

**Green Deeds in the Mead: A Service-Oriented Environmental Education Program for
Lower-Income Youth in Meadville, PA**

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Dr. Eatmon

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Date

Pledge

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Title: ***Green Deeds in the Mead: A Service-Oriented Environmental Education Program for Lower-Income Youth in Meadville, PA***

Environmental education has become increasingly more popular in recent years. This can be seen with the increase of the subject in many schools' curricula. In addition, various out-of-school programs have developed to reconnect students with nature and prepare them to solve difficult environmental problems that the future will present. However, despite these bold initiatives, many young people are still not being reached. Economically marginalized communities, due to the constraints of time, money, and location, are not as capable of enrolling their children in programs like these. Furthermore, environmental education is often presented from a narrow perspective to a homogenous demographic. Many environmental education programs are not culturally or locally relevant and thus do not connect to lower-income communities.

The following is a proposal for a program intended to reach lower-income parents and children in Meadville, PA. The program seeks to combine environmental stewardship, environmental justice, and citizen science in order to foster environmental awareness and civic engagement. The design contains a literature review, a program design (lessons, budget, timeline, evaluation, etc.), and reflections on a three-week pilot run. The program will be fully implemented in the Creating Landscapes for Families after-school program based in Meadville, PA in the Unitarian Universalist Church in the fall of 2013.

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Introduction

“It is not education, but education of a certain kind, that will save us” -David Orr

During my four years at Allegheny, I have put a lot of effort into environmental education. These experiences left me with a passion for education, but also a frustration with the educational inequalities in the United States. I have worked with students from various socioeconomic backgrounds and I see the same passion for knowledge in all of them. However, some are held back by a lack of resources and an inability to participate in extracurricular activities. Therefore, I decided that I must focus on environmental education for my senior thesis, but for a less-approached demographic.

The Creating Landscapes for Families after school program is based at the Unitarian Universalist Church in Meadville, PA. Every Tuesday and Thursday throughout the months of October to April the program commences once school gets out for the day. Children come with their homework and work on it with tutors while the adults prepare meals. Before and after dinner, there is downtime which is usually filled with educational or art-based activities. The older students (5th to 8th graders) often come together with the younger kids for the same activities. As an occasional tutor for the program, I thought to myself that it would be great if these older kids could have different roles and responsibilities throughout the lessons. After that, everything came together. I decided that the after-school program would be the perfect place to implement an environmental education program for lower-income youth. I presented the idea to the program's coordinators and they graciously welcomed me.

Throughout the project, my ideas of what content should be in the program were very conflicted. After studying environmental justice, I have realized that what people consider an environmental risk varies by community and demographic. I wanted to design a program that would incorporate this particular community's local concerns, but also include a traditional environmental education. I convinced myself that this could be done and started doing the research. From my research, I decided that the best approach would be to incorporate lessons, community engagement, citizen science, and interaction with professionals into the program. My research took me in many directions and I often became overwhelmed with the multiple possibilities for the project. However, as my research became more in depth, my direction became clearer.

There is a growing consensus that if our current lifestyles do not become more sustainable, the environment will suffer at great lengths. Even more disconcerting is that the future's problems will be placed in the hands of the younger generations. This leaves many scientists, environmentalists, and educators asking whether our education system is adequately preparing students to deal with the unique situations they will face. More often than not, the answer is "no." Our current education system teaches students a set curriculum that leaves little room for applying knowledge to real-world situations. Our current model of education needs to change in order to teach students to think critically and to produce energetic and creative leaders that can understand the connections between their academics and the world. In particular students need to be aware of their environment and the effects humans have on it. This knowledge is invaluable in addressing the world's future problems.

However, transforming education is a slow process and there are many forces preventing a quick transition from emphasis on test scores to a focus on real-world learning. To provide students with experiences in active citizenship, various programs have developed. However, these programs have proved to be very exclusive. These types of programs have traditionally served a homogenous demographic, which has prevented economically disadvantaged students from participating. These opportunities have proven beneficial in many ways, such as building community, fostering a sense of ownership, and building responsibility. These are necessary components in a child's life that will better prepare them for the future.

It is important that out-of-school opportunities that focus on education for sustainability become more accessible to different demographics. These experiences will be important for youth that may not be aware of their power and their ability to influence change. All too often economically marginalized youth grow-up not realizing their importance in political, economical, and environmental decision-making processes. Environmental risks such as flooding and poor air quality often plague lower-income communities. Youth are a very important part of combating these inequalities because they often have the most pride for their communities.

The following is a proposal for engaging lower-income students in Meadville, Pennsylvania on issues of sustainability and environmental justice. It is my hope that through careful design of this program, a more diverse demographic will be provided with the skills to become active and aware citizens.

Section I: The Program Need

Environmental Education's Audience

A major reason for the lack of attention towards lower-income students in the environmental education field is the perspective of the discipline. Traditionally, the majority of outdoor education research is performed from the perspective of White upper-class individuals (Alon and Leo 1998). This limited perspective results in catering to students from similar backgrounds. Programs specifically targeted at students from lower-income families are needed, because the number of these students taking part in open programs is minimal (Terzian et. al, 2009). Through surveys of 144 camp directors, one study found that overall only 16% of participants were from lower-income families whereas 66 percent were from middle-class families (James et. al, 2008). Furthermore, economically disadvantaged students are less likely to participate in summer and after school programs than all other students (Terzian et. al, 2009). Only 18 percent of students fitting under the description of “poor” participate in summer programs, whereas 71 percent of all other students participate (Terzian et. al, 2009). This further supports that the intended audience of environmental and outdoor education is too narrow. Although these statistics suggest a lack of participation due to income, more research needs to be done on what actually prevents participation in these programs. Could this lack of participation be due to the focus of these programs? Do lower-income families have different ideas of what environmental education should be addressing?

Economically disadvantaged youth are one of the least likely populations to receive a substantial environmental education, leading to detrimental effects (Stife, 2009). Low-income youth are less likely than more privileged students to get experience in and explore the outdoors (Stife, 2009). There are many negative results for youth due to disconnections with nature (Louv, 2005). The term “nature deficit disorder”, was coined by Richard Louv, in his 2005 book, *Last Child in the Woods*. Among the detrimental effects of this “nature deficit” are depression, attention disorders, and obesity (Louv, 2005). All these effects are very serious and have lifelong consequences.

Focus Area Background

The Pennsylvania Department of Education (PDE, 2004) has outlined various academic standards for environment and ecology. Their justification for these standards is that, "...it is our responsibility to develop a citizenry that is aware of and concerned about the total environment and has the knowledge and skills to work toward solutions to current problems and the prevention of new ones (2004)". The introduction to the standards goes on to say that the main focus of the curriculum is to make clear how humans impact the environment. Through environmentally and ecologically based education, the Pennsylvania Department of Education aims to create aware citizens that are effective problem solvers. Through analysis of the state standards it becomes clear that the curriculum only focuses on humans' effect on the environment and not vice-versa. There is one standard about identifying environmental health issues, but it is very small in comparison to the rest of the standards focused on aspects such as natural resources, watersheds, biological diversity, etc. Many of the environmental-concerns voiced by lower-income communities are not related to the concerns listed in the standards such as drinking water quality, air quality, food access, flooding, and natural hazards

This neglect is problematic because many of the environmental concerns listed in the Pennsylvania State Standards are not based on local issues. Local environmental knowledge is very important for students that want to become active citizens in their own communities. Local knowledge can be a significant contribution to environmental decision making (Fischer, 2005). Citizens, if familiar with and knowledgeable about their local problems, can help make suggestions for how to approach these issues. Understanding the environment's effects on humans and vice-versa is an important foundation to understanding more global problems. Furthermore, multiple studies suggest that environmental concern varies by demographic (Mohai, 2003). It is important for students to become familiar with their local environment and problems so that, once they address these issues, the larger ones do not seem so daunting (Sobel, 1999).

Pennsylvania's Department of Education recognizes that there is a need for expanded environmental education in Pennsylvania (PDE, 2011). However many students in Pennsylvania are still not receiving adequate environmental education (Paladino, 2007). Data from the U.S. Census Bureau shows that the percentage of people living below the poverty line from 2006-

2010 in Crawford County was 15.8 % (US Census Bureau, 2011). This is compared to 12.4% statewide in Pennsylvania and 13.8 % nationally (US Census Bureau, 2011).

Therefore, Crawford County is both above the state and national average of people living below the poverty line. Further, in 2011, 44% of students (K-12) in Crawford County qualified for free or reduced lunches (Pennsylvania Department of Education, 2012).

This is a strong reflection of the number of students coming from lower-income families in the county.

Furthermore, it can be seen in Table 1 that scores on the required PSSA Science tests show that schools in Crawford County are generally below the state average. In 2011, 60.9% of PA students scored either advanced or proficient on the science test (WGAL, 2011). However, only a few schools in Crawford County reached this level. More specifically, students categorized as “economically challenged” scored lower than both the state and Crawford County Schools’ total scores, as seen in Table 2. One of the main components of the PSSA Science test is environmental science; therefore many of the students are not meeting the state expectations of proficiency in environmental literacy. In April of 2012, the Pennsylvania Department of Energy announced that it was donating \$642,835 to Pennsylvania schools in need of expanded environmental education (PDE, 2012). Among the list of schools, were those in Crawford County (PDE, 2012). There are many ways to provide these youth with an environmental education, such as after-school and summer programs (Terzian et. al, 2009 and Louv, 2005).

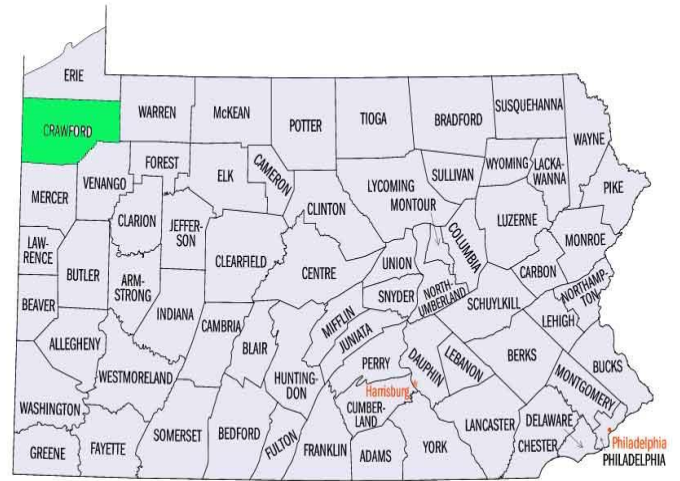


Figure 1 Map Showing Crawford County

Table 1: PSSA Science Proficiency Results for All Students Crawford County

School	Grade	Number Scored	% Advanced Science	% Proficient Science	% Basic Science	% Below Basic Science
Conneaut Lake HS	8	54	37	44.4	11.1	7.4
Conneaut Lake HS	11	68	8.8	26.5	57.4	7.4
Conneaut Valley HS	8	43	16.3	30.2	20.9	32.6
Conneaut Valley HS	11	58	6.9	25.9	48.3	19
Linesville-Conneaut	8	60	23.3	33.3	26.7	16.7
Linesville-Conneaut	11	70	5.7	31.4	45.7	17.1
Cochranon Area Jr. HS	8	63	25.4	34.9	30.2	9.5
Cochranon Area Jr. HS	11	73	12.3	28.8	45.2	13.7
Meadville Area Middle	8	219	31.1	24.2	21.5	23.3
Meadville Area HS	11	223	16.1	24.7	43.9	15.2
Cambridge Springs HS	8	101	32.7	47.5	15.8	4
Cambridge Springs HS	11	85	20	37.6	30.6	11.8
Maplewood HS	8	89	27	39.3	18	15.7
Maplewood HS	11	79	10.1	29.1	44.3	16.5
Saegertown HS	8	99	20.2	36.4	24.2	19.2
Saegertown HS	11	95	23.2	25.3	36.8	14.7

Table 2: PSSA Science Proficiency Results for Economically Disadvantaged Students in Crawford County

School	Grade	Number Scored	% Advanced Science	% Proficient Science	% Basic Science	% Below Basic Science
Conneaut Lake HS	8	20	30	40	15	15
Conneaut Lake HS	11	21	9.5	23.8	57.1	9.5
Conneaut Valley HS	8	28	7.1	25	21.4	46.4
Conneaut Valley HS	11	30	3.3	20	46.7	30
Linesville-Conneaut	8	35	20	22.9	31.4	25.7
Linesville-Conneaut	11	39	5.1	20.5	48.7	25.7
Cochranon Area Jr. HS	8	27	11.1	33.3	40.7	14.8
Cochranon Area Jr. HS	11	19	5.3	31.6	36.8	26.3
Meadville Area Middle	8	104	19.2	22.1	26	32.7
Meadville Area HS	11	78	6.4	19.2	43.6	30.8
Cambridge Springs HS	8	29	27.6	41.4	20.7	10.3
Cambridge Springs HS	11	17	11.8	5.9	58.8	23.3
Maplewood HS	8	35	17.1	40	22.9	20
Maplewood HS	11	25	4	16	52	28
Saegertown HS	8	34	17.6	26.5	26.5	29.4
Saegertown HS	11	35	5.7	20	45.7	28.6

Section III: Program Theory

Environmental Education: Benefits, Problems, and Solutions

Environmental education involves reintroducing students to their natural environment (EPA, 2012). However, the discipline has grown to have a much broader set of goals. The North American Association for Environmental Education defines the discipline as teaching adults and children “...how to learn about and investigate their environment, and to make intelligent, informed decisions about how they can take care of it” (NAAEE, 2012). This discipline recognizes that students have become distanced from the environment (Wielbacher, 2009). This distance is especially unfortunate due to the threat of environmental degradation (Wielbacher, 2009). Environmental education is not just a tool for public awareness, but a way of increasing a child’s skill sets, such as critical thinking, creativity, and academic drive. The field of environmental and outdoor education provides numerous benefits to the development of youth and the future of sustainability and conservation. Using hands-on environmental education is one mode of tackling and preventing estrangement from nature (Louv, 2005). Students in programs that emphasize “real-world” learning generally have higher academic achievements than those that do not participate (Louv, 2005).

More specifically, students receiving environmental education score higher on standardized tests (NAAEE, 2011). For example, a 2005 study found that sixth graders participating in environmental education programs increased their standardized test scores by 27% (Coyle, 2005). In North Carolina, students participating in forms of environmental education increased their math test scores by 31% (Coyle, 2005). There are various explanations as to why environmental education helps improve test scores, but some of the most common reasons are: developing critical thinking skills, relating lessons to the real world, and learning to think independently and collaboratively (Bartosh et. al, 2007). However, many students are not receiving this type of education, despite overwhelming support from educators and parents. For example, 96% of parents surveyed support teaching school children about the environment (Coyle, 2005). Unfortunately, many students are still lacking this type of education and the negative effects are obvious (Louv, 2005). However, many education theorists, critique environmental education for its limited perspective on the environment and its tendency to focus on simple matters such as recycling and planting trees (Mueller, 2008). These values are important, but do not show the correlation between social, economic, and ecological issues.

For this reason, education for sustainability has developed as a way of preventing the mindset that the earth is only a resource. This progressive form of education comes at a pivotal moment. The current and future generations of students will have to be creative thinkers in order to deal with widespread hunger, poverty, and warming temperatures. Sustainability education fosters an awareness of the interconnectedness of society, economy, and ecology (Cortese, 2001). This form of education aims to combine academics in a meaningful way and aims not to make clear distinctions between subjects. Sustainability is unique, in that it is relevant to all disciplines (Cortese, 2001). Most importantly, this field values “real-world learning” and encourages students to work together to solve problems in society (Cortese, 2001). As Santone writes, education for sustainability “emphasizes higher order thinking, decision making, collaboration, problem solving, and interpersonal communication” (2010).

Education for sustainability revolves around some central themes (Capra, 2005). First, it emphasizes the importance of networks. Networks are important in order to achieve sustainable communities, because various actors at different levels need to be part of the conversation. Another important concept is the idea of nested systems (Capra, 2005). This concept teaches that each system is part of a larger system and what you do to one part affects the whole. Educating for sustainability involves integrating education and community through experiential, participatory, and interdisciplinary approaches. In order to involve students and help bridge the connections between education and action, students need to actively engage in their communities. Higher order thinking develops as a result of these actions (NEEF, 2012). Students are able to apply, analyze, and reorganize material into effective tools for change.

Another critique of environmental education is that it leaves out significant correlating issues like those of social justice. Therefore, various movements have developed in order to enhance environmental education’s relevance to different cultures and social groups. For example, educating using an eco-justice framework connects both social and environmental issues. As Mueller writes eco-justice attempts to combine “the resistance of environmental injustices by marginalized communities, the necessity of intergenerational knowledge, the value of renewing marginalized talents and skills, and the interrelationship between the family, the community, and natural environments” (2008). Eco-justice shares many of its values with the environmental justice movement.

The Environmental Protection Agency (EPA) defines environmental justice as, "... the fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies" (2012). Environmental justice generally refers to the interrelation between environmental and social differences. Generally, environmental burdens are unevenly distributed in lower-income communities of color (Walker, 2012). Environmental justice can refer to both to environmental hazards and benefits in a community (2012). Environmental justice addresses these issues at multiple levels. It seeks to answer why these inequalities exist in the first place and how to address them. More often than not, the communities that are affected by these inequities are often underrepresented and not valued in environmental decision making processes (2012). This makes issues of environmental justice incredibly hard to tackle. Some typical environmental justice concerns are air pollution, food deserts, flooding, and toxic waste. These issues affect communities that are disempowered by other social constructs. Environmental justice concerns have traditionally been deemed unimportant in the environmental movement. Thus environmental justice challenges the misconception that the environment is not a big concern of marginalized populations. Rather, the environment is a very important concern, but for sometimes different reasons (Jones and Dunlap, 1992). Environmental justice requires expanding the definition of what the environment is.

Environmental justice movement is often left out of the mainstream environmental movement (Lanza, 2005). This negatively effects what students are learning because environmental education groups teach kids how to plant trees as opposed to how to fight air pollution in their communities. Therefore, environmental justice literacy should become part of the more general ecological literacy movement. Lanza also argues that children are the last to become part of communities' initiatives, which is detrimental because children often have the most passion and pride for their communities. One tactic the environmental justice movement has utilized is citizen science (Walker, 2012).

Citizen science uses the public to monitor various environmental parameters (i.e. water quality, species observance, air quality, etc.) by having them collect and report data (Walker, 2012). This strategy is also used by environmental stewards or environmental justice advocates to monitor their environment and ensure that they are living in a healthy place (Walker, 2012).

The use of citizen science can be beneficial in activism, academia, and education. Citizen science has proven to engage community members in scientific inquiries while also making them more knowledgeable about their local environment (Boney et al). This knowledge allows them to be more effective and active citizens in their community (Boney et. al). Citizen science fosters stewardship by helping identify what is an environmental concern.

Out-of-School Programs

Summer and after school programs focused on environmental education not only provide students contact with nature, but also with necessary skills and knowledge (Louv, 2005). The average American public school does not provide in-depth environmental education, which creates a need for other means of instruction (STEM, 2011). The lack of participation in science programs in colleges has been said to have its origin in K-12 education (STEM, 2011). With this said, the answer lies in afterschool and summer programs (STEM, 2011). Children spend less than 20 percent of their waking hours in school, which does not provide enough time for hands-on learning (STEM 2011). Padgett argues that “After school programs are especially well-placed to help close the opportunity gap that many children and youth from underserved and underrepresented communities face” (STEM, 2011). Education does not have to and should not be limited to the classroom. In order to engage students in environmental fields, they need to be reached in areas besides the classroom. This is where after-school and summer programs come into play. A study conducted by STEM (2011) found that these types of programs outside the classroom contribute to an increased understanding of the role of technology and science in daily lives, increased interest in science careers, increased self-confidence, and increased academic drive.

Out-of-school activities or extracurricular activities are very important for a child’s development. Participation in such activities during middle childhood has shown positive effects emotionally and academically (Mahoney et al, 2005). Organized activities increase educational attainment by promoting the benefits of participation and curiosity (Mahoney et. al, 2005). Students that participate in such activities have smaller tendencies to drop out of school and are more likely to pursue secondary education. Participation in out-of-school activities also reduces behavioral problems (Vandell et al, 2005). Reasons for this are numerous, but some popular explanations are that organized activities promote positive relationships with peers, provide

mentoring from adults, and challenge and engage students. In general, organized activities increase competency for youth. Of course, these benefits can be magnified or minimized according to the quality of the program.

It is important to note that lack of participation in these programs from lower-income youth is not necessarily due to a lack of interest. In order to provide a program for low-income youth, restrictions related to transportation, cost, and time need to be limited as much as possible. By limiting these barriers, after-school programs can become very powerful elements in youth's lives (Vandell et al, 2005). Studies show (Mahwah et. al, 2005) that lower-income youth are most likely to participate in after-school programs when they are locally based. These local programs "not only have the potential to promote positive youth development, but also to affect change at the family, neighborhood, and community levels" (Mahwah et. al, 2005).

Children from lower-income families are exposed to many more challenges than their wealthier peers (Pedersen and Seidman, 2005). Pedersen and Seidman list some of these challenges as under-resourced schools and low parental education. Studies have shown (Luthar et. al, 2000, Pedersen and Seidman, 2005, Barber et. al, 2001) that out of school activities are especially important for low-income youth. National surveys infer that overall participation in extracurricular activities is less prevalent among economically disadvantaged youth than their wealthier peers. However, it is important to keep in mind the context in which these studies are formed. Results differ according to where these lower-income youth reside. For example, lower-income youth from more rural or suburban areas (like Meadville, PA) experience different challenges in their home and community life than do children from similar socioeconomic backgrounds that live in more urban locations (Pendersen and Seidman, 2005).

In rural and suburban areas, results show that extracurricular involvement is very important for lower-income youth's development, in that, involvement prevents early dropout and improves academic performance (Vandell et al, 2005). As mentioned earlier, lower-income youth are more likely to participate in community or neighborhood based programs. There are multiple reasons for this pattern (Carnegie Corporation of New York, 1992 and Pendersen and Seidman, 2005). One reason is that, unlike many school-based extracurricular activities, community based programs not only involve youth, but also the children's families (Vandell et al, 2005). This allows the programs to become intergenerational and affect change at neighborhood levels. Pendersen and Seidman emphasize that the effects of community based

programs can be both positive and detrimental. For example, some youth that participate in such programs show more anti-social behaviors. Therefore, outcomes of youth development highly depend on the quality of the program.

In the last decade there has been a substantial increase in the amount of children participating in after-school programs (Vandell et. al, 2005). In response to this interest, there has also been a growth in after-school programs. There are numerous reasons for this growth, such as child-care needs, concerns about unsupervised children, and concerns about academic performance. After-school programs are in high need for lower-income families that cannot afford out-of-school, fee-based activities. Eccles and Gootman (2002) identify eight qualities of effective after-school programs: 1) Safety, 2) structure, 3) supportive relationships with adults and peers, 4) opportunities to belong to the group, 5) efficacy and mattering, 6) positive social norms, 7) skill building, and 8) integration of family, school, and community.

Interestingly, many of these program qualities are similar to those outlined in “Restoration Based Education: Teach the Children Well,” by McCann. Many environmental-education based programs have tapped into the qualities of successful after-school programs by integrating the community and building skills amongst the participants.

Examples of Environmental Education Programs for Low-Income Youth

In order to provide economically disadvantaged youth with better access to the outdoors and environmental education, many programs have developed (Terzian et. al, 2009). These programs all have various strategies and components but they all share a common goal: to give disadvantaged youth access to environmental knowledge and inspire them to choose careers in the science fields (STEM, 2009). There are many programs that have made the move to address and fix the lack of environmental education for economically disadvantaged youth (Trees New York, 2011 and Pittsburgh Parks Conservancy, 2012). One example is in New York City. The program is called “Trees New York” and was developed to both educate students on environmental issues and encourage them to become active agents in the field of environmental science (Trees New York, 2011). High school aged students are introduced to various professionals in environmental fields and are shown the benefits of getting involved in a comparable career. Similarly, Frick Park’s “EcoSteward” program is creating environmentalists among Pittsburgh’s inner-city youth (Pittsburgh Parks Conservancy, 2012). The program’s

mission is to create stewards that are trained to conserve their local parks. This involves activities like trash collection, invasive species removal, and planting of native flora. In Colorado “cityWILD’s” mission statement is to bring outdoor and environmental education to an untraditional audience – low income youth of color (cityWILD, 2012). A majority of the programs I have come across are younger than ten years. Because these programs are relatively new, limited research is available on their effectiveness.

It is important to emphasize that these programs are more centered on the mainstream environmental movement as opposed to more locally based issues that are important to specific communities and a low-income demographic (Lanza, 2005). However, programs that focus on such things do exist. One example is Literacy for Environmental Justice (LEJ). LEJ empowers youth to become aware of environmental injustices in their community and to address them. The organization was created out of a community in San Francisco that was adjacent to a federal Superfund site. Despite the presence of environmental education programs, the youth knew little about the detrimental effects of the site (Lanza, 2005). This ignited the idea to educate students about their local environment outside the mainstream notions of environmental education. Other organizations of this kind exist, such as: Eco Youth, We Act, Grow Pittsburgh, and the Community for a Better Environment’s Youth Program. The previous examples are only a selection of the current efforts being made across the country.

Stewardship and Perceptions of the Environment

The environmental stewardship movement (sometimes connected to the ecological restoration movement) is practiced under the basis that humans are responsible for environmental degradation and, thus, should also be responsible for restoring it. Environmental stewardship is intended to foster a relationship between humans and their natural environment. The movement has an understanding that in order to maintain a healthy environment for future generations, current resources need to be conserved (Environmental Protection Agency, 2005).

The benefits of stewardship programs are numerous. Some, but not all of the benefits, include: authentic youth and stakeholder participation, increased partnership, and improved cognitive functioning. These experiences are incredibly valuable as youth develop into young adults. With studies (McCann, 2005) showing that 75% of parents believe that environmental education is just as important as science or math, the time is perfect for stewardship programs to

develop. Stewardship programs emphasize service-learning and civic engagement, which ultimately leads to a sense of ownership and belonging in one's community. However, it is unfortunate that, "schools with higher socioeconomic status may have access to more resources and hold different perceptions of schoolyard spaces than lower SES schools" (McCann, 2005). For this reason, out of school experiences are necessary for students from lower-income schools in order to benefit from environmental education in the ways more privileged schools do. However, lower-income families are generally more reluctant to enroll their children into these programs due to money, time, and transportation constraints (Mahoney et al, 2005).

Furthermore, a necessary component of a successful stewardship program is the consideration of local concerns. As said by McCann, environmental education programs "must be culturally responsive and allow for broad perspectives about what is meant by the 'environment'. Educators must be culturally competent, acknowledging the interconnectedness of place and culture, have an acute sensitivity to learners personal experiences in their total environment, and realize that such experiences often entail oppression across race, class, gender and other social contexts" (2011). This approach acknowledges that everyone has a unique relationship and experience with the natural environment.

There are many inaccurate perceptions surrounding ideas of who cares about the environment. For example there are many assumptions that African Americans are not concerned with environmental risks. In reality, African Americans "...have been consistent supporters of conservation and environmental legislation of a wide variety over the past two decades" (Mohai, 2010). Another misconception perceived by the public is that environmental concern is directly proportional to income (Jones and Dunlap, 1992). This theory, coined the "economic contingency hypothesis," says that the poor focus more on economic issues and, thus, the environment is put on the back-burner (Adeola, 19985). This theory says that, as the economy goes down, the economically disadvantaged will be the first to withdraw support for environmental issues (Adeola, 1998). However, this theory has been disproven by researchers such as Jones and Dunlap. Data from surveys with people representing diverse demographics shows that variables such as race and family income are "poor indicators of environmental concern" (1992). However, different demographics have different environmental concerns. Effective environmental education programs must look beyond the traditional notions of

environment and expand those ideas in social and cultural contexts (Newman, 2011). This could mean expanding environmental concerns into issues of environmental justice.

An assessment on the growing amount of youth involvement in the environmental justice movement discusses the importance of intergeneration in advocacy groups (Quiroz-Martinez et al, 2005). Intergeneration allows various perspectives to be present. Youth bring new ideas while adults bring experience. Intergeneration is also emphasized by those that write about effective restoration programs (McCann, 2005). Restoration projects focused on a common goal create bonds between different generations.

Environmental education has traditionally had a limited scope, which needs to be adjusted in order to include more locally and culturally appropriate themes (Lanza, 2005). Many environmental educators see the field as strictly science related. This has resulted in a lack of focus on very pertinent concepts from other fields. For example Cole praises the relevance of social studies, because of its focus on “time, continuity, and change” as well as “individuals, groups, and institutions” (2005).

Program Logic-Model

The current situation in Crawford County, exposed in Section I, reveals a need for increased environmental education for lower-income youth in Crawford County. As seen in Table 1 and Table 2, not enough youth are meeting advanced and proficient levels in science. Furthermore, a substantial amount of people in the county live in poverty. Section I revealed some of the unfortunate statistics in the focus, but did not suggest theories for why economically disadvantaged students are left behind in environmental education or how to solve the issue. Therefore, this section used extensive research on environmental education theories, out-of-school programs, and the perspectives of economically-challenged communities to develop a logic model for the program that would fill the clear need for environmental education for lower-income youth in the county. Figure 2 displays the theory for this program based on the research. The model includes the methods as well as the intended results for the program.

Environmental education and education for sustainability both strive to encourage individuals to change their behaviors. Environmental education preaches the importance of reconnecting children with nature, while education for sustainability encourages critical thinking and community engagement. The literature proves that both theories have exceptional outcomes.

Therefore, the program model aims to combine both forms of education. Research on out-of-school activities has proved that it is important to have measurable outcomes and intentions for programs. Furthermore, participants should have a sense of ownership for the program and see its value in the community. Finally, it is important to have a specific goal for a program. A program's effectiveness highly depends upon its organization and quality. This program model strives to fill the educational and opportunity gap for lower-income youth through environmental education strategies. Ultimately, the program strives to close the environmental education gap for lower-income youth by developing participants' interest in community engagement, environmentally-friendly behaviors, and science-related fields through hands-on, locally relevant, and service-based education.

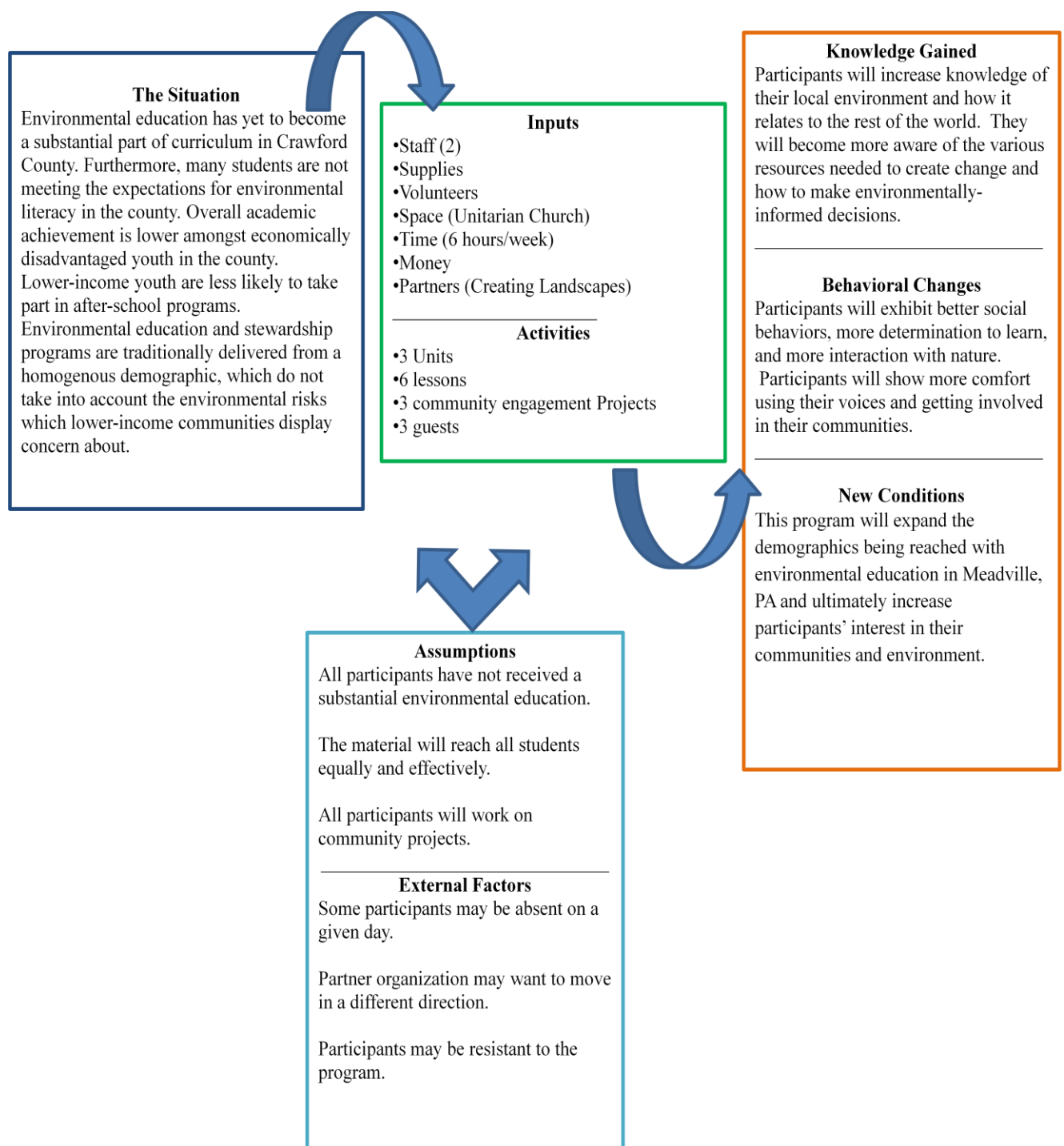


Figure 2 Program Logic Model

Section III: Program Implementation

Choosing a venue and community partner for the program's implementation proved to be a simple task. The Creating Landscapes for Families after-school program fosters community and intellectual growth. The program exemplifies many other qualities of successful programs that I discovered through my research. Families that have children in The Crawford Central School District that qualify for free or reduced lunch are all eligible to be a part of the program. The program takes place at the Unitarian Universalist Church in Meadville, Pa. Children of all ages come to the program with their parent/s once school is out for the day. Mentors help the children complete homework and study for tests, while the parents (mostly mothers) prepare dinner for the group. When homework is done, children in the program do some sort of activity (e.g. holiday craft, dancing, singing, etc). This activity continues until dinner is ready. Following dinner, the parents and children come together for group conversation and activities. I chose to work with this organization due to the commitment to its mission and its devoted staff. I presented my ideas to the program's facilitators and they warmly welcomed me.

I began the process of implementing this program by interviewing the parents and guardians involved in the Creating Landscapes After-School Program. The interviews had multiple intentions. First and foremost the interviews acted as an introduction to the program. Next, I hoped to gauge the parents' interest in their children's' participation in the program. I then wanted to assess what they identify as environmental concerns in their community. I used this information to help structure the program and its content. Table 4 provides a summary of the questions and most common responses. Appendix 3 provides the full interviews. I conducted the survey verbally and stopped to define terms and give examples. Many of the answers listed in the table were elaborations on the questions and sometimes did not directly relate, but I still saw their value. The interviews were conducted in person.

The interviews with the families led to both expected and surprising results. I intended to find out what these grandparents and parents perceived as environmental risks in their communities, but I ended up witnessing frustrations, worries, and misconceptions, thus realizing how naïve I was not to expect emotional responses. In Appendix 3, the answers to the questions can be seen, but do not include the full conversations out of respect for those interviewed.

There are various conclusions that can be made from these surveys. The first is a consensus among all parents that they are interested in the program. Many expressed concerns

over time, money, and location as constraints for allowing their child to participate in extracurricular activities. Furthermore, every parent expressed a belief that their child is interested in environmental education. Many, but not all the parents expressed that there is not a lot of environmentally-based education in the schools. When discussing environmental concerns in their communities, answers varied and were often difficult to interpret. Provided with a list of environmental-risks, many parents stated their concerns about flooding, air pollution, nutrition, and trash in their communities. Some of the answers reflected a misunderstanding of what each environmental risk entailed. For example, some did not show an understanding of the difference between weather and climate. Many expressed concerns about the smell Dad's Pet Care produces. Dad's Pet Care is a company located in Meadville, Pa that produces premium dog and cat food. This was not provided in the list of environmental concerns, but was usually stated as a concern in elaboration to air quality risks. A summary of the questions and most common answers can be found in Table 3.

Table 3 Most Common Responses from Families

Question	Common Answers
Is it important to you that your child gets an environmental education?	All respondents answered yes.
Does your child participate in extracurricular activities? If not, why?	Most answered that their child does not participate due to constraints of time, money, or transportation. However, one respondent said her children do participate, but only when she can pay reduced costs for the program fees.
Does your child show interest in learning about the environment?	Every respondent had at least one child interested in the environment.
Do your children learn enough about the environment in school?	The answers for this were mostly negative, but some did not have a basis for answering.
What environmental concerns are present in your community?	The most common answers were those related to air quality, flooding, access to healthy foods, and trash in the communities.
Would you be comfortable with your child participating in this program?	All respondents answered yes.

Responses, such as those associated with Dad's Pet Care, are not necessarily related to concerns such as pollution. However, they are still valuable in forming content for this program. For example, one respondent was concerned that climate change was affecting their health when the weather was cold. This shows a misunderstanding between climate and weather. Also, many of the concerns expressed may have not matched up with typical environmental studies language, but still can find a place as an environmental risk. For example, many parents voiced concerns about transportation, Dad's Dog Food, and homeless animals. These may or may not be environmental concerns and need to be investigated more. These surveys were limited due to the small amount of people reached. Although these surveys are meant to gauge the parents' interest in the program, it does not accurately conclude whether or not their children would be interested. In many instances the answers were short or not relevant and sometimes the respondent did not have any basis to answer the question. Despite these limitations, the survey results have an influence on the lessons, primarily in choosing the units.

In order to get some insight into what benefits and challenges these types of programs face, I contacted various program facilitators. Contacting program facilitators proved to be one of the most challenging aspects of this process. I found some facilitators through a Google Search (lower income + youth + environmental education) and others I found through peers and Allegheny College faculty. I emailed about 20 people from different organizations across the country and received responses from 4 of them (20% response rate). I was aiming for five, but was satisfied with the information I had received. The interviews were conducted by telephone. I interviewed facilitators from Grow Pittsburgh, The Pittsburgh Parks Conservancy, The Student Environmental Council, and Family Ties. The complete interviews can be seen in Appendix 4.

The facilitators I interviewed all spoke of the positive effects their programs have on youth. Some of these beneficial outcomes were increased academic drive, more positive relationships with nature, increased self-confidence, and development of connections with the host-community. Facilitators discussed how they measured the success of their program. Some used evaluations and surveys, while others used simple observations.

With my literature review and interviews in hand, I was able to begin designing the lessons and program format. I designed an introductory lesson and a unit focused on showing students how processed foods affect our health and environment (see Appendix 2). Following their completion, I began a three-week pilot program. I met with the youth in the program once

each week. Over the course of the pilot program, I presented three lessons and facilitated a group project. Table 4 provides a summary of each lesson's objectives, actual outcomes, and necessary adjustments. Overall, through referring back to the logic model, it can be seen that many of the short-term goals were being reached. Participants were learning new things and applying them to behaviors in their daily lives. However, it is now clear that in order to reach the longer-term goals, such as better test scores, there needs to be more scientific and mathematical elements.

Table 4 Summary of Pilot Lessons

Lesson	Actual Outcomes	Necessary Adjustments
Introduction Lesson: Getting to Know Our Environment and Community Desired Outcome: Participants will be able to identify the difference between needs and wants, as well as how the two interact. Furthermore, participants will learn how to identify environmental problems in their communities and how different community members can work to solve them.	Participants were able to separate needs and wants. Participants could see that some of the things we want can affect our environment. However, participants had a harder time linking how a specific want could affect a certain need.	In order to make clear the connections between needs and wants (how the use of a car affects our air, the instructor should have prepared examples that give students a visual of how the two work together. Then, the instructor could facilitate an activity that asked students to demonstrate how a specific need affects a specific want.
Lesson 1/2: Learning About our Food Desired Outcome: Participants will be able to identify how their favorite snack foods can be detrimental to their health and the environment and display the ability to make more informed eating choices.	By the end of the activity, participants understood how the conventional food system can be polluting to our environment. Participants became aware of how processed foods are filled with salt, sugar, and fat. However, they did not grasp how these things affect health.	In order to make this activity more informative, there should be a lesson on specific ways salt, sugar, and fat, in excess, are detrimental to health. Furthermore, participants should have been shown the recommendations for how much fat, sugar, and salt should be consumed each day so that a comparison could be made.
Lesson 2/2: Learning About Our food Desired Outcome: Participants will continue to learn how each ingredient to a snack has a different impact on our health and environment. Participants will begin to understand how they can influence peers and neighbors to make positive changes in their lifestyle and communities.	Participants were able to identify reasons why it is important to share what we were learning with others and why it is important to be careful about the food we buy and eat. However, the activity was rushed and participants could not strategize how they wanted to inform their communities, making an assessment on their ability to interact with others hard.	Another day should be added to the unit. This way the third day can focus on strategizing, which will give participants a chance to learn about effective ways to work in their communities as well as share their own ideas. This will give participants more sense of ownership for the project. The final day can be to reflect on the project and discuss the effects.

The pilot program was a success in that it revealed the flaws and strengths in my designs. I was met with an immediate change in the original plan. I had intended to work with the older kids that participate in the program (grades fifth, sixth, and seventh) in a separate space so that they could enjoy separate programming. However, there were not a substantial number of youth from this age-group present and this became a trend for the next two meetings. Rather than working with a very small amount of students, I decided to take all ages (grades first to seventh). I felt unprepared to present material meant for twelve year olds to seven year olds. However, I proceeded with the lessons, stopping to explain some more difficult concepts to the younger kids.

This unexpected change in the age of the students actually ended up being a pleasant surprise. The different ages worked well together, some taking more responsibility than others, proving what my literature review and interviews advocated: intergenerational experiences are invaluable to these programs. I gave older participants the responsibility of recording information and assisting the younger kids during small-group work. I designed the lesson fully aware that multiple adult mentors that work for the program would be present. This meant that I could push the content to more advance levels, knowing that mentors would be present to guide the students through difficult concepts during individual and group work. Again, this proved the value of intergeneration.

The students were most attentive when able to actively engage in the material. They liked moving around, volunteering to measure some sugar, or add yogurt to a smoothie. These were the moments when I had their utmost attention. I lost their interest when the instruction for group work was not clear enough and too open-ended. This was a challenge for all age groups, making edits easy to do. Transitions between some of the activities were not connected well enough and students didn't always apply previous knowledge to the newer concepts. However, participants could always recall the previous lesson, proving that they were absorbing the information but not transferring that knowledge to the unit's next component.

In order to understand whether my objectives of each lesson were reached, we did activities to show their understanding: coming up with definitions, grouping cards, performing skits, collaborating on a cook-book, and putting items in order. When participants were able to do these things without my guidance, I interpreted it as comprehension.

Looking back, I regret not having a concluding lesson that discussed what we learned and the value of our group project. The last lesson felt rushed as I tried to get the participants to

understand the purpose of our group, the value of contributing to our communities, and the general concepts from the unit. This led me to add an additional day to each unit in my final design. I realized that the age and number of participants will vary, due to uncontrollable factors, such as some kids having other commitments or not being able to attend that day. For this reason, I have included age adjustments for particular activities that may be too easy or too challenging for some students. Not all the activities include age adjustments, because many are designed to be used for all age-groups.

In order to gain outside perspective on the effectiveness of the trial-run, I gave feedback forms to the programs' mentors and facilitators that were present that day (See Appendix 5). The surveys aimed to reveal the programs strengths and weaknesses and whether the lessons were beneficial to the kids and young adults in the program. The feedback was generally positive, but also had constructive criticism. In the first lesson, I was told that the material was a little too advanced for some of the younger kids, which I attribute to the unexpected circumstances. More helpful suggestions were to provide participants more opportunities to move around and ways to keep focus during transitions. As the lessons went on some other advice involved making directions simpler and including more visuals. It was a consensus among all the feedback that the participants benefited from the activity. The feedback forms asked the reviewer if they would recommend the lesson to educators, to which all answered positively.

The pilot program lacked a formal way to assess if the goals were being met. However, through observations and questioning, it became clear that the participants were thinking in new ways. I questioned the participants, asking them what the value of creating their own cook-books was (see Appendix 4). Many children responded saying things like: "the food doesn't come from far away", "the food doesn't have a lot of salt in it" and, "the food is good for us". These statements helped prove to me that the participants saw the value in their work. At the beginning of the unit, I asked participants what the environment meant to them, which was followed by silence amongst the group. Participants could not find meaning in the word. I asked them what they thought of when I said "environment". Again, the participants did not know how to answer. However, towards the end of the unit, participants were talking about the importance of protecting our environment. They understood the connections between human actions and environmental degradation.

Although my observations proved the program was effective, I also need ways to produce more measurable results. These results can determine behavioral changes such as how many more healthy or local foods participants consumed in replacement of junk-food or even if participants were able to apply this knowledge to their school work. Overall, the pilot-run was a success, providing me with evidence that the program would be successful, but also showing means of improvement.

Conclusion

Developing an educational program is a complicated task that is ongoing. This process has showed me the importance of detail, but also the necessity for flexibility. As I found through my literature review, out-of-school programs are only valuable if the organization is of quality. It is important to ensure that each lesson taught and each project implemented is not just a space-filler, but a means of reaching the program's goals. In the end, I believe the pilot program started to develop new knowledge and behaviors in the participants. However, the truth of how effective the program is will remain unknown until it has had time to establish itself. It is incredibly important that as the program moves forward, the facilitators assess it regularly and look for signs that it is meeting the objective in the logic model.

These recommendations are meant to guide the program, but not stifle it. As the program and the participants' interests develop, the program may move in different directions. The number of units, the focus of the lessons, and the community engagement projects may vary according to year. Though the structure of the program may change over the years, it is important the facilitators and participants uphold the original mission statement. While this program is not complete, it will develop and build more concrete methods through trial and error. These recommendations provide a strong foundation for the program to begin its first year in the fall of 2013. This program will not only involve students in their communities, but will provide them with an educational opportunity that many have been deprived of. It is my sincere hope that this program sustains itself and grows. Future facilitators should work alongside participants and their parents in order to provide the most relevant and helpful information.

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Appendix

Appendix 1: Budget and Management Plan

Format and Organization

I developed the lessons for this program taking into consideration the perceived environmental risks the families voiced concern about. My intention with these lessons is to engage the students in meaningful education through relating larger environmental education concepts to local-concerns. Each unit contains four components, which can be seen in Table 5.

I chose to use three units for multiple reasons. First, some of the students in the program are very young and the oldest students are in middle school. Keeping the lessons to an introductory level with achievable projects, according to my research and experience with the trial-run, keeps the participants focused and excited about the material. Furthermore, since this program will be in its first year, it is important to experiment, seeing which units were most successful and related to the students the most. This will allow the program to grow, focusing in on the topics of the most interest and expanding them.

Finally, although the Creating Landscapes program has enthusiastically welcomed this program, they also have other beneficial programming which should not be substituted. This program will last a total of six weeks, which is enough time to get the students very involved, but not too much time to interfere with other programming. I chose to add a fourth day on to each unit after my pilot program. I realized that I need a way to open-up discussion with the students, in which they could discuss the effectiveness and value in their work. This last day would also provide an opportunity to bring in various guests that could relate the unit to their professional work. This interaction not only provides the students with different perspectives, but also introduces them to different career paths.

The lessons combine hands-on science projects, community engagement projects, discussion, and interaction with professionals. My research convinced me that making programs too focused on one method of instruction isolated individuals who may not relate. I believe this format will achieve three important goals: 1) Encourage participants to pursue science, 2) Involve students in their community, and 3) Encourage behavior that values the environment.

Table 5: Program Schedule

Unit 1 Air Quality November (2 weeks)	Introduction Lesson	Advanced Lesson	Project	Project/ Professional Visitor (Healthy Homes Healthy Families)
Unit 2 Water Quality December (2 weeks)	Introduction Lesson	Advanced Lesson	Project	Project/Professional Visitor (Creek Connections)
Unit 3 Left open for kids and facilitators to decide January (2 weeks) Suggestions: Flooding, Plants, Wildlife	Introduction Lesson	Advanced Lesson	Project	Project/Professional Visitor (Open) Suggestion: Penn's Woods Project

Introduction Lesson: This lesson will provide general information about the topic and will introduce students to why it is an environmental issue and how it may or may not be a concern in their community.

Advanced Lesson: This lesson will engage students in hands-on activities using specific examples and targeting particular terms and themes.

Project: This lesson will involve group collaboration on an issue affecting the participants' communities. Participants will be expected to prepare materials, give a presentation, or talk to community members to inform them about what they have learned.

Project/ Professional Visitor: In this lesson participants will reflect back on their project and what need in the community it was serving. Participants will discuss whether their method was effective or not. To conclude this lesson the students will have a special visitor that works with the issue they are discussing as part of their job.

Open Unit: Unit designs should follow the outline provided above. As the years go on, facilitators may want to reuse some units or build upon them.

Program Facilitators

In order to adequately prepare program facilitators to manage this program, I recommend that each year a Senior or Junior in the Environmental Science Department at Allegheny College lead the project. This way, the program facilitator will have a few years of experience with the topics they will be teaching. However, this role involves a lot of responsibilities, so I recommend that each facilitator be shadowed by a Junior or Sophomore in Environmental Science. This way the facilitator will have help throughout the year, while preparing someone to replace them in the next year. Each year, as part of their responsibilities the facilitator should work to find an assistant to train. The facilitators should possess excellent interpersonal skills, experience or interest in education, interest in community and civic engagement, and display knowledge of environmental sciences and studies.

Program Assessment

In order to assess the effectiveness of the program in the first year, facilitators should use oral questioning. At the start of the program, facilitators should ask students: What does the environment mean to you? What do you know about pollution? Do you think you can make change in your communities? What do you want to be when you grow up? Do you like science? How do you take care of your health? The facilitators should record the answers from the students. At the end of the last unit, the facilitators should repeat this exercise, taking note of whether the students' answers change in a positive way according to the mission statement.

As the program becomes more developed after the first year, a more formal form of assessment can take place. After the first year, the participants will have had more exposure to the program and any behavioral changes will be clearer. Facilitators should survey the parents, asking them if they have noticed changes in their children. These questions should assess participants' interest in the environment, their health, their communities, and in science. Facilitators should also continue to observe the participants growth.

Program Budget

This program has been specifically designed to be low-cost. Many of the materials necessary for the activities can be acquired through donations and Allegheny College resources (e.g. Office of Student Involvement, Creek Connections, Free Store, Creating Landscapes after-school program, and various other resources). I have already compiled a set of materials for many of the activities, which will be given to the program facilitators. Table 6 lists the various expenses for the program. The most costly items will be for facilitating the community

engagement projects, but there are also ways to reduce these costs. For example, Unit 2 requires distributing water filters to community members. Therefore, facilitators can request donations from various filter companies. If this does not come through, then funds can be used. I recommend that program facilitators aim to acquire at least \$350 for each program year, but \$200 would be adequate. These funds can be used for additional expenses, like guest speakers, books, and supplies that may seem appropriate for the program. The total possible cost for next year's implementation is estimated at \$333. This estimate is intentionally higher than will most-likely be needed. Furthermore, the materials acquired can be used the following years. Through applying for grants, borrowing materials, and partnering with other organizations, the budget has the possibility to be \$0. There are various grants available through the EPA, NAAEE, Allegheny's College-to-Schools program, and various other environmental organizations.

Table 6 Budget for Program

Expense	Quantity	Cost	Total
Program Facilitators	2	\$0 (Paid through work study)	\$0
Water Filters	20-30	Applying for donation, but should not exceed \$75 if payment is needed.	\$75
HACH Chemical Tests	1 Hardness 1 Nitrate 1 Chlorine 1 Iron 1 pH	\$ 28 \$ 25 \$ 25 \$25 \$ 25	\$203
Food Materials	Multiple	\$30	\$233
Possible guests (thank you gifts and materials)	3	\$50	\$283
Kit for air quality lesson	Already prepared (0)	\$0	\$283
Paper and art materials	Already prepared (0)	\$0	\$283
Thank-you gifts for Volunteers	10	\$50	Total: \$333

Appendix 2: Lesson Plans

Introduction to Program	Lesson 1/1
Background We live in a world that continually isolates us from each other and our environment, where convenience overrides sustainability, and where youth rarely engage in community service. This lack of nourishment is very detrimental to youth. Therefore, it is important that youth take a break from the distractions of their daily lives and immerse themselves in rewarding education and service. This activity is meant to act as an introduction to community engagement and environmental education. Participants will learn how to identify problems in their communities and the importance of working together. Participants will also learn how their choices affect their communities.	
Objective Following this activity, participants will be able to identify the difference between needs and wants, as well as how the two interact. Furthermore, participants will learn how to identify environmental problems in their communities and how different community members can work to solve them.	
Materials • 15 Cards with different needs and wants on them • 1 poster (not in folder) • 2 sets of cards with written scenarios in them • 8 Cards with different community members written on them • Tape • Markers	
Activities Part 1 Each participant will be given two cards. Each card will have some sort of need or want on it. These things could be, but are not limited to air, water, clothes, candy, schools, doctors, fruit, bread, friends, and neighbors. A poster board will be divided into two with one side reading “Need” and the other reading “Want”. Participants will come up to the board with their cards and tape them on the side they believe best describes their card. The participant will tell the rest of the	

group why they placed their cards where they did. Following the activity, the participants will discuss the final results. They will be asked: Do you see any patterns? What do you believe is the definition of a need? What do you believe is a definition of a want? Can the things we want affect the things we need?

***Age Adjustments**

Grades 6-8:

Each participant will be given a set of cards which they will separate according to what they believe are needs and wants. The cards can be added to, in order to include more relevant objects. Following the described discussion, participants will be asked to write on lined paper how two needs can effect two wants. The participants will be asked to share what they wrote down and why.

Grades 1-3:

Coming up with definitions for “needs” and “wants” may be too difficult at this level. For this age group, participants should be provided with the definition of what a need and a want is. The facilitator will review various categories of needs with the participants (e.g. food, water, shelter, friends/family, and clothing) and then review different needs with them (candy, toys, electronics, etc.) Following this instruction the participants will proceed with original activity. Following the activity, the participants will be asked to think about how they can eliminate some of the “wants” in their life, as opposed to the more advance discussion originally suggested.

Part 2

The participants will be read a short scenario. The scenario is about a community with various positive and negative things happening in it. After being read the scenario, the participants will be asked to work together and make a list of the problems. Then everyone will come together with the instructor again. The participants will discuss the problems and what may have caused them. The participants will then be put in partners. Each group will be given a card with a particular actor in the community. The participants will be asked to identify ways this actor could help solve the problem in the community. Participants should be told to keep an open mind. Can this actor help? If so, what skills or qualities do they have to offer? Would their solution be a long-term process or a single contribution? Participants should be asked to think about these things while they come up with their ideas. Everyone will come together and discuss how they believe their particular community actor can help solve problems.

***Age Adjustments**

Grades 6-8

Have the participants work in groups to create mock proposals of how to fix the problem. Each

group can read the proposal aloud to everyone and defend their argument. Participants will pick the best ideas from each group and will discuss with the facilitator why they would work.

Grades 1-3:

To make this activity more appropriate for younger participants, it would be beneficial to come up with different solutions the community actors could perform. Have solution cards and actor cards, which the participants will match together with the help of an adult mentor.

Part 3

The instructor will ask the participants if they believe they can help their community even though they are “just kids”. The instructor will ask the participants to explain why they feel that way. The instructor will ask the participants to reflect back on the last activity and the problems in the community. They will be asked what their role is in solving the problem. What skills or services can they provide? The instructor will then explain to the participants how important they are to a community and that in order to ensure healthy communities and environments in the future it is important that they start acting now. The participants will be told that they are going to be working on solving environmental problems in their community that effect humans and the natural environment.

Closing

Participants will be told that next week they will be discussing how food affects our health, environment, and communities. Participants will be asked to bring in two food labels of their favorite snack for the next time they meet.

Pilot Run: Learning About Our Food	Lesson 1/2
Background Today kids are much more likely to grab a bag of chips over a healthy fruit-snack. These processed foods are not only bad for children’s health, but detrimental to our environment. Processed foods, like chips and candy must go through several steps to get to our plates. This lesson is intended to show participants how processed snacks are dangerous to our health and environment.	
Objective Participants will be able to identify how their favorite snack foods can be detrimental to their health and the environment and display the ability to make more informed eating choices.	
Materials • Participants will bring in labels from their favorite food • 6 sets of cards with steps of the conventional food cycle • Sugar • Butter • Salt • Scale • Spoon • Recipe • Maps of the United States • Markers • Snack labels	
Activities Part 1 Participants were asked to bring in labels for their favorite foods. Participants will work with their mentors to identify various items on their label: 1) Where was the food processed	

- 2) Grams of sugar
- 3) Grams of fat
- 4) Grams of salt

Once the participants have identified these with the other adults they will come together as a group. The facilitator will ask for three volunteers. These volunteers will come up to the front of the room with their results. Laid out on a table in front of the group will be a scale, spoon, butter, salt, and sugar. The first volunteer will be asked to measure out the amount of sugar in their snack using the tools provided on the table. The second volunteer will do this for fat and the third for salt. After this activity the facilitator will ask the participants if they are surprised how much salt, fat, and sugar is in their food. The facilitator will also ask if they still think it is healthy to eat these snacks all the time.

***Age Adjustments**

Grades 6-8

Have participants measure out the contents of fat, sugar, and salt for each snack food label. Have participants compare their labels to each other's as well as to some "healthy food" labels. Ask if they notice any major difference and if they were surprised with what they found. Ask the participants if they would change their eating habits, knowing the salt, sugar, and fat contents of the food. Bring in information on the health-risks of too much salt, sugar, and fat. Have the participants write a fact for each one that they will share with the group.

Grades 1-3

Have pre-made plastic bags filled with the different amounts of salt, sugar, and fat. Put these plastic bags in the boxes/bags of the correct food item (i.e. a bag of salt, sugar, and fat in a Cheeze-It box). Have the kids pull these out of the boxes. Include both healthy and unhealthy snacks. Have the kids pass around the different snacks and let them hold the bags of salt, sugar, and butter (weighing them with their hands). Have the participants discuss which snacks are the healthy ones, telling them that these snacks would have the least amounts of salt, sugar, and fat.

Part 2

Now the participants will learn how these foods may affect the environment, due to all the steps they have to go through to get from farms and factories to our homes. The participants will be given cards with all the steps that food has to go through to get to our homes. The participants will work in groups to put the cards in the correct order. The first group to get the correct order first will win. After this activity, the instructor will go through the steps in the correct order with the whole class. The participants will discuss how these things get from place to place and how that might affect the environment. This will be a good time to reflect back on the last lesson about needs and wants.

How is this processed food affecting some of our needs?

The facilitator will then ask the group if getting food from the community garden is better for the environment than buying processed foods. The participants and the facilitator will make a list of healthy foods that we can easily find. The facilitator will add a few to the list to help guide the participants.

***Age Adjustments**

Grades 6-8

After participants complete the activity of putting the cards in the correct order they will record the place of origin of all the different food labels they had. The kids will be given a map and a marker on which they will draw a line from the place of origin to Meadville. The participants will also be given food labels from more local areas and will be asked to do the same thing.

The participants will observe which foods travel the least distance. They will then see if any of the foods that traveled the least distance were also the healthiest? Participants will be asked why these foods are the best for our bodies and environment.

Grades 1-3

Instead of putting the cards in order, the facilitator will put the cards in order up on the board (may want to use bigger cards). The instructor will talk about how a potato chip is made, by going through this process. The instructor will give simple explanations and can include props (e.g. potato, chip, chip-bag, salt, and store). Following this explanation, the instructor will put the cards in different parts of the room and have the kids go to them in the correct order.

Closing

Participants will be asked to create a healthy snack food. They will be told that they must write down a recipe that uses 2-5 ingredients and takes less than 15 minutes to make. The facilitator will share with the participants an example of a healthy-snack recipe.

Pilot Run: Learning About Our Food	Lesson 2/2
Background As we prepare food for ourselves, it is rare that we are consciously thinking about which state or country each ingredient came from and how far that meant it traveled. It is also rare for us to think about how much salt, sugar, and fat is in all the food we eat and what it is doing to our bodies. This two-part activity will encourage kids to think about what they eat on a daily basis. It will then show participants how they can teach their friends and peers what they learn and positively change their behaviors.	
Objective Participants will continue to learn how each ingredient to a snack has a different impact on our health and environment. Participants will begin to understand how they can influence peers and neighbors to make positive changes in their lifestyle and communities.	
Materials • Blender • Various fruits • Orange juice • World Maps (one large or multiple handouts) • Handout with information on where fruit came from and health benefits • Mini-cards with various foods on them and where they were produced/grown • Lined Cook-book paper • Markers/crayons • Recipe Examples	
Activities Part 1 Participants will help the facilitator make a fruit smoothie. The smoothie should contain 2-3 fruits, yogurt, honey, and some fruit juice. The facilitator will ask for volunteers to come up and add different fruits to the mix. The participants will have a corresponding worksheet, which shows where each fruit came from and how far it traveled. Another corresponding sheet will show how much sugar, salt, and fat is in each item added to the blender. As each item is added, participants will work with adult mentors to draw a line from its place of origin to North Western Pennsylvania. Following the activity, the facilitator will ask the participants if they were surprised where everything came from. They will also be asked if they believe the smoothie is a healthy snack. The final component of this activity is to determine how many miles went into the smoothie. The final number should be written on a board or poster. *Age Adjustments Grades 6-8 Participants will be asked to calculate the number of miles each thing came from on their own. In order to accomplish this each participant will need a sheet with the food, its origin, and the miles it traveled. Participants will be asked to think of how the smoothies could be made “using less miles”. The instructor can give the participants formulas which will provide an estimate of how much CO2 the smoothie produced. Ask the participants if they were aware of the environmental impact? Ask the participants if the smoothie is a better option than a bag of chips. This will allow them to start to	

consider the difference between healthy for our bodies and healthy for our environments.

Grades 1-3

For younger kids, the concept of miles may be lost on them. Convert miles to a more visual concept, such as a football field or a swimming pool. Have the math already prepared telling the participants where each thing came from while adding it to the blender. The instructor should have a mentor point on a map where the different foods came from as the smoothie is being made. The instructor will tell the participants that making the smoothie is equivalent to so many laps in the pool or something similar. The instructor will ask the participants if they were surprised.

Part 2:

All participants will be given a map of Meadville, The United States, and the world. Participants will work with a partner and program mentor. Each group will be given a set of cards with various foods and their place of origin. Tell the participants that they are responsible for creating a lunch or dinner using the cards. The groups should make their lunches using foods that are close by and not processed. The groups will share each of their creations with the rest of the group explaining why their meal is healthy for their bodies and the environment.

Closing

Participants will be asked what they have learned so far. Each participant will share something that they have learned. Participants will each be given a couple of cook books, which they should give to their friends or family members.

Pilot-Run Project

Kids Cooking for Their Future

At this point, participants have already begun to think about healthy snack recipes. The facilitator will read aloud a few ideas and pass out examples. The participants will be given lined paper, on which they will write and draw a recipe. The participants will be asked to share their recipes and why they are either healthier or better for the environment than the other snacks. The facilitator will create a packet of all the recipes and make copies of them. The participants will be told that they will be distributing these packets to their peers. They will discuss why this is important. The facilitator will start the discussion by asking the following questions?

1. Do your friends eat healthy foods?
2. Do you think your friends know many foods have to travel long distances?
3. Do your friends know that processed foods have multiple steps to go through?
4. Do you think your friends could use this cook book?
5. How would this cook book help your friends?

Unit 1: What is in Our Air	Lesson 1/2
Background Pollution is a problem that affects our environment and our health. However, although pollution is always present, it is hard to pin-point and visualize. This may make it hard for youth to understand that pollution is present. Furthermore, since we do not always see pollution forming, it is hard to identify the source. In this activity participants will learn that pollution comes from various sources and is present in many communities. Participants will learn that pollution is not always visible, which means that we could be unaware when it is present.	
Objective Participants will be able to comprehend why air pollution is hard to detect. Furthermore, participants will be able to identify different sources of air pollution.	
Materials • Jars • Water • Sugar • Salt • Hair-drier • Large plastic box • Glitter or Confetti	
Activities Part 1 The instructor will put a jar of water on the table. The instructor will tell the participants that the jar of water represents all the air in the community. The instructor should pour sugar in the water and mix it around. After, the sugar has dissolved in the water the instructor will ask the participants if anyone can tell that there is something in the water. The instructor will say that this is similar to pollution. Pollution is in the air, but we cannot always see it. The instructor will put up a poster with a general definition of pollution: stuff in the air and the water that can harm us and the environment. Next, the instructor will give each of the participants a small cup, with a little bit of salt and a spoon. The facilitator will walk around and pour salt into the cups and ask the participants to stir the salt and sugar with a spoon. The facilitator will ask the participants if it is hard to tell the salt and sugar apart. The instructor will ask the kids if they had taken a bite of the mix thinking it was sugar, would they have been surprised. *Age Adjustments Grades 5-8 In order to make the activity more applicable to the older participants, the instructor will discuss senses with the participants. Can they smell the difference between the salt and sugar or the plain water and sugar water? Can you ever smell anything funny in town or the city even though you do not see anything? Does running car ever produce a smell that you cannot see? These questions will	

get the participants to start thinking about how pollution may be present, but not visible.

Part 2

Inside a clear plastic box, place different blocks, figurines, and other objects that could help mimic a town. Place a hand-full of glitter or confetti in one corner of the box. Tell the participants that the box represents a town and the confetti represents pollution in the air. Put a hair-drier on low and place it near the corner with the confetti. Tell the participants that the drier represents wind. Ask the participants to observe and write down what is happening. After the confetti spreads all over the box, ask the participants to discuss their observations. Tell the participants that pollution can move around and that just because it was produced in what spot does not mean that it cannot affect another.

***Age adjustments**

Grades 5-8

Use a globe to explain to participants how winds move and explain how pollution is hard to pinpoint due to how it travels. Explain that as pollution spreads, it becomes less concentrated in its place of origin. Do this in addition to the previous activity.

Closing

Ask participants if they were aware that pollution can be present without us knowing and that it can spread from place to place. Ask participants to think about where pollution may come from. They can talk to their friends, parents, teacher, or do research. Tell the participants that they should be prepared to talk about where pollution comes from during their next meeting.

Unit 1: Where Does Air Pollution Come From	Lesson 2/2
Background Pollution comes in many different forms and from many different sources. Some sources are obvious to kids, while others may be more challenging to grasp. This activity is meant to introduce participants to sources of pollution and what kinds of pollution there is and how pollution can affect our environment and health.	
Objective Participants will be able to identify sources of pollution and consider whether or not these sources of pollution are present in their communities. Participants will also learn how their daily activities may contribute to pollution.	
Materials • “Town Map” with different sources of pollution (Cars, trucks, factories, farms,) • Pencils • Colored pencils • Poster-board with various businesses in Meadville listed • Cards with different sources of pollution • Cards with different buildings, plants, and people that exhibit signs of air-pollution.	
Activities Part 1 Each participant will be given a “town-map” which includes various sources of pollution. On a poster or dry-erase board, write down different types of pollution. These should include: mobile sources, point sources, and area sources. Provide a definition and example for each. Give the participants 3 colored pencils or crayons: 1 red, 1 blue, 1 yellow. Tell the participants that each color will correspond with a type of pollution. Red: Mobile Sources Blue: Point Sources Yellow: Area Sources The “town maps” include images of cars, factories, farm-land, and other pollution sources. The participants will be responsible for coloring in these images according to what type of pollution they represent. Following the activity, the participants will share their maps. The facilitator will point on the map to different sources and ask a participant what color it should be and why. *Age Adjustments Grades 1-3 As opposed to listing the three types of pollution, make a list of general things that cause pollution, providing examples. Instead of providing participants with map, put the various images each on a separate piece of computer paper. Include images which do not produce pollution. Ask the participants whether or not this image represents something that produces pollution. Part 2 The facilitator will share with the participants various affects of air pollution on plants, buildings, and people, such as health effects and building destruction. The facilitator should be prepared to explain various effects to the participants. Each participant should be given two cards. One card will display a healthy human, plant, or building while the other card will display something	

negatively affected by pollution, such as a browning-plant.

Each participant will share with the group why one card has not been affected, while the other has. The facilitator should then explain that although they all used clues very well to identify the negative effects of air pollution, sometimes it is hard to see that something or someone has been affected.

Closing

Tell the participants that there are many ways to decrease our contribution to air pollution or work to make polluters more responsible. Ask the participants to take some time at the end of the lesson to brainstorm ways to do this. Tell the participants that next week they will be writing letters to politicians to encourage more environmentally-friendly behaviors.

Unit 1 Project

A Letter for the Better

In this activity, participants will learn how to appropriately write a letter to a local or state political figure. Following this instruction, participants will begin to write a letter following the appropriate guidelines. The facilitator/s should come prepared with their own examples to share with the group. Each participant will write to their senator on some topic related to air quality. The participants may focus on: Carpooling, public awareness of air quality, health issues due to pollution, local polluting industries, regulations about smoking and indoor air quality, public transportation. The facilitators should provide examples of different ideas communities have come up with to solve local air pollution problems.

Unit 2: What Water Can We Drink?	Lesson 1/2
Background Fresh-water is a limited resource. There is only so much of it on the planet. However, if a child looks at a globe, they will see that most of it is covered in water. In this activity participants will learn why a lot of that water is not potable. Some water is locked in ice-caps while other water is too salty for easy consumption. Participants will then learn that because fresh-water is so limited, it is important to conserve it. There are various ways we can pollute our water and participants will learn about some of these.	
Objective Following these activities, participants will understand why fresh-water is limited on the planet and how it becomes polluted over time.	
Materials • Large and clear water bottle • Plastic Cups • Salt • Plastic bag with ice • Potted-plant • Pepper • Soil • Food-Coloring	
Activities Part 1 Fill up a large water-bottle. Place five different clear plastic cups on the table. Each should be labeled in black sharpie. Make sure that there are cups labeled: ice caps and glaciers, salt water, ground water, water vapor, surface water. Measure 100mL of drinking water into a clear water bottle. Tell the participants that this represents all the water in the world. Then explain to the participants that although the earth has a lot of water, only some of the resources are readily available or potable. Ask a participant to pour out about 97% of the water using a measuring cup into the plastic cup labeled “Ocean Water.” Tell the participants this represents ocean water. Ask a participant to pour salt into the cup. Ask the participants if this water is drinkable. Ask them to explain why or why not. With the remaining water, ask a participant to pour out about two-thirds of it the plastic cup labeled “Glaciers and Ice Caps.” Take the cup away and replace it with a zip-lock bag filled with ice. Point on a map where the polar ice-caps are located. Ask the participants if this water is easy to access. Ask them to explain why or why not. With the very small amount left, ask a participant to pour out 98% into the plastic cup labeled “Ground Water.” Take a small potted plant and pour it in the pot. Ask the students if this water is easy to access? Ask them to explain why or why not. Pour the remaining water into a clear-plastic cup. Tell the participants that this represents surface water. Surface water comes in the form of rivers and lakes. Leave the water alone and ask the participants if the water is okay to drink and easy to access? Ask them to explain why or why not. Tell the participants that this represents all the easily accessible fresh water on the planet.	

Discuss with the participants that water is all over the planet, but a lot of it we cannot drink or is not easy to access. Ask participants why it is important to protect surface water?

***Age Adjustments**

Grades 1-3

In order to make the lesson simpler for younger participants, show pictures of different types of water surface and then demonstrate for them what that entails. For example, show participants a picture of ice-caps then take a bag of ice out and explain that ice-caps are a much larger form of this located in another part of the world. Explain ocean water and add salt to a cup. Explain to the kids why we cannot consume salt water. Continue to do this for all other forms of water, and then explain that most water comes from surface water and we only have a little.

Part 2

Explain to participants that water becomes polluted in many ways. List some of these ways on a poster-board, which should be hanging on the wall.

- Agricultural run-off
- Urban Run-off
- Sediment
- Sewage

Fill up a large clear water bottle. Provide background information on each pollutant explaining how it runs on hard surfaces into the water, infects groundwater, or runs-off from farms.

Explain agricultural run-off then have a participant add two drops of red food coloring to the water bottle. Explain urban run-off then have a participant add two drops of blue food coloring to the water bottle. Explain sediment, and then have a participant add pepper to the water bottle. Finally explain sewage and have a participant add soil to the water-bottle. Ask the participants if they would still want to consume this water. Explain to the students that this is why we have water-filters.

Closing

Ask participants to brainstorm why taking care of our water resources is important. Ask participants to fill-up a water bottle from the tap at their house and bring it for next week.

Unit 2: What Water Can We Drink?	Lesson 2/2
Background Water is very important to our daily life. Most of us, in this country are really lucky to have the ability to simply turn on a faucet and have drinking water. However, how do we know that this water is safe? In this activity participants will test their drinking water for home and learn about what dangers the dangers are of consuming contaminated drinking water.	
Objective Participants will be able to identify contaminates in drinking water and ways to consume healthier water.	
Materials • Poster board with water-quality parameters explained • Hardness, iron, chlorine, nitrate, and pH tests • Pencil and paper	
Activities Part 1 The instructor should be prepared with a poster-board to discuss different qualities of drinking water. The instructor will present five different variables: hardness, iron, chlorine, nitrates, and pH. The instructor should share what these parameters indicate, how they can be detrimental, and how drinking water is monitored. Part 2 Participants will divide into five groups and rotate between stations. Each group should have a water bottle filled with tap-water from a participant's home. Each station will have a chemical kit with directions. The participants will follow the directions and record their answers. A mentor should be present at each station to assist with each step. Following the completion of all the tests or if only ten minutes remaining, the participants should come together. Facilitators should share with the participants what the safe-level of each test is for drinking water. Participants will share their results. The facilitators should ask the participants: Why do we need safe drinking water? How does this relate to our last lesson? How can we get safe drinking water, if our water is contaminated? *Note: This activity is necessary for the community project and therefore should not be adjusted for age too much. If material is too difficult, limit the amount of tests or perform demonstrations as opposed to group work.	
Closing Tell participants that in order to ensure high-quality drinking water for their friends and family, they will be distributing filters. Ask participants to brainstorm ideas for next week. Should they sell the filters at a low price or give them for free? How should they advertise the benefits of the filters? Who should they give the filters to?	

Unit 2 Project

Filters for the Community

This project is intended to provide the families, peers, and neighbors of the program's participants with access to high-quality drinking water. The students will distribute water filters to community members. However, the participants and community members should be aware of the benefits of using a water filter. In preparation for this project, participants will create advertisements on poster-board in order to communicate why clean drinking water is important for our health and what types of pollutants may be present in the water that runs from our faucets. Once the participants have completed their advertisements, they will carry them as they distribute the water filters.

Appendix 3: Interviews with Families

SA=Sahar Arbab

P1=Parent 1

SA: Is it important to you that your child gets an environmental education?

P1: Yes. This is very important.

P2: Yes. It is very important.

P3: Yes

P4: Yes it is important

P5: Yes. Wants child to learn about the environment

P6: Yes

SA: Does your child participate in extracurricular activities? If not, why?

P1: Not right now, but the parent prefers educational programs over athletics.

P2: Child does not participate in other activities. The child needs special care and requires an adult being around. Time, distance, and money all make it hard for the child to participate.

P3: The children participate in some programs, but are not involved right now.

P4: No. Programs take too much time and are too expensive

P5: Yes. The parent gets fees for extracurricular at a reduced cost. Some things the child cannot participate in because it is costly and transportation is an issue. The parent believes extracurricular help the child socialize and relax.

P6: Used to be involved, but lost interest. Time and transportation are limitations.

SA: Does your child show interest in learning about the environment?

P1: Yes, child wants to be a scientist.

P2: Yes. The children love planting stuff.

P3: Yes

P4: One child shows interest in learning about the environment

P5: Daughter loves playing in the environment. Daughter like acorns and the parent would like her to learn more about that.

P6: Yes, sometimes. Child learns about some things in school. Child participated in some school activity about fish.

SA: Do your children learn enough about the environment in school?

P1: No. There is not a lot in the schools.

P2: There are not many opportunities for environmental education in the schools. Schools focus mostly on sports.

P3: No basis for answer

P4: No, they do not talk about the environment

P5: No basis for answer

P6: They learn some. They should learn about local issues first and then on a larger scale.

SA: What environmental concerns are present in your community?

P1:

- Homeless animals in community
- Access to healthy foods
- Worried about the air quality in community (asthmatics in house)
- Access to transportation,
- Flooding is the main concern in the community
- Climate change is a big concern (Sicknesses going on as a result of weather change)

P2:

- Kids still eat the junk foods
- Lots of trash in communities/Don't recycle
- Air quality concerns
- Flooding
- Not much greenery in communities

P3:

- Wildlife
- air quality
- Flooding
- Trash
- Healthy foods
- Smoking in the community

P4:

- Children know how to make healthy snacks but more information would be good
- Climate change may be a concern, but doesn't like cold weather
- Learning about the natural environment is important
- Could be more greenery

P5:

- People throw garbage out in the neighborhood
- Dad's dog food smells a lot. Smells everywhere in neighborhood.
- Hard to find transportation to doctors' appointments

P6:

- Would love learning about making healthy snacks
- Tap water tastes bad
- Can smell Dad's dog food
- Get bad flooding (flooded basement)
- Worried about climate change

SA: Would you be comfortable with your child participating in this program?

P1: Yes

P2: Yes

P3: Yes

P4: Yes

P5: Yes

P6: Yes

Appendix 4: Interviews with Program Facilitators

SA= Sahar Arbab

PF=Program Facilitator

Interview 1: Grow Pittsburgh (Pittsburgh, PA)

SA: How do you get participants involved in your program?

PF: We do not actively recruit. Students choose to volunteer with Grow Pittsburgh through an affiliated program, The Braddock Youth Project.

SA: What positive effects have you seen on participants?

PF: Investment in the community, self-confidence, enthusiasm, and feeling engaged and connected when many students are plugged-in. Hard to measure standardized tests. One student is going on to college. Another student came back for a second year. Students develop leadership skills through taking care of business.

SA: What challenges have you faced?

PF: One issue is funding and capacity. We can't bring on new schools right now. It is also hard finding land in an urban setting. Parent involvement is a hard thing at many of the schools, hard to connect with parents and contact them.

SA: How do you measure the success of your program?

PF: We Measure success in the edible schoolyard program through conversations and feedback from teachers. We look for whether the activities in the garden help engage them in learning, increase test scores, improve behavior, and increase confidence. We also look for if interest in eating healthy food has changed

SA: Do students have interests in these issues before they enter the program?

PF: Most students do not have much interest in food systems or agriculture before they start the program.

SA: What need is this program serving?

PF: Intergeneration is very important. Intergeneration is more about community and people than just food. Food brings people together and so does meaningful work. Youth are not always given opportunities for authentic leadership, which intergeneration does.

Interview 2: Student Environmental Congress (Cleveland, Ohio)

SA: What age groups do you work with? How do you manage working with different age groups in the same space?

PF: High School - grades 9-12. We do outreach to elementary and middle schools. I do not work with different age groups at the same time. I work with about 15 high schools for a total of about 550 students through science classes and after schools clubs. The program is in its 17th year.

SA: How do you decide the issues the program focuses on? Are the issues more local, national, or global? Do the students have a big influence?

PF: Yes - I do have a big influence on the issues the program focuses on. We have two focus areas. Although students do not pick the over arching theme, they have a say in how it plays out and the details and smaller focus area. This year's theme is "Advanced and Renewable Energy," which is very general. A student advisory group decides if we will focus on wind, geothermal, fuels, home advancement or commercial, etc.)

The second theme is each school's theme. They choose an issue to focus on. Occasionally a school completely self selects. We do require that they make a connection to Cleveland and local NE Ohio issues, but otherwise they can choose what they want. What happens mostly is - that groups need my input and guidance so I do direct them and often give them choices. I select school themes and issue based on their neighborhood issues, class curricula, student interests, and most current/relevant issues in NE Ohio.

SA: How do you measure the success of the program?

PF:

- Pre and post tests on content
- Pre and post surveys on environmental awareness/interest and level of concern/care about the environment
- Teacher interviews
- We have several formulas that determine value of program influence

SA: What positive affects have you seen on participants?

PF: Many many...some are:

- increased interest/enthusiasm for learning
- increased content knowledge
- Increased knowledge and comfort in public speaking
- Increased environmental awareness/concern for the environment
- Increased desire to be in nature

- Increased recycling, composting, walking etc.

SA: What challenges have you faced working with youth or in the community?

PF: High school students are very busy and environmental issues can fall to bottom of priority list. Even among those who are deeply concerned about the environment, which is mostly the case in suburban schools. They are pretty set in their way of thinking and if environmental issues or concerns have not been part of their thought pattern in growing up, it's hard to change behavior patterns. In urban communities, it is hard for youth to see/make the connections to environment and daily life and how it relates to them. There is a big disconnect. In urban schools, there is not an established environmental curriculum in HS.

SA: Do participants take part in the organization for longer than a year? What responsibilities do they gain as they progress through the program?

PF: About 10% do.

SA: When introducing students to a new issue, how much background information do you give them?

PF: Lots and lots! Again, this program unites diverse students so we have a range of students in the program from elite private schools that have solid environmental knowledge base to kids who are ESL students in urban districts. In the schools where there is a greater need, we have weekly lessons for about 4 months to build working knowledge of issue. The program brings in speakers and has field trips.

Interview 3: Family Ties Program (Pittsburgh, PA)

SA: How do you get students involved in your program?

PF: At-risk-youth are reached through school and scout programs

SA: What positive affects have you seen on participants?

PF: Students have benefits or working in outdoor environment. It is calming and helps students see the benefits of interacting with nature.

SA: What age groups do you work with? How do you manage working with different age groups in the same space?

Work with all ages but at different times. Families will get involved. We have found that it is best to start taking kids out to water in 6th and 7th grade.

SA: Do you have any other suggestions for me?

PF: You may want to contact Youth Places and the Sarah Heinz House. They may host some of the groups you are looking for.

Interview 4: The Pittsburgh Parks Conservancy

SA: What types of programs do you offer?

PF: Habitat Explorers explore the environment and then help the environment. In fall they explore the meadow, take samples, look at plants under magnifier, and compile native meadow seeds and throw them to grow. Spring stream stewards explore and then help the park. Fourth grade park stewards make journals and record experiences in nature, prune shrubs in the park, and remove invasive.

SA: How do you handle working with different age groups in the same space?

PF: 6th graders train fourth graders. High school girls train younger kids

SA: What ways do you measure the success of your program?

PF: Very evaluative information...we use Survey Monkey after each season. We get feedback from teachers to see if we are reaching our objectives. We do not get a lot of information on our programs in their piloting stage. They are too new.

SA: What challenges have you faced?

PF: It is hard to find stewardship jobs appropriate for the younger kids. Kids come with a lot a fear and are uncomfortable in the environment. About 50 percent of the kids have some discomfort. We show techniques to make them more uncomfortable. Eventually they are getting into nature when they didn't want to before.

SA: Do participants take part in the organization for longer than a year? What responsibilities do they gain as they progress through the program?

PF: Partnering with a school is beneficial to retention. It makes sense that students would attend their whole life, but there is not a lot of movement to push kids forward.

Appendix 5: Feedback from Creating Landscapes Mentors

*Note: The number of respondents varies according to how many mentors were available that day and available to fill out the form.

Feedback Introductory Lesson

R1= First Respondent R2=Second Respondent, etc.

1. Which parts of the lesson do you think were the most successful?

R1: Creating a conversation around wants and needs.

R2: Smaller groups worked well. Kids working with mentors worked well.
Pictures=Good

R3: Needs/wants activity and getting kids to think about how different community partners serve the community

R4: I was impressed by their problem solving during the role playing community activity. The skit was awesome.

2. Which parts of the lesson do you think could improve?

R1: The language was a bit tough for some students (even though explained at the end). More physical activity to keep kids actively engaged.

R2: Pictures & words could be bigger. Way to keep focus during transitions. Elaborate on some ideas a little more.

R3: No answer

R4: Some of the connections were hard to make at this age level.

3. Would you recommend this activity to educators?

R1: Yes, yes, yes.

R2: Yes!

R3: Yes!

R4: yes

4. Did the students seem to be learning new concepts or thinking in different ways?

R1: Yes-one of the kids asked when they didn't understand a word.

R2: Yes! Really good intro to environmental issues.Needs & wants very important.

R3: Yes! Applying different community members' roles in problem solving.

R4: I love that they were making connections about their garden and how different community members can work together. Consumerism was questioned.

Feedback from Lesson Two

R1= First Respondent R2=Second Respondent, etc.

1. Which parts of the lesson do you think were the most successful?

R1: Showing exactly how much is in one serving of popular foods, included sugar, salt, and fat.

R2: Nice job! Visual components are always helpful. It was nice to physically see how much is in some foods. I also think using competition was successful.

R3: Showing the sugar, salt, and fat in foods. It was very shocking to see how much is in some of those snacks.

2. Which parts of the lesson do you think could improve?

R1: The kids seemed to get a little distracted. Integrating more hand-on activities could keep them busy.

R2: Multitasking. Talk about things while the kids are measuring out items.

R3: Can't think of anything to improve at the moment.

3. Would you recommend this activity to educators?

R1: Yes, just to show kids that they need to see what they are eating every day.

R2: Yeah. Visual aspects: connecting children to the environment. Food is useful in many aspects.

R3: Yes! It is important to make students aware of what they are eating.

4. Did the students seem to be learning new concepts or thinking in different ways?

R1: Yes, they seemed to learn how much one serving actually was and realized that they eat more than one serving at a time.

R2: The students did seem to think about food differently: how they are connected to food and how traveling affects our air.

R3: Yes. They seemed to all be paying attention and seeing all the salt and sugar seemed to really surprise them.

Feedback from Lesson Three
R1= First Respondent R2=Second Respondent, etc.

1. Which parts of the lesson do you think were the most successful?

R1: The kids really enjoyed looking at the places and finding things on the maps.

R2: Involving the kids with the smoothie making and asking them to guess and calculate how far the ingredients traveled. Creating their recipes for the cookbook was a great idea.

R3: Multi-tasking. Making own smoothies is great. It puts power into their hands and provides independence as well. Step by step smoothies is good too.

2. Which parts of the lesson do you think could improve?

R1: Having a globe would have been very helpful or even a smaller map showing where Meadville is would be nice. It was a little difficult for the kids to visualize.

R2: Making the “create your own meal” portion slightly less complicated. For example, “making a lunch” would help them stay focused.

R3: Adding these ideas to larger overall concepts. Connect all three lessons.

3. Would you recommend this activity to educators?

R1: Yes

R2: Yes, I think it was a fun way to teach kids about healthy eating and eating locally.

R3: Yea, though it would be hard to make smoothies for everyone. You could do the same concept though (make something).

4. Did the students seem to be learning new concepts or thinking in different ways?

R1: Yes

R2: They seemed to be considering the difference between local foods and foods that are processed/have to travel a long way.

R3: Yeah. Putting the students in control builds more than just an environmental conscious. This multi-approach is a huge strength