting and weeding. I can use tools like a shovel or rake."
<i>Art making</i>	"I have experience making art. I am comfortable creating art by drawing, painting or making 3 dimensional objects."
<i>Community service</i>	"I have experience with community service. I have volunteered to help others at school or in my community to improve my neighborhood."

Students were first read a description of an activity and then asked to rate their personal experience with that activity (Table 3). They were then asked to rate their experience by entering the activity name in the circle (“a lot of experience”), on the line of the circle (“some experience) or outside the circle (“no experience) This format was used to mitigate the test fatigue faced by students in Priority schools who take a myriad of tests that include classroom learning assessments, program evaluations and state wide tests for annual advancement (Figure 3-2). The survey was piloted with ten students in June 2012 and was found to be effective for its purpose: students described it as “fun”, and “not like a test”. Additionally, this style of survey addressed

the teachers concerns regarding students' written language comprehension in the pilot stage of the survey.

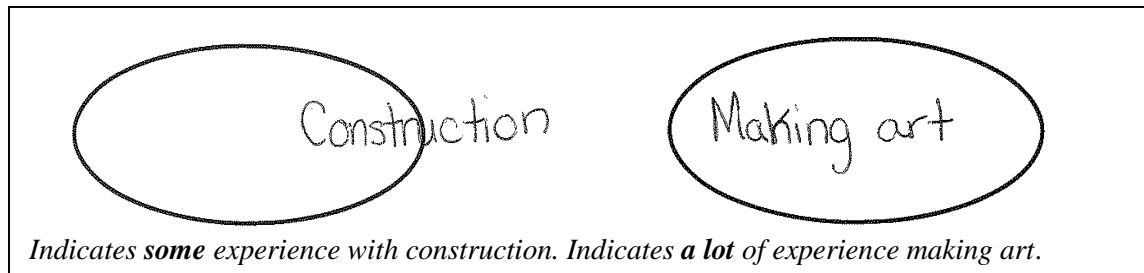


Fig. 3-2 Example of student's response to questions regarding their level of experience with skill-building activities

Finally, in order to gather information about students' vicarious experience, students were asked if they had seen friends or family members participating in these same activities (Table 5).

### ***Self and collective efficacy for landscape stewardship***

The next set of questions on the survey explored self and collective efficacy for improving local landscapes (Table 4). Bandura (1977, 2006a) states that efficacy construction and its transfer to other situations are highly contextual. Therefore these questions ask students to think about specific landscapes they might encounter in their community including, their backyard, the school grounds, a church lawn, a public park and an empty lot and to report their confidence in improving these spaces as individuals and with a group of their peers. Given that the construct of efficacy is one that is cognitive rather than affective in nature recommends using survey language that addresses a person's perceived capability of completing a task (*can do*) rather than their intention to do something in the future (*will do*) (Bandura, 1986, 2006b) . Following this model, survey questions were framed using language such as "I can do" an

activity to evaluate self-efficacy and “We could do” a specific activity to evaluate collective efficacy for the student’s work as a class. Bandura (2006b) recommends the use of a 10-point Likert scale with a total possible 100 points in order to detect variation in the quality of reported efficacy. For this study a 5-point Likert scale was used because teachers noted that the 10-point scale would not be familiar and might be confusing the students<sup>1</sup>. The annotated 5-point scale of confidence for improving specific landscapes included the following choices: “Not at all confident” scored as 1, “Not very confident” scored as 2, “Somewhat confident” scored as 3, “Quite confident” scored as 4 and “Very confident” scored as 5.

Below are the questions students were asked on the survey instrument related to efficacy. For the sake of efficiency, Table 4 also includes the average response to these questions given by the whole population.

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<sup>1</sup> For precedent studies utilizing a 5-point Likert scale to assess collective efficacy see Fernandez-Ballesteros, Diez-Nicolas, Caprara, Barbaranelli, & Bandura. (2002).

Table 3-4 Efficacy for Landscape Stewardship Questions for a. Self-efficacy and b. Collective efficacy

Efficacy Indicators	HSY Participants				No HSY Participation				Whole Study Pop.			
	Before HSY		After HSY		Before HSY		After HSY		Before HSY		After HSY	
	n=	$\bar{X}$	n=	$\bar{X}$	n=	$\bar{X}$	n=	$\bar{X}$	n=	$\bar{X}$	n=	$\bar{X}$
<b>a.) Self Efficacy - I am confident that I can:</b>												
<i>improve the schoolyard at 9GA.</i>	11	3.64	12	4.00	28	2.82	27	3.41	38	3.11	38	3.55
<i>improve the landscape of my local park.</i>	11	2.73	12	2.83	28	2.54	27	2.78	38	2.63	38	2.74
<i>improve the empty lots in my neighborhood.</i>	11	2.73	11	2.91	28	2.61	27	2.70	37	2.65	37	2.70
<i>start an outdoor community improvement project.</i>	11	2.82	12	3.25	28	2.64	27	2.89	38	2.63	38	2.95
<i>improve the yard around my home.</i>	11	3.91	12	4.00	28	3.93	27	4.22	38	3.92	38	4.13
<i>improve the church yard at my church.</i>	10	3.20	12	3.42	28	2.82	25	3.88	31	3.65	31	3.74
<b>b.) Collective Efficacy - I am confident that together with my 9GA science class we could:</b>												
<i>improve the schoolyard at 9GA.</i>	11	3.09	12	3.67	28	2.79	27	3.78	38	2.92	38	3.76
<i>improve the landscape of my local park.</i>	11	2.64	12	3.42	28	2.54	27	3.63	38	2.92	38	3.58
<i>improve the empty lots in my neighborhood.</i>	11	2.82	12	3.42	27	2.85	27	3.41	37	2.89	37	3.41
<i>start an outdoor community improvement project.</i>	11	3.55	12	3.75	28	2.50	27	3.56	38	2.84	38	3.63
<i>Collective Efficacy Score (Latent Variable)</i>	11	3.02	12	3.56	27	2.71	27	3.59	39	3.06	39	3.50

In order to examine students' potential support networks for landscape stewardship projects, students were asked to rate how confident they were that they could find help to improve one of the listed landscapes (home, church, schoolyard, park, empty lot) or the help needed to start an outdoor community improvement project (Table 4a). They were also asked to rate their perception of confidence in their class to improve these landscapes (Table 4b). Finally, as collective efficacy is partially perceived by how an individual perceived their own self-efficacy (Bandura, 1997) students were asked to rate how confident they were that they were an important member of a team working on a stewardship project.

### **3-3. Variable creation and statistical methods**

All data analysis was completed with SPSS Statistics Version 22, 2103.

#### **3-3-1. Collective efficacy construction through participatory design**

##### ***Collective Efficacy for Healthiest School Yard Program (HSY) Participants:***

Answers to the four questions examining the construct of collective efficacy for the HSY population had a high level of internal consistency (Cronbach's alpha = 0.922), were used to create a latent variable for collective efficacy. A high level of consistency was also found for the six questions examining the construct of self-efficacy in the HSY population (Cronbach's alpha = 0.785), and a latent variable for self-efficacy was created.

A paired t-test was used to determine differences in HSY students collective efficacy scores before versus after participation in the design program for the group (n=12) and by gender (8 females, 4 males). For those students participating in the HSY program (n=12), the latent variable for collective efficacy measured in February 2013 was tested for its ability to predict

collective efficacy by the end of the program in June 2013. The construction of collective efficacy by the end of the program was examined by regressing post-program collective efficacy responses on potential contributing agents including: post-program responses regarding self-efficacy, having a supportive environment, and sense of individual importance in a work group. Gender effects were analyzed.

Examination of the raw data for the skill-building experiences of construction, gardening, art making and community service, showed that some students rated their post-program experience with skill-building activities at levels lower than before the start of the program. Therefore, a latent variable for a change in experience over time was not created and statistical analyses for influences of separate skill building experiences on efficacy were run separately using the post-program survey data. There was a low level of consistency for the questions related to personal experience with skill building activities and with vicarious experience of these activities (Chronbach's alpha = 0.595 and -0.296, respectively). Consequently experience responses were recoded as minimal experience (none or some) and experience competency (a lot).<sup>1</sup>

Independent samples t-test was used to determine if there was a difference in collective efficacy scores based on minimal experience or experience competency with skill building activities. The same test was used to examine the influence of vicarious experiences of skill building activities on collective efficacy. Examination of gender effects were possible due to low sample size.

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<sup>1</sup> Bandura (1977) discusses the mastery of experience as a key component of efficacy construction. Re-coding the variables in this manner separates students with a low level of experience from those more confident in their skill base.

### ***Self-efficacy for Healthiest School Yard Program (HSY) Participants:***

A paired t-test was used to determine whether there was a difference in HSY students' self-efficacy scores before versus after participation in the design program. Self-efficacy construction by the end of the program was examined by regressing post program self-efficacy scores on the post-program responses regarding having a supportive environment. Gender effects were analyzed. Independent t-tests were used to examine changes in self-efficacy scores related to personal and vicarious experience with skill building activities.

### ***Exploring efficacy related to specific landscape types (HSY):***

Bandura (2006b) describes self-efficacy as being context specific. For instance a child efficacious with her math skill, but not with her writing ability. Given that the HSY program was on school grounds, and a school yard is a very different landscape context than a local empty lot, paired t-tests were used to examine self-efficacy responses to specific landscapes pre and post program. Again analysis by gender was not possible due to low sample size for male students.

Further analysis with the Healthiest School Yard participants was not possible due to small sample size.

### ***Collective Efficacy for the Whole Study Population (WSP):***

The small number of students participating in the HSY program eligible for the study limited the strength of statistical analysis. Examining the larger student body allowed for a closer exploration of what might support efficacy construction outside of a specific programmatic experience. Therefore in further pursuit of understanding collective efficacy for stewardship, the

reported experiences and perceptions of the whole student population participating the study were examined.

As a reminder, the 40 students (23 female, 17 male) comprising whole study population included 12 from the HSY program (8 female, 4 male). The sample size for specific questions may vary from the totals listed in Tables 2-5 due to student attrition, a low percentage of returned permission slips, student absences during one of survey delivery dates, and students skipping responses on the surveys. Even with this larger group, analysis by gender, was not always feasible.

***Exploring collective efficacy construction in the Whole Study Population:***

Answers to the four questions examining the construct of collective efficacy for the whole school population (Table 5) had a high level of internal consistency (Cronbach's alpha = 0.898) and were used to create a latent variable for collective efficacy. In the case of the whole study population, the six questions for the construct of self-efficacy indicated a high internal consistency (Cronbach's alpha = 0.820) and a latent variable for self-efficacy was created for the whole study population. Once again, a low level of consistency was found for the questions of related to experience with skill building activities (Cronbach's alpha = 0.559) and a latent variable was not created for experience. Therefore the dichotomous variables of "Minimal experience" (No experience, Some experience) and "Experience competency" (A lot of experience) were utilized through the analysis. In this population (n=40) questions related to vicarious experience of skill building activities had a high level of internal consistency (Cronbach's alpha = 0.752) and a latent variable for vicarious experience was created.



Descriptive statistics for students' personal and vicarious skill building experiences are shown in Table 5.

Table 3-5 Personal and vicarious skill building activities for the Whole Study Population before and after HSY program

Skill Building Activity	Pre/Post Program	Personal Experience			Vicarious Experience		
		None	Some	A lot	Pre/Post Program	Yes	No
Art Making	Pre	4 (10%)	4 (10%)	29 (72.5%)	Pre	31 (77.5%)	4 (10%)
	Post	<b>5 (12.5%)</b>	<b>7 (17.5%)</b>	<b>28 (70%)</b>	Post	<b>30 (75%)</b>	<b>6 (15%)</b>
Gardening	Pre	15 (37.5%)	13 (32.5%)	10 (25%)	Pre	27 (67.5%)	9 (22.5%)
	Post	<b>14 (35%)</b>	<b>13 (32.5%)</b>	<b>13 (32.5%)</b>	Post	<b>26 (65%)</b>	<b>10 (25%)</b>
Construction	Pre	7 (17.5%)	14 (35%)	17 (42.5%)	Pre	29 (72.5%)	7 (17.5%)
	Post	<b>6 (15%)</b>	<b>16 (40%)</b>	<b>18 (45%)</b>	Post	<b>27 (67.5%)</b>	<b>7 (17.5%)</b>
Community Service	Pre	11 (27.5%)	6 (15%)	19 (47%)	Pre	19 (47.5%)	5 (12.5%)
	Post	<b>9 (22.5%)</b>	<b>12 (30%)</b>	<b>19 (47.5%)</b>	Post	<b>25 (62.5%)</b>	<b>7 (17.5%)</b>

A paired t-test was used to determine whether there was a difference in the whole school populations' collective efficacy scores before versus after the design program for the group (n=40) and by gender (23 females, 17 males). For the whole school population collective efficacy measured in February 2013 was tested for its ability to predict collective efficacy by the end of the program in June 2013. The construction of collective efficacy by the end of the program was examined by regressing post-program collective efficacy responses on potential contributing agents including: post-program responses regarding self-efficacy, the ability to find help, and a sense of individual importance in a work group. The effects of their vicarious

experience of seeing skill building activities were also included in this set of analyses. Gender effects were analyzed.

An independent samples t-test was used to determine whether there was a difference in the whole school populations' collective efficacy scores based on their personal experience with art making, gardening, construction and community service. Gender effects were analyzed.

Finally a Spearman's Rho correlation examined correlations between collective efficacy and self-efficacy for improving specific landscapes.

### ***Exploring self-efficacy construction for the Whole School Population:***

Paired t-tests were used to examine self-efficacy at the beginning of the study in February and at the end of the study in June. Self-efficacy construction by the end of the program was examined by regressing the following variables: post program self-efficacy scores, vicarious experience and post-program responses to their ability to find help.

An independent samples t-test was used to determine whether there was a difference in the whole school populations' self-efficacy scores based on their personal experience with art making, gardening, construction and community service. Gender effects were analyzed for all tests. Paired t-tests were also used to examine self-efficacy responses to improving specific landscapes pre and post program. Finally, self-efficacy for improving specific landscapes was examined for association with individual skill-building experiences. Initial correlations indicated that the data was non-parametric in nature, with over 50% of the reported answers from fewer than 5 respondents. Therefore a Fishers Exact test was used. In order to utilize this test, the 5-point Likert scale for self-efficacy and collective efficacy questions were converted to a

dichotomous scale of Low Confidence (including “Not at all confident” and “Not very confident”) and High Confidence (including “Somewhat confident”, “Quite confident” and “Very confident”). Individual skill building activities were operationalized with the previously utilized dichotomous variable of minimal and experience competency in the Fishers Exact test.

### **3-4. Results**

#### **3-4-1. Collective efficacy outcomes for HSY design program participants**

##### *Collective Efficacy for Healthiest School Yard Program (HSY) Participants:*

For students in the Healthiest School Yard Program (n=12), there was no significant increase in collective efficacy scores between the beginning and end of the HSY program (paired t-test, n = 11,  $t(10) = 1.44$ ,  $p = 0.179$ ). However, when considered by gender, females showed an average increase in collective efficacy of 41.8% (paired t-test, n = 8,  $t(7) = 3.37$ ,  $p = 0.012$ ). No such change was seen for male students in the program (paired t-test, n=3,  $t(2) = -0.8333$ ,  $p = 0.405$ ).

Collective efficacy scores for the group (n=12) at the end of the HYS program were not predicted by students’ pre-program collective efficacy scores. These results held for gender. They were however predicted by post-program self-efficacy scores (linear regression  $B = 0.091$ ,  $p. = .044$ ,  $R^2 = 0.378$ ). And when considered by gender female students post-program self-efficacy scores were predictive of collective efficacy (linear regression  $B = 0.118$ ,  $p. = .011$ ,  $R^2 = 0.759$ ); the prediction was not significant for male students. Collective efficacy scores were not predicted by a sense of a) being important to the functioning or b) ability to find help to complete an outdoor community improvement project, except when considered by gender. A sense of being important to the group predicted female collective efficacy scores both prior to the start of

the program in and following their participation in June (beginning: linear regression  $B = 0.75$ ,  $p = .034$ ,  $R^2 = 0.479$ ; end:  $B = 0.627$ ,  $p = .035$ ,  $R^2 = 0.475$ ). For male students the feeling of being important to the group was not predictive of collective efficacy. Female students collective efficacy was predicted by the ability to find help at the end of the design program in June (linear regression  $B = 0.754$ ,  $p = .003$ ,  $R^2 = 0.76$ ). For male students the ability to find help was not predictive of collective efficacy.

### ***Collective efficacy and skill building experiences with HSY participants:***

In the absence of a strong latent variable for skill-building experiences, responses to individual experience were evaluated. The only significant increase over the course of the four month program was seen in females who reported a 33.2% increase in construction experience (paired t-test,  $n=12$ ,  $t(7) = 3.416$ ,  $p = .011$ ). An independent-samples t-test was conducted to compare collective efficacy and minimal skill-building experience or experience competency conditions. There were no significant differences for between any individual skill-building experience or vicarious experience and collective efficacy scores. The same held when examined by gender.

### ***Self-efficacy and skill building with HSY participants:***

There was no significant increase in self-efficacy scores between the beginning and end of the HSY program, (paired t-test,  $n=10$ ,  $t(9) = -0.14$ ,  $p = 0.891$ ). These results held when examined by gender. Pre-program self-efficacy scores did not predict post-program self-efficacy scores; results held when examined by gender. When self-efficacy was examined by skill-building experiences there was a significant difference in construction experience scores between minimal experience ( $M = 15.0$ ,  $SD = 5.15$ ) and experience competency ( $M = 24.2$ ,  $SD = 2.19$ )

conditions (independent samples t-test,  $n=10$ ,  $t(9) = 2.926$ ,  $p = 0.017$ ). When examined by gender, the same held true for female students with a minimal experience ( $M = 15.5$ ,  $SD = 5.91$ ) and experience competency ( $M = 26.0$ ,  $SD = 3.61$ ) with construction (independent samples t-test,  $n=6$ ,  $t(5) = 2.752$ ,  $p = 0.040$ ), but not for males. No other skill-building experiences indicated significant mean differences. Small sample size precluded testing the effect of students' vicarious experience on self-efficacy.

#### ***Exploring efficacy related to specific landscape types (HSY):***

Paired t-tests compared self-efficacy before and after the HSY program for the capacity to make improvements to specific landscapes in the teen's environment – home, church, school, park, empty lot. There were no significant changes in self-efficacy for any specific landscape. When analyzed by gender, female self-efficacy increased by 22% regarding their capacity to improve the schoolyard at the 9<sup>th</sup> Grade Academy (paired t-test,  $n=8$ ,  $t(7) = 2.39$ ,  $p = .048$ ).

Due to small sample size no further analysis was possible.

#### **3-4-2. Collective efficacy construction in the whole study population**

##### ***Exploring collective efficacy construction in the Whole School Population (WSP) scores:***

When considering the whole study population ( $n=40$ ) there was a 14.5% increase in the mean collective efficacy score by the program's end in June (paired t-test,  $n=39$ ,  $t(38) = 2.573$ ,  $p = 0.014$ ). When examining responses by gender, there was a 19% increase in efficacy for female students (paired t-test,  $n=23$ ,  $t(22) = 2.750$ ,  $p = 0.012$ ). There was no significant increase in the collective efficacy score for male students.

Collective efficacy scores for the whole study population in June were not predicted by students' pre-program collective efficacy scores. Pre-program collective efficacy scores for female students predicted post-program collective efficacy scores (linear regression  $B = 0.546$   $p = .001$ ,  $R^2 = 0.332$ ); this was not true for male students. Unlike the HSY population, for the whole school population, post-program self-efficacy scores predicted collective efficacy (linear regression  $B = 0.072$   $p = .012$ ,  $R^2 = 0.171$ ). Additionally, for the whole group, the ability to find help to start a project predicted collective efficacy scores at the end of the study. When considered by gender, this result held for female students but not male students (Table 6). Additionally, students' confidence that they were important in a group was a strong predictor of collective efficacy for improving local landscapes at the end of the study. When considered by gender, this result held.

Table 3-6 Predictors of collective efficacy

Collective Efficacy Predictors	Pre Study collective efficacy			Post study collective efficacy		
	$\beta$	$p =$	<b>R2</b>	$\beta$	$p =$	<b>R2</b>
<i>Finding help to start a project</i>						
Whole School	0.273	<b>0.028</b>	0.106	0.247	<b>0.030</b>	0.097
Female Students	0.340	<b>0.038</b>	0.158	0.412	0.080	0.304
Male Students	0.181	0.381	-0.013	0.058	0.741	0.007
<i>Feeling of Importance on a Team</i>						
Whole School	0.541	<b>0.001</b>	0.431	0.585	<b>0.001</b>	0.431
Female Students	0.594	<b>0.001</b>	0.522	0.624	<b>0.001</b>	0.535
Male Students	0.475	<b>0.028</b>	0.319	0.531	<b>0.014</b>	0.342

***Collective efficacy and skill building experiences (WSP):***

Again, in the absence of a strong latent variable for skill-building experiences, responses to individual experience were evaluated. There were no significant increases in any particular experience over the course of the four month program. An independent-samples t-test was conducted to examine the effect of minimal skill-building experience or skill-building experience competency conditions on collective. When collective-efficacy was examined by skill-building experience there were no significant differences for between any individual skill-building experiences.

For the whole study population, post-program vicarious experience was not predictive of post program collective efficacy. These results held when examined by gender.

***Collective efficacy and self-efficacy (WSP):***

Post-program collective efficacy scores were predicted by post-program self-efficacy scores (linear regression  $B = 0.072$ ,  $p = .012$ ,  $R^2 = 0.147$ ). And when considered by gender female students post-program self-efficacy scores were predictive of collective efficacy (linear regression  $B = 0.082$ ,  $p = .021$ ,  $R^2 = 0.220$ ); the prediction was not significant for male students.

On the pre-program survey, a strong sense of collective efficacy was associated with self-efficacy for changing the school grounds, the landscape of their churchyard and their local park. (Table 6). Considered by gender, significant correlations between female students' collective efficacy scores and their self-efficacy for improving the schoolyard, churchyards, local parks and

empty lots. There were also correlations for male students on collective efficacy scores and their self-efficacy for changing the schoolyard and their church.

Post-program collective efficacy scores were also strongly associated with post program self-efficacy for changing local landscapes in terms of improving the school yard, home landscapes, and empty lots (Table 7). Here, associations for female students were found between collective efficacy and self-efficacy for improving their schoolyard and home landscapes. No associations were found for male students.

Table 3-7 Correlation between collective efficacy and self-efficacy for improving local landscapes in the whole school population and by gender

Efficacy indicator	Whole population			Female			Male		
	n=	r <sub>s</sub> *	p =	n=	*r <sub>s</sub>	p =	n=	r <sub>s</sub>	p =
<b>I am confident that I can improve:</b>									
(Pre-HSY Program)									
<i>my home landscape</i>	38	0.277	0.092	23	0.332	0.134	15	0.213	0.445
<i>my school landscape</i>	38	0.636	<b>0.005</b>	23	0.662	<b>0.002</b>	15	0.632	<b>0.011</b>
<i>my church landscape</i>	32	0.539	<b>0.001</b>	19	0.485	<b>0.036</b>	13	0.569	<b>0.042</b>
<i>my local park</i>	38	0.456	<b>0.004</b>	23	0.708	<b>0.005</b>	15	0.006	0.984
<i>local empty lots</i>	38	0.279	0.09	23	0.449	<b>0.032</b>	15	-0.12	0.681
(Post-HSY Program)									
<i>my home landscape</i>	39	0.383	<b>0.016</b>	22	0.463	<b>0.03</b>	17	0.287	0.264
<i>my school landscape</i>	39	0.337	<b>0.036</b>	22	0.516	<b>0.014</b>	17	0.08	0.76
<i>my church landscape</i>	37	0.293	0.079	21	0.253	0.268	16	0.434	0.093
<i>my local park</i>	39	0.18	0.273	22	0.389	0.074	17	-0.03	0.925
<i>local empty lots</i>	38	0.344	<b>0.034</b>	21	0.304	0.181	17	0.411	0.101

rs\* = Spearman's rho; all p values for 2-tailed test



***Self-efficacy outcomes for the Whole School Population:***

There were no significant increases in mean self-efficacy scores over the length of the study for the whole study population. There same was true when examined by gender. For the whole study population, when self-efficacy was examined by skill-building experience significant differences in minimal experience and experience competency were found for the skill-building experiences of construction, gardening and community service (Table 8); but no difference were found for the experience of making art.

Table 3-8 Self-efficacy association with skill-building experiences

Skill-building experience	Population	n=	p.	t.	Skill-building experience level			
					Minimal experience		Experience competency	
					M	SD	M	SD
Construction	WSP	36	0.005	3.016	17.7	4.90	22.7	5.06
	Female	20	0.0001	4.323	17.7	4.79	26.0	3.16
	Male	-	-	-	-	-	-	-
Gardening	WSP	36	0.006	2.951	18.0	3.83	23.3	6.81
	Female	-	-	-	-	-	-	-
	Male	16	0.002	3.734	18.5	27.00	3.5	3.61
Community Service	WSP	36	0.038	2.16	17.9	4.31	21.7	6.04
	Female	20	0.049	2.109	16.3	2.87	21.7	6.83
	Male	-	-	-	-	-	-	-

*Independent samples t-test*

Vicarious experience (latent variable) was predictive of self-efficacy scores in the whole study population (linear regression  $B = 5.699$ ,  $p = .35$ ,  $R^2 = 0.144$ ). Vicarious experience was also predictive of female students self-efficacy scores (linear regression  $B = 7.209$ ,  $p = .036$ ,  $R^2 = 0.261$ ), but not of male students self-efficacy scores.

### ***Self-efficacy for specific landscape types:***

Self-efficacy for improving the school yard landscape increased by 15% by the end of the program (paired t-test,  $n=36$ ,  $t(35) = 2.221$ ,  $p = 0.033$ ). When considered by gender, self-efficacy score regarding ability to improve their school yard increased by 33% for male students (paired t-test,  $n=15$ ,  $t(14) = 2.256$ ,  $p = .041$ ). There was no significant increase in the mean self-efficacy scores for any of the other specific landscape (home, church, park, empty lot) or for starting an outdoor improvement project.

### ***Specific landscape types and skill building experiences:***

Associations were found between the skill building experiences of construction, gardening and community service and specific landscapes types. Self-efficacy for improving one's park was associated with construction ( $p. = 0.49$ ), gardening ( $p. = 0.37$ ) and community service ( $p. = 0.22$ ). When examined by gender improving one's park was associated with construction ( $p. = 0.006$ ). Empty lots were associated with gardening experience for the whole group ( $p. = 0.43$ ) and when examined by gender results held for male students 9 ( $p. = 0.29$ ).

## **3-5. Discussion**

### **3-5-1. Collective efficacy and the Healthiest School Yard (HSY) Program**

In this study the collective efficacy of teens for local landscape stewardship was examined through the process of engagement in a participatory design program on their school grounds. Participation in the Healthiest School Yard (HSY) participatory design program did not significantly increase the students' collective efficacy for stewarding local landscapes. A small sample size made some analysis unviable and these results should be viewed cautiously.

However, the results provide significant insights into efficacy construction and participatory design and highlight areas for further exploration.

***Collective efficacy construction through participatory design:***

First, given the theoretical discourse that places emphasis on the construct of mastery of experience as a component of efficacy construction it was expected that participation in the HSY program would increase collective efficacy. Although this outcome was undetected in the small intervention group, it is important to examine the nature of students' experiences in the participatory design program. As a reminder, collective efficacy is the perception of a group's ability to succeed in their attempt to reach a goal (Bandura, 1997). It is an emergent property at the group level, but is perceived by each individual in the group (Bandura, 2000). This perception is derived from two assessments made by a group member. One assessment is the individual's perception of their own ability to fulfill a role that helps the group function successfully, essentially their self-efficacy related to their role in the project. Self-efficacy development draws heavily one's mastery of skills related to the task at hand; skills built during past experience play a key role in the persistence with which a person will continue to address a task under adverse conditions (Bandura, 1977, 1986). There are a broad set of skills learned and applied through the participatory design process that support landscape stewardship. They include but are not limited to visioning a new space through art making as well as the construction and care of the space through construction, gardening, and community service. These nature of these experiences are disparate and are therefore discussed individually.

Participatory landscape design is one kind of community-based art production, with a focus on landscape as the medium. Studies of similar programs, like public arts projects indicate

that as youth learn technical skills, practice communication skills by talking with local officials and take ownership of a public space through beautification activities they are building collective efficacy (Krensky & Steffen, 2009). Given the amount of time spent envisioning and creating models of the future space during the program, it was somewhat surprising that the students' participation in the envisioning a new school yard space through model making (art making) did not significantly influence the self or collective efficacy responses. One reason HSY students' art and model making experiences did not influence collective efficacy may be related to the arc of the design process and the timing of the survey delivery.

The participatory landscape design-build process generally has three stages, design conception (understanding the opportunities and constraints of the space, finding inspiration in the local culture, learning about the local ecology), design development (creating drawings and models of the future space) and design build (the actual construction of the site). The students in program participated in the design conception and design development phase of creating a new school yard. At the end of the term, when the post project survey was administered, students had imagined new spaces, some practical, some fantastic in nature, but none of them had seen their design ideas come to fruition in the final space. Perhaps at this visioning stage, they could not see themselves as agents of change able to implement such ideas.

Regarding the other skill-building experiences of gardening and construction, the program's timing in the school year may have had an impact on their sense of skill mastery. The program facilitated from mid-winter to early spring in the Midwest, did not allow students to engage in any significant planting process that might have built gardening skills for landscape stewardship. Finally, the design-build portion of the project, in which students participated in the

physical construction of the new design, did not occur until July a month after the post-program survey was administered. The summer portion of the participatory design process required much more collaboration between students and their peers. Not yet having the experience of participating in the summer program may have mitigated HSY participants' ability to connect construction experiences to stewardship activities.

Nevertheless, given that at least 50% (Table 5) of students participating in the HSY program reported having “a lot” of experience with construction, gardening, making art and community service, it is possible that students did not connect these design-related experiences to stewardship activities. Bandura (1986) notes the importance of using efficacy measures that are closely related to the outcome goal. It is possible that the HSY Program did not articulate the connections between the design process and stewardship, likewise the language of the survey may not have accurately reflected this connection. If this connection was not clear, it would have impacted results related to both self and collective efficacy and skill-building activities.

***(HSY) Team building and collective efficacy:***

A second perception taken into account when one assesses the collective efficacy of a group is an individual's sense of how the group may function as a whole (Bandura, 2000; Fernández-Ballesteros et al., 2002; Roger D. Goddard et al., 2004). This includes one's perception of being important to the effective function of the group and the sense that they are in an environment that is supportive of their designated goal (Roger D. Goddard et al., 2004). For students in the HSY Program, neither a sense of individual importance to the group nor the ability to find help were significant predictors of collective efficacy (Table 6).

The feeling that one is on a team working collaboratively toward a mutual goal may vary greatly between groups. For instance the nature of feeling like a team may be very different for a sports team than for a group of teachers working to improve a student population's academic achievement. Both situations require collaborative work towards a mutual goal, but the structure of the groups are very different nature. Goddard et al. (2004) has noted that school teachers working to increase student achievement may not perceive an immediate sense of collectivity until social norms create an expectation of individual work on behalf of collective success for academic achievement. It is possible that organization of the participatory design project and its timing did not build the social norms and sense of team-ness needed in this situation for collective efficacy construction. Likewise, students in the HSY program were participating through assigned class, not because they had chosen to participate in the project and therefor may not have associated their classroom activities with a team effort.

Additionally, the brevity of the HSY Program may not have allowed for sufficient team building activities that might have supported collective efficacy. One limitation of the study is that while it asked students about their sense of being important *to* a team, it did not ask them if they felt they were *a part of* a team. Much of the work during the design conception phase of the project was individual in nature, perhaps not providing important team building opportunities. The individual nature of the work at this stage certainly could have mitigated the connection between students' ability to find help for the project and their sense of collective efficacy.

Another issue at play in collective efficacy construction is group formation in light of collective confidence. A study examining collective efficacy construction with undergraduates assigned a team project for a college level class indicated that sometimes confidence in task

completion comes too quickly (Goncalo, Polman, & Maslach, 2010). In this study when groups bonded easily and had a high level of confidence prior to actually working on the assigned project, collective efficacy levels dropped the group when faced difficulties with their project. The study also indicated that the early formation of group confidence was threatened by projects that required an extended period of time to complete. In this study, HSY students' mean collective efficacy did not drop, but it did not increase significantly over the length of the program. It may be that as the semester progressed, the students developed a more comprehensive understanding of what was needed to complete the project. As such, their insights may have mitigated some confidence in their ability to complete the project.

***(HSY) Gender, participatory design and stewardship efficacy:***

Interestingly, the analysis indicated that for young women in the HSY program, collective efficacy for landscape stewardship significantly increased over the length of the project. Given the small sample size it was difficult to parse out the exact cause of this increase but of note are the following outcomes. Results indicated that for these young women collective efficacy was predicted by their self-efficacy, their sense of being important in a group and their ability to find help to complete a stewardship project. Their self-efficacy for improving local landscapes increased over the semester and as it did for specifically improving the 9GA schoolyard. Finally the experience with construction had increased significantly over the semester; and their experience with construction was associated with their self-efficacy for general landscape improvement. Combined these results suggest that learning construction skills – essentially building physical skills for on the ground stewardship and working on community service projects – collaborating and communicating with others may be important components of helping young women build the skills, confidence and community connections needed to become

stewards of their local environment. This is corroborated by service learning literature indicates that for female students, volunteer experiences with a physical components can boost self-confidence (Hamilton & Fenzel, 1988). Finally, results of this study also hint at the important role projects sited on the school yard can play in efficacy construction, particularly for young women. School gardening literature suggests that working in school-sited gardens may build students confidence but with little empirical research on gardens in high school settings, more that research is needed to clearly understand this outcome (Blair, 2009; Lekies, 2006).

### **3-5-2. Collective efficacy construction in the Whole Study Population (WSP)**

#### *(WSP) Collective efficacy construction for stewardship– What plays a role?*

An examination of the whole study population provided additional insights into what experiences might support collective efficacy construction for stewardship activities. Collective efficacy for the whole study population (n=40) increased over the length of the project and was predicted by students' self-efficacy responses: their self-efficacy for landscape stewardship, a sense of being important to a group executing a stewardship project and their ability to find help to successfully complete that undertaking. Once again, collective efficacy was not influenced by their experience with the skill-building activities of construction, gardening, art making or community service; but their vicarious experience of seeing friends and families did influence their self-efficacy for landscape stewardship. These outcomes, differing from that of the HSY students alone, corroborate studies that explore collective efficacy for community change at the neighborhood level. For designers and educators, they point to the importance of supporting self-efficacy construction and group bonding as components of collective efficacy



***(WSP) School as social community in which to build collective efficacy:***

A community may be defined by geographic boundaries as well as social relationship program (McMillan & Chavis, 1986); for students, a school community may be bounded their social relationships built in academic classes, sports and enrichment program. While school identity was beyond the scope of this study, one identifying feature of school culture at the 9<sup>th</sup> Grade Academy was supporting soft skill development through volunteer activities. Students enrolled at the Beecher 9<sup>th</sup> Grade Academy are required to complete 40 hours of community service either at school or in the neighborhood. This community service requirement is a part of the social norm of the school community. While the School Administration did not use the vocabulary of efficacy, their focus on experience and skill development has relevance to understanding efficacy construction in this study. Some community service experience was reported 30% of the students and 47.5% of the students indicated that they had a participated in a lot of community service (Table 5). While detailed data is not available, the School Supervisor noted that students volunteered at variety of places including a day care center, a local farm, and a senior center. Others volunteered at 9GA tutoring their peers, clearing garbage off school grounds, weeding and planting tulips. All the sites required mentoring and few projects could be completed without the collaboration of others. Many had a component of physical labor.

In studies of community level collective efficacy for improving the physical structure or social milieu of their neighborhood, having a trust in one's peer group emerges as a key component of collective efficacy and successful collective action (Sampson et al., 1997). These authors describe neighborhood level collective efficacy as community members' trust in one another's willingness to work together for the common good. An example of this is how participation at a community garden has been shown to strengthen social bonds of trust and

reciprocity thereby leading to a sense of collective efficacy between those participating for other projects (Comstock et al., 2010; Teig et al., 2009). Similarly, Ohmer (2007) found that community members who participate in local organizations develop relationships that build collective efficacy for other shared goals. It is plausible that at 9GA these required community service hours function in a similar manner to volunteer activities for adults by providing opportunities to build supportive, trusting relationships through collaboration and observation which support future collective action.

One limitation of this study is that beyond questions addressing their vicarious experience of specific skills related to participatory design and related stewardship activities, it did not examine students other social networks. Future studies of youth participating in design and stewardship projects would benefit from a better understanding of students activities and social relationships outside of the school sited design process.

***(WSP) The Schoolyard - A place to build stewardship efficacy:***

While a school community may be social in nature, the school grounds are also geographically bounded. As such the school-yard becomes an important physical site in which to learn and practice skills leading to efficacy. In the whole study population, collective efficacy for landscape stewardship was associated with the latent variable self-efficacy for changing local landscapes. Collective efficacy was also associated with the specific landscapes of home, church, a park and empty lots (Table 7). But over the project time span, only one association held constant: the association between self-efficacy for school yard stewardship and collective efficacy for landscape stewardship. Interestingly, when examined by gender this association held true for both females and males at the outset of the program but only for females at the end of the

program (Table 7). Again, dividing the sample by gender may call into question concerns related to samples size; it should be noted while self-efficacy for the male students was not significant at ( $p = 0.08$ ) perhaps for the sample size it was not far from significant. Together these results indicate that the school yard may play an important role as a safe place in which to practice skill-building activities related to stewardship; particularly for young women.

While qualitative studies describe the participatory process with urban teens related to design outcomes and ecological learning (Breitbart, 1995; Gearin & Kahle, 2006; Rottle & Johnson, 2007), there are few empirical studies examining the effects of participatory landscape design. Therefore this article draws on environmental education regarding school gardening literature to reflect on this study's findings. School sited participatory landscape design projects and school gardens engage students in similar processes of creating and caring for green space. Similar to the participatory design process, much of the school gardening literature argues that it is important to engage students in all parts of the gardening process from planning to planting, from weeding to harvesting. These studies indicate show that engaging young children in decision making processes related to school gardens can build self-confidence, increase skills related to collaborative team work, and build environmental knowledge and concern that could lead to stewardship activities later in life (Aguilar, Waliczek, & Zajicek, 2008; Danks, 2000; Stine, 1997; Wake, 2007). A review of school garden studies described the parallels of school garden and community gardens including the potential for collective efficacy construction. Similar studies of adult collective efficacy construction in community gardens (Teig et al., 2009), Ozer, et al. (2008) propose that that school gardens can build community level collective efficacy with youth. But others warn of the limited empirical evidence regarding the broader impacts of school gardens (Blair, 2009; Williams & Dixon, 2013).

Underpinning each of the articles is the implicit argument that school gardens are important because they are sited on school grounds. In post-industrial communities with few outdoor amenities, schoolyards may be some of the few safe, outdoor, green spaces for teens to practice outdoor stewardship skills. Krasny and Tidball (2009) have argued that in order to build an active environmental citizenry urban environmental education programs need to be more reflective of students' physical context. Likewise Chawla and Cushing (2007) have proposed that such projects, in spaces where students can safely practice skills with and build supportive relationships, may support efficacy construction for further environmental engagement. This study has actualized these proposals demonstrating that self-efficacy for stewarding one's school grounds is related to collective efficacy for other landscape stewardship projects (Table 6).

***(WSP) Self-efficacy construction through skill-building experiences:***

Associations between the skill-building experiences of construction, gardening and community service were associated with self-efficacy for caring for landscapes off school grounds like one's park or fixing an empty lots. Specifically construction, gardening and community service were associated with improving one's local park and gardening was associated with fixing an empty lot (Table 8). These outcomes are not surprising in the context of these students' local landscapes and school experiences. In the Beecher School District, a lack of municipal and state funding, has left local parks in disrepair, over grown and with broken equipment. In this neighborhood where open spaces need require significant interventions to be accessible, the skills garnered from experience building, planting flowers and community service would be applicable to changing these spaces. And again, while detailed data is not available it is likely that these students had participated in community service projects (working on the nearby urban farm helping to build hoop houses, raised beds and preparing the ground for planting or

light physical work at school picking up garbage or planting flowers) that would build these skills. This is kind of work would require students to practice physical and technical skills as well the soft skills related to collaborative work teamwork.

### ***Gender and landscape stewardship:***

Similar to the female students in the HSY program, results for female students in the whole school population point hint at the importance of school yard sited projects that provide opportunities to practice construction skills. For female students in the whole school population collective efficacy was predicted by self-efficacy for generalized landscape stewardship, feeling confident that they were integral to a group's success and the ability to find help (Table 6). While their self-efficacy for any particular landscape did not change over the course of the study, self-efficacy for general landscape stewardship was associated with self-efficacy for improving home and school landscapes (Table 7). School garden discourse corroborates such findings indicating that school gardens can be a place for female teens to build self-confidence through skill development and the teaching of other students (Lekies, 2006).

Additionally, female students' self-efficacy for landscape improvement was associated with construction experience. The same was true for their self-efficacy for improving park spaces (Table 8). It should be noted that the percentage of females participating in construction (78%) activities was lower than males participation in these activities (94.1% respectively) (Table 5), yet only the female students' self-efficacy increased as their comfort level with construction increased implying the particular importance of providing these kinds of physical activities for young women. Again, service learning literature indicates that volunteer work that engages

students in a physical activities may support personal confidence levels and enthusiasm for future volunteer work (Hamilton & Fenzel, 1988).

For young men self-efficacy construction was manifested in a slightly different way. The skill of gardening rather than construction was related to their self-efficacy. This outcomes is not easily explained. There little literature specifically related to teenaged male students and gardening from which to draw reasons for this outcome. And it is plausible that the testing instrument did not capture components of experience related to their efficacy construction.

### **3-6. Conclusions**

In its examination of collective efficacy for landscape stewardship this study adds to discourse that suggests participatory design can be a tool for supporting environmental stewardship. It draws connections between the participatory design process and environmental education program that engage students in learning about and acting on their own environment. Refinement of the survey instrument in relation to the participatory design curriculum may provide further insights about which skills best support the development of students' stewardship ethic. One limitation of the study was the small sample size. While higher participation would be ideal, the nature of specialized programs in schools and the in-depth participatory process this program provided may not allow for more student engagement in this kind of participatory design program. In this case, the study might benefit from the addition of on-going interviews with students about their experience in the program.

Landscape designers and environmental educators who use participatory design processes to empower young people to care for local landscapes can benefit from understanding more about how the participatory process builds efficacy for stewardship. For urban minority teens,

participatory design projects located on school grounds provide accessible, safe, low risk learning opportunities for students to practice stewardship skills. While collective action may be the goal of such a project, attention should be paid to skill-building activities that support development of self-efficacy needed for students to feel like they can play an important role in a group. Projects that only engage students in the design portion of the project (visioning, model making) may not give teens the necessary skills to feel efficacious outside of the classroom. For participatory design projects, , teaching the physical skills needed for landscape restoration – like construction, may provide teens with the confidence and skills needed to engage in restoration activities off school grounds. Likewise community service projects on school grounds or in their community can help young people build confidence in their ability to work as a team while expanding their network of supportive adult relationships. For female students, these skill-building opportunities, sited at a safe space like school grounds, may be particularly influential in supporting their development as landscape stewards nurturing urban green spaces.

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## **CHAPTER IV**

### **Minority teens' reflections on urban green space: Places to play, socialize and build self-esteem**

***Abstract:***

The early phases of a participatory landscape design process provide one entry point for designers to understand participants' collective efficacy for landscape stewardship and to support its evolution. As designers ask what kinds of green spaces participants find important and why they do so, designers may discover the skills and resources a community has available to make and sustain local landscape improvements. This study focuses on the early stages of a school-sited participatory design project in a low-income postindustrial city as a way to understand a group of teens' efficacy for landscape change and stewardship. Photographs representative of the local landscapes provided a context for short interviews which explored teens (n=52) connection to urban green space as well as what skills and networks already existed from which the students might draw assistance in future stewardship efforts. Findings indicated that teens' most preferred open spaces, with clear site lines that supported active play. They also preferred places of beauty that supported passive recreational activities. Teens valued these well-manicured green spaces for their ability to support gatherings with peers and family during which they could build important social relationships. Discussions of least-liked spaces provided nuanced insights into these teens' fears and concerns of people and nature elicited by neglected urban green spaces. Furthermore, findings suggest the importance of local landscape aesthetics to teen's self-image and community pride. Students suggested simple and low-cost interventions for improving these

spaces; likewise they indicated that there was support within their community for these changes. These interviews expand our understanding of how minority teens in low income communities experience urban green space, additionally they reveal how the students' desires and concerns connect to simple, low cost landscape interventions which if applied could quickly improve urban green space access for young people.

## **4-1. Introduction**

*Why did you like that image (of the playground)?*

“[I like] the swings cause even though we teenagers we still like to swing on stuff.”

(Girl, 14 yrs.)

*And how would you improve that space (empty houses on overgrown lot)?*

“Take down the houses and make it into a nature walk where neighbors can chill and hang out.”

(Boy, 14 yrs.)

And so went fifty-two, short photo interviews with students at the 9th Grade Academy in Beecher, MI in which students described a desire to play and find peace of mind in safe, well-manicured outdoor spaces with friends and family. These students were participants in study examining how the participatory design process supports collective efficacy construction for landscape change and stewardship. This study seeks to understand these young teens’ relationship to urban open space, their desire to make improvements to green spaces and how collective efficacy might motivate them to engage in future stewardship activities.

The participatory design process provides one entry point for designers to understand group collective efficacy to support its evolution. Early in the process designers can ask about what people find important and why. They are able to probe to understand what skills and resources a community may have to make and sustain those changes. For this reason, this paper focuses on the early stages of the participatory design process as a way to understand students’ current efficacy for landscape change and stewardship. This included exploring their connection to urban green space as well as what skills and networks already existed from which the students might draw assistance in their stewardship efforts.



***Advocating for youth space through participatory design:***

Participatory design is a part of the current landscape design lexicon. It is a process in which design experts collaborate with users to imagine, conceptualize and create products, systems, building and landscapes (Sanders & Stappers, 2008; Yamauchi, 2012). In landscape design the collaboration of planners and landscape architects with local users can be instrumental to the creation of large public parks or greenways (Crewe, 2001; Hou & Rios, 2003), a city-wide schoolyard program (Lopez, Campbell, & Jennings, 2008) an individual school's playground (Weinstein & Pinciotti, 1988). In the United States, these types of collaborations have their roots in the 1960's civil rights movements promoting participation in public life – politics, education, planning etc. (Francis, 1983; Hester Jr, 1987; Hou & Rios, 2003; Sanoff, 2000). In landscape design and planning these efforts resulted in what landscape architect and planner, Randolph Hester (1999) called “advocacy planning”. Advocacy planning or what Francis (1999) calls “pro-active design” includes collaborative efforts of professionals (planners, designers, lawyers, etc.) and community members to use design to support social justice and a democratic society through public space.

Yet some advocates now critique the process as a placation of public interest in which participation offers community members a voice, even though in the end, environmental justice is not realized through the design process (Hester Jr, 1987; Hou & Rios, 2003). Others warn that designers and planners may use participatory design to their own advancement, utilizing processes that offer minimal participation rather than truly empower people to change their communities (Juarez & Brown, 2008).

Within these critiques of participatory design are specific references to the missing voice of youth. These scholars and youth advocates contend that spaces --from school gardens to urban metropolises--that work for youth, work for all people. (Breitbart, 1995; Chawla & UNESCO, 2002; Chekaway, 2006; Francis & Lorenzo, 2002; Hart, 2013; Wilson et al., 2007). Patsy Owens (2002) has argued for specifically addressing teen needs and preferences. Studies of participatory design with youth often focus on working with elementary aged children on the design of playgrounds or school gardens (Lekies, 2006; Roe, 2006; Rottle & Johnson, 2007; Shaw, 1987); to the exclusion of the interests and desires of urban minority teens, particularly those living in areas stressed by social, racial and environmental inequity.

Collaborative efforts to improve, care for and sustain local green spaces may be described in terms of collective efficacy for landscape change and stewardship. Not explicitly discussed in participatory design literature, collective efficacy is implicit in collaborative efforts that require sharing knowledge, skill development and collaborative work for a common goal. Collective efficacy can be described as an emergent group level construct reflecting the trust and confidence a group has a collaborative effort for the common good (Bandura, 2000; Goddard, Hoy, & Hoy, 2004; Robert J. Sampson, Raudenbush, & Earls, 1997). While a group level process, it is perceived by individuals as their assessment of the groups' ability to work as a team as well as their perception of their own ability and important role in the group (Bandura, 2000). Collective efficacy for environmental stewardship is one way to describe the collective action communities take to address environmental inequities and crises. This may include addressing a lack of green space through neighborhood organizing (M. Ohmer & Beck, 2006); organizing to stop the placement of toxic factories or harmful road placement (D. E. Taylor, 2014) creating social norms for safe streets for children (Robert J Sampson, Morenoff, & Earls, 1999) resilience in the

face of ecological disasters (Benight, 2004; Tidball, Krasny, Svendsen, Campbell, & Helphand, 2010). These studies address the collective efficacy of adult community members; little attention has been paid to urban minority young people's collective efficacy in relationship to their urban environment. These young people will soon be the environmental decision makers at local, state and national levels. Understanding more about their relationship to urban nature – what they care about, how they might engage in its care - can help designers, educators and youth advocates support their current and future engagement in environmental issues affecting their communities and the world.

With this in mind, collective efficacy for landscape change and stewardship may be an important concept for designers and planners to understand for two reasons. The first occurs at the front end of the participatory design process. Early exploring, listening and visioning processes can be exciting and hopeful to participants; but the implementation of long term plans and designs take significant organizing, time, human and financial resources. As a measure of confidence, Bandura (1977) contends that the strength of one's perceived efficacy may be a key component of how long and with what effort a group will attend to a difficult task. The second has to do with social and environmental context. In the case of communities stressed by environmental inequities and minimal financial resources, the collective efficacy of a community may be key to the perseverance needed to make plans come to fruition.

For instance, Teig et al. (2009) describe the emergence of collective efficacy for general social issues after a group of adults collaborated in caring for a local community garden. And Tidball et al. (2010) argue that following a disaster caused by natural or human means, engaging in stewardship activities, like tree planting, can help with the healing process and may also build

collective efficacy for further action. Because collective efficacy construction evolves from participation in stewardship activities, designers may be able to play an important role in supporting that evolution through the participatory design process. This may be particularly important when working with young people in ecologically and economically stressed communities even though in such communities there may be few municipal resources available to build and maintain green spaces for youth – parks, playgrounds etc. Before understanding efficacy, however, one’s connection and preference for spaces to care for must be understood. Drawing on theoretical frameworks and professional practices utilized in fields of landscape architecture and environmental justice study used a grounded theory approach<sup>1</sup> understand three research concerns: What kinds of urban green spaces are valued by these young teens and what are the elements that most limit their utilization of these spaces? What is their sense of efficacy for improving these spaces? And what can designers learn from their reflections in order to improve our role facilitating participatory processes?

These interviews provide insights into these students’ experience of urban green space, by revealing how the students’ desires and concerns connect to simple landscape interventions which if applied could quickly improve urban green space access for young people. Finally, it offers some simple suggestions to help designers, educators and youth advocates support the efficacy of young people in low income communities, with few green amenities, to become stewards of local landscapes.

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<sup>1</sup> Grounded theory focuses on “inductive strategies of theory development in contrast to theory generated by logical deduction from a priori assumptions” (Patton, 2002). As discussed in the methods section, it is not possible to approach one’s data without prior knowledge that may guide what a research sees in the data. It does however require a close reading of data for themes that emerge from the data, rather than looking for predetermined themes (Charmaz & Smith, 2003). With minimal literature describing collective efficacy as outcome of participatory design, this method allowed for an open exploration of themes found in student’s responses to interview questions.

## **4-2. Methods**

### **4-2-1. Study location and Participants**

This study and the related participatory design project took place at the 9<sup>th</sup> Grade Academy, locally known as 9GA, in the Beecher School District, Beecher, Michigan. Beecher is an unincorporated school and water district covering approximately 6 square miles in Genesee County. Located just north of Flint, MI, Beecher is home to a population of 10,232 residents of African American 69% and Caucasian 25% decent. The final 6% of residents identify as Latino, American Indian/Native or mixed heritage (US Census Bureau, 2013a). The median household income at the time of this study was \$25,568; 42% of residents were single parent households and 42.2% of the population were living below the poverty line (US Census Bureau, 2013b) (Table 3.1). Approximately 35% of the residents over the age of 25 had earned a high school diploma and 4.7% had attained a bachelor's degree (US Census Bureau, 2013c).

Beecher School District includes two elementary schools, one middle-high school and the 9<sup>th</sup> Grade Academy. Currently the Beecher School District is listed as one of the State of Michigan's Priority School Districts meaning that it has a graduation rate of less than 60% and ranks in the bottom 5% of schools on Michigan's Top to Bottom list ("Priority Schools," 2013). When designated as a Priority School, the school's administration must provide an improvement plan to be implemented over the next 3-5 years.

Table 4-1 Beecher School District U.S. Census demographic data

<b>Income and Benefits</b>	<b>Est.</b>	<b>Percent</b>	<b>Total households</b>	<b>Est.</b>	<b>Percent</b>
Total Households	3,603		Family households (families)	3,603	68.7%
Less than \$10,000	694	19.3%	With own children under 18 yrs	1,068	29.6%
\$10,000 to \$14,999	357	9.9%	Married-couple family	963	26.7%
\$15,000 to \$24,999	733	20.3%	With own children under 18 yrs	411	11.4%
\$25,000 to \$34,999	585	16.2%	Male householder, no wife present, family	176	4.9%
\$35,000 to \$49,999	553	15.3%	With own children under 18 yrs	48	1.3%
\$50,000 to \$74,999	386	10.7%	Female householder, no husband present, family	1,336	37.1%
\$75,000 to \$99,999	203	5.6%	With own children under 18 yrs	609	16.9%
\$100,000 to \$149,999	47	1.3%	Nonfamily households	1,128	31.3%
\$150,000 to \$199,999	23	0.6%	Householder living alone	1,006	27.9%
\$200,000 or more	22	0.6%	65 years and over	272	7.5%
Median household income	\$ 25,568	(X)	<b>Educational Attainment</b>		
Mean household income	\$ 38,175	(X)	Population 25 years and over	6,053	
With cash public assistance	541	15%	Less than 9th grade	190	3.1%
With Food Stamp/Supplimental Nutritional Assisatance Program in past 12 months	1,704	47.3%	9th to 12th grade, no diploma	1,084	17.9%
<b>School Enrollment</b>			High school graduate (includes equivalency)	2,087	34.5%
Population 3 years and over enrolled in school	3,511		Some college, no degree	1,796	29.7%
Nursery school, preschool	210	6.0%	Associate's degree	531	8.8%
Kindergarten	164	4.7%	Bachelor's degree	287	4.7%
Elementary school (grades 1-8)	1,373	39.1%	Graduate or professional degree	78	1.3%
High school (grades 9-12)	858	24.4%			
College or graduate school	906	25.8%			

Part of the Beecher District's plan was the creation of 9GA, in which all 9<sup>th</sup> grade students were moved out of Beecher Middle-High School (grades 7-12) into another location. With approximately 120 students enrolled, 9GA takes up one floor in "the old" High School building, once home to a high school population of over 1,000 and now the site of the Beecher Superintendency. The new physical environment was meant to provide a more intimate setting for learning. Combining special programs for academic and career development, the Academy provides personal and academic support for students during a crucial year for high school tenure. On the 9<sup>th</sup> Grade Academy's floor, there is a common area to which all classrooms and the Supervisor's office may open for shared educational experiences. The hallways covered in motivational posters, community service sites and volunteer hours completed, test scores, attendance rates don't hide the wear and tear of years. The bathrooms have leaking ceilings and broken toilets; classrooms contain a mix of tables and chairs, their undersides covered in gum. On one side of the old school building is a new set of bleachers for the high school football field and behind the school sits a new field house in which sports teams, grades 7-12 play. The field house is a great source of pride, as are alumni who've gone onto play professional sports.

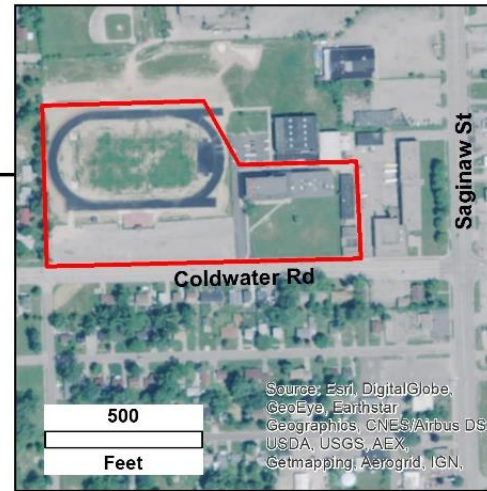
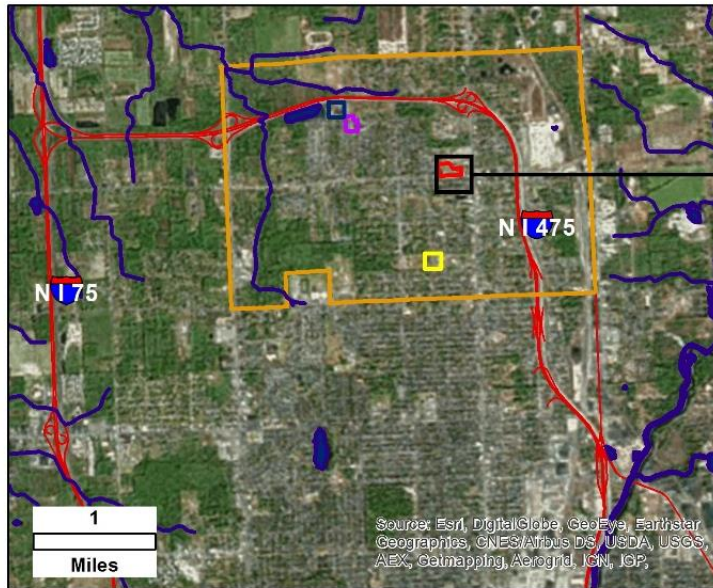
Beecher is flanked on three sides by the more rural, slightly more affluent community of Mt. Morris Township; a small corner of Beecher touches Genesee Township on the east (Figure 4-1)<sup>1</sup>. On its southern border, directly across from the 9GA school building is the city of Flint with which Beecher shares a more common demographic and social history (Highsmith, 2012).

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<sup>1</sup> The population of Mt. Morris Township is 21,501 (50% White, 41% Black or African American, 6% American Indian, 3% Asian); 86% of the housing units are occupied and 72% of the occupied housing units are owner owned; median household income is \$34,697; 24% below the poverty line. Genesee Township has a population of 21,581, (87% white, 8% Black or African American, 5% Other); 83% of the housing units are occupied and 78% of the occupied housing units are owner owned. The median income is \$39,429, 19.2% below poverty line.

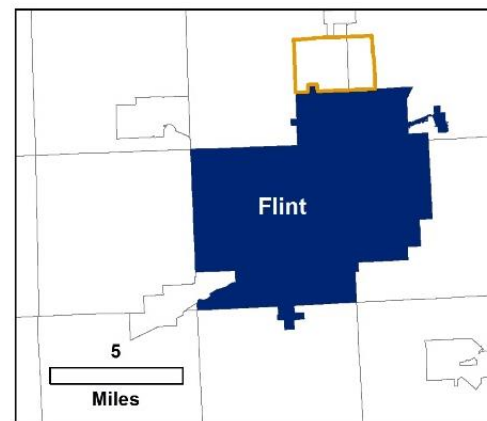
Highsmith (2012, 2014) has described Beecher as a rural suburb. He has described Beecher's history of economic prosperity and decline are closely tied to Flint's auto industry, racially restrictive housing exploitation through the process of red-lining and more recently through the pressures from the sub-prime mortgage crisis.





- Beecher 9th Grade Academy
- Beecher Middle High
- Dailey Elementary School
- Milton E. Tucker Middle School
- Beecher (CDP), Mi Area 5.9 sq. miles

**Source:**  
*Satellite imagery:*  
 Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community  
*Roads, rivers, administrative boundaries:*  
 Michigan GIS Open Data Portal



**Projection:** Hotine Oblique Mercator  
 Azimuth Natural Origin  
**Datum:**  
 NAD 1983

Fig. 4-1 Study location1

The landscape students might encounter on their walk to school reflect the border on which this community sits. Abandoned storefronts, dollar stores, medical supply sites and fast food restaurants line Coldwater and Summit streets at Beecher's south and east boarder (Figure 1c). Housing stock, much of which dates back to the 1970's, funded by HUD and built with poor quality (Highsmith, 2012) varies widely block and by block. Vacancy rates in Beecher are similar to Flint's (19.7% and 21.1% respectively) as opposed to Mt. Morris (13%) (US Census Bureau, 2013c). While the urban landscape of Flint sits to its south, to the north and east the surrounding landscape quickly opens to wide expanses of agricultural land, bisected by Interstate 475.

The 9<sup>th</sup> Grade Academy is within walking distance of the middle-high school and Tucker Elementary; students move back and forth between both schools for tutoring, to see friends, and to pick up siblings. Several students in the study described cutting through the back of the school grounds through the neighborhood to the other schools. A series of photographs from the walk between these two schools provide a snapshot of the manicured and abandoned homes students may see (Figures 1a-b).

#### **4-2-2. Participant Selection**

All students in the school, 120 enrolled, were invited to participate in the study. Over 70 students agreed to be interviewed; 52 (43%) interviews were eligible for use in the study. Eligibility required parental and student consent on an Institutional Review Board approved release form. Consent forms were collected over two months via printed release forms and verbal permission given over the phone. There was no academic penalty for not participating. As an

incentive to return the forms, any student returning a consent form was offered two hours of community service credits; 40 are required by the school.

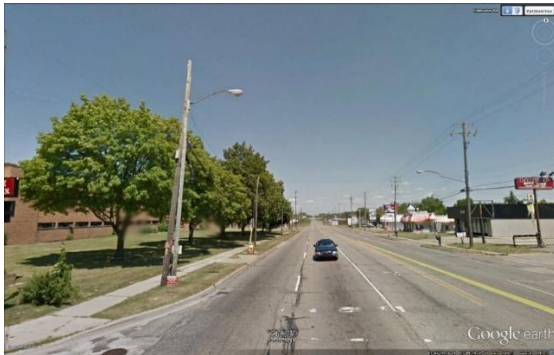




a) Home seen as students leave back of school property



b) Home at back entry of school property



c) Liquor and fast food stores adjacent to school



d) Fenced and maintained empty lot in neighborhood.



e) Common housing stock in neighborhood



f) Street view on a walk from the 9th grade Academy



g) Vacant home near middle-high school property



h) Fenced playground at near by elementary school

Fig. 4-2 Images of landscape between 9th Grade Academy and the Beecher Middle-High School

At the start of the study, I visited all the science classes, a required course, and explained who I was, and what I was studying. This included a brief description of what the job of landscape architecture entailed and my work as graduate student, and why I was involved in this study. This introduction was requested by the school, to support their academic and career development activities. During the interview period, the science classroom teacher chose which students to send at any one time. In an effort to interview a diverse set of students, it was requested that he send in a variety of students in the classroom – not just those with strong academic skills or good behavior.

Social power relationships between an interviewer and interviewee can interfere with an interviewees comfort in answering interview questions (Chavez, Duran, Baker, Avila, & Wallerstein, 2003). This was of importance to me as an adult white woman working with teens of color. In pre-testing the interview questions I found that interviewing two to three students together provided an increased sense of safety to the teens, allowing them to answer questions more fully. Certainly this did not mitigate all social interaction that might have influenced student's answers, like teasing from peers, the small group interview structure seemed to create a relaxed rapport between myself and the students. The School's Supervisor and Science teacher supported this method noting that students often worked on academic projects in small groups and that this interview structure would reflect their classroom project organization. Therefore, students were interviewed in groups of 2-3 with a few exceptions when classroom logistics prohibited this structure. Interviews were taken on seven days over the course of three weeks. Students were sent from class to meet with me in the school cafeteria or when lunch was in session in the school commons were studying and tutoring occurred throughout the day.

### **4-2-3. Image Selection**

During the interview, students were shown a series of nine images of landscapes they might encounter in their community (Appendix 1) and then asked five structured interview questions. Images similar to, but not of, the community were used as way to mitigate feelings of specific place attachment. The choice of the nine images was informed by three pre-study conversations with students and teachers, driving tours through the neighborhood and environmental justice literature on the use of urban green space by people of color (Table 3.2). Six students were chosen by the principal to talk with the researcher about the study, as part of a career development project and to answer some brief questions about their time spent outdoors. Using a 24 x 36" map students pointed out how they walked or drove to school, where they hung out and how they spent time outdoors. They noted how the closest park, not located in Beecher, was overgrown and how they like to hang out at a playground on a nearby elementary school where many siblings attended school. Several mentioned that though they lived in walking distance to school, their parents did not think it was safe for them to walk so they were driven. Following these conversations, three driving tours of the community provided additional context to what the students' had described. Through these driving tours, several spaces, not mentioned by the students were identified; these included churches with manicured lawn spaces and a large school garden at the Middle-High school. Combining student experience with environmental justice discourse helped frame the image choices. Environmental justice discourse and critical environmental education discourse highlight the need for a more nuanced discussion of communities of color and a relationship to nature (Brahinsky, Sasser, & Minkoff-Zern, 2014; Lewis, 1995; Warren, Roberts, Breunig, & Alvarez, 2014). They note differing ways that communities of color may use, describe or connect with green space. For instance African American and Latino families tend to use urban parks in Chicago as groups, rather than for

individualized recreational activities (Paul H. Gobster, 2002; DE Taylor, 1991). To this end photographs used in this study included images or evidence of human use.

Taking into consideration conversations with students and current environmental justice discourse, pictures were also chosen to represent landscapes found in public, private and institutional spaces. The public spaces included public parks with basketball courts, playgrounds and picnic areas. The private spaces included gardens and lots between houses; the institutional category included images of a church and school landscape. Three criteria were used to select the images: recreation, stewardship and human intervention. Images for the recreation category included the potential for active or passive recreation; some places suggested contemplative activities like gardening, others referenced active recreation like basketball courts. Given the urban context, all images chosen had evidence of human activity; sometimes there were images of people in the photographs, but more often there was evidence of human intervention via built structure like a home or organized green spaces like a garden. Some images clearly elicited a sense of care and stewardship in the trimmed lawns, or garden beds, others were in obvious disrepair, like empty homes.

Table 4-2 Images for photo interviews and criteria for inclusion in study

Images	Criteria for Image Inclusion								
	Active recreation	Passive recreation	People present in image	Evidence of, but no people present	Active current stewardship	Minimal current stewardship	Institutional	Private	Public
Abandoned homes				X		X		X	
Basketball court	X			X	X		X		X
Park with tall grass	X			X		X	X		X
Church Yard		X		X	X		X	X	
City Park / Family picnic	X	X	X		X		X		X
Flower garden		X		X	X			X	
Empty lot with basketball rim	X			X		X		X	
Playground with swings	X		X		X		X		X
School vegetable garden		X		X	X		X		X



#### 4-2-4. Interviews

All interviews (n = 52) were conducted during the school day. Semi-structured questions were developed for the interviews (Appendix 2). Given that students would be missing instructional time, it was imperative that the length of the interview was not longer than 10 minutes. In this context, semi-structured interview questions proved an efficient tool for data collection and analysis (Corbin & Strauss, 2014). Whenever possible, interviews were conducted with two students at one time, although interviews were also conducted with three and up to five students. Interviews were conducted in the cafeteria, hallway floor and common area.

To start the interview, introductions were made and a brief description of the study and the parallel participatory design project were given. With the permission of each student, each interview was recorded; no student declined being recorded. The nine images were then scattered on the table. After looking at the images students were asked to choose the three pictures in which they would most like to hang out. They were then prompted to explain why they chose those images. Next, they were asked to choose the three images they would be least likely to hang out and again to explain their choices. After talking about the places they would least like to be, students were asked to look at those images and describe how they would improve them for teenagers use. Finally, students were asked if they could make these changes themselves and who they might ask to help them make their described changes. At the close of the interview students were thanked and asked if they had any questions<sup>1</sup>.

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<sup>1</sup> Few students had questions. Those that did asked about whether the project “would really happen” or why I picked their school to work with. These conversations were not part of the official data collection but an important part of the community based participatory research process in which a researcher can give back to the community they are working in. The school supervisor had asked that I share information about the project and study with students as a part of the school’s career development efforts.

### **4-3. Data analysis**

A sample set of fifteen of the recorded interviews were transcribed by myself; the remaining 37 interviews were transcribed by a research assistant student at the School of Natural Resources and Environment. Transcribed interviews were entered into an excel sheet for coding. Random interviews were checked for accuracy, and I reviewed any interviews which the research assistant could not understand the speaker or identify which student was speaking. Grounded theory, a method that uses people's experiences as the basis to explore concepts and build new theory was used to analyze student responses (Charmaz & Smith, 2003; Corbin & Strauss, 2014; Miles & Huberman, 1994). This approach supposes that a researcher approaches the data without a preconceived idea of what they will find and that they will let the data guide the theory, but as Charmaz and Smith (2003) point out, rarely does a researcher approach their data without a priori knowledge, constructs and questions. In this study, the data set was examined the purpose of understanding how efficacy for landscape stewardship and change. Content analysis was used to organize and examine responses to individual questions. The codes that emerged reflected students' responses to particular landscapes in terms how they might use (recreation), care for (steward) and feel (comfort) in those spaces. Thematic labels that described the main topic of students' comments were then applied to the data. Successive readings, discussions with fellow researchers, and reference to the literature helped refine thematic labels. In order to provide interrater reliability, a subset of 25 answers were coded by other researchers; discrepancies were reviewed and coding was refined in light of their coding. Answers were then reexamined looking for related subthemes.

Thematic labels evolved from students' responses to three main questions. The first two asking them to choose places they would like, or not like to be and why, the third what they

would do to the space to improve it. The thematic labels were: aesthetics, nature, stewardship, recreation, comfort and community (See definitions below). Each category included the possibility of a negative or positive comment related to that theme. Finally axial coding compared student responses across the questions and the varied thematic labels were examined for additional themes.

#### **4-3-1. Thematic Labels and Descriptions**

***Aesthetics:*** Student's comments describing how the physical spaces appeared to them. Descriptions included reflecting on beauty, a sense of place and peacefulness. Alternatively, other comments described spaces as unattractive, ugly and nasty. Statements were often made in relation to how a space was taken care of or stewarded, their sense of ease or comfort in a space and how the space reflected upon their community.

**Positive:** *Right here, because it's clean, got a variety of color, it looks pretty.*

**Negative:** *This one is wretched; It looks like the houses just look tore up.*

***Nature:*** Any reference to a natural feature, plant, animal or weather. Often overlapping with themes of aesthetics (pretty flowers), stewardship (grass needs to be cut) and comfort (bugs/animals are scary). Sometimes it was discussed as a setting in which to be with one's community (being in nature with family.)

**Positive:** *I'd be there, because the grass is green.*

**Negative:** *Grass too tall, probably poison ivy in there and animals popping out.*

***Stewardship:*** Comments highlighting the care, or lack thereof, for a particular place. Stewardship was often discussed in terms of how a site might be accessed or utilized for

recreation. Stewardship often overlapped with the theme of aesthetics, it is differentiated by the specific references to action for care, describing what the students or others could do to a space to improve it.

**Positive:** *This picture, if you moved the rim, you could dig everything in the ground, instead of paving it, and make it a garden. If you moved the rim, you could make this house back up, remodel it, and you could put the rim where that is.*

**Negative:** *This one is just ugly.*

**Comfort:** These comments reflected either emotional or physical (dis)comfort. The physical space itself was described as being supportive of peace or eliciting fear. These spaces might be places where students could “just be” or were described as “dangerous” and “creepy”. How students imagined people would act in these spaces was a second component of their comfort level in any particular space.

**Positive:** *It looks so beautiful, surrounded by grass that's nice and cut. It looks like a peaceful area.*

**Negative:** *This look like a lot of dangerous stuff at those one of those basketball places.*

**Recreation:** Comments in this category include active recreation like traditional sports (basketball, football), or playing on playground equipment (swings) as well as more passive recreation exploring or walking in nature. Many students described their own participation in a stated activity; others described the social activity of watching others. As such their comments often overlapped with community and who they could interact with at the site. Stewardship and

comfort also played a role in this code reflecting student comments about accessibility and comfort level.

**Positive:** *Everybody plays basketball. If you don't play, you still like to watch it.*

**Negative:** *This is a basketball court in the grass, you ain't got no place to bounce the ball around.*

**Community:** This label was used to code comments in which students described how the spaces were supportive of human relationships, describing them as a stage for human activity and behavior. Community codes differed from recreation in their focus on social interactions rather than on an activity. Tied to comments about aesthetics, students also discussed how the spaces reflected what others might think of them, or their community.

**Positive:** *It's well cultivated, and kept up. You can expect good things coming from it.*

**Negative:** *I don't like to be around a lot of people. People always fighting and stuff so I don't like to go around people and stuff.*

Answers to the questions regarding which places students would choose to be, or not be in, and the codes applied to those images are reported in Tables 3.3 and 3.4. The codes are reported as a percentage of total comments about the images. Students' answers were also examined for gender differences. Strong differences were not found in questions regarding students' preferences for different spaces. Some difference was seen in responses to questions regarding student's efficacy for making changes to the spaces and those are reported in Table 3.6.

#### **4-4. Findings / Discussion**

To help orient the reader, findings are organized by the three focus areas of the interviews: where students liked to hang out and why; where they did not want to hang out and why; their suggested changes and question regarding their efficacy to make these changes. Each section is opened with a short overview of the findings and then detailed by landscapes chosen and students' rationale for choosing these spaces. Following each section is a discussion of the findings related to the key question. Implications for designers stemming from these discussions sections are reflected on at the end of the paper.

##### **4-4-1. Where students like to hang out: *Places for play, friendship and peace***

Roughly 62% of the students chose images of the city park (20%), basketball court (21%) and playground (21%) as the places they would most like to hangout (Table 3.3). There were 151 comments related to images most liked, with in these 268 thematic codes were applied to these answers. In describing these places the ability to play, rest and enjoy the company of friends and family with friends were integral to their choices. When looking at the images they often reference specific activities like basketball or swinging, but the subtext of their comments reflected general desire to be playful, explore and have fun with others. Of note is that two of these images, the city park and the playground included images of people. The third image, of the basketball court did not include a person in the space but the court itself invoked the sense of play with others. Recreation *with* one's community held a primary place in their comments, references to nature emerged if the space was supportive of play and social interaction. Nature was described as a backdrop or platform for other activities. With more active recreational activities, like basketball, students noted whether the care of the space offered access for them to utilized the space.

The next set of spaces that most interested the students, encompassing 37% of their total answers, included church yard (15%), flower garden (14%), and school vegetable garden (8%) in which they described engaging in more passive recreational opportunities, like walking or gardening. In these descriptions the importance of aesthetics as part of the outdoor experience became more apparent. The students' reflections on these smaller, perhaps more intimate spaces reflect the importance of having a variety of green spaces to support teen's needs. The larger open spaces elicited an interest in active play with peers. These smaller places provided another avenue for interaction with people and nature. Students comfort level in these spaces was reflective of nature (beauty, care) as well as the social setting (school, church) in which the green space was located. It should be noted that in discussions about both active and passive recreational activities students described how safety and comfort were supported by natural spaces that were well manicured. Comments about the aesthetics and stewardship of a place also elicited thoughtful reflection regarding how such spaces reflected on their community.

Table 4-3 Places in which students (n=57) would most like to hang out and thematic label for their choice

Image Chosen	Thematic category						
		Aesthetics	Nature	Stewardship	Comfort	Recreation	Community
	% total chosen (n=151)	% total coded answers (n=268)					
<b>City Park / Family Picnic</b>	20%	9%	4%	0%	14%	22%	51%
<b>Basketball Court</b>	21%	1%	0%	2%	7%	68%	22%
<b>Playground with Swings</b>	21%	9%	17%	0%	10%	52%	12%
<b>Church Yard</b>	15%	44%	10%	2%	36%	2%	6%
<b>Wildflower Garden</b>	14%	19%	35%	2%	19%	19%	6%
<b>School Vegetable Garden</b>	8%	33%	28%	0%	11%	6%	22%
<b>Abandoned Homes</b>	1%	33%	0%	33%	0%	0%	34%
<b>Park with Tall Grass</b>	0%	0%	0%	0%	0%	0%	0%
<b>Empty Lot with Basketball Rim</b>	0%	0%	0%	0%	0%	0%	0%
<b>Total</b>	100%						



### *City parks, basketball courts and playgrounds:*

When speaking of the city park, rather than commenting on the space itself, students generally recalled family events, like picnics, parties and family gatherings. (Fifty-one percent of their answers related to the city park were coded as Community to reference themes of family, friends and community.) For instance, “I like this one, I’m a people person. I love people, and I see a lot of people. It looks like a family affair. I love my family.” And, “This feels like a safe place to go with your family and chill out.” When students commented on the physical space, “shaded” and “big enough” to afford them a place to “hang out” and “have fun” it was in context of how it provided a comfortable space to be with others.

Not surprisingly, 68% of their comments about the basketball court were coded as recreation with 92% of these comments discussing the referring to playing the game itself. However, in addition to mentioning this specific type of play, students’ comments were heavily infused with references to the social interaction (22%) it provided. For instance several boys specifically commented that “*we* [emphasis added] like to hoop”. It was also a place they wanted to be even if they themselves were not participating in the game. As one male student noted, “...even if you aren’t playing that’s where all your friends play basketball”. A female student commented, “It’s where all the boys are at.” It should be noted that of the 13 girls who chose this as their top site, nine said that they themselves like to play. The other four liked to be in the space to watch or be with friends, “I don’t really play basketball, and it’s just a place I like to go.”

Students’ rationale for choosing the playground image was clear; 52% of the coded answers indicated that the space provided them a place to play. In the case of this image, their

enjoyment of swinging or using the swings to jump and flip off of was paramount. Yet, like the basketball court, infused in their enthusiasm for play, was an express interest to be in the space with their peers and siblings. Unlike the basketball court this playground elicited specific reference to the natural features of the park (17%), “It is well populated with trees. The sun is shining, kids playing on swings, and having a good time.” In this image (playground), it seems that nature, the trees and the sun, were an integral part of the urban landscape’s setting for fun.

When discussing this most preferred set of spaces, students did not focus on the natural aspects of the space, but the concept that the landscape as a backdrop or setting that supported social interaction and emotional well-being was woven throughout their comments. For instance, the image of the picnic in the city park provided space for play, “It’s like a lot of room, if I have friend and stuff, we’d be out there playing.” And, “This feels like a safe place to go with your family and chill out.”

***The churchyard, flower garden and school vegetable garden:***

The second set of images most chosen by the students included the church yard (15%), flower garden (14%), and school vegetable garden (8%). Again, themes of being with people in a safe place were most common in students reasoning for choosing these spaces, but in this set of choices comments about nature and beauty also played a role in students’ sense of emotional and physical comfort. For instance, one student commented that the image of the churchyard was, “so beautiful, surrounded by grass that’s nice and cut.

Comments about the wildflower garden included many specific references to nature which was described by aesthetic appeal - colorful, pretty (19%), its accessibility for quiet

recreation -walk, sit, play (19%) and whether it afford them a sense of comfort - peaceful, clarity of mind (19%). Garden beauty was connected to peacefulness, “I like nature, flowers. It has a good vibe to it.” Different than all of the other images chosen, the garden was seen as a place for personal reflection, “This looks like a nice place you can hang out and clear your mind.” Yet again, it was a place where one could connect with family, “I like playing in the garden because it was my grandma’s favorite thing to do.”

Like the churchyard and wildflower garden, the school garden was a place where nature was well tended, accessible and provided respite , “It feels like roses and stuff and benches. And you can sit down and be calm.” In the case of the school vegetable garden some students were struck less by the garden itself than its connection to the school building and what it represented for the students. For instance, when looking at the school vegetable garden one student commented, “It’s a school. I need my education.” A similar connection was made regarding the churchyard lawn about which one student said, “it inspires good things.”

Finally, as in the first set of images, students described how well cared for places raised expectations for behavior for oneself, or one’s greater community. For instance when talking about the playground image one student said, “a park...It looks like not a lot of trash, look like a better environment for me to hang around.” And another student reflected on the picnic area, “It looks like a good community, since there's a whole bunch of people.” For these students, these green spaces were more than a background for activity; the quality of the space reflected a sense of themselves and of their community. For example, one student noted, “Its well cultivate, and kept up. You can expect good things to come from it.”

***Most preferred landscapes: Places for play, socializing, and self-esteem:***

Throughout the interviews, these teens' preferred places were themes of play and community. For these young people an interest in basketball was ubiquitous; but designers and youth advocates should be cautioned about using a court as quick fix for young teens' needs. These youth also expressed interested in play equipment that some might consider inappropriately young to their age group. They wanted swings. Finding a place to play at this age may be somewhat complicated by issues of mobility, safety, access and what is considered to be age appropriate behavior. Young teens in rural and urban communities around the world have expressed frustration at a lack of public space in which they are welcome (Bell, Thompson, & Travlou, 2003; Percy-Smith, 2001). Playgrounds are often designed with younger children and their care givers in mind. Youth in their early teens may not be welcome in these space, but have little access to more adult spaces. It seems teens may need some intermediary spaces practice adult social relationships (Owens, 2002), but they still need a place to just be kids.

Whether for playing a sport, swinging, picnicking with family, or just hanging out near these activities students expressed desires and preferences for spaces that allowed for recreational activities with other people. These preferences are reflective of others studies in which teens have indicated a preference for landscape types that support socializing with friends (Clark & Uzzell, 2002; Gearin & Kahle, 2006; Owens, 1988). These types of reflections in which the students expressed an interest in being with other people are also in keeping with studies examining differences in the use of urban public parks by minorities and white user groups. Separate studies, set in the Chicago area, describe how African Americans are interested in being outside as a way to meet and socialize with others (Dwyer, Hutchinson, & Vining, 1990; Paul H. Gobster, 2002). In spaces like a playground, park or basketball court, where play and

socializing were their priority, the landscape and its natural elements became considered a backdrop or a supporting structure for human interaction. In these situations natural elements (trees, grass) and weather (sun) were an integral part of the urban landscape's setting for fun but not what students' main focus when looking at the image. This use of nature as a setting for other activities was also indicated by minority park users describing their use of national parks (Winter & Taylor, 1995). Students did reference spatial features including the desire for large open spaces for play. Like these teens minority visitors to national and urban parks have also indicated some preference for large open spaces, where tree cover provided shade but did not block views (Dwyer et al., 1990; Paul H. Gobster, 2002; R. Kaplan & Talbot, 1988; Winter & Taylor, 1995). Finally, in urban settings wide spaces with mown lawns and large tree cover have been shown to be spaces supportive of intergenerational interaction (Frances E Kuo, Bacaicoa, & Sullivan, 1998). Interestingly many of the young teens in this study specifically mentioned wanting to spend time with their families in outdoor spaces.

These teen's desire to be outside and socialize with peers is also in keeping with previous findings suggesting that at this age teens may need outdoor public spaces as safe places to practice adult roles as much as they need these space for access to nature (R. Kaplan & Kaplan, 2002; Owens, 2002). Yet caution should be used not to interpret these teens' focus on social interaction as a lack of interest in nature. In this study it is possible that the nature of the photographic images on which the conversations were based influenced these responses. As a reminder, all of the images had evidence of human intervention, but the use of images without evidence of human presence would not have been representative of the outdoor spaces these students come into contact with in their daily experience. Alternatively, it is possible that when the outdoor spaces were well manicured, and contained amenities that welcomed access to the

space, that the natural elements in the green space seemed to be taken for granted. Furthermore in contrast to discussions of play and socializing, student did indicate and were explicit in their interest in the natural features or the amenities of spaces that afforded them passive recreation. This desire for safe outdoor spaces for quiet recreation was also expressed by Los Angeles teens participating in a urban park restoration planning process (Gearin and Kahle, 2006). In this study, student comments suggested that well-manicured, pretty spaces that offered the teens a place to restore and find peace of mind emerged.

In fact, the care of outdoor spaces seems to play a significant role in how teens think of themselves and their community. These teens made explicit connections to their behavior and the quality of green space. They also connected the behavior of others to the care of the space.

Access to nature has been found to support cognitive and emotional development of young children (Frances E. Kuo & Faber Taylor, 2004; A. F. Taylor, Wiley, Kuo, & Sullivan, 1998; Wells, 2000). Access to nature has also been found to lower stress levels and improve functioning in stressful low income environments (Van den Berg, Hartig, & Staats, 2007). In their reflections on places that they liked, teens were explicit in their perception that well maintained spaces brought out the best in them and improved the behavior of those around them. S. Kaplan and Kaplan (2003) argue that particularly in urban environments, access to nature can lower stress and improve behavior patterns. Likewise maintained urban green spaces with low vegetative density and clear sightlines are associated with lower crime levels than overgrown uncared for green spaces (Frances E. Kuo & Faber Taylor, 2004). From students' comments it is apparent in urban contexts safe, well maintained greens spaces are playing similar roles for young teens.

Strife and Downey (2009) argue that we still have much to learn more about how ecologically and economically stressed urban environments impact young people. These students' reflections on the use and preference of open, shaded green spaces that support recreation and socializing suggest that such spaces may support teen's social development. Furthermore spaces in which nature is well maintained and provided opportunity for mental restoration and volunteer engagement also support teen's social and emotional development. Finally, students' interest in socializing should not be taken as a disinterest in natural settings. In fact it seems the quality of the natural settings creates a platform for social interactions and private reflection and restoration all of which support teen's social and emotional development as they begin to age. Furthermore their insights regarding how the quality and care of greenspace can provide comfort and raise expectations for social behavior have implications for policy decisions regarding budget allotments for public green space.

#### **4-4-2. Where students did not want to hang out: *Fears and discomfort of nature and people***

When choosing places they would not like to be, 79% of their choices included the abandoned homes (31%), basketball rim in empty lot (28%) and the overgrown public park (20%) (Table 3.4). There were 153 comments related to images most liked, with in these 349 thematic codes were applied to these answers. Students' initial reaction to these spaces was in terms of an aesthetic experience related to the care and stewardship of the site. Some expressed frustration as they equated a lack of care with a lack of access and the inability to use play equipment. For others, reflections on the aesthetics of a space were woven with feelings of disgust, discomfort and even fear. In this set of images it seemed the source of their fears were largely, though not exclusively, social. Fearful of crimes like attack and kidnapping, they also

shared painful insights regarding how these kinds of spaces made others think of them and their community. Finally, wild looking spaces brought up concerns about encountering wild animals.

The next set of images chosen includes the school vegetable garden, the flower garden, basketball court, city park and church made up 20% of the overall choices, but were never chosen by more than eight students. With these images negative emotional reactions were paramount in students' descriptions, but they varied slightly in focus from the first set of chosen images. For these images students referenced physical discomforts like allergies. Some expressed fears of unkempt, seemingly wild nature. For others spaces for social gatherings elicited worries about social exclusion.

***Abandoned homes, rim in empty lot and the overgrown public park:***

In explaining their choices, students spoke of the state of disrepair of the structural elements in the images like the houses and play equipment. They used strong descriptors as they spoke about these aesthetic appearance of these places. The abandoned houses looked – “nasty,” “unsanitary,” and “ridiculous.” Another noted, “It look like it gonna fall down, it don't look like it's a house to be sitting by.” A few students described the landscape around the houses, with many simple statements about the need to trim trees and cut the grass. As students spoke to the aesthetics of the space they also referenced how the spaces made them feel, “It looks like bad people, serial killers, or wild animals might hang out here.” Again, students used strong words to describe their discomfort in these spaces. Some spoke of personal trepidation, “It looks dangerous too, I mean scary.”



Table 4-4 Places in which students (n=57) would least like to hang out and thematic label for their choice

Image Chosen	Thematic category							
		Aesthetics	Nature	Stewardship	Comfort	Recreation	Community	
	% total chosen (n=153)	% total coded answers (n=349)						
<b>Abandoned Homes</b>	31%	31%	9%	3%	30%	2%	25%	
<b>Empty Lot with Basketball Rim</b>	28%	27%	30%	6%	7%	23%	7%	
<b>Park with Tall Grass</b>	20%	16%	30%	11%	12%	22%	9%	
<b>School Veg. Garden</b>	8%	5%	26%	0%	37%	5%	26%	
<b>Wildflower Garden</b>	5%	16%	44%	0%	40%	0%	0%	
<b>Basketball Court</b>	3%	29%	0%	0%	43%	29%	0%	
<b>City Park / Family Picnic</b>	3%	0%	13%	0%	50%	0%	38%	
<b>Church Yard</b>	1%	33%	0%	0%	33%	0%	33%	
<b>Playground with Swings</b>	1%	0%	0%	0%	0%	0%	0%	
<b>Total</b>	100%							

Themes of aesthetic appearance (31%) were followed closely by comments related to students comfort in these spaces (30%). Students expressed exasperation and perhaps dismay at having to see such spaces on a regular basis, “Who wants to walk by this all the time, it looks nasty.” and “I don’t like looking at abandoned houses like this. I don't want my house to look like that.” Others expressed how these places reflected poorly on themselves and their communities (25%). In one case a student connected the quality of the landscape with the perception that others would have of him for being in that space, “I don't like houses that look like this: Raggity and it looks suspicious. If you go there the police or somebody gonna think I’m doing something suspicious or something.” Another student in an apparent effort to separate herself from such a space emphasized, “I *live* in a *good* neighborhood. [emphasis added] It look like it dirty and in the hood somewhere. It seem dangerous.” In these reflections, students also shared their concerns regarding the future of their community, “I don't like abandoned houses. I think the government should fix them up. I'm tired of them in Flint - Flint might be a ghost town in five years.”

When talking about the basketball rim in the empty lot, comments more directly referenced the appearance of nature – the grass – in the image. Thirty percent of the comments were discussed nature and 27% described the appearance of the mentioned natural features Many comments specifically referenced how the grass looked to them, “This one looks nasty and unsanitary. It’s not even green.” Also common were comments that expressed the students’ frustration at how the lack of care of the space meant that playing there was not an option, “It’s a basketball hoop but there’s grass everywhere, so you can’t play. Similarly, the image of the park with tall grass elicited comments about the appearance of natural elements (16%) and whether or

not the space afforded them a chance to play (22%). “They don't got no swings. No swings, just open grass and it needs to be cut too.”

Tall grasses were a common issue of concern, “This place is scary, it has tall grass.” In particular they noted the lack of clear site lines as an issue of safety, “I do like to be places I can be seen. Over here it look like you be covered up by to many trees and stuff. Can't really be seen.” And again, “It looks like somebody was in there, they could just grab you and take you anywhere.” There were also fears of animals, rodents etc. hiding in the tall grasses.

***The school vegetable garden, flower garden, basketball court, city park and church:***

The next set of least preferred images, the school vegetable garden, the wildflower garden, basketball court, city park and church together totaled 21% of the students choices. For each of these images, feelings of discomfort and safety were paramount. The theme of (dis)comfort occurred consistently when describing these choices: For the school vegetable garden 37% of their comments were related to comfort, in the wildflower garden 40%, the basketball court 43%, city park 50% and church yard 33%. Caution should be used when looking at these numbers, for instance there were only three comments total made about the church, and so one comment makes up 33% of the choices. What bears more examination is the reason issues of comfort were discussed in these images. Unlike the images least preferred, like the abandoned house, or tall grass park, the reasons for discomfort focused on nature itself rather than on evidence of humans in the landscape. For these images some students described fears related to physical discomfort. They were fearful of nature as uncontrolled, “It's not kept together, and it's just like wildflowers. It's not safe at all... Wildflowers aren't safe, because they're wild.” In

addition to emotional discomfort, they expressed fears stemming from possible allergic reactions, “The grass is too high, it's gonna make me itchy... and all the bugs.”

For a few students a third type of discomfort was associated with the images. Different than physical discomfort stemming from nature or than the fear of being a victim of crime, these students looked at the images and reflected on the discomfort of social exclusion. In doing so they described the (dis)comfort of human interactions. They shared concerns about not belonging, not being welcome or being afraid of the human activities in these areas, “This look like a lot of dangerous stuff at those one of those basketball places...I don't like to be around a lot of people. People always fighting and stuff so I don't like to go around people and stuff.” Similar to the images students choose as places they preferred, these comments referenced the social institution or the social activities in or inspired by the space, “I don't know if I should be going to church. I don't like to go to church. It's like school to me, I just sit there.”

***Least preferred landscapes - Sources of physical discomfort, fear and discouragement:***

In this study students' rationale for explaining why they did not like particular places had several parallels to why they liked other places. Consistently students wanted a safe, outdoor space to play and socialize with peers and family. While nature and stewardship of outdoor space were the backdrop rationale for preferred places, in their least liked places the look and care of nature took a more prominent role in students' perception of the space.

Feelings of frustration and discouragement were evident as students reflected on the natural and built elements in these images. Many students suspected that over grown grasses could hide someone or something that could harm them. These concerns are specific to these

students' experiences but preferences for environments that allow one to feel both protected and have a view to the surrounding have their roots in human evolution. Such preferences in both rural and urban landscapes have long been documented by environmental psychologists and landscape planners (Appleton, 1996; R. Kaplan & Kaplan, 1982). Additionally, in this kind of urban context, their fears of crime, attack and kidnapping in these types of outdoor spaces (overgrown parks, vacant homes and empty lots) are not unfounded or unusual. Empty lots and abandoned buildings are locations for criminal activity and their presence in a community can increase residents' fears of crime (Frances E Kuo et al., 1998; Perkins & Taylor, 2002; Spelman, 1993).

Some students in the study expressed fears of other people; others imagined wild animals hiding in the grasses or expressed discomfort due to allergic reactions. Bixler (1994; 1997) has described how urban minority students with little experience in safe green spaces may be uncomfortable with and or even repulsed by nature. It is possible that a lack of experience in nature might have been a contribution to these students' fears. Yet even if students have had developed a certain comfort level in outdoor spaces, their fears, once again are not unfounded. Wildlife including raccoons, possum and hawks have been sighted in urban landscapes across the country (Vogel, 2007). And in other post-industrial Midwestern cities like Detroit and Cleveland, residents have reported seeing wild dog packs wandering through less populated neighborhoods (Binelli, 2012; Mott, 2003). While some fear may be related to limited experiences in which students were able to develop comfort in and with natural settings, some discomfort may be related to allergies and asthma induced by being outside. Empty lots in other post-industrial cities like Detroit have been associated with high levels of ragweed which may contribute to frequent allergies and asthmatic reactions (Katz & Carey, 2014).

Finally, of note was a different expression of discomfort or discern expressed as students reflected on how the aesthetics and the lack of care for these spaces might reflect on them and on their communities. Owens (2002) has described the intersection of disparaging media about teens, design that discourages their presence and the criminalization of teen activities. Youth activities that happen in public spaces have been curtailed by curfews, anti-loitering ordinances which leaves few outdoor spaces that support the needs of young teens (Malone, 2001; Owens, 2002; Percy-Smith, 2001)<sup>1</sup>. Students in this study made similar connections; when looking at empty lots or vacant homes students expressed concern that these spaces cast them or their communities in a disparaging light. Again, these worries, like their fears of crime are not without warrant. Ducre (2006) has described how due to the racialization of space, people may come to be defined by others in relation to their surrounding landscapes be that factories, poor housing stock, abandoned lots or overgrown parks. These associations evolve from a long history in which people of color have been associated with nature in ways that portrays them as wild, uncontrolled, and dangerous (Finney, 2006; Taylor, 2009). It seems that these students have also intuited these misjudgments. When listening to them one feels keenly their sense of exasperation and discouragement as they spoke of how their local landscape might be perceived as a reflection of self and of community.

Manzo (2005) contends it is as important to understand negative feelings related to place as it is to understand positive feelings of attachment. In our efforts to help young people access the urban outdoors, it is important not to disregard any perceived fears. In fact their concerns

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<sup>1</sup> Beecher's border city Flint and Mt. Morris Townships whose police jurisdiction covers Beecher maintain curfews for teens (Flint Township Police Department, 2015; "ORDINANCE 96-172," 1996).

may implications for how designers, educators and youth advocates may facilitate teen's experience in urban nature.

#### **4-4-3. Suggestions for Change: *Can I make a difference here?***

##### ***Places that invite engagement:***

Before recounting student answers to the posed interview questions for landscape improvements, impromptu responses to both preference questions merit a brief description. When answering both questions regarding preferences and dislikes students spontaneously spoke about how to improve the spaces at which they were viewing. Sometimes the improvements were grounded in self-interest; the beloved basketball court had cracks in it and students regularly commented that it should be fixed. But other student's reflections moved beyond personal interest to concern for their community. When looking at the school vegetable garden, one student spoke of the need of her own neighborhood, "We need a garden in our community 'because we don't really have one.'" Similarly when looking at less preferred spaces, students spoke to their own needs and to the needs of their greater community, "Cut some of these trees down, and make it more interesting so people can come to the park." The generosity of these comments provide additional rationale for involving youth in community planning and design.

Another theme found across conversations of preferred and least liked spaces was that of engagement with the landscape. Several students mentioned that they wanted to "help out," "volunteer," or "work in" these outdoor spaces. It was when discussing their most liked spaces that they could place themselves in that space helping out. Clearly the spaces that were dilapidated needed intervention, but students did not talk about making changes to these spaces until specifically asked if they could. For some the location of a green space, like a school garden

afforded them a place and an avenue to be engaged, “if it’s something at school I’d help out.” Perhaps such institutional spaces like a church or school garden, where there is evidence of human intervention and support for action, allow young people to think that they too could engage in that space. Additionally, students may feel a sense of safety and comfort in these places with which they are familiar and from which they may benefit.

For others recollections of human relationships or an attraction to working in pretty place may have played a part in student’s interest in volunteering. Human interactions may play a part in people’s sense of place or place attachment (Kudryavtsev, Stedman, & Krasny, 2011; Manzo, 2005). Additionally, a sense of place may play a part in spaces that people care about and for (R. T. Hester, 2006). For these students a fond memory of gardening with one’s grandmother may create preference for similar spaces and invite them to repeat such stewardship activities in that space. Finally one study suggests that an aesthetically pleasing landscape may invite interaction from use to care to preservation (Paul H Gobster, Nassauer, Daniel, & Fry, 2007). Perhaps a well maintained place provides an aesthetic invitation for stewardship.

Alternatively, the less preferred places seemed to deter their self-confidence in doing something themselves. R. Kaplan and Kaplan (1982) argue that people prefer environments of any kind that allow people to make a difference; that humans do not like efforts that seem futile in nature. In contrast to their reflections on the spaces they wanted to be in this set of suggestions of often described what others could do to improve these spaces. Cut the grass was an often repeated remark, “Can’t *they* [emphasis added] cut the grass, ain’t no playground, ain’t no swings, they need to take it down.” And, “*They* [emphasis added] need cows or horses to chew this grass.”



***Simple suggestions for stewardships:***

After looking at the photographs and talking about the places students would least like to be, students were asked to again look at their least favorite sites and make suggestions for how to improve them for teens and other youth. Given students descriptions of why they liked or did not like particular images, it was expected that student answers would focus largely on improving places for active play and recreation. This was not their only suggestion. They offered a variety of suggestions to make the outdoor spaces more accessible and inviting to address human needs like beauty and peace of mind. Additionally, their answers provided a nuanced perspective of other amenities they thought the community needed.

***Pragmatic interventions for safety, access, play and peace of mind:***

The majority (35%) of students' suggestions addressed stewardship of natural elements within the image. Specifically they suggested "just cut the grass" (Table 3.5). Sometimes their reasoning seemed to be for aesthetics, "Cut grass make it a little better." Some wanted accessibility and safety for play, "I'd cut the grass, and actually put some swings on the swing-set, and have some playground stuff." Still others imagined quiet recreational activities, "Take down houses and make it into a nature walk where neighbors can chill and hang out." Sometimes their responses were to simply "fix it up" or "tear it down". Suggestion for building a space up, as opposed to tearing it down were most often in reference to structural elements like constructing new houses, putting up a new basketball net, laying a cement for a court. One student suggested, "I would get them houses knocked down. Get the trees cut and the grass cut and get some new houses built." And in similar vein of thought, "just move the hoop somewhere else like the driveway, buy a new net and cut the grass and rake it out."

Table 4-5 Student suggestions for improving outdoor spaces

<b>Suggested Improvements</b>	<b>Description</b>	<b>Responses n=</b>	<b>(%)</b>
Steward nature	Pertaining specifically to the care of natural attribute (includes trimming, planting, caring for)	97	35%
Build Fix Up	To build or improve a physical structures (houses, basketball courts, playgrounds)	59	21%
Recreation	Specific description of how to improve the space for play	55	20%
Social Comfort	Suggestions for changing the social behavior and activities in the space.	31	11%
Tear Down	The removal of structures or natural attributes in a space.	25	9%
Structural Amenities	Reference to adding structures that allow better access to natural spaces for quiet recreation.	14	5%
Total Responses		281	100%

Students responded strongly to the images of grassy lot, the tall grass park and the basketball court with specific suggestions for repairing the basketball hoops and fixing the swings. Of the answers coded for recreation (55), the basketball rim in the approximately 33%, referred to improving the space for basketball “Cut all the grass add another hoop at the other end. Fill in this space.” Another 22% asked specifically for swings, “...playground you can put more swing on it and more thing like teenagers like to do.” Although the reference to swings may have been influenced by the images of swings foregrounded in the playground image, students were clear that they still wanted access to play equipment. Some students did request “a track” or “a pool” which would require significant financing and construction, most of their suggestions were quite pragmatic.

### ***Places that welcome people:***

Students also spoke of adding specific amenities to the space – such as benches, walking trails, and waterfalls to the sites. These comments centered largely on the tall grass park, the wildflower garden and the school garden. These few comments comprising a small percentage of the answers (5%) their specificity to for adding amenities to be in the green space were different than those suggesting interventions to make natural elements neater and more orderly. In these suggestions students wanted to provide others a chance to be in or with the natural elements in the space. They wanted to add objects (seating) and spaces (trails) that would allow people to interact with nature in a comfortable way, “I’d put up a fence around all of it to make a walkway. I’d take half to give people places to sit, or take notes, or take pictures.”

### ***Places for youth and for their community:***

Proposals to remove structures, or erase what was on the site were minimal. When they did make these suggestions, they were aware of the challenges of making such improvements, “Fix the house up, or tear it down. If it’s too bad, then just tear it down.” Notably, the subtext for these improvements was often greater than wanting something for themselves, as one student said, “With this one, just fix up the neighborhood. Nobody wants to be around something that brings you down... like, that’s my city.” These inferences that their community was in need of something in the landscape was woven throughout students’ comments for improving spaces. They wanted community gardens, but were thinking about whether all people liked such places. They wanted beauty, but were worried how much flowers cost, whether they would be cared for, and if they created a safe place to be. “Plant some other flowers. Probably some of the purple things, or safe things like tulips. Not roses, they cost a lot, and people might dig them up. No sunflowers, because I’m terrified of bees.”

In concert with the reasons why they liked or disliked certain images students referred to how green spaces can facilitate relationships by providing spaces for social interactions “Have things to do for girls that don’t like playing basketball.” And again, “With the basketball court, it’s not something that you could really do, but make sure people don’t have weapons.” Their proposals reminds us that our landscapes are the platform that supports basic needs like housing, “You need to fix these houses up so people can have homes. Make more activities for kids, shelters for stuff.” Sometimes their comments spoke to greater personal or community based concerns. When looking at the image of the family picnic, a student commented, “I just try to change the alcohol and stuff. And people when they start drinking alcohol things get crazy.”

#### **4-4-4. Skills and social networks: collective action with friends and family**

In an effort to understand students’ perceived efficacy for making their suggested landscape changes they were asked if they were confident in their ability to make said improvements. Many of the students expressed confidence in their ability to make their suggested changes. Some offered reflections on their personal skill set that would help them make these changes. Others intimated that they could not make the changes by themselves, but that they could be part of a group that implemented them (Table 3.6). Students shared who they might ask to help them make these changes. Once again they described the related skill sets these people had that would make the changes possible. This set of responses showed some gender differences not clearly apparent in their responses to the first set of questions and therefore responses in this section are reported by gender.

Table 4-6 Efficacy responses for ability to implement suggested improvements

Efficacy response	Whole Group		Female		Male	
	YES	16	35.6%	8	36.4%	8
Yes, with help	11	24.4%	3	13.6%	8	34.8%
NO	18	40.0%	11	50.0%	7	30.4%
Total responses	45	100.0%	22	100.0%	23	100.0%

***Reflections on skill sets and social networks:***

When asked if they could make their proposed changes themselves 35.6% of the students said yes. For instance one female student noted, “I can build stuff, I know I can’t build a house, but I can help build stuff for the playground and put stuff together.” And a male student said, “Little bit. I could cut the grass, pour the cement, and try to build onto the house.” Another male student reflected, “Yes, when I get out of school and have money.” Other students responding affirmatively to this question (24.4%), qualified their response saying that they could complete those changes if they had assistance; often implied the changes would require teamwork, “Not by myself but maybe if I had a team of people.” More female student responded no, that they could not make these changes (50.0%) than male students (30.4%). Male student responses also seemed to indicate that they had more confidence in being part of a collective effort their female counterparts.

When responding that they could not make the changes, commonly students did not give a reason, but the few that did, referenced health (allergies) or emotions (frustration) as barriers to their abilities to make changes. As one female stated, “No can’t do myself, I don’t like even

raking grass, I've got allergies and stuff. I can't be in the grass.” Alternatively, a young man noted, “No. I'd quit, I'd start throwing stuff around.”

***Who teens turn to for help implementing changes:***

Student responses to the question, “Who would you ask to help you make the changes you have suggested for these landscapes?” were coded into 9 categories (Table 3.7). Students responded most often with family members (39.3%). Looking to family for help was followed by references to adults who were not family (17.9%) and their peers (17.9%). Similar to their reflections on their own ability to steward these spaces, when referencing those who could help them, they once again described the skills needed to make those changes. For instance one young woman said, “My uncles ’cause they know how to build stuff.” And a young man reflected, “A group, people I could trust. I'd call my mom's friends; they're reliable...I'd mostly call adults, because they have experience.”

In addition to individual people, a few students mentioned that the government should play a role in cleaning the space, “The government needs to tear them down.” They also noted that money was needed to make the changes. They spoke of getting help from specific businesses like Walmart and of collecting neighborhood donations, “I'd start a construction thing around the neighborhood. Invite people to help clean up the environment. I'd ask people to donate, and hopefully there'd be enough to help.” One young woman mentioned going to her church. Some students were not sure who to ask for assistance, “I don't know...maybe the Mayor?”

Table 4-7 Social network for finding help to complete proposed landscape improvements

Where students seek help	Study Population		Female		Male	
	n=	%	n=	%	n=	%
Family	22	39.3%	11	50.0%	11	32.4%
School	4	7.1%	1	4.6%	3	8.8%
Community	10	17.9%	2	9.1%	8	23.5%
Government	3	5.4%	2	9.1%	1	2.9%
Friends	10	17.9%	2	9.1%	8	23.5%
Business	2	3.6%	1	4.6%	1	2.9%
“I don’t know”	2	3.6%	1	4.6%	1	2.9%
church	1	1.8%	1	4.6%	0	0.0%
Fundraiser	2	3.6%	1	4.6%	1	2.9%
<b>Total</b>	56	100%	22	100%	34	100%

Again, there some gender differences in in the responses with 50% of the female students reporting that they would look to their families for help. Similar to female students, the most common response for male students was that they would look to their families for help (32.4%). Male students also offered that they would ask friends (17.9%) and other adult members (17.9%) of their communities.

***Suggested changes and efficacy for stewardship:***

Suggestions related to fixing these spaces were not complicated and quite pragmatic. Students rarely asked for expensive or expansive interventions. Only one student suggested making a youth center and two others asked for a pool. It is possible, that these low cost suggestions might have been influenced by students’ lack of local experience to more expensive amenities or that these types of answers might have been influenced by the type of images shown to students. Never the less it is suspected that their answers were addressing an interest making the spaces accessible for use now. Whether their suggestions were for cutting the grass, boarding up dilapidate houses or fixing basketball courts their interventions could be made with small

human resource and minimal financial effort allowing the spaces to be made read for use almost immediately.

As a representation of self-efficacy for completing their proposed landscape improvements, student responses indicate that they understood the need for a specific skill base to make those changes. Mastery of experience is a key component of self-efficacy for any given task (Bandura, 1977, 1986). Students seemed to understand that their suggested improvements required a varied skill set; as indicated by referenced physical and organizational skills as well as the need for financial resources. But as these students aptly noted, many of these changes could only be made with the assistance of others. Again, when listing people who could assist them, they also described these people's skill sets appropriate to the goal of improving these spaces. These two references, first to those who might support the student's efforts and their skill base reflect two more components of self-efficacy, those of vicarious experience and a supportive environment. Bandura has argued the importance skills built from personal experience but suggests that seeing others struggle and complete a task provides an important role model for others efficacy construction (Bandura, 2006). Additionally, when one is struggling to complete a significant goal, a supportive environment can help people persevere through challenging moments.

The student reflections noting that they could steward these spaces if they were part of a group or a team of people begin to address another kind of efficacy, that of collective efficacy. Collective efficacy is an emergent group level process that evolves from one's understanding of their own role in a group and their assessment of the group's abilities (Bandura, 2000; Goddard et al., 2004). Student's reflections that their changes could only be implemented with a group



effort hints at the possibility of collective-efficacy for landscape stewardship within their community. Collective efficacy has been described as the trust in one's group to address a task of mutual interest like the safety of children or making physical changes to one's neighborhood (M. L. Ohmer, 2010; Robert J Sampson et al., 1999). Students' comments seem to indicate their trust in variety of adults (family members, family friends, and school staff) to collaborate with them on such projects. Their reliance on adults is probably not surprising given the students' age. Additionally, the referenced skills, like construction, needed to complete the project may need adult supervision or expertise. One student replied that while he would ask his parents friends for help, he would not ask his own because "...we don't know how to work power tools." Regarding peer relationships, the findings suggest that males students more willing to ask help of their peers than female students. The reason for this not fully understood and requires further examination.

#### **4-5. Implications / Conclusions**

These findings describe the nuanced relationship of a group of Midwestern minority teens' relationship to urban greens spaces and their potential efficacy for improving and caring for local green spaces. Their reflections add to our understanding of how youth in low income minority communities utilize urban space for recreational activities and relationship building. Examination of their preferences for and dissatisfaction with particular landscapes along with their suggestions for changes helps build a typology of landscapes that may support teens engagement with outdoor spaces. Finally from these understandings and insights into these students efficacy for landscape stewardship we may draw some suggestions that support future engagement in landscape stewardship and care.

### *Understanding how teens are using urban green space:*

These young teens still want outdoor spaces in which to play. They are interested in active recreational activities like basketball, yet they still express an interest in play equipment, like swings, usually dedicated to young children. If they don't want to engage in a particular sport or activity, they want to be near those who are – because that's “where everybody at.” Teens use outdoor spaces to socialize with friends and families and were interested in spaces that supported a variety of social interactions. In keeping with other teen preference studies they wanted room for gatherings with extended family and hanging out with groups of friends as well as spaces for more intimate social interactions in less active spaces (Chawla & UNESCO, 2002; Gearin & Kahle, 2006). Finally, teens saw well cared for spaces as places that supported these social interactions.

Given the enthusiasm students expressed for being with friends it was important not to reduce their interest in being outdoors as strictly social in nature. In addition to being able to play and socialize, these teens utilize aesthetically pleasing outdoor spaces as places to reflect, restore and find “peace of mind”. They want these kinds of spaces for themselves and for their community. They also see green spaces as opportunities to engage in the care of their community. Institutional spaces like a churchyard or school gardens were particularly inviting this kind of engagement.

Finally, it seems that teens use the quality of green spaces as one reflection or evaluation of self and community. Well cared for spaces were associated with their own good behavior and the expectation of good behavior from others. Uncared for or broken spaces were suspected of supporting poor behavior and symbols of illicit activity. Students tried to distance themselves

and their communities from these types of places and associations. Intuitively they suspected that others might judge their character on the basis of their physical state of the local landscape. They did not want to be associated with landscapes that might represent to others a lack of care or violence. This precipitates the idea that simple efforts to maintain nearby outdoor spaces may be as important as creating new spaces.

***Outdoor spaces support teens and their community:***

Underlying all student preferences was the assumption of safety. Physical and emotional safety were perceived through landscape stewardship, amenities, aesthetics and the potential to make a difference. Signs of stewardship as exemplified by a mown lawn, trimmed trees or well-kept garden were all signs of human intervention. This evidence of human intervention was equated with the idea that someone cares about the space and what happens in that place. For children in urban areas, these human interventions seem to equate with safety (McAllister, Lewis, & Murphy, 2012). Amenities including benches, play equipment, trails and gardens all point to human engagement and interaction in the space. Safety in these spaces was signaled through engagement - if others play, walk, sit there safely, then teens too may be safe to enjoy that space. In these urban outdoor spaces aesthetic appeal also pointed to human presence. Perhaps these signs of care for place also equated to care for people. Finally well-manicured spaces, with amenities from play equipment to community gardens welcomed students to interact (engage, work, volunteer) in and with those spaces.

Often when teens looked at images they preferred, nature in the image seemed to take a back seat to the potential social interactions in the space. This might lead one to think that they were not interested in nature, but again looking across both preferred and disliked images

suggests otherwise. When looking at least preferred places the care and quality of nature in the image became significantly more prominent in the teens minds. Unfortunately its lack of care was often associated with emotional distress or physical discomfort. In these situations students were quite sensitive to natural features of the space. Wild or unkempt nature was equated with crime and wild animals. Some studies of urban nature and teens suggest that such fears are grounded in a lack of experience (Bixler & Floyd, 1997). Yet, in one of the few studies of urban nature and teens, students indicated similar fears of rape and attack when looking at images of overgrown urban nature (Wals, 1994). Perhaps these fears are not unfounded. Furthermore, it seems that when the natural aspects of a space are attended to they become taken for granted as a platform for human interaction.

***Empowering youth to care for and about local green spaces:***

This study indicated that teens have ideas and efficacy to make change and steward local landscapes. What then is the role of a designer in communities like this one, where resources to invest in expensive long term planning are limited? Our first role must be to ask and listen. Understanding how teens utilize space is an important step to supporting their needs. Teens in this study offered some simple, low cost interventions that might make existing spaces usable in the immediate future. Our next step should be to act – together with the teens and their communities. Perhaps we should, as the students asked, help cut the grass. Such small immediate steps are not in conflict with longer term planning for more complicated expensive design interventions. Empowerment comes not just from being heard, but taking action. The young people's reflections on their community also provided insight into an array of resources available to make landscape changes. Designers may support the collective efficacy of teens by assisting them to draw on these resources throughout a design process. Supporting such multi-generational

efforts for the creation and care of public green spaces may in turn build collective efficacy for future stewardship efforts. Working together to implement low cost immediate interventions could support teen's social and emotional development while acting as a venue to practice care and stewardship.

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**CHAPTER V**  
**Constructing an Outdoor Classroom:**  
**A case study exploring collective efficacy for landscape stewardship**

*Abstract:*

Participatory design projects can act as conduits to connect teens to the people in their communities, thereby strengthening social networks and collective capacity for urban landscape stewardship. Enhancing a school yard through a participatory design project can be seen as one form of landscape stewardship that engages young people in the care of their local environment. With an emphasis on participation and action - participatory landscape design projects may build efficacy for local environmental stewardship. Through a summer internship program eight minority teens from a post-industrial city in the Midwest participated in the re-design and construction of an outdoor classroom on their school grounds. This study sought to understand collective efficacy construction for landscape stewardship through the experience of these students. Post-program interviews and participant observation highlight how perceptions of self-efficacy and collective efficacy are closely intertwined. Findings reveal that skill building competencies in gardening and construction can support self and collective efficacy for landscape stewardship, but that collective efficacy was be mitigated the teens' perceptions that their peers might not treat newly created spaces with care. Furthermore findings indicate that the teens' collective efficacy was bolstered by the perception that adults in the community would support their efforts. This study offers some simple suggestions to help designers, educators and

youth advocates support the efficacy of young people in low income communities, with few green amenities, to become stewards of local landscapes.

## 5-1. Introduction

Participatory landscape design is a process by which designers and community members collaborate to create a shared vision and plan for a future landscape. This participatory process may engage local users at all stages of the design process from sharing, visioning, planning, implementation and care (Hester, 1990; Sanoff, 2000). When those local users are young people in a school setting, it has the potential to teach stewardship skills that will move far beyond the school yard (Chawla & UNESCO, 2002). In its attention to understanding and supporting human needs and ecological systems through hands-on engagement, participatory design has much in common with urban environmental education programs that seek to engage young people in the local needs of place (Russ, 2015). By their specific focus on place, both participatory design and environmental education may empower young people to learn about, care for and act on behalf of their local environment. Through this emphasis on participation and action they may also help build efficacy for local environmental stewardship. Enhancing a school yard through a participatory design project can be seen as one form of landscape stewardship to engage young people in the care of their local environment.

This exploratory case study seeks to understand a group of eight teens' collective efficacy for landscape stewardship through an examination of their experience of in a summer design-build program. The summer program was the final stage in a seven-month design process during which these student helped design and build an outdoor gathering space and garden for their school. Participant observation<sup>1</sup> and post-program interviews with students provide a snapshot of

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<sup>1</sup> Participant observation is one type of ethnographic research method in which the researcher immerses themselves in the activities of a group of people in such a way as to build a rapport in which the participants behave naturally. During this process the researcher takes observes and takes notes on the phenomena of interest. These notes and memos become the data from which the researcher can extract and abstract themes for explanation and discussion (Bogdan, 1982).

these students' experiences that in turn provides insights into what supports or hinders efficacy construction for landscape change and future stewardship. It is proposed that by understanding more about the experience of participation in changing one's local environment, we may understand how to better support efficacy construction for future stewardship behavior.

***Participatory landscape design and urban environmental education – Shared goals and process:***

While traditionally thought of as different fields of study and practice, landscape design (particularly participatory landscape design) and urban environmental education share similar practices and goals designed to support the creation of, and care for, environments which support integrated human ecological systems. In fact, a recent review of environmental education practices in urban settings describes the integration of design practices (green building, green roofs, planning) into environmental education pedagogy (Russ, 2015). In theory and in practice, participatory design and environmental education both draw heavily on the concept of participation as a tool to support on-going engagement in building just and sustainable communities. In particular, they share an expressed interest in supporting the people who participate in the care and stewardship of local landscapes.

Participatory design for community and landscape planning has its roots in the United States' civil rights movement of the 1960's (R. T. Hester, Jr., 1999; Sanoff, 2000). One way in which this process manifested was in the collaboration between professional designers (landscape architects, architects, city planners) and members of low income communities to address issues of social and environmental injustice (Francis, 1999). Participation as a means of empowering residents (particularly those in low income and minority communities) to make choices about the future of their neighborhoods was integral to these collaborations (Hester Jr,

1987; R. T. Hester, Jr., 1999). These types of collaborations ground their work in the social and ecological needs of local place, while respecting that local interventions have an impact on larger systems (Hayden, 1997; R. T. Hester, 2006). In this way, these collaborations are able to strengthen the intertwined social and ecological systems of urban communities.

In a similar way, current environmental education practitioners' view cities as social-ecological systems in which there are on-going feedback loops between the natural and urban environments (Russ, 2015). One type of urban environmental education called civic ecology education "considers urban areas as linked social-ecological systems, includes opportunities for young people to learn from the practical and diverse knowledge of urban stewards...and focuses on restoration of urban social-ecological systems" (Keith G Tidball & Krasny, 2011, p. 5). Like landscape architects working to address the social and ecological needs of a specific place, these environmental education theorists and teachers suggest that these ecological systems can be positively impacted through human interventions like landscape design and stewardship. In this way, civic ecology education parallels participatory design efforts that involve knowledge sharing, skill development, and community empowerment.

Empowerment and agency are concepts important to those interested in engaging young people in the design and planning process. By sharing their perspectives, hopes, and dreams for their communities, young people can play an important role in making sure that cities meet the needs of people of all ages (Chawla & Unesco, 2002; Francis & Lorenzo, 2002; Lopez, Campbell, & Jennings, 2008). Engaging young people in the design of smaller areas has improved the educational potential of botanic gardens, increased active play in schoolyard playgrounds, and created safer, more welcoming spaces in large urban parks (Gearin & Kahle,



2006; Lekies, 2006; Malone, 2003; Woolner et al., 2010). Engagement in design processes may also provide other direct benefits to participating youth, like building a caring connection to nature, learning skills for future civic engagement, and increasing knowledge (Breitbart, 1995; Danks, 2000; R. A. Hart, 2013; Rottle & Johnson, 2007). There is some indication that engaging in such participatory design processes can build a sense of ownership and an ethic of landscape stewardship with adults (Crewe, 2001). Less is known about the impact of youth participation on the final stage of physical construction of the design.

As described above, many studies examine youth participation during the planning phase of a participatory design project. Adding to this work, this study specifically examines the end stage of participatory design process: the phase in which a design is constructed. The activities undertaken during this phase (debris removal, construction, planting etc.) have much in common with environmental education programs that use stewardship activities as a way to engage students in learning about and caring for their local environment. A school-sited participatory design project draws on elements of civic ecology education in its focus on caring for and improving a local landscape. Through participation in such a process, students may gain new knowledge, skill sets, and relationships. In this way, they may build efficacy for future stewardship activities.

### ***Efficacy for landscape stewardship:***

Like any significant stewardship project, the re-design and construction of a school yard requires the collaboration of many people. Current environmental education discourse suggests that environmental education must begin to teach students the skills necessary for collective action (Chawla & Cushing, 2007). Using this premise, this study seeks to understand how

participation in the building of one school yard may support collective efficacy for future landscape stewardship. Collective efficacy describes a group's shared belief in their ability to address a particular problem or task (Bandura, 2000). Collective efficacy is thought to play a role in low income communities' efforts to protect local resources, recover from natural disasters, and create safe environments for children (Benight, 2004; Sampson, Morenoff, & Earls, 1999; Taylor, 2014). At this time there is no known literature exploring the collective efficacy of youth for environmentally responsible behavior.

This study extends the argument that environmental education focusing on individual behavior change is insufficient to address the intertwined socio-ecological challenges that urban communities face. Focusing on collective action and participatory design, it seeks to understand more about the construction of collective efficacy for landscape stewardship, and examines how participation in a schoolyard design-build program influenced collective efficacy for future stewardship, both on and off of school grounds. These findings may support designers' and educators' goals to support sustainable, just, and resilient urban communities.

## **5-2. Methods**

### **5-2-1. Study location**

This study and participatory design project took place at the 9<sup>th</sup> Grade Academy, locally known as 9GA, in the Beecher School District, Beecher, Michigan. Beecher is an unincorporated school and water district covering approximately six square miles in Genesee County. Located just north of Flint, Beecher is home to a population of 10,232. It is 69% African American and 25% Caucasian. The final 6% of residents identify as Latino, American Indian/Native or mixed heritage (US Census Bureau, 2013). The median income at the time of this study was \$25,568;

42% of residents were living in single parent households, and 42.2% of the population was living below the poverty line.

Beecher School District includes two elementary schools, one middle-high school, and the 9<sup>th</sup> Grade Academy. The 9<sup>th</sup> Grade Academy is a creative response to the challenge of a low graduation rate. Currently the Beecher School District is listed as one of the State of Michigan's Priority School Districts, meaning that it has a graduation rate of less than 60% and ranks in the bottom 5% of schools on Michigan's "Top to Bottom" list ("Priority Schools," 2013). When a school district is designated as a Priority School District, its administration must provide an improvement plan to increase student success – 9GA forms a part of that plan. 9GA pulls all 9th grade students from Beecher Middle-High School (grades 7-12) into "the old" High School building. The school takes up one floor of one part of a building that once housed over 1,000 students. The floors below are occupied by the Beecher Superintendent's office and the Department of Buildings and Grounds for the school system.

The new physical environment provides the 120 enrolled students with an intimate setting for learning. On 9GA's floor, there is a common area to which all classrooms and the Supervisor's door or wall may open for shared educational experiences. When closed, a smaller common space exists as a place for ongoing academic and personal support. Students come for tutoring, to work on special projects, to escape an overcrowded lunch room, and to be disciplined. Supervisor Ford's office opens directly into this central space.

Combining special programs for academic and career development, 9GA was designed to provide enhanced personal and academic support to students during a crucial year of high school. This kind of support extends to personal dress and the school's appearance. Students are required

to adhere to a dress code of khaki pants and a collared shirt. Young women may wear skirts that must come to their knees. As a Title I School, many of the students come from families struggling to make ends meet. If they do not have the means to get such clothes, the school has a donation program that offers students what they need. The hallways are covered in motivational posters, lists of community service sites and volunteer hours completed, test scores, attendance rates and more. The change of class “bell” is classical music –not a bell at all. Unfortunately these efforts do not hide the wear and tear of years on the building. The bathrooms have leaking ceilings and broken toilets; classrooms are filled with mismatched tables and chairs, the undersides covered in gum.

On one side of the old school building is a new set of bleachers for the high school football field, and behind the school sits a new field house in which sports teams from grades 7-12 play. The field house is a great source of pride, as are former students who have gone onto play professional sports including Devyn Marble, 1989 NBA pick for the Atlanta Hawks, and Courtney Hawkins, NFL receiver for the Pittsburgh Steelers and Tampa Bay Buccaneers.

Many at the 9<sup>th</sup> Grade Academy exude a strong sense of pride in “BucTown” – Beecher’s beloved nickname, a play off the school’s mascot, the Buccaneer. Parents, teachers, secretaries, and maintenance workers at the school will quickly tell you how “people care here” and “it hasn’t always been like this”. And 9GA students respond strongly to verbal missteps – like “So, you’re from Flint?”, “Oh no Miss, I’m from Beecher.” (9GA faces Carpenter Road, the border of Flint). The School Supervisor is a veteran teacher and administrator with 35 years of work for the District. He can remember when the school housed over 1,200 students of mixed racial and class backgrounds. He is warm and tough – pushing students to excel in their studies while

challenging them to after school basketball tournaments in which he participates. With little prompting, Mr. Ford will tell you that while the demographics of Beecher mirror those of Flint, the violent crime rate – particularly the murder rate – is lower<sup>1</sup>; while 9GA students remind us in a recently created YouTube video, “We Are Not Our Crime Rate” (Johnson, 2014). The school now houses just over 100 9th grade students. As Mr. Ford tells you his version of how this came to be – the construction of Interstate 475, the demise of the car industry, forced federal integration – it is difficult not to notice his deep commitment to this place and these students (Personal Communication, H. Ford, Interview, 2013). He relates painful stories of why this community has made national news:

- In 1953 the Beecher tornado, still ranked in the top 10 deadliest in the US., devastated the community and local landscape (Flint Public Library, 2014)
- In 1972, Mr. Ford’s friend and mentor Paul Cabell, the school’s Assistant Principal, became severely depressed during a period of high racial tension at Beecher High School and committed suicide (Smith, 1972).
- In 2000, a six year old girl was shot in her classroom by a young boy, inciting a national discussion about gun control (Angus, 2010).

But Mr. Ford will also relate the deep commitment of parents, the alumni who return year after year for sports events, and the dedication of the Superintendent and Beecher’s School Board. He embodies this kind of commitment as he tells you that he has tried to retire twice from teaching but returned each time to the Beecher system: the first time to start the Beecher

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<sup>1</sup> This statement was difficult to corroborate. Specific crime rates for Beecher were not available; Beecher falls into several police precincts. Crime maps from Michigan Youth Violence Prevention Center seem to indicate that crime (assault, burglary, murder) are more common south of the Flint – Beecher border, but without specific data from Beecher this should be read with caution. For more information see <http://yvpc.sph.umich.edu/crime-data-map-library/current-data-set/>.

Scholarship Incentive Program (BSIP), a college preparatory program with scholarships for local students, and the second, to run the 9<sup>th</sup> Grade Academy.

School staff note that it is a challenge for the students to get up to speed with the requirements of the school – and that at first, there is much complaining. They also note that students from the first class, now in 10th grade, have returned to visit the Academy – saying they miss the sense of family, and that they wished they had uniforms at the High School. At Mr. Ford’s suggestion, the participatory design project was placed in the first period enrichment class, a required course in which students were exploring careers, practicing job readiness, participating in theater arts programs, and receiving academic tutoring. The school’s science teacher and a mentor from the Carrera Program<sup>1</sup> would help facilitate classroom projects and coordination of the student interviews as needed.

### **5-2-2. Preparing to build:**

The case study focuses on the experience of 9GA students during the construction of the new outdoor classroom and eating area, but the first phases of the project were initiated during the previous winter term. Once a week for 14 weeks, students in the science class were engaged in a design program facilitated by the research and volunteers from University of Michigan Flint, and students from the University of Michigan School of Natural Resources and Environment’s landscape architecture program. The students created a series of three-dimensional models which became the inspiration for the final design. These models re-imagined a narrow broken cement patio, approximately 22 by 30 feet in size, located between the school building and the field

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<sup>1</sup> The Beecher Carrera Program is part of a Children’s Aid Society Program to prevent teen pregnancy. The program takes a holistic approach to pregnancy prevention providing students with career mentoring, health literacy, academic tutoring etc. For more information see <http://www.childrensaidsociety.org/news/evaluation-results-children%E2%80%99s-aid-society-carrera-teen-pregnancy-prevention-program>.

house. Mr. Ford told the students that 30 years ago, this site had once been lunch and break area for staff and students. One could still see the concrete pads and rusted bolts that once supported picnic tables.

Student models from the school year program displayed students' interest in seating areas, a place for performances and an area for flowers or vegetables (Figure 1). Some students suggested an arbor for shade, others included green roofs or other green features. The final design included the requested seating, tables, performance area, and two gardens – one with flowers, the other with vegetables, as well as an awning for shade.



Fig. 5-1 Student model and final site design model

### 5-2-2. The summer project:

The summer program was facilitated from the last week of June until the middle of August. I planned each day's activities, taught construction skills, and facilitated procuring the necessary tools and equipment (Figure 2). Significant logistics support was provided by UM Flint's University Outreach - Discovering Place Program Coordinators Sara McDonald and Leyla Sanker. Throughout the summer at least one student volunteer from the University of Michigan's School of Natural Resources, Landscape Architecture program was on site to assist

with educational programming and construction. On several occasions adults from 9GA or the Carrera would join us for a day of work. The Carrera job shadow program, in which the students had enrolled was a five week program that offered students positions at local not-for-profits as well as job training and tutoring. They were asked to work Monday through Thursday from 8:30 am – 1 p.m. if they chose to return to school for Carrera programming, or 8:30-3 if they wanted to stay on site. If requested Carrera provided transportation from the high school, where tutoring activities took place, to the 9<sup>th</sup> Grade Academy. For participation in the summer program students received \$100 stipend. Three students volunteered for several weeks beyond the length of the program to help finish the project. Due to unexpected delays with the concrete patio, the project was not complete at the end of the internship.)

A typical day on site started with students arriving and having a snack. Carrera provided a small breakfast of a granola bar and a yogurt. Each day I brought a cooler full of fresh fruit, iced water bottles and some type of cracker or cookie. Students were welcome to help themselves to snacks whenever they liked. When all the students arrived I asked the “leader of the day” – a student volunteer who was in charge of organizing morning stretches, making sure everyone was hydrated and making sure clean-up was complete at the end of the day to get morning activities started. After stretching we reviewed a list of activities to be completed that day.



<b>Week 1</b> <i>Garden-strip preparation</i>	<b>Week 2</b> <i>Flower garden creation</i> <i>Concrete removal</i>	<b>Week 3</b> <i>Concrete removal</i> <i>Patio and paver installation</i> <i>Paint railings</i>	<b>Week 4</b> <i>Paver installation</i> <i>Bench construction</i> <i>Paint railings</i>	<b>Week 5</b> <i>Bench + table construction</i> <i>Paint patio edging</i> <i>Vegetable garden prep</i>	<b>Week 6-7</b> <i>Seal + paint benches + tables</i> <i>Mulch vegetable garden</i>
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Fig. 5-2 Summer design build schedule

The first week of the program we drew out the plans for where new tables and chairs would be located on the old site. We also began to prepare a new garden strip along the future ADA accessible ramp. In its original state it was a strip of well-tended grass. Student in the winter and summer program were very excited about the idea of a flower garden there. During the first week we removed the grass, sent soil samples to Michigan State University to test for toxics, researched plants for pollinators, decided on a color scheme for the flowers and made a field trip to a local plant store to purchase the plants. In part due to some difficulties described next, the start of the project was rather slow. Planting continued into the next week but it was sometimes hard to keep the students busy. Throughout the summer, watering plants was a daily chore. During the first week we also began to scrape the railings lining the garden and the patio. Throughout the next few weeks they would be painted bright red, one of school colors, and then repainted after the cement truck scraped most of the paint during patio installation.

Our original plan required some preparation beyond the scope of my skills – like concrete removal and laying the new patio. We planned for this part of the project to be completed between the final week of school and the start of the program. Due to the combination of the

time it took to process money through the University, weather not appropriate to laying concrete and some communication difficulties the old concrete was not broken up for removal until late in the first week of the program the patio was not laid until they third week of the program. I was quite relieved when the masonry team finally arrived as this meant some of the more difficult construction could be completed and we could continue with work that could not be started until the patio was finished. The breaking of the cement took several days and left quite a pile of debris. The students on the program moved the majority of the stone but it was clear we could not make our time line if we did this ourselves. Luckily, by this time summer football practice had started. As mentioned, the site was just outside of the field house and each day the coach would stop walk by, occasionally chatting with me or the two boys on the project. He noticed the pile of concrete and offered to use part of practice to have his team help move the pile to the dumpster. About a third of the pile of pieces was left from which we laid a design in the now permeable section of the patio, while other pieces were eventually used in the benches. While the slow progress on behalf of the masonry crew was quite frustrating at first, it did have a social benefit. The crew did not interact much with the students at first. But as they say how hard the students worked to remove the heavy broken concrete, they began to comment on what an important project this was – and to offer construction advice for projects like laying the patio form and leveling our pavers (Figure 3). One the day the crew arrived to pour the patio, one student, Mona looked up and shouted, “Uncle Willie!” A tall man with a straw hat beamed at her and gave her a big hug. Her great uncle would be supervising the project. By this time the crew, while not overtly friendly with the students, had warmed to them enough that I felt I could ask if there was a chance the students could help. The foreman agreed. The next day I brought a couple pairs of rubber boots and the students were able to help push the wet cement into the patio

form. As we watched, one of the men, perhaps in his late 50's, quietly told me he had helped lay the brick for the school when he was 19 years old.



Fig. 5-3 Participant and her Uncle

It was the fifth week, when the patio was dry, work on the benches began. This required working with smaller, square shaped blocks of cement, fitted together to hold the form of the bench, made from cattle panel, in place. When this was completed, each bench was fitted with a wooden frame onto which pieces of urban wood<sup>1</sup> was fitted for seating (Figure 4). Each bench was then trimmed, sanded and sealed. At this end of this week, the project was not yet completed

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<sup>1</sup> Urban wood is term used to describe trees removed from urban areas which are milled and then sold for use. The wood may be from any tree type. One of the supporting partners who helped us procure the wood from Habitat for Humanity, thought that the wood we were using had come from ash trees that had recently lined the main road leading the Beecher Middle High School. They were infested with the emerald ash bore and had to be taken down. She thought it was rather fitting that they were coming back to use in the neighborhood.

-tables still needed to be fitted and the vegetable garden fixed. Three 9GA students continued to volunteer over the next two weeks to help finish the project. Likewise several of the UM students volunteered past their committed time to help finish the project. By mid-August, the project was completed except for an awning which would be installed in the spring of the coming year. A science teacher would take responsibility for finishing the vegetable garden. As one final touch, on our last day we planted 100 red and white tulip bulbs to surprise the incoming students.



Fig. 5-4 Building gabion benches

### 5-2-3. Participants:

Students were selected for the summer program through a partnership with the Carrera Summer Program. Carrera had supported the school year program, and upon request, helped facilitate student applications from the participating class to the summer program. Six of the students had participated in the winter school portion of the participatory design project; two had not.

*Jermaine* was a bright-eyed gentle giant. He was tall, strong, and built like a linebacker, which he wanted to be, but he as a freshman that was going to be a long shot this year. He thought outside the box and believed in the paranormal. He was visually creative –says his Dad

has taught him to take photographs. It sounded like they are close. He looked just like his father, who worked for the School District. Both were unassuming, but you could see them take in every detail around them. Jermaine took care of his three-year-old sister on a regular basis. This kindness extended to his peers and adults alike. Once, while listening to the radio while working, he quickly turned down the volume. I noticed and looked up from what I was doing. I asked him why he had turned the radio down, and he shrugged. His friend Mona told me the song had some “bad words”.

*Mona* had a small build and sweet demeanor but that did not mean she was meek in any way. She was not particularly strong, but she was very determined. Outside, she was not about to let the boys do the harder or more interesting work. With her focus on succeeding in school, Mona was a favorite student of teachers and administrators— smart, eager, hardworking and pleasant. She was sometimes teased for being nerdy, but she seemed to take it in stride. She would go on to enter the Mott Community College program while still in high school. She played volleyball and was interested in robotics. She spoke highly of her mother, loved her grandma, and became very excited when her older brother was home from college.

*Angel* was one of two students of Mexican origin in the school<sup>1</sup>. She had long black hair and dark eyes that flashed when she was irritated – which happened on a regular basis. The boys paid her a lot of attention, which incited regular outbreaks of swearing. She was bilingual, and I understand from the administration that her parents did not speak English. The supervisor worried about her. He commented that she was very smart, but that she didn’t like to show it, and

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<sup>1</sup> Detailed demographics of the enrolled student body are not available. Racial diversity in the Beecher School District is estimated at 89.1% African American, 5.9% White, 2.6% Multiracial, 2.1% Hispanic.

“hangs with a rough crowd”. Like Mona, she had a slight build and liked a physical challenge. On a field trip to build hoop houses, she and her long hair ended up six inches deep in mud. This was not a problem until someone teased her; that person got smacked, hard.

Tall, fast and all limbs *Dante* often spoke of his love of basketball and of his family. His Mom had to move to Oklahoma for work; he lived with his Dad and Grandma. All summer he talked about whether he would be moving, or whether he would stay in Beecher. He spoke to his mother almost every day, and reflected that he would miss his family and friends in Beecher if he left. Dante was smart with a quirky sense of humor. He called Mona, “Mo” and was a good friend of Jermaine. He was respectful of female peers, but was quick to gently tease or imitate anyone who was taking up too much attention from the work at hand.

*Kartesia* did not seem to belong to a particular group. She got along well with other students. She just did not seem to have a group she identifies with – at least not among these students. She played basketball and had a reputation as a good player. When she came to work, which was sporadic, she took charge of the group. She clearly expressed her desire for work to be organized. I suspect this is why she often volunteered to be the leader of the day – leading stretches, organizing breaks, making sure everyone was well hydrated and that the tools were cleaned up at the end of the day. During the school year, she made the design model mostly by herself, whereas others worked in groups of 4 to 6 students.

On any given day, *Quanique* could be heard to say, “I don’t like mud, but I do like to water. I just don’t like to get my hair wet.” So she wore a head scarf, for which Dante gave her a hard time--not much of one, though. While she would water the garden any day, she expressed little interest in construction. Strongly opinionated, her influence on the flower choices was evident in

the bright yellow lilies and hot pink flowers. I often wished that I could get her to remember not to flood the utility closet and bathroom floor. Luckily, Joe, the custodian was very supportive and didn't seem upset by this. Quick to share her opinion, we saw a lot of her at the beginning of the summer, but her attendance faded as the heat intensified. No one could blame her; summer days were often in the high 80's with heavy humidity that made physical work very unpleasant.

*Tannya* worked hard when she came to the program. I didn't get to know her well. She was tall, big boned, with an even bigger heart. She was generally in a state of mild distraction, but was quick to add her opinion to any discussion that interested her. She expressed a love for making art joining the program because she thought it would be "more like the school program" where she "got to make things." Tannya used to sneak into the participatory design class during the school year to work on the models with her friends. With the help of her friend, Kartesia, she took ownership of painting the rails. She was not going to move rocks or weed, but she loved how the bright and shiny red paint brought life to the school yard.

*Anyah* was so soft-spoken I had to lean in to hear her whisper. While in class during the school year, she indicated a dislike for working in teams, but you could see that she enjoys being with her girlfriends. There was something quietly sad in her demeanor. Her attendance was irregular for the first week or two and then she disappeared. She stopped by once or twice later in the program at the end of the day, just to say hello.

### **5-3. Data collection and analysis:**

Students were interviewed about their experience in the program in September of 2013. The researcher attempted to conduct these interviews with student groups of two. Small group interviews can help provide a sense of safety for interviewees, especially for children and

adolescents (Eder & Fingerson, 2002). In small group setting the students seemed to feel more comfortable being asked questions when there was a peer in the room. Additionally, hearing their peers speak often helps them to remember experiences that might have not come at first. Despite this goal, due to student's academic responsibilities interviews with two students at one time was not feasible. Therefore students were interviewed as available (one group of three students, two groups with two students and one individual interview). It should be noted that despite significant effort on the researcher's part the interviews were often interrupted by other students and adults entering the interview space. Furthermore, while the students and the research had built a relaxed rapport over the summer months, the students seemed quite somewhat reluctant to talk. This may have been a result of a break in contact; almost two months had passed between the end of the summer program and the interview. It may also have been an effect of being in a new setting in which the students were less comfortable. The impact of interruptions and the perceived discomfort sometimes resulted in short and disjointed responses.

Interview questions (Table 5-1) were designed to explore the student's experiences in the program in relation to the components of efficacy construction. Bandura (1982, 2006) argues that mastery of experience related to a particular task is a key component of efficacy construction. Likewise knowledge construction, skills development and the application of those skills are considered key components necessary to build pro-environmental behaviors (Hungerford & Volk, 1990). Questions addressed skill building competencies through questions asking what students like, learned and how they would apply this knowledge (Table). Vicarious experience, a supportive environment and positive outlook all play a role in how a person assesses their ability to use those skills (Bandura, 1982). These efficacy components were addressed by asking who students would ask to assist them on future projects and by asking them to recall confidence



before and after the project. Collective efficacy assessment includes one's assessment of their ability to fulfill their role in the group, essentially one's self efficacy within the group context, as well as an assessment of the group's collective ability to complete a task (Bandura, 2000). The teens' collective efficacy perceptions were examined through questions regarding future projects (Appendix D).

Answers to interview questions were coded using a priori themes related to efficacy construction. While collective efficacy has been described as an emergent group level process, it generally examined from the perception of the individual. An individual's perception of collective efficacy includes an assessment of the role they can play in a group as well as an assessment of the group's collective abilities (Bandura, 2000; Goddard, Hoy, & Hoy, 2004). Making an assessment of one's role in a group may be considered a reflection of self-efficacy. Collective efficacy has been found to be correlated to self-efficacy (Fernández-Ballesteros, Díez-Nicolás, Caprara, Barbaranelli, & Bandura, 2002). Given the relationship between collective and self-efficacy students' answers and observations were first coded for the proposed constructs of self-efficacy construction: mastery of experience, vicarious experience, a supportive environment and a positive emotional attitude (Bandura, 1977, 2006). They were then coded for students assessments of how well their group could work together to complete the school garden.

The coding process was organized in the following manner. Answers to each question were compiled and coded for efficacy themes within that set of questions. Then an open coding process completed by examining answers across the sets of previously divided questions to look for any unexpected themes. This proved to be important given the unexpected challenges of the

interview process described above; interrupted responses were sometimes picked up again when asked a question later in the interview.

After the first coding it was discovered that there were few references to student's vicarious experiences related to landscape stewardship. When vicarious experiences were mentioned, it was in the context of who would support the students a future project and what skills that person would bring to the project. Therefore vicarious experience was typically combined with supportive environment. Through the open coding process a fifth theme emerged, labeled "landscape as community." Field notes and commentary by 9GA staff and program assistants were used to compare students' reflections with observations made throughout the summer. The use of the four a priori codes related to efficacy construction through a design build project are described here:

Skill development: Student skill development was appraised while working with students over the length of the program and through student interviews. Student reflections on what they liked and/or learned in the program provided some clear reference points for their skill development. Less explicit references to student understanding and skill development were found in their assessments of and plans for future projects. Given the brevity of the program and the variety of skill sets needed it would be surprising if any student had full mastery of any particular skill. Therefore experience was examined at a general level.

Emotional outlook: A positive emotional aspect has a strong influence a person's perceived self-efficacy (Kavanagh & Bower, 1985). In this study, students' emotional state was explored through their reflections on the design build project. These included the recollection of their initial confidence levels prior to the start of the project, their comments related to their

future confidence in the ability to complete such projects, and observations during the summer program. Sub-themes in the construct include confidence building

Supportive environment and vicarious observations: This theme included student descriptions of factors that might facilitate or hinder the completion of the school sited project or future imagined projects. As noted this theme also included student's observations of others. Therefore this them includes student references to the known or presumed skill sets of others.

Collective efficacy: This theme addressed student's recognition of the need for collective action to improve local landscapes. This theme includes student's assessment of how the greater community will support or hinder their project in some way. In this recognition and assessment this theme differs from student's reflections on their personal need for assistance.

Landscape and community: Throughout the coding process a theme emerged in which students discussed the needs and perceptions of their school and community. Comments in this code include reflections on the students' perception of their own community as well as what the students thought other people might think of their community.

#### **5-4. Findings and discussion**

Findings from this study exemplify how the physical construction of a school yard may support efficacy for future landscape stewardship. In this study the experience of building a school yard increased students skill base, their self-confidence for future projects and connected them to caring adults. Each of these outcome is related to the components of self-efficacy; technical skills as representative of one's mastery of experience, increased self-confidence as a part of a positive outlook and an expanded adult network supportive environment as an example

of a supportive environment. These findings highlighted how the components of efficacy for behaviors as complex as stewardship behaviors must be examined in relation to each other as well as in relation to the broader concept of efficacy. For instance as students skill base increased, so did their confidence levels in future completing future projects. These experiences and positive outlooks are part of efficacy – but their relationship has an influence on efficacy outcomes.

Furthermore this study provides provocative insights into collective efficacy construction. It is argued that collective efficacy is strengthened by self-efficacy (Bandura, 1986; Fernández-Ballesteros et al., 2002), but for these students, collective and self-efficacy perceptions seemed to have feedback loop that indicated a more complex relationship between collective and self-efficacy than previously discussed. In particular, these students self-efficacy as bolstered by skill development, was supportive of collective efficacy, but assessments' of their peers support and care for such projects mitigated their sense of collective efficacy. These interactions are highlighted through the findings and implications.

#### **5-4-1. Self-efficacy: Skill building experiences**

Students reported learning a variety of skills that contribute to efficacy for landscape stewardship. Experience through skill development is a key component of how one builds self-efficacy for a particular task; as one develops competence and mastery of a skill, efficacy is strengthened (*Bandura, 1986, 2006*). These reports are in keeping with the nature of the deconstructing and building of a new outdoor classroom. During the program, students were taught a variety of skills related to small-scale construction. These included how to safely use a variety of hand tools (hammers, saws, rock bars, and screwdrivers), proper safety and use of small

power tools (jig saw, nail gun, electric sander), and how to prepare and paint outdoor surfaces. Students also participated in the preparation of two planting beds, one for flowers and one for vegetables. In doing so students learned to use shovels and rakes, to take soil samples, and how to properly install and care for a variety of plant species. Students were asked to try a task for some portion of the day, but were also welcome to choose to work on parts of the project they enjoyed. By the end of the summer, competency with construction skills (including comfort with and safe use of tools, spatial thinking) and gardening (appropriate plant choice, care and maintenance) varied widely among group members. While it would be difficult to say that students had mastered these skills, they certainly had exposure to them, and in some cases they had developed comfort with these activities, if not competence. For instance, at first Mona was terrified of using an electric jig saw and refused to try, but with encouragement, she eventually became quite adept as she trimmed wood edges of the seating and tables. After some trepidation over the size of the task (and the spilling of red paint on new black pants), Tannya took ownership over scraping and painting the railing bright red – school colors are red, white and black – and she began to instruct other volunteers in how to do these tasks correctly. Jermaine and Dante took great pride in their ability to lift broken cement pieces. They liked laying them to create a paving pattern, but had little patience for the detail of level required by setting each one into place. On the other hand, Angel liked putting the benches together because “It was like solving a puzzle.” As a reminder, the benches were made from pieces of broken concrete weighing 10 to 30lbs taken from the former patio. They were laid into a cage-like form of cattle panel to create gabion benches. Each piece was laid to interlock to create a sturdy base; one needed a strong sense of spatial relationships to make the uneven pieces lock in place. Quanique and Kartesia expressed their “love to water and took ownership of this task each day. This was

no small project, as the hose had to be run through the boy's bathroom window and out to the garden. The hose perpetually leaked at all connections, and mopping became a part of the watering routine. But by the end of the summer, flooded floors were a rare occasion, and the plants were flourishing.

When asked what she had learned, Kartesia connected her planting experience with working in her grandmother's garden: "...remember when you were like, do it light so it won't damage the flowers? When I used to help my grandma I used to wet them. So if they did break, I didn't know. So you taught me how to water." In this case Kartesia was not only expressing new knowledge, but she was beginning to apply it in another context. Student's competencies with these skills became more apparent as they imagined working on future projects. When discussing plans for an old playground that was "messed up," Kartesia began discussing how to get the site in order. Remembering the summer project, she decided she would begin "The same way we went like digging up the grass, then seeing what kind of flowers, how big they were gonna be, how many and what types we would need. Then start on the concrete. Actually, I would start on the concrete first because that takes longer, but then we could do the flowers, because that's quick." In Kartesia's comments are references to time management as well as physical skill development. In the context of environmental education for stewardship, this kind of reflection and application are thought to be an important component of building the skills needed for future engagement in similar projects (Chawla & Cushing, 2007; Hungerford & Volk, 1990; Schusler & Krasny, 2008). It is proposed that learning such technical skills is one component of skill building that may lead to future pro-environmental behaviors (Hungerford & Volk, 1990). Likewise, struggling with a task, making mistakes or even having small failures, and then overcoming these challenges is thought to strengthen self-efficacy (Bandura, 2006). Application

of these skills is the next step towards future action. Together, the observations of students' skill competencies and their own reflections on how they would apply new knowledge suggest that skills built on a school-sited project can support future engagement landscape stewardship activities.

#### **5-4-2. Self-efficacy: A positive outlook**

Skill development is one component of efficacy construction, but skill development alone is an indication of efficacy. One less frequently discussed component of efficacy construction is that of positive emotional outlook. Students' attitudes and levels of motivation were made in light of the following circumstances. First, students' motivations for enrolling in the summer program varied widely. They included "needing a summer job for money", "need(ing) something to do", and being "interested in helping" the project. Second, it is unlikely that students understood the commitment they were making. I suspect that the amount of physical work was new to most students. Finally, students' rate of attendance varied significantly. For some this might equate to a lack of interest or enthusiasm, but from speaking with the students, it seemed that missed days had less to do with a lack of interest than with travel logistics, family needs, or other personal struggles. Throughout the course of the project, some students were observed to jump in to do jobs more quickly, and certainly there were those who worked harder and longer hours. Jermaine, Mona, and Dante even volunteered for three extra weeks of work after the internship ended. Despite individual differences in motivation for participation, and the likelihood that students did not really understand the commitment they had made, students' general attitude towards work and the project was observed to be positive. And if, as Bandura (1982) argues, having a hopeful emotional state can help push people through the more difficult moments, the program certainly offered up a series of challenges that required more than a

technical skill set. Work delays, oppressive heat, tricky construction details, and work requiring significant physical exertion all required some positive attitude to push through and complete. This is in keeping with other studies exploring the relationship between a positive attitude and self-efficacy in youth describe how having self-efficacy can help a young person through difficult emotional struggles (Kavanagh & Bower, 1985; Oettingen, 1995). While Bandura (1977) has described the relationship between efficacy and a positive outlook as a two-way interaction, in these studies, efficacy is seen as a supportive feature of maintaining a positive emotional outlook, as opposed to portraying self-efficacy as an outcome of a positive outlook. In the context of this study, it seems a positive attitude supported students through the challenges of the project, acting as a supportive component of efficacy construction.

#### **5-4-3. Self-efficacy: A positive outlook built from skill competency**

While literature discusses how a positive emotional outlook may support efficacy (Bandura, 1986), in this instance findings indicate that confidence may be built in the process of developing the skills needed to complete a task. These students expressed this positive outlook in terms of a sense of accomplishment and self-confidence. Over the course of our conversations several students expressed how challenging the project was for them to complete, but it also that learning new skills had increased their general levels of confidence. This is in keeping with service learning literature suggests participation in some kind of construction activity can support long lasting increases in teens' self-confidence (Astin, Vogelgesang, Ikeda, & Yee, 2000). As students spoke, they exuded a sense of accomplishment that they had managed to persevere through challenges. For instance, Anyah said, "You gotta work hard. You got to keep in charge of yourself to get it done. You need to be motivated to do it." And Kartesia reflected, "...it gave me more opportunities, like now that I did this, I know that I could do it again. So it gave me



more confidence.” Likewise Dante discussed personal growth, “I liked how we got to learn stuff. It was like a new environment to me, because I ain’t never did none of that stuff before. I liked it that I was a part of something that we developed, a positive thing that we developed for our community.” These findings suggest that over the course of a design-build program, students may develop technical skills that support a positive perspective on engaging in future projects. This connection between learning construction and gardening skills and a general increase in confidence for future stewardship activities is one example of how the different constructs of self-efficacy, in this case experience and a positive emotional outlook, may interact.

#### **5-4-4. Self-efficacy: Thinking about community support**

In addition to mastery of experience and having a positive outlook, having a supportive environment and vicarious experiences also play a role in efficacy perception (Bandura, 1977). Generally examined separately, in this study supportive environment and vicarious experience are examined together. This decision was made for two reasons. First, student’s responses provided minimal data respective to vicarious experience. Second responses related to this theme were made in response to the question of whom the students would call on to help with a future project. As such their answers also fit into the theme of supportive environment.

It is argued that seeing another person can inspire confidence in one’s own abilities; in moments of struggle, support from peers or mentors can boost efficacy and help one move toward one’s goal (Bandura, 2006). When students were asked who they could ask to help them start a future project the array of people mentioned was fairly small, was not consistent across student responses, and was rather general. For instance Quanique said she would ask “community people, who like to help the community.”

This short list was rather surprising as a number of adults (custodial staff, teachers, parents and community members) often stopped by the site while we were working to provide encouragement. Some Carrera and 9GA staff even volunteered to work with the students for a few days over the summer. There was some initial skepticism about the project and the students' ability. The school facilities manager was less than positive about that project at its start, but over the weeks, began to offer helpful technical advice and to let us borrow small equipment as needed. Likewise masons laying concrete for the new patio seemed a little wary of the young people at first. But after a few days, they expressed how impressed they were with the students' perseverance and began to offer technical advice. They even let the students, with knee high boots on, jump in the patio form and help move wet concrete around as it was poured from the mixer. Nevertheless, the students did not list any of these likely sources of assistance when asked.

Students gave my name as a person that could help them several times; when asked who else they would ask students suggested Mr. Ford the School Supervisor who left his suit at home and sweated side by side with the students for several afternoons of work. They also mentioned the college students from University of Michigan (UM), Ann Arbor and Flint who helped on site. Some were not sure who to ask for assistance. Anyah reflected, "You? You. There is nobody I could depend on, so...." These findings might suggest that students did not feel as if there was supportive network from which they could draw on for the next project.

This extrapolation should be made with caution. First, the students' short list included people with whom they had significant contact throughout the length of the project. The relatively short list of people outside of the program coordinators and school leaders who could

help them may have been a reflection of the program organization. Authentic youth participation in a design project should allow young people to engage in the decision making process as well as the activities of moving a project forward (Chawla & Cushing, 2007; R. Hart, 2001; Heft & Chawla, 2006). The brief time frame of this project combined with the physical nature of the work – which required significant adult supervision – meant that some organizational aspects of the project were done after program hours. Many of these organizational issues (technical assistance, permissions for access to the site, supply deliveries etc.) required significant support from the school and community members, but this may not have been apparent to the students.

Alternatively, it may have been that students did understand the complexity of organizing such a project. For instance, Mona’s reflections represent her understanding of the need for organizing and financial resources for similar projects. She offered that to start a new project she would “write a letter to some organization....I’d ask everybody. I’d be selling cookies.” Dante followed this idea by saying he would “write a letter to some important organization, for some money” and “get people to sign a petition”. Dante reasoned, “The schoolyard is pretty big. I think we could do it. It’s gonna take a while. I just need my people to pitch in.” In these comments students indicated an understanding that in order to be successful, large stewardship projects require more than individual technical skills - they require the support and engagement of many people.

Self-efficacy literature often focuses on the mastery of skills as a key component of efficacy construction, but a project of this size must be done in concert with other people. Similar to a relationship between the components of skill mastery and positive emotional outlook, these findings indicate a relationship between technical skill mastery and a supportive environment.

For instance the students understood that in addition to new skills, they would need the help of their community to engage in future projects. This suggests that while skills and a supportive environment contribute directly to self-efficacy, these components also have a relationship to each other – confidence in one’s skill set may be associated with the need for community support for larger projects.

Furthermore, it is here that we begin to see an interplay between self-efficacy components and collective efficacy. Self-efficacy is influenced by a supportive environment, often described as verbal encouragement (Bandura, 1977). For these students a supportive environment was exemplified by finding people with skill sets to support a stewardship project. This extends the idea of support from a verbal relationship to one that includes the possibility of support through collective action. Similar to self-efficacy in which one assesses their own skill set, collective efficacy includes an assessment of a group’s skill set. This idea of finding support in context of a skill set, suggests an interplay between the components of self and collective efficacy. This interplay between the components of self-efficacy and collective efficacy were also seen when students reflected on their peer group’s ability to build the school yard and in their comments about the future care of the site.

#### **5-4-6. Collective efficacy: Evaluating one’s peer group and a positive outlook**

As described, during the summer months students’ exhibited behaviors that might be described as positive in perspective – a willingness to work hard under difficult conditions – yet many of the them recalled having minimal confidence in their ability to complete the project. It is in such recollections that we see how a positive emotional outlook, one component of self-efficacy and collective efficacy may be inter-related.

When asked to reflect on whether they had been confident that they could complete the plan, several students were quick to admit they were not hopeful about its completion. Angel stated, “No I didn’t think so. I remember rolling my eyes.” Kartesia had more to say. Thinking back to the design conception phase of the project when her whole class was working out ideas for the site she said, “Yeah, but I thought it was going to be the whole classroom, and if it would have been the whole classroom, I don’t think we would have got as much as we got done, because there’s a lot of childish people in there, and they would not have took it seriously. But the people that you had, we took it seriously, and we got a lot done.” Mona and Dante also started out unsure of the capability of their peers. Mona, who had participated in the school year program said, “I didn’t think that we had it in us, but we got it done though, I’m proud of us.” Dominique, who joined the program at the start of the summer reflected, “I didn’t think we were going to do it. I believed in us for a little bit... I was like fifty-fifty.” These students’ initial perceptions of their peer group were not far off from my assessment. Recalling the class dynamics during the school year, one could understand their concerns. There were a number of male students who had short attention spans and liked goofing around in class. When given a significant task or when working in small groups, they could be quite productive, but in general group dynamics were an on-going challenge.

The development of collective efficacy in part comes from working together and developing group goals and norms (Roger D Goddard et al., 2000; Goncalo, Polman, & Maslach, 2010). As students recalled a low level of confidence in the project’s completion they may have been assessing the collective efficacy of their classmates at the end of the design phase in the Spring 2013. Students’ assessment that their class was not mature enough to complete the project might add to their sense that they were not in a collaborative effort in which they could count on

their peers. These comments highlight how student's collective efficacy assessment of their peer group seemed to mitigate their hopefulness (positive outlook) in their ability to complete the school yard.

Other students were more hopeful. Anyah responded, "I knew if we worked hard enough things would go." Tanya remembered thinking, "You can do anything if you try." Jermaine, who was generally more hopeful and rarely cynical also reflected on the class experience saying, "I think maybe we could because I understood how they showed... each of the students showed eagerness." He also expressed his personal interest in the project, "I wanted to do it, and I wanted to change things. I thought it could be good." Here again we see the interplay between self-efficacy themes and collective efficacy perceptions. This kind of intersection of self and collective efficacy is in keeping with efficacy literature that suggests that collective efficacy is built in part from an individual's confidence in their role within a group (Bandura, 2000; Roger D. Goddard, Hoy, & Hoy, 2004) In Jermaine's reflections we see that a positive outlook may also support an assessment of collective efficacy.

#### **5-4-7. Collective efficacy: Teens working in a community setting**

Similar to the ways in which one's positive attitude may be with collective efficacy assessments, it seems the concept of a supportive community influences both self and collective efficacy assessments. In efficacy literature, a supportive environment is described as the support a person may receive while attempting a task (Bandura, 1977). In this study, this concept can be applied to this study in how an individual student perceived receiving support in learning new construction or gardening skills. The concept of a supportive environment may also refer to general attitudes and trust one has in one's community (Robert J Sampson, Morenoff, & Earls,

1999). When students began to discuss whether they thought their project – or imagined projects – would be cared for, it seemed that they were struggling with this exact issue. They wondered aloud whether they could count on the community to care for newly built spaces. In this study, neighborhood-level collective efficacy for the care of local landscapes is examined through students' references to the care of future projects. Precedent for examining collective efficacy in this way can be found in studies that suggest working together on community greening activities builds social support and collective capacity for collaboration on future community needs (M. Ohmer & Beck, 2006; Teig et al., 2009).

When describing the future care of the schoolyard project, students expressed little confidence that their peers would care for the site, but they noted that caring adults might be able to ensure its care. Jermaine and Angel suggested that because adults like the School Supervisor, Mr. Ford, and people from the UM were involved, the newly constructed outdoor classroom at 9GA might be taken care of. But Quanique responded that she had already seen trash, specifically pop bottles, scattered on the site. Tannya commented that the 9GA site would get “worn out” and worried that the tables would get drawn on. Anyah agreed, stating “People will carve their names [in the tables].” This lack of trust in their peer age group was evident when imagining future projects as well. When discussing a future project Quanique stated, “...how some little kids are like destructive. They're just going to break things. And some older kids, they're just going to go there and smoke.” Adults from the school community also mentioned these concerns. The facilities manager noted that he had taken down all the picnic tables at the Beecher schools because they were constantly vandalized and that the picnic areas had become places for young adults to hang out and drink. He did not want to encourage this kind of activity at school settings.

Taking a pragmatic long term view, Kartesia said “I think it will last, but not as long as it would because...people will mess with the flowers. Kids or teenagers.” But she qualified her statement, noting that “There’s a lot of people who care about it, but if there’s somebody like one of us who are over here, just monitoring it...then it will probably last a long time.” Dante and Mona were indignant as they discussed how the plants lining the ramp had already been stepped on. Apparently Mona’s mother had noticed the damage and had shared her observation with Mona at home. But again, like other students, Mona expressed hope that it would be taken care of because Mr. Ford was watching the site and “he’s got people out there picking up trash.”

These comments suggest the importance of stewardship projects that connect young people and adults. Childhood experiences in nature with a caring adult have been shown to be instrumental in adult engagement in pro-environmental behaviors (Chawla, 1998). Additionally, literature on children’s participation notes the importance of collaborative projects that let young people take on age-appropriate roles with adults’ support (Francis & Lorenzo, 2002; R. Hart, 2001). These findings also suggest a potential role for understanding more about inter-generational relationships in collective efficacy construction. There are extensive studies exploring how adults can support academic efficacy of youth (Roger D Goddard et al., 2000), or how adult communities can create safe neighborhoods for children (Robert J Sampson et al., 1999), but these studies do not integrate adult and youth efforts. The concept of intergenerational collective action is currently being discussed in environmental education discourse that looks to understand capacity building for environmental action at the community level (Keith G. Tidball & Marianne E. Krasny, 2011). Findings in this study imply that teen-adult relationships are an important component of collective efficacy to engage in community level stewardship activities.



#### **5-4-8. Growing the school, our community and ourselves**

Finally, woven through students' reflections on the program were their ideas about what kinds of spaces the community needed and why anyone should participate in similar stewardship activities. I will start with a brief review of students' comments as they provide a snapshot of the context within which the project was set. Specifically, they wanted parks. There are no public parks within the Beecher School District; Dailey Elementary has a playground accessible during the week, but it is fenced off after school hours and on the weekends. Students also indicated that they wanted new spaces that were open (not "fenced with barbed wire") and aesthetically pleasing (with pretty flowers, "not messed up"). They wanted spaces for restoration, to "just chill", including a schoolyard that was inviting and whose appearance reflected a sense of pride. Intuitively they noted that such places would draw people to them. For instance when Kartesia spoke of an old playground she wanted to fix up and plant with flowers, she noted that such interventions would "make people want to go there more." The idea that an aesthetically pleasing place would invite people to it was also represented in students' comments about the 9GA project. Tannya expressed, "It's our school and we want it to look nice. If we have a nice school, we can recruit people. People want to be recruited to go to the school. When people come they wanna see a nice campus. So we should make a change, we should make it look nice." Students also reflected that by making a change to their community they might inspire other youth to do the same. Angel's answer also represented an interest in leaving a legacy, but a desire to be a model for others. She described how the project "helps people that are going to come up there next year. It's going to look better, and they're going to help out, too... People are just going to keep helping." In these reflections are two separate but intertwined themes – how the act of helping makes one feel good and how a well-cared for space may inspire good feelings and good behavior.

In further musings students expressed the concern that both their school and the greater community were equated with and perhaps judged by uncared for landscapes. With his usual dry humor, Dante stated with a serious tone that the project was important because you had to be “hard working...[it’s something] you have to be serious about...you have to jump right in.” He then broke out in laughter, saying not to use that comment, but that he did enjoy working with people. After a bit of banter with Mona he reflected, “It gives a different environment to Beecher, because everybody thinks Beecher is filthy, dirty, nasty. It shows everybody that it’s different than the façade, and what everybody says.” Mona agreed, “It gives a different view of Beecher than before.” Environmental justice theorists have made similar connections. They note the parallels between the framing of nature as wild and untamed and racist depictions of people of color as wild and unkempt (Finney, 2006; Taylor, 2009). Similarly minorities living in urban areas may be stereotyped by nearby environmental degradation (Ducre, 2006; Gans, 1995; Robert J. Sampson & Raudenbush, 2004). Furthermore, students in this study intuited that care for one’s schoolyard landscape has broader implications than what happens on site. As Dante stated, “I would encourage someone to do [this] because it really shows character about people. How they think. Their thinking process. It keeps that part of your little neighborhood looking nice, so it shows that others really can do it, and then we have a nice neighborhood.” Speaking about new design Jermaine made similar reflections. He noted how important it was that we had made a change in the “appearance and the feeling” of the site. He noted “The back end of it was just ugly looking. Now it looks it’s cultivated.” He continued, this kind of project “might attract more people to come to the school, and have more people have a good review on it. Because somebody might just think the school is just based on sports, and having good athletic things, but then once they see that the school actually takes pride in other things, like community, then

maybe they'll change their view.” Together the students' comments and this discourse suggests that projects like the schoolyard re-design could support a sense of dignity from within the community and a change of perception from outside the community.

With low income minority communities facing a myriad of social, economic and environmental challenges, efficacy landscape stewardship might seem low on a list of priorities, but recent studies of community resilience suggest that landscape stewardship efforts are an important component of supporting healthy and sustainable communities (Tidball & Krasny, 2007). While landscape stewardship is often associated with resource management, urban landscape stewardship activities, from stream restoration to community gardening, may also require advocacy and organizing efforts that support community connections (Svendsen & Campbell, 2008). For instance following a natural disaster, human crisis stewardship activities from community gardening, to memorial building to stream restoration may help communities recover important social connections as they support local ecosystems (Helphand, 1997; Tidball, Krasny, Svendsen, Campbell, & Helphand, 2010). Likewise activities which require collective action, like community gardening, may also build efficacy for further community collaborations (Teig et al., 2009)<sup>1</sup>. It is proposed that such collaborative experiences and the subsequent feelings of accomplishment and increased community capacity may build community resilience to other environmental and social stressors (Svendsen, 2009; Svendsen & Campbell, 2008; Tidball et al., 2010). With this in mind it becomes ever more important to understand how

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<sup>1</sup> Similar projects are being facilitated in Flint and Detroit, Michigan, where this study is located. These urban and community garden efforts play similar roles strengthening social networks that provide (Taylor & Ard, 2015; "Work Groups: Garden Starters," 2015).

designers and educators may use participatory design and restorations projects to support efficacy construction for landscape stewardship.

### 5-5. Implications and conclusions

The experience of eight low income, minority teens living who re-built a school yard was used as a framework for exploring the construction of collective efficacy construction. Notably, throughout the interview process student reflections indicated that the components of self-efficacy construction for stewardship activities are closely intertwined. While this relationship is known, the interactions are not well understood. For instance, findings in this study indicated that the students were hopeful about engaging in future projects in part because of their newly acquired skills that would help them to do so. Furthermore when they thought about future projects, they intuitively discussed the support they could find in their communities to implement them. As they began to reflect on community support, themes often related to of self-efficacy (positive emotional outlook and supportive environment) began to emerge as in their reflections of collective efficacy. This may be illustrated in the following diagram (Figure 5).

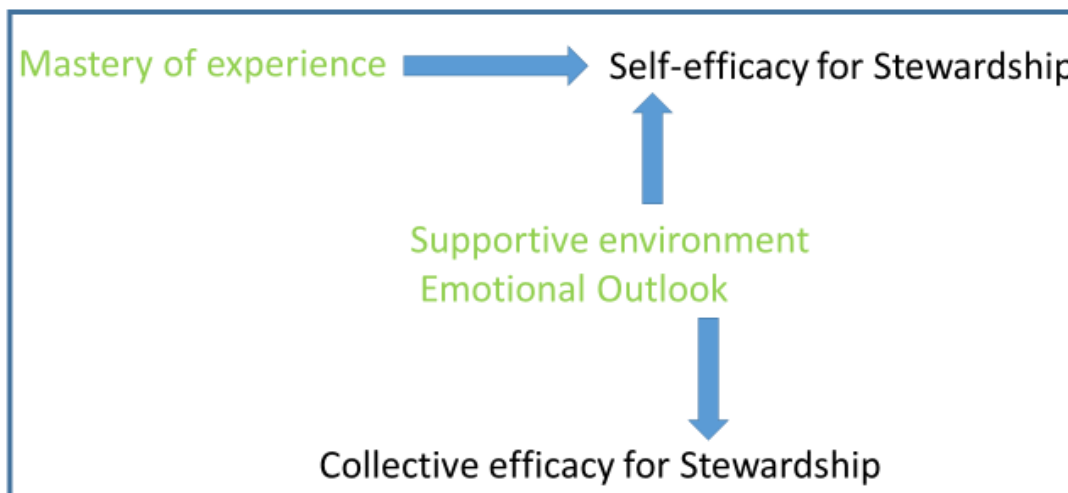


Fig. 5-5 Model of self-efficacy components that support collective efficacy

These findings suggest the need to better understand and perhaps define the components of self and collective efficacy if we are to better support efficacy construction. The use of a five week school yard design-build program illustrates that we still have much to learn about self and collective efficacy construction. In particular it highlights the inter-relationships between the components of self-efficacy. Furthermore, it highlights the complex relationship between self and collective efficacy in a community setting suggesting that there is a two way relationship between self and collective efficacy (Figure 6). And that at any one time, separate components of self-efficacy may support or mitigate collective efficacy.

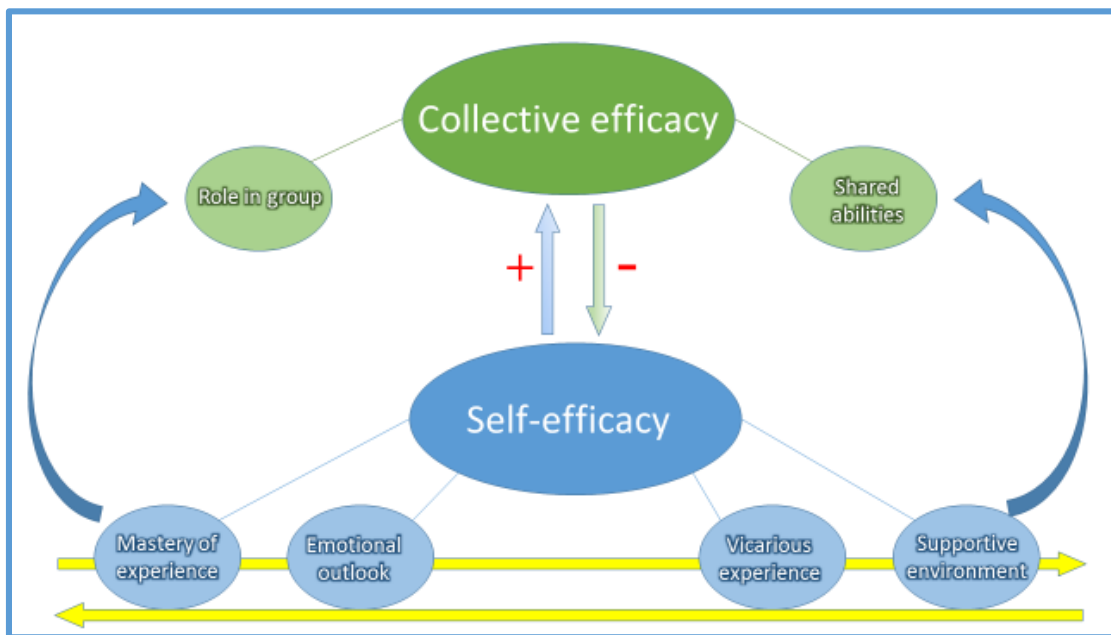


Fig. 5-6 Model indicating the complexity of the relationship between self and collective efficacy

Students in this study understood that they could not accomplish a similar project alone; their assessments included reflections on their skills, hopes, and available support for particular activities (self-efficacy) *and* how the community would support those efforts (collective efficacy). When students spoke of support for future projects it was not only in light of who

could help them accomplish the project, but who would support its future care. For instance, on one hand they expressed concerns that other teens might vandalize the space, on the other they suggested that adults could play a significant role as advocates for and caretakers of their new schoolyard. In particular, it indicates the importance of thinking about how one frames collective efficacy. This study initially framed collective efficacy of teens as within a peer group. Findings indicate that this was much too narrow of a perspective, and that the teens' collective efficacy was situated within their peer group but also with in their larger social network.

When working in communities struggling with environmental justice concerns, landscape designers and environmental educators may play an integral role building resilience through stewardship. By facilitating projects that engage students in the creation and care of safe outdoor green spaces, these professional may help young people build an ethic of stewardship.

Understanding the interaction between self and collective efficacy for landscape stewardship suggests a few guidelines for using participatory design projects to support collective action in improving local environments. Construction of new schoolyard spaces can teach teens some necessary physical, technical, and planning skills useful for landscape stewardship projects.

These experiences form an integral part of building their confidence and self-efficacy for future action, but engaging in these activities without collaboration from the students' local community has limited impact. Teens need to feel that they are part of a larger collaboration for community care. In this study teens learned a variety of new skills and built new relationships important in building efficacy, but the nature of this summer program was such that students did not have much ongoing contact with adults from their community. The fact that I facilitated this participatory design project, and I was not of their immediate community seemed to have a strong influence on who students identified with the project and who they would look to for help

on future projects. Given the role of designers and educators, this may not be an unusual scenario, but the impact of this role is significant. In similar scenarios care should be taken to help young people build relationships with each other and with their greater community so that upon completion of the project they can look to each other for support in the care of the newly designed or restored space. In addition to helping youth and adults work together to create a new space a designer can help a community plan for the long term care of a new space. This may provide a framework for on-going collaboration. These intergenerational connections made through participatory design projects can further support the collective capacity of community to steward local green spaces, in the building of these social support networks are the seeds of lasting socio-ecological restoration and resilience.

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## CHAPTER VI CONCLUSION

### *Summary of findings:*

This dissertation examined how participation in a school-based participatory design program influenced teen's sense of collective efficacy in terms of future environmental action in their neighborhood. The utilization of a design project which evolved over the course of seven months facilitated the use of three different methods of investigation. Through surveys, interviews and participant observation this study offers insights about the particular activities and experiences that can support efficacy construction for landscape stewardship. Research outcomes identify the kind of spaces that support urban teens' interests and needs for outdoor activities. The results also demonstrate how the care of these spaces can build self-esteem and community pride while strengthening social interactions. These studies also add to our general understanding of the interplay between the components of self-efficacy. Furthermore they begin to build a more detailed picture of how self and collective efficacy are mutually supportive of one another.

By grounding this research study in the practices of community-based participatory research, the schoolyard design project also addressed the interests of the partner organization to understand more about the impact of such programs, and the interests of the participating school by engaging students in the design and construction of a new school yard. This concluding chapter looks across these studies to provide an overview of efficacy construction for landscapes stewardship. It closes with a discussion of these insights provide practical recommendations for

educators and designers interested in empowering youth to participate in building stronger urban communities.

The empirical studies in Chapters III and IV are grounded in the early phases of the participatory design process. Chapter III utilized a survey to examine students experience in the design conception and design development phase to better understand perception of collective and self-efficacy and relationship between the two. This study highlighted the connection between a teens' feelings that they could play important roles in a stewardship project and their perceived collective efficacy. Likewise, the ability to find help for stewardship projects was a predictor of collective efficacy for landscape stewardship. In addition, this study hinted at the relationship between self and collective efficacy. For instance, students' strong sense of self-efficacy for improving landscapes of home or school was highly associated with their collective efficacy for stewarding local landscapes. This was especially true for female students. Finally, skills related to the stewardship project, like the technical skills of construction, gardening and community service or the social skills built through community service experience, were not associated to collective efficacy perceptions; but they were strongly related to self-efficacy perceptions.

Chapter IV provides insights into the types of urban landscapes that these teens preferred and did not prefer. Drawing across these findings we see how the students quite clearly connect the appearance (care, beauty, safety) of local landscapes with behavior and with perceptions of self and judgments made by others of their community. Using carefully selected photographs as a guide for interviews, teens indicated greatest preference for well-manicured green spaces. Such spaces support these teens' ability to play outdoors and engage with urban nature as well as serve

as invaluable places to gather with peers and family and thereby build social relationships. The findings also describe how abandoned or neglected urban green spaces may illicit a variety of student concerns to fears of crime, wild animals and the discomfort caused by allergies. The suggestions students offered for improving these landscapes were surprisingly simple and low cost. Additionally, they indicated that many of the people needed to make these changes were existing members of their community. Overall, these findings show that minority teens' perceptions of their urban landscape are tightly connected to perceptions of self and community, and that support of relatively simple and low cost changes through stewardship efforts of existing community members can enhance the social network of a community.

The third study, that comprises Chapter V, examines efficacy construction through a case study about the experience of eight students who participated in constructing the designed schoolyard outdoor classroom and garden. Findings from this study corroborate results from the previous two studies in two ways. First, the case study reveals the importance of building competencies in skills appropriate to landscape stewardship activities. Second, this study demonstrates how the aesthetics of a landscape impacts social interactions and influences perceptions of and judgements about a community; these relationships were also seen in the semi-structured interviews of Chapter IV. Finally, this examination of efficacy construction highlights the how perceptions of self-efficacy and collective efficacy are closely intertwined. For example increasing teens' competencies in landscape stewardship practices appears to translate into higher levels of self-efficacy, and this self-efficacy may be supported or hindered by their perception of social support for such activities.

### ***Contributions of knowledge:***

This dissertation uses a novel and multi-tiered approach to weave together existing research regarding participatory design, self-efficacy, and collective efficacy in the context of landscape stewardship and among a previously unstudied group, urban minority teens. It greatly enhances our understanding of efficacy construction through participatory design that can drive environmental action and landscape stewardship.

Efficacy is seen as a key component of motivation and perseverance (Bandura, 1982). As such it may play a significant role in how individuals and community address complex environmental problems. There are few studies examining efficacy construction for pro-environmental behaviors, and to this author's knowledge only one exploring the self-efficacy of youth in the context of pro-environmental behaviors (Meinhold and Malkus 2005). Some authors have suggested that school-based greening activities, like school gardens projects, which have parallels to this design project, may build self and collective efficacy. But again, there is no empirical work examining this phenomena. This study provides insight into how –school-based greening projects can contribute to self-efficacy for landscape stewardship by teaching specific skills (gardening, construction) related to landscape stewardship. Additionally it highlights the importance of creating a sense of collaboration in which students feel they are a part of a team working towards a common goal. It argues that a key component of building collective efficacy through a participatory design or stewardship project is the teens' shared experience with adults in their community. The collaborative effort appears to provide students with confidence that their work will be sustained by the care and protection of adults. Moreover, it creates a wider social network from which they can draw to initiate further stewardship activities.

Current environmental education discourse has challenges for researchers and practitioners alike when considering education for collective action, as opposed to a focus on individual behavior changes (Krasny & Tidball, 2009; Tidball & Krasny, 2011). As an exploration of *collective* efficacy construction, this study is one foray into understanding how similar design and/or environmental education projects may build skills and support relationships needed for collective care of our urban environments. Drawing on findings from all three studies we see that efficacy for landscape stewardship relies heavily on related skill development but that skills alone are not enough to support efficacy for engagement. In addition to broadening our understanding of efficacy construction specifically for landscape stewardship, this dissertation indicates that there is still much to understand about the relationship between self and collective efficacy. First, while efficacy is often discussed in relation to skill building experiences, this study indicates that confidence in one's skill building experiences are closely tied to how one perceived support in their environment. While a supportive environment is often associated with self-efficacy, this study suggests that how a teen defines their support – either as their peers or as the greater community of adults, can significantly influence how they think about collective efficacy. In turn, in this study, when the teens perceived a strong sense of collective efficacy for care of their newly built school yard they also felt more confident about their engagement in future projects. Across the studies we see how individual and community level support can enhance perceptions of collective efficacy. In particular, we see the role of caring adults collaborating with teens on such projects as integral to their collective efficacy perceptions.

Finally, this study adds to our understanding of how minority teens, in urban communities with few financial resources to support natural space, see, feel and use their environment. Critics of environmental education practices have argued that current

environmental practices make normative assumptions regarding the kinds of environments people should care about, assumptions that often do not address issues of racial and economic disparity in low income urban contexts (Cole, 2007; Lewis, 1995). Understanding of these teens may provide educators and designers with new sensitivity for facilitating greening projects in similar contexts. Furthermore their perspectives challenge us to think of landscape stewardship as more than a being supportive of local ecology, but a process that supports community capacity through social interactions and a sense of pride in place.

***Contributions to community:***

As a community-based participatory research project, this work provides an example of collaboration between members of a local community (activists, organizers, educators) and researcher that sought to improve the lives and landscapes of these teens. As cited above, this collaboration adds to academic discourse related to efficacy construction. It also has practical application for the collaborating partners. From a program planning perspective, the research results provide a rationale for future projects that can be cited in grant proposals. It is common for not-for-profits to strengthen their requests for support with data that supports programmatic goals and outcomes. Preliminary data from this study has already been included in a grant for a new project within the Flint school system. My dissertation research has also provided professional exposure for staff members: staff members from EMEAC and Discovering Place have co-presented with the research at two separate conferences on place based education and educational change strategies. Finally, the teens in this study who were empowered by the experience of designing and creating an outdoor classroom at their school have left a legacy that can serve future students in other environmental education efforts.

***Future directions for research:***

This study can be considered an initial foray into understanding how to support collective efficacy construction and as such, it raises questions and opportunities for further research.

As a study intertwined with a design project, future studies could benefit from examining projects of different lengths. This project engaged a fairly small number of students in the initial design phases over a four month period. The original program design called for a yearlong program. Unexpected constraints limited the program to a 14 week experience. A longer program would allow students more opportunities for in-depth explorations of local ecology and social networks and opportunities to build a sense of collaboration which in turn might influence efficacy outcomes. Additionally, a longer program might provide an opportunity to explore the first design phases as a case study in conjunction with the survey of students' experiences.

Methodologically there is room to refine and expand the survey instrument. One limitation of the survey and perhaps the design project, is that while the students were engaged in a design process, they did not necessarily learn, or identify with design language. Survey questions might be refined to accommodate this concern. Additionally, survey questions responses indicated some gender differences related to efficacy and experience. These should be explored further through the survey or through interviews across the entire length of the program. Interviews with students throughout the early design phases of the project might identify other efficacy building components not found through a pre-determined survey.

This study used a set of pre-determined photographs to learn about students preferences for outdoor green spaces. Future studies could benefit from using a photo-elicitation or photo-



voice process in which students take pictures of their choosing and then discuss the images. This process could provide further insight into outdoor places teens preferred or places that concern them. While providing further insights into teens experiences, if such images are shared publicly, or used to advocate for new green space, this process may also have useful outcomes for students who participate

Stewardship practices are often associated with land management practices, without comes that focus on the ecological (Svendsen & Campbell, 2008). Some discourse in environmental education has proposed that in addition to exploring knowledge gains and individual behavior change, evaluations of environmental education programs that engage students in stewardship activities should also evaluate the ecological impact of their actions (Short, 2007). A parallel process may be found in the landscape architecture practices called a post-occupancy evaluation. An ecological and post-occupancy evaluation could add to our understanding of how making change to one's environment may in turn change ecological and social systems.

Finally, there is more to understand regarding the potential of participatory design and related stewardship project to issues of social and ecological resilience for urban communities. Some research theorizes that projects like the one in this study may be thought of as an example of a civic ecology education that enhances local capacity for resilience in the face of ecological challenges (Krasny & Tidball, 2009; Tidball & Krasny, 2007). They propose that in a civic ecology education framework when students make changes to their environment it initiates a feedback loop in which the environment responds to said changes and which in turn has an impact on the community. Future studies could include interviews with adults engaged in the

project to better understand community level collective efficacy. Finally, a similar study in a different socio-economic contexts, with different resources would strengthen our understanding of participatory process across economic and racial differences.

***Suggestions for practice:***

There are many resources available discussing participatory design processes and potential environmental education project with young people. In these resources are creative ideas for engaging activities that connect young people to their local environment. This dissertation adds to these tools on the specific point of facilitating programs that efficacy construction. These suggestions are designed to be applicable to school projects in a variety of social-environmental contexts.

*Ask and listen, then listen more:* More often than not, a designer (or educator) does not live in the community in which they are working. Therefore it is incumbent on the designer, as a part of the participatory process to ask young people what kinds of spaces outdoor spaces matter to them and how they would like to use them. In order to get a more complete understanding of students' experiences in the local landscape it they should also be asked to discuss landscape settings they do not prefer. These understandings may change design choices. For instance, if tall grasses or bushes are associated with hiding people or animals – essentially if they trigger a sense of fear, a designer should make alternative choices. Facilitating opportunities for young people to share their reflections with their community may also help build a sense of shared need and interest.

*Plan AND Build:* The case study indicated that the physical construction of the new site allowed students to learn and practice the physical and technical skills associated with larger scale landscape design and stewardship projects. This was in keeping with the survey responses that associated these skills with self-efficacy for improving local landscapes. The process of visioning and planning can be an empowering experience for young people. The opportunity to engage in the actual construction, care or stewardship of a place and thereby to see the difference they can make to their community may be all the more important.

*Build a teen team - Mix with adult mentors:* Designers should teach individual skills; they should also take the time to engage students in team building activities and help them to feel a part of collaborative process. Likewise they need make sure to connect young people to adult volunteers. Again, designers do not often have a long tenure with the communities they work in. Connecting a school sited, youth focused project to the greater community helps build social connections that may grow after the design is implemented. A particular emphasis should be placed on long term management to ensure the sustainability of design spaces.

*Dream big. Act now. Cut the grass:* Teens need opportunities to envision big changes in their communities, advocate for them and help in the planning process for their implementation. Such planning processes can make significant changes to communities; they may also take many years. Youth living in similar contexts need opportunities to access outdoor spaces to play, socialize and rest – now. In addition to supporting youth to make long term changes, designers and educators can help facilitate projects that make green spaces immediately available for use – we can, help “cut the grass”.

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## APPENDICES

**Appendix A Photographic images used in interviews. Each image was printed at approximately 4x6”**



Park with tall grass



Playground with swings



Church Yard



Basketball court



Abandoned homes





School vegetable garden



Empty lot with basketball rim



City park / Family picnic



Flower garden

*Appendix B Survey instrument*

PLEASE PRINT CLEARLY- Thank you!

Name: \_\_\_\_\_

Age: \_\_\_\_\_

Circle one: Male or female Race/ethnicity: \_\_\_\_\_

What is the name of the elementary school you attended \_\_\_\_\_

Thanks for participating in the Ugliest School Yard Project. This survey is designed to help me learn more about you. *The following is a survey related to the school garden design we are about to design and build together.* Please answer the questions to the best of your ability. There are no right, or wrong, answers. This is not a test and you will not be graded on the project. While I appreciate your answers, you may feel to stop taking the survey at any time or to leave answers blank.

---

This section asks you about your experiences and feelings. For each circle I will briefly describe a task or a project.

If you agree with the statement that I read to you, write the word in bold in the middle of the circle. For example if I say, "I like to eat vegetables, they may me feel healthy," and **you agree**, write the word *vegetables* like this:

*Vegetables*

If you are **not sure** you like vegetables, or you only like them **sometimes**, then write the word *vegetables* like this:

*Vegetables*

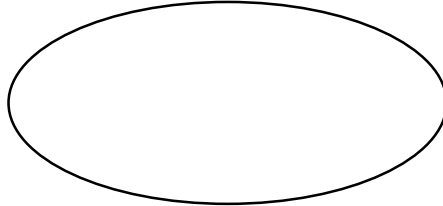
If you **disagree** or **don't like** eating vegetables then wring the word *vegetables* like this:

*Vegetables*

**Now, we'll do one together on the board.**

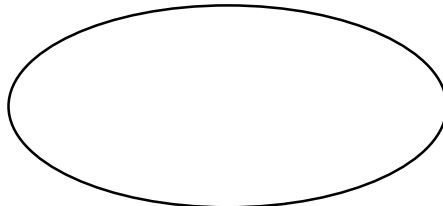
After I read a short statement about your experience with the following words **underlined**, write the **underlined** words at the appropriate place inside, across the line or outside the bubble according to how you feel about each activity.

**Construction**



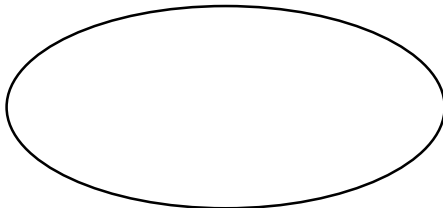
**I have seen friends or family working on construction projects? Y N**

**Gardening**



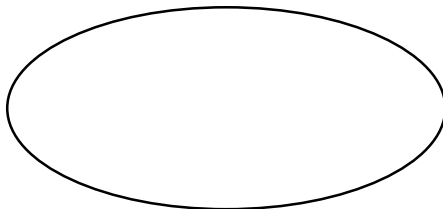
**I have seen friends or family gardening? Y N**

**Making art**



**I have seen friends or family making art projects? Y N**

**Making  
Neighborhood  
Change**





If you have participated in some kind of project to improve your community please write what you did here:

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I have seen my friends or family working on projects to improve my community? Y N

**Mind Maps!** The following exercise asks you to make connections between a word listed in the circle and what you know about that word. The words you add maybe connected may be ideas, issues, and/or feelings. You may add as many lines and connections as you like. **Let's do one together on the board with the word: *playground*.** Now you do these on your own.

9GA school yard

City park

Urban Ecosystem

Environmental Justice

**PAUSE HERE: Wait for the researcher to give the next set of directions**

**Community Improvement Questions:** The next questions ask about your ability to perform specific projects related to improving the land around my community. For each item, please rate how confident you are that you can complete that task. Please check **only one box** for each question below.

*I am confident that I can....*

	Not at all confident	Not very confident	Somewhat confident	Quite confident	Very confident
a. improve the yard around my home.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. improve the schoolyard at 9GA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. improve the church yard at my church. (If you do not go to a church leave blank.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. improve the landscape of my local park.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. improve the empty lots in my neighborhood.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. start an outdoor community improvement project.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. I can find the help I need to start these kinds of community improvement projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***I am confident that...***

	<b>Not at all confident</b>	<b>Not very confident</b>	<b>Somewhat confident</b>	<b>Quite confident</b>	<b>Very confident</b>
h. my 9GA science class could work together to improve our schoolyard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. my 9GA science class could work together to improve our local park.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. my 9GA science class could work together to improve an empty lot.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. my 9GA science class could work together start an outdoor community improvement project.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. working on a team, I can be an important part of these kinds of improvement projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I am aware of “green job” career options: (circle one) Yes No Not sure

What “green jobs” have you heard of before? \_\_\_\_\_

---

FINALLY ....

Please list three things you learned in during this project:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Please list three things you liked about this project:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Please list one thing you would change about this project:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

## Appendix C Project Introduction for School Administrator

### Introduction to the “Ugliest” School Yard Project

The “Ugliest” School Yard is a participatory landscape design program that engages students in the process of deep design – the design and construction of a school yard landscape. Inspired by Canada’s Ugliest School Yard program – East Michigan Environmental Action Council has successfully facilitated the program in 4 Detroit high schools. The final landscapes have included new entryways, courtyard gardens, and gardens of meditation. They have drawn on themes of human health with raised beds for vegetables, native species for habitat improvement and the need for safe social spaces for learning and play. Each of the garden designs was driven by student ideas. The 6-8 month project is facilitated by a U of Michigan, Ann Arbor doctoral student in conjunction with a high school teacher. While the project focuses on the design and construction of the school yard, the workshops are flexible enough to support other classroom studies. This is most effective when the classroom teacher is closely involved in the project.

The classroom portion of the project includes two phases: Design Conception and Design Modeling. In Design Conception students explore their cultural relationships to landscape through oral histories, storytelling, and meetings with local gardeners. They also learn about their local and regional ecology. Throughout this process students write and sketch ideas for their new schoolyard. During Design Modeling students work in groups to create scaled models of their dream school yard; upon completion of the models the UM student creates a working model and plan which is reviewed by students, staff and administrators. Once the design for construction is completed, the summer Design Build phase begins. It is during this phase that the actual garden construction ensues. It can be designed to be finished in the summer, or phased over time to allow more students and school community members to be engaged in the project.

In conjunction with the project the UM student will be studying the impact of the project on student’s sense of efficacy and interest in participating in similar projects in their community. The research component will include simple surveys and interviews about students’ sense of place, comfort with nature as well as their understanding of social systems that would support such projects. These questions should build toward a better understanding of the impact participation in these kinds of programs. This data will be vetted and shared with the school community.



**Appendix D Questionnaire used in post summer build program:**

**Summer Design-build Program Survey**

- What did you like about your experience building the school yard?
- What did you learn during the summer program?
- Was there anything about the summer program you did not like, or would change?
- Thinking back to the start of the project, how confident were you that you and your peers could complete this project?
- How confident are you that you could start a similar project on school grounds? And in your community?
- How would you start such a project?
- Who would you ask to help you start that project?
- If you were to recruit fellow students to participate in this kind of project, what would you tell them? Why should they do something like this?