

**Youth Education Programs at College and University Student Farms  
in the United States: An Investigation of Initial Program Implementation  
and Long-Term Organizational and Financial Sustainability**

by

**Justin Rogers**

A Thesis  
Submitted in partial fulfillment  
of the requirements for the degree  
Master of Environmental Studies  
The Evergreen State College  
December 2011

Copyright©2012 by Justin M. Rogers. All rights reserved.

This Thesis for the Master of Environmental Studies Degree

by

Justin Rogers

has been approved for

The Evergreen State College

by

---

Jean MacGregor  
Member of the Faculty

---

Date

## Abstract

### **Youth Education Programs at College and University Student Farms in the United States: An Investigation of Initial Program Implementation and Long-Term Organizational and Financial Sustainability**

Justin Rogers

The goals of my research were to (a) gain a better understanding of what is required to implement and sustain a student farm youth program over time; (b) identify the various funding and organizational opportunities, issues and challenges for these programs; and (c) identify ways for other farms to improve their operations, and possibly stimulate more youth programs on student farms to be established throughout the United States. My research included a review of the literature, a quantitative on-line survey of forty-six (46) identified student farms in the United States, and a qualitative phone interview session with five student farm youth program stakeholders. Via my investigations and research, I was able to identify (a) best practices of farm-based education, environmental education, and Nature Center program management from the literature; (b) physical and programming characteristics of over sixty (60) percent of existing student farms in the U.S.; and (c) youth program details such as program implementation, staffing and funding from the qualitative data. With this information, I identified and elaborated on best and promising practices for youth programs in the areas of strategic planning, staffing, funding, programming, and partnerships. The five major best practices identified included (1) developing successful strategic planning around the concepts of simplicity, flexibility and participatory processes; (2) providing program stability by financing a highly trained and permanent position, such as a director or manager who can handle the diverse responsibilities; (3) identifying potential funding sources with a focus on establishing a diversified balance between short-term financial efficiency and long-term resilience with a desired goal of self-sufficiency; (4) establishing programming that is diverse, age-appropriate, efficient in delivery and scope, and responsive to the specific needs of the youth in the community; and (5) identifying partnerships, stakeholders and allies within the community and supporting institution to establish program stability and sustainability. I also identified and discussed youth program barriers and obstacles and ways of addressing them in the future. Major program barriers included (1) facility, land, and staffing shortages; (2) lack of consistent and reliable staffing; (3) unsustainable funding sources; (4) tensions between institutional and program pedagogy; and (5) a chronic inability to keep up with the community's increasing demand for the youth program's services. Insights and conclusions from the research also show that (1) local community demand is strong and growing, (2) the community development value of farm-based youth education often fuels and justifies program, (3) college and university students want more from traditional agricultural programs, (4) diverse student farm outreach opportunities are already in motion, (5) inspired and well supported institutional students are catalysts to program start-up, (6) most student farm youth programs have little to no "official" budget, (7) direct income from services/products and institutional funds support youth programs, not grants, and (8) student farm stakeholders are very interested in supporting farm education research and furthering youth program implementation.

## **TABLE OF CONTENTS**

### **LIST OF FIGURES**

### **LIST OF TABLES**

### **GLOSSARY OF ACRONYMS**

### **ACKNOWLEDGMENTS**

### **INTRODUCTION**

## **CHAPTER 1: Literature Review**

### *1.1 Relevant Definitions*

### *1.2 History of Environmental Education, Garden-Based Education, Farm-Based Education, and the National Farm to School Program in the United States*

#### *1.2.1 Environmental Education (EE)*

#### *1.2.2 Garden-Based Education (GBE)*

#### *1.2.3 Farm-Based Education (FBE)*

#### *1.2.4 National Farm to School Program in the United States*

### *1.3 Student Farms in the United States*

### *1.4 Effectiveness of Environmental Education, Garden-Based Education and Farm-Based Education Programs*

#### *1.4.1 Environmental Education (EE)*

#### *1.4.2 Garden-Based Education (GBE)*

#### *1.4.3 Farm-Based Education (FBE)*

### *1.5 Characteristics of Successful Farm-Based Education Programs*

### *1.6 Best Practices with Respect to Environmental Education and Nature Center Program Management*

#### *1.6.1 Environmental Education Programs*

#### *1.6.2 Nature Centers*

### *1.7 Summary of Best Practices Regarding Successful Farm-Based Education, Environmental Education and Nature Center Program Management*

## **CHAPTER 2: Research Methodology**

*1.1 General Research Approach*

*1.2 Quantitative On-line Surveys of Existing Student Farms*

*1.3 Qualitative In-depth Phone Interviews with Major Stakeholders of Student Farms with Youth Programs*

## **CHAPTER 3: Research Findings**

*1.1 Quantitative Research (On-line Survey)*

*1.2 Qualitative Research (Phone Interviews)*

*1.2.1 Student Farm Descriptions*

*1.2.2 Phone Interview Summaries*

## **CHAPTER 4: Discussion & Recommendations**

*1.1 Quantitative Research (On-line Survey)*

*1.2 Qualitative Research (Phone Interviews)*

*1.3 Promising Practices*

*1.3.1 Strategic Planning*

*1.3.2 Staffing*

*1.3.3 Funding*

*1.3.4 Programming*

*1.3.5 Partnerships*

*1.4 Barriers and Obstacles and Ways of Addressing Them*

*1.4.1 Strategic Planning*

*1.4.2 Staffing*

*1.4.3 Funding*

*1.4.4 Programming*

*1.4.5 Partnerships*

*1.5 Synthesis and Additional Insights*

*1.5.1 Community Demand and Community Building*

*1.5.2 The Role of Students*

*1.5.3 The Resiliency of Limited Funding*

*1.5.4 The Momentum of Farm-based Education Research*

**CHAPTER 5: Conclusions**

**APPENDIX 1: Quantitative On-line Survey Cover Letter**

**APPENDIX 2: Quantitative On-line Survey Questions**

**APPENDIX 3: Qualitative Phone Interview Cover Letter**

**APPENDIX 4: Qualitative Phone Interview Questions**

**REFERENCES**

## **LIST OF FIGURES**

**Figure 1:** Survey Responses of U.S. Student Farms by Region

**Figure 2:** Survey Responses of Student Population

**Figure 3:** Survey Responses of U.S. Student Farm Establishment

**Figure 4:** Survey Responses of Types of Outreach Activities

**Figure 5:** Survey Responses of Youth Program Existence

**Figure 6:** Survey Responses of Youth Program Establishment

**Figure 7:** Survey Responses of Youth Program Current Sources of Funding



## **LIST OF TABLES**

**Table 1:** Summary of Best Practices Regarding Farm-based Education, Environmental Education and Nature Center Program Management

**Table 2:** Quantitative Survey Criteria

**Table 3:** Student Farms and Youth Program Comparisons from Qualitative Phone Interviews

**Table 4:** Youth Program Stakeholder Response Comparisons from Qualitative Phone Interviews

## **GLOSSARY OF ACRONYMS**

<b>ADD</b>	<i>Attention Deficit Disorder</i>
<b>ADHD</b>	<i>Attention Deficit Hyperactivity Disorder</i>
<b>AEE</b>	<i>Association of Experimental Education</i>
<b>ANCA</b>	<i>Association of Nature Center Administrators</i>
<b>CFSC</b>	<i>Community Food Security Coalition</i>
<b>EE</b>	<i>Environmental Education</i>
<b>FBE</b>	<i>Farm-Based Education</i>
<b>FBEA</b>	<i>Farm-Based Education Association</i>
<b>FBL</b>	<i>Farm-Based Learning</i>
<b>GBE</b>	<i>Garden-Based Education</i>
<b>GBL</b>	<i>Garden-Based Learning</i>
<b>IFAFS</b>	<i>Initiative for Future Agricultural and Food Systems</i>
<b>NAI</b>	<i>National Association for Interpretation</i>
<b>OSPI</b>	<i>Office of the Superintendent of Public Instruction</i>
<b>PEAS</b>	<i>Program in Ecological Agriculture and Society</i>
<b>SAEA</b>	<i>Sustainable Agriculture Education Association</i>
<b>SARE</b>	<i>Sustainable Agriculture Research and Education</i>
<b>UEPI</b>	<i>Urban &amp; Environmental Policy Institute</i>
<b>UNESCO</b>	<i>United Nations Educational, Scientific and Cultural Organization</i>
<b>USDA</b>	<i>United States Department of Agriculture</i>

## **ACKNOWLEDGMENTS**

I must first and foremost acknowledge my thesis reader Jean MacGregor. Her patience, persistence, and expertise have been monumental to my success with this research. Thanks to her guidance and wisdom my knowledge of environmental education in its many forms has expanded immensely over the last few years due.

I would also like to thank everyone that participated in my quantitative on-line survey and qualitative phone interviews. Your willingness to support my research and share your experiences was crucial to this research and immensely valuable. I was continually inspired and amazed at the creativity, passion and professionalism demonstrated by the students, staff and faculty involved on student farms across the United States. Your leadership and experience are the foundation for emerging student farms and youth programs.

My return to the classroom would not have been possible without the love and support from my family. I thank you endlessly for the belief in me and my passions. My graduate degree is as much yours as it is mine.

Finally, I would like to thank the amazing faculty and staff of the MES department for their endless support as well. No matter how much my life and academic circumstances changed over the years, I always felt supported and encouraged toward finishing my degree. I have grown as a person and as a student during my time in the program and I will always be grateful for those experiences.

## **INTRODUCTION**

According to the research literature, K-12 school programs that utilize garden-based education (GBE) have the potential not only to contribute to students' academic skills, but also to address a child's development in a social, moral, and practical or life-skill sense. GBE can be defined simply as an instructional strategy that utilizes a garden as a teaching tool and whose pedagogy is based on experiential education applied in the living laboratory of the garden. GBE is used in the context several different educational fields such as environmental education, ecological literacy, agricultural literacy, and agricultural education. It has the potential to significantly contribute to the traditional K-12 classroom curriculum on many levels. However, for GBE programs to be truly effective, they must be tied to a comprehensive and cohesive educational program or garden curriculum that is implemented across grade levels and ideally is tied to local, state, or national education standards.

Farm-based education (FBE), also widely referred to as farm-based learning (FBL), is similar to garden-based education (GBE) yet has many distinct and unique characteristics that have the potential to significantly enhance and contribute to existing and associated learning curricula. FBE can simply be defined as an instructional strategy that utilizes a *farm*, a tract of land cultivated for the purposes of agricultural production, as a teaching tool. FBE is also a form of experiential, interdisciplinary education that connects people to the environment, their community, and the role of agriculture in our lives. If teachers and educators agree that FBE experiences can indeed significantly enhance existing and future GBE curriculum, then more proactive steps could be taken to expand farm-based learning opportunities.

FBE utilizes some of the same educational subjects as GBE, such as botany, ecology, and biology, integrating concepts of science, math, art, history, and health. However, FBE experiences offer teachers and students the potential for a significantly more enriched learning experience within the associated garden-based curriculum, because the farms offer many more learning opportunities. Physical advantages of farms, such as additional space for livestock, compost, greenhouses, large vegetable production and pollinator cultivation, offer the potential for a more in-depth learning experience about food systems and food-community connections. Farm education experiences can complement traditional classroom work with a hands-on learning environment. Seeing firsthand how food is grown can give youth a direct link between agriculture and their everyday lives while potentially increasing the chances that they also get excited about healthy, nutritious food.

Farms also offer the potential for a greater understanding of living systems and the interconnected and interdependent nature of all living things. When children meet farmers and are immersed in the real work and cycles of life on a farm, farms can become classrooms where students can see and touch systems. Farms can thrive when they mimic the ways of nature and in doing so, foster respect for land and nature, an essential element to potentially understanding and meeting today's environmental challenges.

While GBE experiences have their own set of unique advantages as well as the potential for curriculum connections to living systems, school gardens are often beholden to the limitations of space, economic viability, and ecological diversity. However, the integration of FBE experiences into pre-existing GBE curriculums could provide the best of both worlds and help to reinforce crucial overlapping themes. One such opportunity

and location for FBE experiences often occurs on student farms on the campuses of colleges and universities in the United States.

Student farms can be defined as farms that physically engage students in ways that teach them about crop production as well as direct marketing. Most work from farm planning to crop harvesting is done by college and university students, usually in addition to student farm managers, volunteers and staff. The farm demonstrates basic plant and animal husbandry, professional cultivation methods, integrated pest management, and research.

Student farms on United States colleges and universities can enhance college and university curricula by integrating research, extension and teaching missions, reinforcing classroom instruction, and improving job training. Student farms are sites of agricultural production and marketing at which students have, through coursework and/or internships, opportunities to supplement classroom instruction with "real world" experience. Student farms and their influence on curricula began decades ago; more recently, the number of student farms has been increasing every year.

In addition, many of these student farms have *also* been implementing an additional youth education element to the overall farm structure, outreach and curriculum, which provides farm-based learning opportunities for children and adolescents from the surrounding community. These youth education opportunities can provide valuable learning assets not only for the community youth involved, but also for the student farm curriculum and staff. Youth programs on student farms, which can be defined as any outreach activities specifically targeted for age ranges from preschoolers

through adolescents, have the potential to be mutually beneficial for both child learning development and student farm enhancement.

However, according to the literature, there is a lack of knowledge and understanding regarding the start-up funding and operating costs of these youth programs at student farms, which potentially hinders the development of new programs on student farms and the ongoing success of existing student farm youth programs. From the existing research, the following questions are still being explored:

- (1) How have these youth programs been established and funded?
- (2) How do they continue to operate via various funding sources?
- (3) What are the strategies and challenges of securing stable and long-term financial support?

While there have been attempts in the past to research basic quantitative characteristics of existing student farms, there is no inventory of those student farms that also have youth education opportunities. Furthermore, in the small but emerging literature about student farms, there is very little organizational analysis regarding how these youth programs are developed, implemented, established, funded, and sustained over time. Most research relating to the management of youth programs and student farms can be found in the related areas of nature center and non-profit educational program organization, implementation and structure.

My research attempted to gain a better understanding of how much a student farm youth program really costs to implement and sustain over time; it also identified the various funding and organizational opportunities, issues, and challenges for these

programs. Studying the details of funding sources and the factors contributing to success of each individual student farm youth program may allow other student farms to improve their operations and outreach capabilities, and possibly stimulate more youth programs to be established. My research investigated and explored this problem and attempted to reveal patterns of best practice, such as those found in similar youth programs at nature centers and other non-profit programs that are similar to student farms in structure and implementation.



## **CHAPTER ONE: Literature Review**

### ***1.1 Relevant Definitions***

My research focuses on farm-based education (FBE) on student farms in the United States. More specifically, my research examines the financial aspects and characteristics of student farms with youth programs. There are several interdisciplinary fields and various definitions that relate to farm-based education. These definitions will be helpful in framing my research.

“Farm-based education” (FBE) and “garden-based education” (GBE) are very similar in pedagogy, types of “non-formal education” and application; they fall under several sub-classifications of “environmental education” such as “experiential education”, “place based education”, and “outdoor education” (Wheeler, 2007; MacGregor, 2011). Within these environmental education (EE) fields exists “agricultural education,” specifically on “student farms”. It is on these student farms where various forms of community “outreach” are conducted, such as “youth programs.” My research focuses on the financial and organizational structure of these youth programs as they exist on a student farm within an institution of higher education (i.e. college or university). All of these fields of EE are linked in their historical and philosophical roots, which in turn have influenced the development and cultural impacts of each other. In this chapter, I will provide further definitions of these various EE strands and related educational fields as well as provide the interdisciplinary linkages that connect them together.

One of the most widely accepted definitions of “environmental education” (EE) was given in the Tbilisi Declaration, which was developed at an international conference of environmental educators sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1977 (MacGregor, 2003). Within this Declaration, EE was defined as “a learning process that increases people’s knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action” (UNESCO, 1978). According to the Declaration, environmental education is seen as a life-long process that is interdisciplinary and holistic in nature and application. It concerns the interrelationship between human and natural systems and encourages the development of an environmental ethic, awareness, understanding of environmental problems, and development of critical thinking and problem-solving skills. On a broader scale, EE focuses on working collectively and individually to overcome environmental challenges on all levels and scales of community.

Under the umbrella of EE are several related strands that are directly relevant to my research. They are experiential education, place-based education, and outdoor education. “Experiential education” is both a philosophy and a methodology in which educators purposefully engage with learners in direct experience and focused reflection in order to increase knowledge, develop skills, and clarify values (MacGregor, 2011). Experiential education takes many forms, such as service-learning, adventure education, wilderness education, and outdoor education among others. The goal is to provide participating individuals and students with an experience beyond the traditional

classroom that aims to foster students' teamwork skills, improved self-esteem, personal discipline, and a strong sense of purpose and service to others and their community.

“Place-based education” immerses individuals and students in their local landscape, with emphases that can include history and heritage, culture, ecology, and local issues. These experiences can often lead to a strong foundation for the study of language arts, mathematics, social studies, science, and other subjects (Wheeler, 2007).

Place-based education programs often encourage teachers and students to use the schoolyard, community gardens, public lands, businesses and other local relevant places, such as student farms, as essential resources. These programs turn communities into classrooms and community members into potential mentors and teachers (Sobel, 2004). Since place-based educational philosophies are project-focused and inherently tailored by local people to local realities, these programs can be made equally relevant on many varying scales (small towns and big cities) and equally effective for various age groups of learners from kindergarteners to high school students to college-level learners (Wheeler, 2007; Sobel, 2004).

“Outdoor education” is a vital component of EE. Outdoor education is a kind of experiential education that occurs outside the classroom, usually in the natural environment, and that encourages lifelong enjoyment of and an appreciation for the outdoors, wildlife, and nature (Wheeler, 2007; MacGregor, 2011). The purpose of outdoor education is to use resources outside of school classrooms for educational purposes in order to make teaching and learning more effective by engaging learners beyond the walls and field of school buildings. Outdoor education programs, or sometimes also referred to as “outdoor environmental education” programs, typically

bring school classes and groups to rural, outdoor locations and settings for a day or longer to engage in hands-on, environmental education in nature (Lindberg, 2009). One common form of outdoor program is the outdoor learning center or nature center, which provides many of these outdoor environmental education programs at one facility (Wheeler, 2007). A nature center conserves and protects the native ecosystems and educates a local community through interpretive programs, naturalist-led activities, and events that promote the conservation ethic (ANCA, 1998). A nature center brings environments and people together under the guidance of trained professionals to experience and develop relationships with nature. A nature center focuses on conservation and preservation; offers a gateway for direct experience in nature; and stresses environment-responsible behavior (Evans & Evans, 2004). Nature centers are usually not residential and their audience generally includes school groups on field trips, families, adult groups, and various clubs. Nature centers are very similar to educational farms in organizational and management practices. Since nature center practice has a robust literature, they will be referred to often in my discussion of student farms.

All three of these “non-formal” strands of EE, experiential education, place based education, and outdoor education, provide the framework for local and community-based hands-on learning outside the classroom, involving various age groups of students and individuals. Directly related to this framework are three emerging fields of environmental education that focus on the growing of food which are agricultural education, garden-based education and farm-based education.

“Agricultural education” refers to a type of vocational education in agriculture which includes the development of the specific skills and knowledge necessary to

become effectively employed in some aspect of the system of commerce that provides a society's food and fiber (Desmond et al., 2002). On an institutional level, agricultural education programs seek to develop in students the necessary skills, knowledge, and techniques to become the next generation of farmers or at the very least, acquire some form of "agricultural literacy." Agricultural literacy can be defined as interdisciplinary education about various aspects of agriculture such as a person's understanding of the food and fiber system, its history and current economic, food processing, domestic and international marketing, and social and environmental significance (Desmond et al., 2002).

"Garden-based education" (GBE) can be defined simply as an instructional strategy that utilizes a garden as a teaching tool. Based in the fields of experiential education and/or environmental education, garden-based education is applied in the living laboratory of the garden. GBE employs several different learning pedagogies and has the potential to significantly enrich and strengthen the traditional K-12 curriculum in many levels. These pedagogies are generally most effective when tied into a comprehensive and cohesive educational plan or program or garden curriculum implemented across grade levels and when ideally tied into the local community. GBE is similar to farm-based education in its use of concepts from the fields of botany, ecology, biology, and agriculture.

The term "farm-based education" (FBE) is a relatively new term in the broader field of EE and is defined by the Farm-Based Education Association (FBEA) as, "a form of experiential, interdisciplinary education that connects people to the environment, their community, and the role of agriculture in our lives...(and) promotes land stewardship, the

value of meaningful work, and supports the local food systems that sustain us” (FBEA, 2012). On a basic level, FBE can also be defined as an instructional strategy that utilizes a working farm as a teaching tool. Even though FBE experiences are similar to GBE, they have many distinct and unique characteristics that have the potential to significantly enhance and contribute to existing and associated learning curriculums due to the several physical characteristics of farms compared to gardens. These characteristics are ample space for livestock, enhanced compost facilities, greenhouses, large and often diverse vegetable production, and pollinator cultivation. These characteristics offer the potential for more variety in learning experience in regards to food systems, food ecology, and food-community connections.

One specific setting where FBE and similar agricultural education models are being utilized is on “student farms.” “Student farms” are defined as farms at institutions of higher learning (i.e. colleges and universities) that put students to work in ways that teach them about crop production, direct marketing, basic plant and animal husbandry, professional cultivation methods, integrated pest management, and all work from planning to harvesting (Leis, 2011). A majority of the work on the student farm is done by students while faculty and staff integrate other areas of interdisciplinary agricultural education into the overall curriculum. Student farms are sites of agricultural production and marketing at which students have, through coursework and/or internships, opportunities to supplement classroom instruction with "real world" experience. In addition, there are two essential and loosely defined criteria for student farming: here “there must be some level of student initiative or possibilities for student leadership

associated with the farm; and, there must be a degree of attention and concern paid to questions of environmental stewardship and sustainability” (Sayre & Clark, 2011).

In addition, many of these student farms have also been successful in implementing additional “outreach programs” into the overall farm educational structure and overall learning goals. An “outreach program” is defined broadly as efforts to increase the availability and utilization of services, especially through direct involvement and interaction with a specific target population or the wider community. Student farms can often engage in many different forms of community outreach, such as on-site public tours of the farm, larger public events such as fairs or festivals, or in some cases involvement with the youth of the local community. This youth involvement may come in many loosely structured forms such as impromptu farm tours for a local elementary school.

Alternatively, these farms might create more intentional and consistent community involvement, such as an established “youth program” on the student farm (i.e. youth camps, routine farm visits, paid work opportunities, etc.).

It is important to clarify that student farms on college and university campuses have diverse missions. Some are associated with training students for small and large-scale agricultural professions; this often is the case at land grant universities. On smaller campuses, some student farms prepare students both for more small-scale commercial farming and for hobby farming that might be taken up without the expectation that the farm be a primary source of income. Other student farms have even more modest

objectives: they function as small demonstration gardens with no formal agricultural curriculum. Often these farms are run entirely by student and community volunteers.

A “youth program” can be broadly defined as any outreach activities specifically targeted for age ranges from preschoolers through adolescents. These youth program education opportunities can provide valuable learning assets not only for the local community youth involved, but also for the student farm students and staff. Youth programs on student farms have the potential to be mutually beneficial for both youth learning development and student farm enhancement.

In summary, there are many kinds of environmental and farm-based education that are relevant to my research about youth programs on student farms in the U.S. The various fields of education and pedagogical strategies described above are interdisciplinary and inter-connected.

## ***1.2 History of Environmental Education (EE), Garden-Based Education (GBE), Farm-Based Education (FBE), and the National Farm to School Program in the United States***

### ***1.2.1 Environmental Education (EE)***

The current field of environmental education (EE) has been created by the interconnection of many different and distinct fields of education, each claiming its background in different historical moments, yet all forging together to form the larger field of environmental education. There are four primary roots of EE; nature study,



conservation education, outdoor education and experiential education (Wheeler, 2007; MacGregor, 2011).

“Nature study” was founded in the 1890s and took hold in the industrialization of that time as a movement to rekindle students’ interest in and their connection to the natural world. This was also a time of “manifest destiny” for many European settlers, a time to conquer and personally own and control a seemingly vast, untouched landscape of North America. In many ways, nature study was a counter-movement to the urbanism and industrialization of the time. Nature study aimed to teach students various naturalist skills such as careful observation of the natural world, identification and collection of plants and animals, and knowledge of the life histories of these creatures. Its pedagogical goal was to make learning practical through direct contact with nature and close observation of the natural world. In addition to the content of nature study, this field encouraged first-hand observation and active, inquiry-based learning. At the time nature study was introduced and added into the school curriculum in the 1890s-1920s, most schools taught little or no science at all. Therefore, it was extremely new and teachers had virtually no background with which to teach this new material. The nature study movement briefly declined in the post-World War I 1920s, along with the progressive education movement in general. Later, in the 1950s, nature centers and interpretive centers began to expand and rekindle the nature study movement. The field continues to reign strong today and there are many excellent resources for nature study and hundreds of nature centers throughout the United States and Canada.

"Conservation education" emerged in the first decades of the 1900s as agency managers (i.e. of the US Forest Service, the Soil Conservation Service, the Tennessee

Valley Authority, and the National Park Service) sought to promote natural resource protection and management both as a practical conservation act and as a “patriotic” act to strengthen nationalism. At the turn of the 20th century, extensive over-harvesting and extraction of natural resources led some organizations and political realms to believe that these resources needed to be managed and protected by the government in order to ensure their continued presence for future generations. Later, in the 1950s, conservation education grew out of this movement, and as a result was driven and managed largely by government resource managers educating the public about the conservation of natural resources. Conservation educators taught students about America's ecological systems such as forest, soil, watershed, and wildlife resources and promoted the wise use of these resources now and into the future. Emphasis was placed on the characteristics of certain resources, their distribution, and promotion of good management choices. At first implementation and education was conducted by agency professionals, of which many did not have any educational background, and thus many early conservation educators were never sure of the curriculum applications. Overall, this has changed with expert educators now acquiring positions throughout resource management agencies and industry as well. However, in the current educational landscape, conservation education remains a marginal extra in the typical school science curriculum.

“Outdoor education” also traces its historical background to the early 20th century, yet differs from both conservation education and nature study in that it was distinguished primarily by its teaching method and pedagogy, rather than by its content. It was created not by proponents of environmental knowledge or stewardship, but from the teachers and educators themselves, heavily involved in basic school and curriculum

improvement efforts. The goal was to better educate children by using resources outside of school classrooms for educational purposes, in order to more explicitly connect education to the “real world” outside the school. Outdoor education came specifically out of progressive education movements and various activity-based curriculums, whose goals were “education for life in a democracy”. It also revolved around child-centeredness, learning how to learn, and the integration of school learning coupled with personal experience (MacGregor, 2011). Whereas nature education sprang from nature scientists and horticulturalists, outdoor education was created by K-12 educators determined to find new ways to improve classroom teaching and learning. As nature education and conservation education introduced new content, outdoor education introduced a new pedagogy. Outdoor education is highly varied depending upon what teachers want to stress. It could also offer outdoor extensions or community-based experiences to study of any traditional school subject. Or it might incorporate content from nature education and conservation education as well. Some outdoor education programs have focused on the development of “outdoor skills,” such as hiking, map-reading and orienteering, canoeing, and camping. Ultimately, outdoor education’s goal is to teach out-of-doors, what can best be learned out-of-doors.

“Experiential education” is another highly diverse and interdisciplinary educational field that has evolved into many sub-fields, many with strong connections to environmental education. One of its more well-known advocates in the early 20<sup>th</sup> century in America was philosopher John Dewey. However, the branch of experiential education most associated with the outdoor learning developed from lessons learned from programs to strengthen sailors’ confidence and resilience in World War II and the potential benefit

of educating young adults through experiences that would both require cooperation and fortitude. The goal was a type of extremely powerful experiential learning that would give youth exposure to enough tough experiences, confidence-building and team-work skills to be ready for the challenges of life. The original prototype for this model was developed in the 1930s by the path-breaking work of Kurt Hahn. Hahn's approach (through what were to become known as Outward Bound Schools) was to create powerful experiential learning experiences for youth by placing them in challenging situations in natural settings and forcing them to work cooperatively to succeed, thus building endurance, confidence, teamwork, and an ethic of service to others. These learning concepts and the Outward Bound movement soon spread from England to the United States and also to at least a dozen other countries around the world. Many Outward Bound programs still provide experiences for teenagers and young adults, but there are also now programs for adults, corporate groups, and troubled youth. Over the past several decades, experiential education has expanded out to also include experiences including service learning, esteem education, eco-political education, expeditionary education, adventure education, wilderness education, and outdoor education among others. All these forms of experiential education aim to give participants wilderness skills, teamwork skills, self-esteem, personal discipline, and a sense of purpose and service to others, in order to overcome the perceived cynicism and ego-centrism that is common in Western culture (Breunig, 2005). Today, experiential education professionals have a formal Association of Experiential Education (AEE), which defines experiential learning as, "A process through which a learner constructs knowledge, skill and value from direct experiences. Experiential education is a philosophy and methodology in

which educators purposefully engage with learners in direct experience and focused reflection in order to increase knowledge, develop skills and clarify values” (AEE website, “What Is Experiential Education, n.d., paragraph 3).

### ***1.2.2 Garden-Based Education (GBE)***

Garden-based education (GBE), also referred to as garden-based learning (GBL), integrates a wide variety of disciplines and is basically an instructional and curricular strategy that utilizes a garden as a teaching tool based in the dual theoretical frameworks of experiential and environmental education (Subramaniam, 2003). The perceived importance of GBE comes from current research in the literature that claims that garden settings are natural bridges between the school classroom and the community, with complex connections to issues as diverse as ecology, poverty, hunger, international economics, and public health. In theoretical terms, GBE proponents find support for their approach in a number of contemporary educational theories including Howard Gardener’s theory on multiple intelligences (Gardner, 1983), Daniel Goleman’s theory of emotional intelligence (Goleman, 1995), and Kolb’s theory of experiential learning (Kolb, 1984).

The history of the school garden movement and GBE has a strong connection to on-going historical cycles of educational reform (Meyer, 1997). In the United States the school garden movement reached high points in several different eras, mainly in response to specific reform efforts. In the early twentieth century (1900-1930s), progressive education and social reform movements originally encouraged GBE. In the mid–

twentieth century (1960-1970), after a lull in GBE activity and support, counter-culture and environmental movements created a resurgence of interest in school and community gardens. By the late twentieth century (1990-2000), because of the rebirth of progressive education coupled with renewed interest in environmental education and nutrition/health issues for youth, school gardens were once again of major interest. In summary, from an historical perspective, garden-based education has been viewed as contributing to all aspects of basic education, including academic skills, personal development, social development, moral development, vocational and/or subsistence skills, and life skills. In each of these eras of renewed and expanded educational and cultural interest, the lure of GBE in basic education was grounded on its potential presentation of educational strategies that are strongly accepted within the literature and research as valid and essential as pedagogical approaches to meaningful learning. Today, GBE occurs not only in schools but in communities and institutions of higher learning as well, such as colleges and universities. GBE's definition is however limited by its scale of activities within the "garden" setting, which is usually smaller in size, complexity, and labor required as compared to an agricultural setting, such as a farm.

### ***1.2.3 Farm-Based Education (FBE)***

According to the literature, the history of farm-based education (FBE) does not have any specific dates of origin or initial implementation. The concept and definition of "farm-based education" is still emergent and developing among educators, researchers and agriculturalists. In addition, the term FBE also incorporates various concepts of

outreach sometimes conducted on a farm, such as farm tours, workshops, or public events that would create various conditions for “farm-based education” to occur. This is significantly different than “agricultural education” in which the intent is to train agricultural professionals. Farm-based educators focus on cultivating and fostering connections with the local community through a broader spectrum of interdisciplinary agricultural education and environmental education. FBE is essentially “education in a farm setting” and differs from garden-based education with respect to scale of learning environment (i.e. farm size vs. garden size) and the dual purposes, sometimes in tension with one another, of production and education. Most commercial farms in the United States are not deliberately educational by design or structure. However, according to the literature, many farms over the last decade have begun to embrace and incorporate various “farm-based educational” opportunities and outreach into their overall services, if even for the potential financial contributions through tour fees, on-site programming, youth summer camps, and other paid outreach services in the community. This additional direct income and customer attention received from increased FBE opportunities can often be perceived as extremely valuable for the farm’s continued financial viability and positive community standing.

#### ***1.2.4 National Farm to School Program***

In many ways the “Farm to School” movement is closely linked to youth farm-based education and therefore is an essential part of my research. In general, “Farm to School” is a program that connects schools (K-12) and local farms with the objectives of

serving healthy meals in school cafeterias, improving student nutrition, enhancing health and nutrition education opportunities, and supporting local and regional farmers. The National Farm to School Network believes that its work and mission are an “essential component of strong and just local and regional food systems, ensuring the health of all school children, farms, the environment, economy and communities” (FTS website, “About Us” n.d., paragraph 2).

Much like the goals of FBE focused on youth, Farm to School aims to establish relationships between local foods and school children. Several examples of Farm to School programs and initiatives include, but are not limited to, promoting local products on school menus, supporting food-related curriculum development and experiential learning opportunities, supporting school gardens, offering school to farm tours and farmer-in-the-classroom sessions, providing education for parents and community members, and supporting the overall expansion of Farm to School programs through local communities. In addition, many of the intended benefits of the Farm to School program are similar benefits of youth FBE as well, such as strengthening children's and communities' knowledge about, and attitudes toward, agriculture, food, nutrition and the environment; increasing children's participation in the school meals program and consumption of fruits and vegetables; and increasing market opportunities for farmers, fishers, ranchers, food processors and food manufacturers.

The history of the Farm to School movement began in 1996 through pilot projects in California (Santa Monica-Malibu Unified School District and The Edible Schoolyard, Berkeley) and Florida (New North Florida Marketing Cooperative). In 2000, the USDA Initiative for Future Agricultural and Food Systems (IFAFS) provided support to



establish the National Farm to School Program enabling program development, research, and policy. From the consistent efforts of organizing workshops around the country to bring farmers and school food service providers together, successful pilot program implementation, and continued federal financial support, the Farm to School movement had established over 400 programs in 22 states by 2004. The National Farm to School Network, was founded in 2007 through a year-long collaborative planning process engaging more than 30 organizations across the country; it already has mounted a national staff, eight regional lead agencies, 50 state leads, and thousands of Farm to School advocates across the country. The National Farm to School Network was originally co-led by staff from the Community Food Security Coalition (CFSC) and the Urban & Environmental Policy Institute (UEPI) at Occidental College until 2011, under whose guidance and leadership the organization blossomed and grew significantly, providing assistance to Farm to School programming in all 50 states through an expanding national and regional infrastructure and staff. Farm to School is now operational in more than 10,000 schools spanning all 50 states.

### ***1.3 Student Farms in the United States***

At the same time there is a rich history of agricultural education on specific college and university campuses throughout the United States, particularly land-grant institutions. Historically, these institutions have provided agricultural education opportunities to students who intend to enter agricultural professions and who wish to gain valuable skills to improve their existing agricultural knowledge and skills. The

educational settings in which these skills are commonly taught to the students have included the classroom as well as in the field, such as a field laboratory or on a campus farm. These farms, also referred to as “student farms” are typically owned, operated, and maintained by the institution. However, since the majority of the academic and physical work and educational experiences on the farm involve institutional students, the term student farm can accurately be used to describe these farms on campuses of higher education.

Since the nineteenth century, the student farm movement has developed, survived and flourished in North America. Many progressive era thinkers championed “the nature-study movement” in the early twentieth century as a way of introducing an inspiration and a wonder for the natural world into elementary school education (Koester, 1999). School gardens were consequentially promoted as a practical, tangible way of connecting children to nature and to the local community (Mayer-Smith et al., 2009) . In addition, many other progressives were also concerned with the problem of educating farmers as a means of improving rural life. The education of non-farmers about farming was also a future goal to be addressed, but less immediately practicable than educating farmers or school children (Sayre & Clark, 2011).

From the perspective of many progressives, by the late 20<sup>th</sup> century, the institutionalization of agriculture as a science had gone too far. It had lost sight of interdisciplinary education and the need to communicate or justify agriculture’s means with the wider non-farming public (Moncure & Francis, 2011). Foundational structures embodying utilitarian ideals of the U.S. for the development of agricultural expertise such as, the Morrill Act of 1862, which established the land-grant colleges, the Hatch Act of

1887, which created the agricultural experiment stations, and the Smith-Lever Act of 1914, which authorized federal funding for cooperative extension, eventually gave way to a gradual separation of theoretical and practical knowledge that, over the 20<sup>th</sup> century, effectively insulated agricultural research from outside understanding and critique for a variety of historical reasons (Sayre & Clark, 2011). The consequences would be seen in many spheres of education, the environment, and society in general.

In a nation with fewer and fewer farmers every year, new generations of students have very limited understanding of agriculture's profound importance; this was one of the worst consequences of the separation and insulation of agricultural education from mainstream education (Lyson, 2004). A failure of the secondary schools and liberal arts colleges to teach even basic courses on food and agriculture meant that an enormous majority of Americans, even among the well-educated and wealthy, were now totally ignorant of an area of essential knowledge that only a few generations before was widely common among the population. It also meant that the United States' policies regarding agricultural trade, technical assistance, foreign relations, and food production were being discussed and formulated without information and input from all sides of the public table (Leis, 2011; Sayre & Clark, 2011).

The decade following the Smith-Lever Act of 1914 was a significant time in U.S. agricultural history since many scholars and citizens at the time viewed agriculture as widely relevant to human concerns such as natural resource use, individual health, economics, and international relations. These human concerns were viewed, and still are today, as so essential to societies throughout the world, that agriculture can be argued to not only transcend traditional academic disciplines but also demand a level of basic

practical familiarity even among those who are not professional farmers (Leis, 2011; Lyson, 2004).

The first few decades of the twentieth century were indeed a turning point in U.S. farming history. A realization that the study of agriculture needed to be enriched and questioned by the perspectives of non-agriculturists was gaining more attention. The realization that the lives and thinkers of non-agriculturists needed to be enriched and questioned by the study of agriculture was also gaining supporters. Overall, these realizations began to shed light on the fact that disciplinary and cultural divisions were increasingly coming to isolate food producers from the wider food-consuming public, simultaneously obscuring the political processes affecting the food system on both the global and the local levels (Leis, 2011; Sayre & Clark, 2011).

Later in the twentieth century, several progressive educators such as David Orr began to propose the establishment of college farms, working outside the land-grant system, as at least a partial remedy for these farmer-to-public issues (Jorgensen, 1993). Rather than focus on the need to reform the land grant system itself, these educators and reformers saw significant potential in small-scale, hands-on farming as a means of enriching a liberal arts education. The potential of college-based farming, or student farms, was also an extension of the ideas of ecological literacy, the belief that no student could be roundly educated without developing some sense of place, including a basic familiarity with the natural systems of his or her local region. Many educators at the time believed that students could acquire this ecological literacy from direct experiences with farming as a way of life (Moncure & Francis, 2011; Koester, 1999). From these beliefs arose a proposed a list of benefits, both pedagogical and institutional, that could be

gained by including agriculture as a part of a complete liberal arts education. Many of these potential benefits included instilling an ethic of work while promoting ecological awareness; offering interdisciplinary field sites for the study of plants, soils, and other natural systems; helping to revitalize local and rural economies; protecting biodiversity; mitigating carbon impacts by reducing food miles and/or planting trees; recycling yard and food wastes; and teaching problem solving and strategies for institutional change (Lyson, 2004). It was argued that these benefits related directly to several of the most promising fundamental and broad lessons to be learned on a student farm, such as the students' understanding of what is possible in the world and the ongoing balance of negotiations of power between individuals and institutions (Sayre & Clark, 2011; Leis, 2011; Smith, 2010).

By the 1990s, dozens of student farms throughout the United States had been established. This student farm surge was a direct reflection of a new level of institutional recognition for sustainable agriculture in general, as evidenced by the creation of the USDA's Sustainable Agriculture Research and Education (SARE) program in 1988 (Smith, 2010; Koester, 1999). The SARE program, along with other key USDA programming, was a significant source of both legitimacy and funding for faculty and students, making a case for research and practices regarding more sustainable agricultural values beyond the common industrial agricultural models of production. Farmers stretched to the edge of viability and financial stress throughout the U.S. began to develop various low-input and self-sufficient farming systems as a way of reducing costs and mitigating environmental and human health impacts (Lyson, 2004). During this time of the 1980's and 1990's, the idea of sustainable agriculture first began to really take hold

in the agricultural industry, eventually influencing institutional and educational agricultural policy on student farms as well (Wilkins, 2005; Jorgensen, 1993).

The student farm's balancing act between agriculture and higher education is a unique and dynamic relationship. Student farms can be considered places where people of all ages within the community can learn something significant and lasting about classic agrarian issues such as how food is grown, who grows it and where, and how things historically and politically came to be this way. However, the gathering of that community diversity into the student farm fields can often fuel debate and challenges to fundamental questions about a whole range of social, political, environmental, and economic questions that are specifically linked to the practices and politics of agriculture (Leis, 2011; Sayre & Clark, 2011). This unique mixture of "farmers" and "non-farmers" can therefore become a lab for best practices to be tested, a physical forum for intellectual and practical discussions, an arena for theory to practice experimentation to take form, all contributing to an ideal of the possibilities of sustainable agriculture (Smith, 2010; Mayer-Smith et al., 2009).

As like all agricultural farms and businesses, educational or not, student farms are also significantly influenced by infrastructural concerns, intergenerational conflicts, numerous market pressures, shifting definitions and research of best management practices, as well as the growing unpredictability of acute and seasonal weather patterns (Leis, 2011). In addition, student farms can also be influenced by the institutional context in which they operate and the corresponding political and geographical logistics (Smith, 2010). However, one key difference between a student farm and a traditional U.S. farm is its labor pool. The student farm's labor force is often undergraduate and graduate

students, each with different levels of academic and practical experience and motivation. Each student farm, then, operates within a set of relationships among the farm itself, its engaged students, and its larger institutional context; thus, each student farm establishes its own identity based on the strengths and weaknesses of these evolving relationships. This situation is unique and unusual compared to the standard structure and operation of a typical commercial farm in the United States.

The literature on student farms at United States colleges and universities reveal that these programs aim to enhance curricula by integrating research, extension and teaching missions, reinforcing classroom instruction, and improving job training (Leis, Whittington & Kleinhenz, 2011). Varying in scale, size and focus, student farms are also often places of agricultural production, applied hands-on experiences and marketing, at which students have opportunities to supplement classroom instruction with "real world" experience, such as through coursework, individual research projects, or internships. Typically, the goal is to provide basic training in organic production and marketing while linking to more formal academic subjects such as agro-ecology, environmental studies, or other disciplines (Jorgensen, 1993; Moncure & Francis, 2011; Leis, 2011). At the same time, student farms can facilitate broader campus sustainability objectives such as the recycling of food wastes and the provision of local food for dining halls. Frequently, there is a community service element as well, as students grow food to be donated to local food banks, install gardens at nearby secondary schools, or host farm tours for elementary school groups (Smith, 2010; Lyson, 2004). Some student farms are focused specifically on the training of new farmers while others serve as sites for undergraduate and graduate student research, while providing an experiential underpinning for an

academic program in sustainable food and farming systems. Some produce large quantities of food for their local communities. All teach a wide range of practical skills, and a host of less tangible skills, such as leadership, teamwork, tolerance, resilience, flexibility, organization, responsibility, ethics, and communication (Sayre & Clark, 2011).

However, the core essence of experiential education, significantly utilized within student farm educational programs, is that of engaging students to “solve problems inductively, actively use and explain knowledge through solving problems, and make connections and apply knowledge beyond the classroom and school, based on real-life problems” (Knobloch, 2003, p. 23).

According to the literature, over the last ten to fifteen years, there has been an increase in demand from college and university students for more hands-on academic farming experiences (Leis, 2011; Smith, 2010; Sayre & Clark, 2011). This demand has facilitated the formation of many student farms throughout U.S. institutional campuses, in various sizes and functionality, in which stakeholders of colleges and universities are responding to these demands. Since 1990, there have been at least 41 new student farms created on a wide variety of U.S. college and university campuses, ranging in size from less than an acre to dozens of acres (Sayre & Clark, 2011). Various sources of literature and research on student farms indicate that there are currently 80 to 90 student farms in the U.S. as of 2012, with the trends strongly suggesting more being established every year (Leis, 2011; Smith, 2010).



***1.4 Effectiveness of Environmental Education (EE), Garden-Based Education (GBE) and Farm-Based Education (FBE) programs***

***1.4.1 Environmental Education (EE)***

According to the literature, environmental education's interdisciplinary and multi-faceted nature contributes to the integration of many teaching practices that are thought to characterize effective education. Thus, EE programs encompass a wide range of promising successful characteristics. Because of its potential to span many different disciplines, EE can appeal to students who possess very different learning styles and backgrounds (Wheeler, 2007).

According to the research literature, environmental education is a potentially effective means of achieving a number of desirable student outcomes such as an increase in academic achievement across a wide range of classes, an increase in students' self-esteem, engagement and motivation, a deeper integration of many techniques that are thought to define good education, an increase in active student civic engagement, a catalyst in transforming school culture, and providing a streamline to connect schools to communities (Subramaniam, 2003; Blair, 2009; Lekies et al., 2006; Ozer, 2007). While all of these potential outcomes from EE programs are indeed positive and inspiring, simply providing EE programs does not in itself produce these outcomes. In other words, EE is still an emergent field and continues to be integrated into school curriculums where possible. More and more research and positive results are being brought forward every year concerning EE's potential benefits.

One piece of valuable research was recently completed by the Office of the Superintendent of Public Instruction (OSPI). In 2006, the Washington State Legislature passed Engrossed House Bill 2910 which directed the OSPI to create a study report on the impacts of environmental education on K-12 students. Accordingly, the OSPI developed the *Environmental Education Report*, which summarizes academic research measuring the impact of EE on one or more of the following: academic achievement; career development; graduation requirements; self-esteem, engagement and motivation; and civic responsibility and service learning (Wheeler et al., 2007, pg. i). In all, 76 relevant studies were located and the findings of the most methodologically rigorous studies were weighted most heavily in the OSPI report (Wheeler et al., 2007, pg. i). The report's findings suggest that EE is an effective means of achieving a number of desirable educational outcomes (Wheeler et al., 2007, pg. ii).

Of the 20 reviewed studies that addressed student achievement, the EE Report cited 18 that indicated a correlation between participation in environmental education and improved academic achievement, for both high-ranking and low-ranking students (Wheeler et al., 2007, pg. ii). From these studies there was strong evidence that environmental education increased math and science achievement the most out of all achievement areas (Wheeler et al., 2007, pg. ii). However, many studies did not test for statistical significance and instead relied on small sample sizes. In addition, very few studies controlled for other factors such as gender, socioeconomic status, age, and level of achievement prior to participation in environmental education.

When it came to career development, the report found no studies that examined the impact of K-12 environmental or sustainability education on career choice. Several

studies which analyzed adult populations suggested that EE programs increased awareness and interest in environmental careers and that participation in service-learning programs can enhance career development. Studies of individuals working in an environmental field cited outdoor opportunities and participation in environmental educational programs as an influence in their career choice (Wheeler et al., 2007, pg. ii).

There is limited evidence available on the impacts of environmental education on graduation rates. Only one study suggested that environmental education participation reduced dropout rates and increased university enrollment, while no studies focused on culminating projects required for graduation (Wheeler et al., 2007, pg. iii).

With respect to more affective outcomes, of the sixteen studies reviewed, there was some evidence that seemed to indicate that environmental education had a positive impact on students' self-esteem, motivation, and engagement (Wheeler et al., 2007, pg. iii). However, much of the impact showcased in the studies may have resulted from the experiential nature of environmental education programs examined, whose learning approaches frequently involved outdoor/adventure activities as opposed to traditional classroom learning. In addition, only one study used well-developed and reliable instruments for measuring changes.

Finally, when it came to taking a closer look at the research involving the effects of EE on civic responsibility and service-learning, eight studies reviewed found mixed evidence that participation in environmental education increased civic engagement (Wheeler et al., 2007, pg. iii). These studies focused on self-reported data rather than measured behavior changes.

In general, the *Environmental Education Report* seemed to indicate that there were various positive benefits to students from EE programs and environmental education curriculum integration. The comprehensive nature of this report, investigating numerous scientific reports and documents concerning the potential benefits of EE programs on student performance and overall life influences, does provide strong evidence in favor of more environmental education integration in the future. However, it is also clear that more research must be conducted to truly gauge the effectiveness, especially long-term effectiveness, of EE programs and EE concepts into student curriculum (Wheeler et al., 2007, pg. iv).

#### ***1.4.2 Garden-Based Education (GBE)***

Similar to research regarding environmental education program effectiveness, research focusing on garden-based education program effectiveness is plentiful, yet in need of further rigorous studies. According to the existing literature and research, whether GBE occurs under the fields of environmental education, ecological literacy, agricultural literacy, or agricultural education, it appears to have the potential to contribute to basic education (Blair, 2009; Desmond et al., 2004; Ozer, 2007; Subramaniam, 2003). The literature also suggests that GBE can be a unique and effective strategy to be used in basic education to introduce an experiential component in support of the traditional curriculum or as an environmental education curriculum (Desmond et al., 2004). As with the promise of EE program effectiveness, programs that utilize GBE have the potential not only to contribute to academic skills, but also to address a child's

development in a social, moral, and practical or life skills sense (Blair, 2009; Desmond, 2004). According to an international survey of garden-based learning (GBL) organizations, GBE supports academic skills, personal development, social and moral development, vocational and/or subsistence skills, and life skills (Subramaniam, 2003). Some of the suggested benefits and core uses of GBE programs can be divided and summarized into academic skills and life-skills categories.

Academically, many subjects can be taught using nature and gardens as the learning lab, making these concepts potentially more meaningful (Blair, 2009; Lekies et al., 2006; Poudel et al., 2005). Gardens offer dynamic settings in which to integrate every discipline including science and math, language arts, history and social studies, and art (Desmond, 2004). GBE also has the potential to increase environmental literacy and in teaching scientific concepts (Subramaniam, 2003). Other broad academic benefits include broadening children's experience of ecosystem complexity, clarifying the nature-and-culture continuum through an emphasis on place-based learning, teaching food systems complexity through exposure to vegetable gardening and helping to shape adult attitudes and environmental values through garden-based academics experiences (Blair, 2009; Ozer, 2007; Subramaniam, 2003). In general, all of these sources evaluated some dimensions of student learning.

Several studies indicate that when children work in gardens, 90 percent of their experience is classified as hands-on (Ball et al., 2001; Poudel et al., 2005). Therefore, it was found that learning by doing produced a 75 percent retention rate of knowledge over time. GBE also has the potential to effect cooperation and communication in an academic and school environment. Several studies show that facilitating cooperation and

communication in a real-world setting rather than a classroom makes learning teamwork possible (Ozer, 2007; Poudel et al., 2005). Additional promising benefits within the literature from GBE among students include increased concentration and impulse control, enhanced emotional coping skills and stress reduction, more creative play, reduced symptoms of Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD), contributions to a foundation for stewardship, and increased motor coordination (Blair, 2009).

Some potential core life-skills acquired from garden-based education beyond basic academic education revolve around the concepts and issues of community development, food security, sustainable development, vocational education, the greening of school grounds, personal development (mental and physical), social and moral development, vocational and/or subsistence skills (Desmond et al., 2004; Lekies et al., 2006; Ozer, 2007). Research also suggests that gardens can help create a sense of community and belonging, foster a connection with the environment, and help students develop self-confidence, discipline, collaboration skills, and multi-cultural understanding (Meyer as cited by Desmond, 2004). School garden projects nurture community spirit and provide numerous opportunities to build bridges among students, school staff, families, local businesses, and community based organizations (Desmond, 2004).

The literature also documents the positive health benefits, both short-term and long-term, that gardens can provide by creating opportunities for children to discover fresh food, make healthier food choices and become better nourished (Gale et al., 2001; Harman et al., 1999; Ozer, 2007). Links with school gardens, school food-service programs, and local farms can ensure a fresh nutritious diet for children while teaching

about sustainable food systems (Harman et al., 1999). Young people can also potentially experience deeper understandings of natural systems and become better stewards of the earth (Desmond et al., 2004). This empowerment and connection to the earth can often give students a sense of achievement and motivation.

One recent garden-based education resource, *Learning Gardens and Sustainability Education: Bringing Life to Schools and Schools To Life*, uses the metaphor of living soil as a foundation for designing and using learning gardens (Williams & Brown, 2012). The authors state in this advocacy book that garden-based education has the potential cultivate a sense a place, awaken the senses, nurture interconnectedness, embrace practical experiences, enhance value regarding bio-cultural diversity, foster curiosity and wonder, and provide enlightenment to the concepts of rhythm and scale. One example within this resource points to the Learning Gardens program in Portland, OR as a model garden-based education program that connects children to schools and the community. The goals of this program include the following: 1) to foster multidisciplinary learning, connecting math, science, social sciences, language arts and aesthetics; 2) to promote multicultural learning representing multiple agricultural and culinary traditions of the parent community; 3) to cultivate intergenerational learning among young adults, parents and grandparents, educators, and others in the community; and 4) to nurture multisensory learning by involving not only our heads but hands, hearts, skins, tongues, intestines, and palates. This book also give numerous examples of successful garden-based programs throughout the United States and the positive impacts they have had on the children, teachers and parents involved.

Many of these outcomes match the literature already mentioned earlier in this research review.

### ***1.4.3 Farm-Based Education (FBE)***

As mentioned earlier, farm-based education (FBE) is an emerging concept that offers similar potential academic and life-skill benefits as garden-based education (GBE). The main difference of course is that most of the actual learning experiences occur on a farm instead of in a garden. FBE educational farms can range from having a single teacher-farmer to a staff of hundreds. Educational farms can also serve all ages from infant visitors with their parent, through kindergarten to 12 grades, to university students and adults throughout their lives. Research shows that FBE programs are growing in popularity within the United States and in particular in students who are often completely removed from these elements and need an opportunity to experience the basic elements of food and farming (Olson, 2010). Basically, FBE can help to create a stronger connection between people and their food.

Farm-based education can offer many potential benefits to students and youth involved with student farms. These benefits can be organized into two categories, academic skills and life-skills. Academically speaking, FBE is among the most effective and promising forms of environmental, experiential, and place-based education because of its innate ability to connect all people with farms and food production. Furthermore, agriculture and education on farms lends itself to interdisciplinary studies as well, involving economics, business, math, science, politics, languages, social studies, and art.



Farms are natural laboratories for environmental education while enhancing the potential to illustrate ecological principles. Practical lessons on farms enhance and reinforce theoretical learning in schools. Finally, farms offer a tremendous array of prospects to expose people to the interconnectedness of food, land and people through direct and hands on experiences (Olson, 2010).

In terms of life-skills, the literature indicates that FBE can be effective on many related levels. First, there is a chance to develop a vast array of abilities, including critical thinking, decision making, problem solving, application of knowledge, sense of responsibility, leadership skills, management skills, motivation, work ethic, and building of interpersonal relationships (Olson, 2010; Ball et al., 2001; Leis et al., 2011; Mayer-Smith et al., 2009). These abilities can often be crucial in the job market, as employers seek potential employees skilled in problem solving, critical and analytic thinking, adaptability, effective communication, and ability to work as a member of a team, in addition to a practical background in agriculture (Smith, 2010). In addition, hands-on learning on farms builds confidence, self-awareness, and individual and collective responsibility, which can lead to an increased sustainable stewardship of our world (Poudel et al., 2005).

In regards to youth in the community, FBE programs offer learning environments for youth to develop empowering connections with their communities and a deeper understanding of their abilities as leaders (Gale et al., 2001). FBE can promote life values in youth, such as respect for nature, manual work, individuals, and community by relating to the social, moral, cognitive, and emotional aspects of the human experience (Leis et al., 2011). FBE also has the potential to promote the idea that the raising of food is

fundamental to our society and that all people, including the youth, should know about agriculture and where their food comes from (Wilkins et al., 2005; Leis et al., 2011). Furthermore, natural rhythms and cycles seen and experienced on farms can lead to a deeper and accessible understanding of the world for children as well as older students as well (Booth, 2009).

### **1.5 *Characteristics of Successful Farm-Based Education (FBE) Programs***

From the literature review and existing research I was able to locate three important resources regarding how to create an effective and successful farm-based education program. The first resource is called *A Start-Up Manual for Farm-Based Education Programs* by Nick Olson, released in 2010. This manual presents a step-by-step approach to creating a farm-based education program outlined below. Much of this manual is simply a lesson in creating a small business with an emphasis on farm considerations. However, this manual is geared specifically toward private or non-profit farms, not institutional farms operating as part of colleges and universities. Obviously, institutional farms have their own set of potential challenges and advantages mentioned earlier. Despite these differences, this document is helpful in providing guidance to any farm developer who desires to implement a farm-based education program.

The *A Start-Up Manual for Farm-Based Education Programs* suggests that the first step toward the creation of a farm-based education program is to turn your “dream to vision.” This is accomplished by developing a mission statement for the program along with specific goals and the identified audience that this program hopes to serve within the

community. The majority of farm-based education programs used as positive examples within the manual focus largely school-age visitors. These schools can be public schools, private schools, preschools, alternative schools, religious based schools, and home-school networks. This concentration of students within schools and the fact that there are schools in nearly every community make schools are an excellent audience to serve, according to this publication (Olson, 2010, pg. 9).

Next is to focus on the business side of things early in the process. Creating a business plan is absolutely essential and at the heart of the entire program. Decisions need to be made concerning a wide variety business logistics such as, but not limited to for-profit vs. non-profit status, legal matters, safety, educational vs. farm income, diversified income sources, grants and charitable giving, and marketing (Olson, 2010, pg. 15).

Selecting a location that considers aesthetics, access, and flow are also very important to the future of the farm program. The locations of crops, animals, and other important infrastructure must be at least roughly determined before further decisions can be made. In addition, decisions such as whether to buy, lease, or rent the land will potentially determine future uses as well. Finally, a decision must be made as to what type of farming practices will be conducted on the land to ensure viability, both ecologically and financially (Olson, 2010, pg. 44).

The next step to starting a farm-based education program according to this manual is locating and acquiring the appropriate staffing and volunteers, while identifying and securing potential long-range partnerships such as with local schools. The manual

suggests that when contacting schools, it is most effective to locate an individual who will be very interested in your program, which is often an individual classroom teacher or a science coordinator. It is important to build a relationship with that individual to create trust that will last. Long range relationships can be successfully established with schools through providing different forms of professional development for their teachers, such as working with a group of schools or a school district to provide opportunities for educators to learn more about farm based education in conjunction with their classrooms. These types of strong relationships take time and inputs from both sides (Olson, 2010, pg.55).

Finally the manual discusses how “it comes together with education.” The programming is central to the “education” side of the success of the farm-based program. The manual recommends that this programming be diverse, age-appropriate, and efficient in delivery and scope. It also states that successful programming should assist teachers in meeting State and National standards when appropriate and foster further community connections. This education can include many different types of activities beyond direct interaction with the farms operations (i.e. sowing, harvesting, etc.) such as teacher workshops, adult workshops, programs for seniors, corporate programming, large events, open houses and festivals, movies and dances, farmer’s markets, hay and sleigh rides, weddings, and meeting space opportunities (Olson, 2010, pg. 58).

A second informative book on FBE is *Growing A Garden City: How Farmers, First Graders, Counselors, Troubled Teens, Foodies, a Homeless Shelter Chef, Single Mothers, and More Are Transforming Themselves and Their Neighborhoods Through the Intersection of Local Agriculture and Community—And How You Can Too*, published by Jeremy N. Smith in 2010. This book tells the story of Missoula, Montana’s Community

Food System. It describes the origins of this city's local food actions and food movement, its expansion to include more and increasingly diverse participants, and the connections between production and consumption that involve many different stakeholders and community members. It also describes in detail a non-profit called "Garden City Harvest" which partners with other non-profits and governments at multiple levels to grow and distribute healthy food to low-income people, offer education and training in ecologically conscious food production, and utilize various sites for the personal restoration of troubled youth and adults. The PEAS farm (Program in Ecological Agriculture and Society) maintains a partnership and collaborative relationship with Garden City Harvest, as well as the University of Montana.

Regarding accounting for farm costs, *Growing a Garden City* states that, there must be a distinction between those that are required for the business and those that are necessary to support student education. It continues by expressing that student farms need to maintain flexibility and adaptability, especially in regards to new programs focused on education. In addition, a balance must be established between short-term financial efficiency and long-term resilience. In some cases, student farms may actually be forced by financial pressures to become more financially self-sufficient. However, the results of this increased self-sufficiency can potentially generate enough income for its annual operating costs while also contributing to staff salaries and capital infrastructure. Encouraging an economic reality within an educational and agricultural setting so that production and educational obligations can inform one another is one major goal of any student farm. Self-sufficiency is a desired characteristic of most student farms and farms in general.

This book also underscores the importance of blending small groups, humble labor, and tangible, beautiful edible results to maximize the positive aspects found within the creative tension between production and education. Acknowledging and remaining patient and flexible with these tensions between production and instruction is extremely important. In addition, striking a balance between student leadership and staff or faculty direction is crucial as well. The ingredients of first-hand experience, traditional explanation, and the successful assumption of responsibility from instructors often come together in an extremely positive way when delivered and implemented successfully.

The *Growing a Garden City* book continues by stating that a public farm, or student farm, can sometimes be a “catalyst for community” as it works to establish and develop civic responsibility. The book also emphasizes that an educational and student farm exists within a community and therefore it should be a public place (where appropriate), open to passive experiences of the continual agricultural process, and include the inviting involvement of children and community celebration. In this way, the farm can become a force for the creation and maintenance of local culture. The student farm supporting the community as the community supports the student farm is a real and achievable goal for resiliency.

Finally, this resource offers some basic advice for student-farm long-term viability. It suggests forming a trusted core group, identifying allies in the community and the institution, doing a business plan, seeking diversified funding, starting small, keeping the farm weeded and aesthetically organized, reading and writing as an exercise in knowledge expansion, thinking very carefully before adding livestock, cultivating partners and supporters beyond campus, and never forgetting to socialize. In general, the

book recommends the creation of an authentic student farm experience through the following pieces: educational experience, customer service, adequate public facilities, safe and accessible environment, community relations, and proper financial planning for the future.

Another important resource for my research came from a confidential phone conversation with a staff member at Shelburne Farms, a membership-supported, nonprofit environmental education center. Shelburne Farms is a 1,400-acre working farm and National Historic Landmark on the shores of Lake Champlain in Shelburne, Vermont. Shelburne Farm's mission is to cultivate a conservation ethic for a sustainable future by practicing rural land uses that are environmentally, economically and culturally sustainable. For purposes of confidentiality, I will refer to my informant as "SF."

During our telephone conversation, SF drew on her experience to identify many of the best practices of creating and maintaining a student farm. One thing SF emphasized was how crucial partnerships are for the success of a farm-based education program. According to SF, one way to build a positive partnership is to look into the needs of the community and local schools first in order to identify potential audiences and how best to serve their needs and assist in overcoming educational obstacles. This could be accomplished by meeting with the superintendent of the school district and with the local teachers to discuss their needs. Working within the systems and various standards already in place at schools is often an extremely important way to build lasting and productive partnerships. SF recommended working with curriculum experts in district/school and developing education opportunities with what teachers are already required to teach is also a great way to justify field trips from the school to the farm. It is

essential to get approval of the community education program from the school district and have funding in place before implementing program in the community. Otherwise, there is a potential for wasted time, money and effort. Some other specific strategies for successful implementation of a FBE program within the community are to offer free busing for schools to increase access and participation. This can be accomplished through grants in most cases. SF also suggested the possibility of leasing land from the school district to grow food and install gardens.

The final resource of direct significance that I utilized in my research and literature review comes from a 2011 book that I have cited earlier entitled *Fields of Learning: The Student Farm Movement in North America* by Sayre and Clark. One chapter of this book that I found extremely useful and relevant is titled “Starting a Student Farm”. This chapter stresses the importance of experienced farming expertise as essential to the creation and maintenance of a successful student farm. All the student farms investigated by the authors of this book have evolved and changed continually over the years in terms of their acreage, market strategies, infrastructure, management, academic curriculum and community partnerships. In addition, the authors advise that it often takes several years to get the student farm established, so patience and consistent efforts to create opportunities for student successors one year to the next is a key ingredient. Successful and resilient student farms all represent the qualities of adaptability and flexibility, for long-term survival and growth.

Based on their research with student farm managers, the authors state that there is no single set of consistent rules or blueprint for starting a successful student farm. While there may ideal conditions and resources such as quality land, staff expertise, faculty and



administration support, ample funding, committed students and interest among the wider community, this does not always equate to success in itself, mainly because no student farm begins its program implementation process with all of these elements. There are many different ways to organize a student farm.

A student farm needs to be developed within the context of its specific location, both geographically and institutional and should serve the needs and interests of the students at that school and the local community as well when possible. It is important to perform quality and meaningful research, which considers physical attributes, proximity to campus, facility possibilities, future barriers, and fertility of soil, as some of the most important factors in where the student farm should be located.

Forming a small core group of people interested, committed and willing to work hard to start a student farm is crucial. The next step is to identify your allies or people who can help you, such as faculty members, Deans, the provost, the president, alumni, student organizations, and facilities staff. Get to know your institutions goals and needs, academically, financially, and philosophically.

When seeking funding realize that in most cases some kind of financial commitment from the institution will be critical for the stability of the farm and this can take many forms, such as land, buildings, vehicles, utilities, personnel, and/or work-study allocations. It is also important to be realistic about how much you can bring in from the sale of farm products alone, especially in the early stages of the student farm. Grants are valuable, but they can also be unstable. From the research, it is clear that even well-

established thriving student farms typically cover only operating expenses (seeds, supplies, other inputs) from their sales revenue, not salaries.

Diversity and simplicity of the student farm's mission and capabilities is key, especially in the early stages of implementation. As things go well, diversify and expand year after year. At the end of the term, a simple, manageable initiative brought to a completion is infinitely more appealing than a few odd parts of a larger vision.

Keeping the student farm tidy, clean and well weeded is a good way to increase support, especially from the campus. Aesthetics matter, especially if you're in a highly visible location. A well-kept farm is appealing to outsiders, safer, more pleasant to work in, and demonstrates a sense of commitment.

Committing what you've done and what you plan to do on paper on a regular basis will help you develop your ideas, facilitate communication among current student farm workers, and provide an indispensable record of what worked, what didn't, and how much it all cost for student farmers in years to come.

Cultivating partners and supporters beyond campus is essential on many levels for the student farm. There is great value in developing partnerships with the wider local community. Offering gardening or farming workshops and field days as well as sponsoring community education events will increase awareness of your activities and promote an appreciation for your efforts. Get to know your local organic and sustainable farming community. Its members will constitute one of your most valuable resources. Get input from multiple stakeholders, and think about how you can work together.

According to all the resources discussed above, here is a synthesis of the best practices in regards to successful farm-based education programs:

- 1) Develop simple and manageable mission statement, program goals, and business plan: Identify land and facility needs: Acquire staff and volunteers; Identify programming that is diverse, age-appropriate and efficient in delivery and scope.
- 2) Identify audience and community needs.
- 3) Identify potential funding sources: Establish balance between short-term financial efficiency and long-term resilience with a desired goal of self-sufficiency; Diversify funding sources if possible.
- 4) Identify partnerships, stakeholders and allies within the community and institution which is crucial for long-term success.
- 5) Maintain flexibility and adaptability, especially in regards to new educational programs.
- 6) Maximize the positive aspects found within the creative tension between production and education.
- 7) Strike a balance between student leadership and staff/faculty direction.
- 8) Remember that the student farm supports the community as the community supports the student farm: This is a real and achievable goal for resiliency.
- 9) Work within educational standards of local schools.
- 10) Keep student farm tidy and clean to increase support.

## ***1.6 Best Practices with Respect to Environmental Education and Nature Center***

### ***Program Management***

#### ***1.6.1 Environmental Education Programs***

As mentioned in several sections of this thesis, there are limited specific resources and research publications focusing on best practices of student farms. Since student farm research is still emerging, and while there are a few quality resources, I have also chosen

to expand my literature review research beyond the realm of student farms. Because of their organizational similarities, such as program management, funding and staffing, environmental education and nature center programs are solid examples of best practices in regards to student farms. There is a wealth of resources and research concerning environmental education and nature center programs throughout the United States, that are valuable for this student farm research as well. The characteristics of these programs can also be applied to other farm-based education programs. In general, most EE and nature center programs operate as or within a non-profit organization. While not all student farms operate or start as a non-profit, many do, and the research available concerning these related programs is valuable as well.

Much of the research about EE programs can be summarized from the 2007 Office of Public Instruction (OSPI) report *Environmental Education Report*. In addition to analyzing programs' effects on student outcomes, the EE Report stated that the environmental education research investigated had helped to identify various characteristics that help to define successful environmental and sustainability education as well as best practices. In general, the report also indicated that successful programs were tied "either to 1) teaching practices, where there tend to be elements of active experiential learning, or 2) program characteristics that promote community involvement, an integrated curriculum with an evaluation component, and well trained staff" (Wheeler et al., 2007). It was also emphasized that programs that operate a long time seemed to have a stronger impact on students, especially in the areas of academic performance and mastering skills and knowledge. However, most of the reviewed studies in this report

focused on “identifying measured changes in students’ performance and behavior, and do not identify the specific factors that caused these observed effects” (Wheeler et al., 2007).

Here is a summary of several types of *long-term EE programs* mentioned in the OSPI *Environmental Education Report*:

Inquiry-based projects and programs, based on critical thinking is at the core of best practices in environmental and sustainability education. Inquiry is a crucial part of the teaching and learning practices found in a classroom with fully implemented environmental and sustainability education. Within these programs, effective teachers use a variety of methods and types of experiences to integrate inquiry into their everyday classroom activities. The students are often involved in gathering and interpreting information through observation from a variety of sources and investigate new ideas, issues, and concepts through collaboration, in which finding solutions to real-world problems using scientific research models and methods is a desired goal (Wheeler et al., 2007, pg.36).

Service-learning and real-life programs appear to be most successful when they tie academic concepts to real-world, locally relevant examples and allow students to apply their knowledge to projects in their communities. The research from this report seems to indicate that such service-learning activities increase student motivation and interest and assist students in the development of a sense of pride, ownership, and respect for themselves and others (Wheeler et al., 2007, pg.36).

Student-led projects, activities and programs that include leadership, cooperative learning and group work are also mentioned as a type of successful EE program model.

From the research, student-centered and constructivist approaches to learning and teaching are often viewed as strategies and techniques to improve student performance, motivation, and engagement. Lessons and facts have the potential to become more interesting when students have an opportunity to construct their knowledge themselves and to apply it to real, important, and relevant situations (Wheeler et al., 2007, pg.36-37).

Finally, when it comes to describing characteristics of an EE program, almost every research and resource publication mentions hands-on learning. It is well documented that learning by “doing” helps students master real-life skills and potentially provide an opportunity to integrate skills and knowledge from different areas. As a result, students may be more motivated and engaged and may be more likely to remember the learning and apply the information and skills to new situations (Wheeler et al., 2007, pg.37).

Here is a summary of *program characteristics* of successful EE program according to the research conducted by the OSPI within the 2007 *Environmental Education Report*:

According to the research in the report, effective EE programs require a highly trained and competent instructor. These educators work in a variety of settings and within a variety of jobs. They also teach in public and private classrooms, and lead activities for children and adults at non-formal educational institutions such as nature centers, zoos, museums, outdoor learning centers, and parks. They develop curriculum materials, put on public awareness events, and administer national, state, and local programs. Their

training involves both initial educator training, as well as ongoing professional development.

In regards to EE program characteristics, utilizing an integrated approach and being able to work on multiple tasks at the same time is a necessary skill in many current work environments. In the context of an EE program, integration of several disciplines allows the potential for students to draw deeper connections between different subjects and to move from isolated concepts to a network of interrelated ideas. EE programs that use integration may help students develop greater motivation and interest in learning and, as a result, possibly lead to higher academic performance (Wheeler et al., 2007, pg.37).

The report mentions that the characteristics of effective communication and documentation between team members, teachers, schools, and the community is one of the key elements of a successful environmental and sustainability program. The studies in this EE Report also suggest that documenting the program activities could help with program assessment and evaluation. In addition, regular meetings and planning time for teachers involved in the development and delivery of the program has the potential to improve the quality of the program (Wheeler et al., 2007, pg.37).

Involvement of community partners in the EE programs can improve their quality and impact on students, according to the report. Community members and organizations have the potential to provide formal and non-formal programs with environmental learning opportunities, professional expertise, and financial support (Wheeler et al., 2007, pg.37).

Professional development of environmental education teachers can lead to a high-quality, well-educated staff, which is crucial to the long-term success and overall improvement of the program. Some examples of professional development suggested within the research can come in the form of summer institutes and workshops, weekly or biweekly learning sessions, and common planning time to collaboratively develop and refine ideas (Wheeler et al., 2007, pg.37).

Finally, authentic assessment, specifically that which informs student learning, is one of the strategies to create and maintain a successful EE program according to the research. Authentic assessment allows students to assume an active role in the assessment processes and potentially increase their self-esteem and motivation. Through assessment tasks that are relevant to students' lives, what students gained from the program can be assessed. These assessments can help them develop ownership of their learning and may improve their attitude specifically toward school and learning (Wheeler et al., 2007, pg.37).

Here is a summary of best practices regarding EE program management:

- 1) Develop projects and programs that include inquiry and critical thinking; service-learning that asks students to apply their knowledge to projects in their communities; student-led activities that include leadership, cooperative learning and group work: "learning by doing" helps students master real-life skills; opportunities to integrate several disciplines.
- 2) Acquire a highly trained and competent instructor who can work in a variety of settings and within a variety of jobs.
- 3) Provide professional development opportunities for staff.
- 4) Develop effective communication and documentation between team members, teachers, schools, and the community.



- 5) Involve community partners: community members and organizations provide environmental learning opportunities, professional expertise, and financial support.
- 6) Allow students to assume an active role in the assessment processes; provide authentic assessment, specifically that which informs student learning.

### ***1.6.2 Nature Centers***

The principal resources that I found regarding best practices of nature centers were the Evans & Evans 2004 book, *The Nature Center Book: How To Create And Nurture A Nature Center In Your Community* and the Association of Nature Center Administrators 1998 book, *The Nature Center Handbook: A Manual of Best Practices from the Field (Volume 1)*. Both of these resources come highly recommended in the environmental education field and provide excellent examples and discussions concerning everything from start-up to funding to programming. I have summarized many of the main points from these resources below in an attempt to create a stronger framework from which to view student farm implementation and long-term sustainability.

The resource *The Nature Center Handbook: A Manual of Best Practices from the Field* is a director and user guide to running a successful nature center and was developed by The Association of Nature Center Administrators (ANCA). This valuable manual offers best practices, tips, techniques, and examples from nature center administrators and other experts in five essential areas: leadership, strategic planning, boards, staff, and fund raising and development. The ANCA was founded in 1989 in response to a demand for a national professional network for nature center administrators. The founding directors

recognized the need to develop peer relationships and ways to share knowledge, expertise, successes, and failures with each other. In addition, ANCA promotes leadership and quality management for the nature center profession in addition to offering services to its members.

The manual has several related nature center definitions. The first definition is that a nature center brings environments and people together under the guidance of trained professionals to experience and develop relationships with nature. A more expansive definition comes from the ANCA in which it states that a nature center consists of 1) a natural site or home base to conduct educational programs; 2) a separate legal entity with a precise mission statement managed by a governing body; 3) a paid professional staff; 4) an established education program. In regards to best practices, a successful nature center is one where the mission is fulfilled, clients are reached through programs and services, and sufficient funding is attained to achieve the organization's goals. A nature center brings environments and people together under the guidance of trained professionals to experience and develop relationships with nature. A nature center consists of a natural site or home base to conduct educational programs; a separate legal entity with a precise mission statement managed by a governing body; a paid professional staff; and an established education program.

Strategic planning is defined as a disciplined, consensus building process of creating a desired future for an organization and developing strategies to attain that future. Benefits to strategic planning include promotion of strategic thinking and action, improved decision making, enhanced organizational responsiveness and improved performance, and direct benefits to the people of the organization. In general, successful

strategic planning leads to action, builds a shared vision that is values-based, is an inclusive, participatory process in which board and staff take on shared ownership, accepts accountability to the community, is externally focused and sensitive to the organization's environment, requires an openness to questioning the status quo, and is a key part of effective management. The process requires teamwork and improves communication, trust, respect, and consensus among board members, staff, and other important members of your constituency. Strategic planning is an on-going part of the organization's operations.

In regards to best practices with staffing, people are an organization's greatest asset. Staff members plan, conduct, and carry out the nature center's programs and activities, and represent the organization to its constituents on a daily basis, while providing important services and support to visitors, members, donors, and the general public. Most nature centers operate with paid staff, who in partnership with the director, volunteers and board members, work to achieve the organization's mission. Coordinating and training volunteers, accumulating materials, planning activities, researching learning resources, and securing funding are all vital processes that will require significant time and energy. Therefore, these resources recommend that one best practice would be to finance a permanent position, such as a director or manager, who can handle these responsibilities, instead of spreading the load among existing staff.

As is true with almost all organizations, student farms, EE programs and nature centers, funding is necessary to advance the organization's mission and achieve goals, and essential to ensure growth, stability, and longevity of any organization. To produce sufficient resources to support the center, most directors develop an income mix that may

include earned income (fees, services, contracts), interest income (from endowments or other investments), and charitable contributions (donations, gifts, grants, and support). These resources recommend that an integrated development program should combine short and long-term fundraising through annual, capital and planned giving programs. Annual giving produces basic income for operations, while capital giving targets funds for special projects and capital needs such as buildings and facilities. Planned giving concentrates on large, permanent gifts for long-term support such as bequests.

Established fundraising practices that generate annual, capital and planned gifts for nature centers and that are based on strong ethical principles and practices are the keys to success for any organization or nonprofit. By protecting donor rights and incorporating sound business and fund management practices, the organization can build donor confidence in the organization's credibility. However, fund raising and development is challenging and requires a sustained commitment to develop relationships with donors and supporters. Short-term fund raising successes are important, but to guarantee the stability and longevity of programs and mission, planned steady growth is essential.

These resources recommend the keeping of records of all financial activity including receipts from all purchases of goods or services, volunteer time or materials, and staff time and activity. These records become a vital tool in selling the project, keeping it alive, and helping it prosper.

Fund raising strategies vary widely among nature centers, and have involved both traditional and innovative approaches. Nature centers take their funding where they can

get it and usually, that means locally. Most often, numerous funding sources rather than one primary source support the project. The majority of nature centers are partnerships between non-profit organizations and public entities, relying on public funds, private donations, program fees, contracts, endowment income, annual giving programs, grants, fund-raising drives, nature shops, and memberships, as well as admission charges. The most important advice regarding all this funding potential is that a project will not receive funds from any source unless the staff or volunteers ask.

Non-profit organizations receive about 85 percent of their financial support from individuals through annual giving and endowments, with the remaining coming from foundations, corporations, and bequests. Therefore, the organization should have a broad approach to fund-raising and not rely on any single large entities that can suddenly end support and shut down your center.

Here is a synthesis of best practices regarding nature center program management:

- 1) Develop successful strategic planning around a participatory process: Provides shared ownership, accountability to the community, and is sensitive to the organization's environment.
- 2) Finance a permanent position, such as a director or manager, who can handle the main responsibilities, instead of spreading the load among existing staff.
- 3) Develop a broad approach to fund-raising and do not rely on a single large entity.
- 4) Develop an income mix that includes earned income (fees, services, contracts), interest income (from endowments or other investments), and charitable contributions (donations, gifts, grants, and support).
- 5) Develop an integrated development program that combines short and long term fund raising through annual, capital and planned giving programs. Planned steady growth is essential.
- 6) Provide staff with necessary support to achieve goals of developing relationships with donors and supporters.
- 7) "You will not receive funds from any source unless you ask."

### ***1.7 Summary of Best Practices Regarding Successful Farm-Based Education, Environmental Education and Nature Center Program Management***

After researching program management best practices regarding successful farm-based education, environmental education, and nature center education, several patterns and themes emerged from the literature. These themes and patterns can be organized into five distinct areas of program structure: strategic planning, staffing, funding, programming and partnerships.

In the area of strategic planning, it was clear that simplifying program goals, missions and the overall business plan was key for early program success and implementation. It was also suggested that this development process be participatory, involving many stakeholders to create shared ownership and increase buy-in from the supporting institution and the community. In addition, identifying needs of the youth program in terms of land and facility requirements is crucial as well. In most cases, these needs are limited by already maxed out student farms and university campuses. However, understanding what these minimal requirements of land and facilities would be to run an effective program is essential to long-term success.

Identifying the needs of the community, institution, and university students is equally as important as land and facility needs. These audience needs may vary from community to community, and may even change over the years. The youth program needs to be able to respond to these needs from the beginning in order to remain viable in the community and within the structure of the supporting institution. If the program

chooses to become a non-profit, addressing these needs may become even more important, especially when applying for funding from various foundations.

Best practices from the literature also revealed that many youth programs within the context of a student farm atmosphere encounter constant challenges and tensions between the responsibilities of production and education on the farm. However, these tensions can be overcome or mitigated by maximizing the positive aspects of this challenge instead of dwelling on the potential negative impacts it might have on the program. Several examples cited in the literature state that focusing on the creative solutions to logistical issues with student and staff involvement can enhance team building and community. Even financial tensions between production and education can be resolved by working together with institution and community to identify solutions that fit the goals of the youth program. Communication among stakeholders is seen as the key to tension resolution.

In the program management area of staffing, best practices from the literature revealed that acquiring funding to hire at least one full-time director or manager in charge of the youth program was crucial for long-term viability and success. It was agreed by most program resources that utilizing temporary staff employees, especially those reliant on institutional student positions or AmeriCorps or Campus Corps positions, created program instability and limited growth for the future. Having a permanent staff member to handle the main responsibilities, instead of spreading the load among temporary staff, was deemed ideal. Institutional funding for this position was also viewed as more sustainable than grant funding for overall program stability.

Identifying quality staff and volunteer bases was seen as critical for program success. This staff and volunteer base most often comprises university students and community volunteers such as teachers and parents of children involved with the youth program. Providing this work force base with the necessary support to achieve the goals of the program was also key for long-term viability. These resources stated that simply filling positions within the youth program with quality employees and volunteers is not enough. Continuous financial and program support is also needed to enhance and expand program services into the future.

Finally, striking a balance between student leadership and staff and faculty direction was also stated as important. Developing effective communication and documentation between team members, teachers, schools, and the community is essential for sustainability of the program. The main point is that there needs to be a feeling of participation and ownership among everyone involved with the program.

The issue of funding was another theme of program management discussed within the literature. Identifying potential funding sources requires a focus on establishing a balance between short-term financial efficiency and long-term resilience with a desired goal of self-sufficiency. Diversifying funding sources through a broad approach to fundraising was identified as ideal for long-term success. Relying on a single funding entity was viewed as extremely risky over the long haul. Income mixes that included earned income (fees, services, contracts), interest income (from endowments or other investments), and charitable contributions (donations, gifts, grants, and support) was also viewed as ideal. Several resources also stressed how important it was to not assume that



financial support was not available from any particular source. Stated plainly, you will not receive funds from any source unless you ask.

When it came to best practices in programming and curriculum, many resources agreed that identifying programming that is diverse, age-appropriate, and efficient in delivery and scope, was the ideal for short-term and long-term program success. Also mentioned in the literature were the types of programming or activities that research had shown to provide positive impacts for children. These types of programming included inquiry-based projects and programs based on critical thinking; service-learning that allows students to apply their knowledge to projects in their communities; student-led projects and activities that include leadership, cooperative learning and group work; and learning by “doing” which has the potential to help student’s master real-life skills. In general, any programming that incorporated the integration of several disciplines was deemed ideal as well. Allowing students to assume an active role in the assessment processes of this programming was also identified as a key element in program sustainability. The literature indicated that this student role in assessment provided authentic assessment, specifically that which informs student learning.

Other significant elements of programming revealed in the literature stated that maintaining flexibility and adaptability, especially in regards to new educational programs was a desired quality of the program. Also, working within educational standards identified through the local schools was also identified as a way to connect on a deeper level within the community. In general, programming must remain adaptable and flexible enough to provide services to meet the needs of the community, even as these needs change throughout the years.

Strong and vibrant partnerships were identified by many literature resources as being one of the most critical elements to achieve for overall program viability. Solidifying involvement of community partners, members and organizations had the potential to provide environmental learning opportunities, professional expertise, and financial support. In fact, several resources cited partnerships as the most important factor for program success. It was emphasized in the literature that the institution and student farm supports the community as the community supports the student farm and youth program. This synergy is a real and achievable goal for resiliency. It was also emphasized that keeping the student farm and youth program tidy and clean increased institutional and community support.

The literature that I reviewed point fairly consistently to best practices in five areas, which are strategic planning, staffing, funding, programming, and partnerships. These best practices are summarized in Table 1. on the following page.

**Table 1: Summary of Best Practices Regarding Farm-based Education, Environmental Education and Nature Center Program Management**

<b>Strategic Planning</b>	Develop simple and manageable mission statement, program goals, and business plan.
	Develop successful strategic planning around a participatory process: Provides shared ownership, accountability to the community, and is sensitive to the organization's environment.
	Identify land and facility needs.
	Identify audience and community needs.
	Maximize the positive aspects found within the creative tension between production and education.
<b>Staffing</b>	Provide staff with necessary support to achieve goals of developing relationships with donors and supporters.
	Finance a highly trained and permanent position, such as a director or manager, who can handle the main responsibilities, instead of spreading the load among existing staff.
	Identify potential staff, student and volunteer base. Provide professional development opportunities for staff.
	Strike a balance between student leadership and staff/faculty direction. Develop effective communication and documentation between team members, teachers, schools, and the community.
<b>Funding</b>	Identify potential funding sources with a focus on establishing balance between short-term financial efficiency and long-term resilience with a desired goal of self-sufficiency. Planned steady growth is essential.
	Diversify funding sources if possible. Develop a broad approach to fund-raising and do not rely on a single large entity.
	Develop an income mix that includes earned income (fees, services, contracts), interest income (from endowments or other investments), and charitable contributions (donations, gifts, grants, and support).
	"You will not receive funds from any source unless you ask."
<b>Programming</b>	Identify programming that is diverse, age-appropriate, and efficient in delivery and scope.
	Develop teaching strategies known to strengthen student learning, including inquiry-based projects and programs based on critical thinking; Service-learning which allows students to apply their knowledge to projects in their communities; Student-led projects and activities that include leadership, cooperative learning and group work; Learning by "doing" which helps students master real-life skills; Integration of several disciplines is optimal.
	Maintain flexibility and adaptability, especially in regards to new educational programs.
	Allow students to assume an active role in the assessment processes. Provide authentic assessment, specifically that which informs student learning.
	Work within educational standards of local schools.
<b>Partnerships</b>	Identify partnerships, stakeholders, and allies within the community and institution, which is crucial for long-term success.
	Involve community partners, members, and organizations to provide environmental learning opportunities, professional expertise, and financial support.
	Remember that the student farm supports the community as the community supports the student farm; This is a real and achievable goal for resiliency.
	Keep student farm tidy and clean to increase support.

## **CHAPTER TWO: Research Methodology**

### ***1.1 General Research Approach***

In order to identify which student farms in the United States have existing youth programs and better understand what the financial and organizational issues are with implementing and sustaining these youth programs, I decided to undertake both quantitative and qualitative research methods. After identifying existing student farms in the United States through an extensive literature review and individual student farm research, I conducted quantitative on-line survey research to yield broad descriptive data concerning various institutional and program characteristics of existing student farms. Using quantitative data analysis for the survey research enabled me to be able to analyze many student farm survey responses in the context of a limited number of questions, thus facilitating comparison and statistical analysis of the data.

I then conducted a series of in-depth qualitative phone interviews with five identified student farm youth programs. This qualitative research provided numerous details concerning youth program organizational finances, implementation and overall longevity. Synthesizing this data, I utilized summative research to determine youth program effectiveness, specifically program financial effectiveness. Summative research can be defined as conclusions made about a program to make a major decision about its value, whether it should be continued, and whether the demonstrated model can or should be generalized to and replicated for other participants or in other places. This research method is used in the context of judging the merit of a program at the end, and to make recommendations for the future if such a program is undertaken again.

I applied purposeful sampling as my sampling strategy for the research on student farms. Purposeful sampling can be defined as a sampling strategy in which information rich cases or subjects are purposefully selected for potential in-depth studies. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the inquiry, thus the term purposeful sampling. Studying information-rich cases also tend to yield insights and in-depth understanding rather than empirical generalizations. In general purposeful sampling focuses on selecting information-rich cases whose study will illuminate the questions under study.

Not only did I employ both quantitative and qualitative methodology, I also attempted to incorporate illuminative evaluation methodology. My goal in utilizing illuminative evaluation was to examine financial and organizational strategies and outcomes for youth program implementation and longevity on student farms via data from numerous sources in order to "illuminate" the realities of and barriers to financial sustainability. By exercising illuminative evaluation, I had the flexibility to discover information and perspectives applicable to my original research questions and to incorporate these findings into my discussion and analysis in order to produce a complete story of various financial strategies of youth programs on student farms in the U.S.

I employed a combination of deductive and inductive research analysis. Deductive analysis is where the data is analyzed according to an existing framework whereas inductive analysis involves discovering patterns, themes, and categories in one's data. Inductive analysis findings emerge out of the data, through the analyst's interactions with the data. I utilized deductive analysis to interpret my quantitative survey data and used inductive analysis to evaluate my qualitative interview data. Each of these analysis

strategies are appropriate for the type of respective data that was collected applying both quantitative and qualitative methods.

While my thesis did not have a specific hypothesis in a way that explicitly links dependent and independent variables, I did however have several assumptions from my early literature research regarding youth programs on student farms. These assumptions shaped my research design and analysis strategies and also influenced the framework of my main research questions.

One broad assumption was that student farms are growing in popularity, number and size as a result of the increasing interdisciplinary interests from students, staff and faculty at colleges and universities across the United States. These interests are partially created by the overall growing movements surrounding food and farming issues such as food security, organics, and climate change. In addition, food issues are interdisciplinary by nature, involving many different areas of institutional curriculum study such as human health, ecology, economics, energy, and education. The realization from students that farms are linked to these other interdisciplinary areas of study is expanding and therefore the institutional demand and need for expanded academic offerings is growing as well.

The second assumption was that the potential benefits of garden-based and farm-based education programs to the overall development of children and adolescent youth is well documented and growing in popularity throughout K-12 schools across America.

The third assumption was that the structure, curriculum, and funding of student farms varies greatly across the United States because of geographical, political, economic, and institutional factors.

Fourth, the addition of a youth program, defined as any outreach activities specifically targeted for age ranges from preschoolers through adolescents, to an existing student farm program benefits both the surrounding community (specifically the youth within that community) and the students working on the student farm as well.

Fifth, that student farm youth program potential benefits are not thoroughly researched or documented and that examples or inventories of existing and emergent student farm youth programs have not been well researched as well.

My last assumption was that by understanding the financial and organizational issues related to implementing and sustaining a youth education program on a student farm could benefit future youth program implementation and overall student farm research.

## ***1.2 Quantitative On-line Surveys of Existing Student Farms***

Along with my literature review I discovered three resources that were crucial for my survey research: the Rodale's Institute online "Directory of Student Farms", the Sustainable Agriculture Education Association (SAEA) online "Student Farms in the U.S. and Canada" student farm directory through Cornell University, and the student farm directory found in the appendix of the 2011 book *Fields of Learning* by Sayre and Clark. In the spring of 2012, I created a spreadsheet combining all of these student farm inventories along with all associated information, such as geographic characteristics, land uses, institutional location, farm name, year established and stakeholder contact information, if available. Eighty (80) student farms were identified on this integrated

inventory representing student farms throughout the United States. Through further research, three of these student farms were discovered to be no longer in existence. This left seventy-seven (77) student farms to be contacted.

Every effort was made to ensure the accuracy of the list in order to verify student farm existence and current information. However, it is understood from the literature that the student farm movement is continually evolving with new student farms and associated academic programs emerging or in development. My research and inventory efforts provided a strong list of potential student farm candidates based on the most current information and research available at the time of this project.

On March 13, 2012, I created an online survey through the limited free services of Survey Monkey (Appendix 2). This survey's intention was to collect quantitative data regarding various qualities of these identified student farms such as location and size of the associated institution, existence and types of outreach programs, existence and age ranges of a youth program, average operating budget and current sources/types of funding of youth program, and willingness to participate in a confidential follow-up phone interview. These responses were then investigated and organized to determine various descriptive data.

Between March 18<sup>th</sup> and March 31<sup>st</sup>, 2012, two rounds of email messages were sent to the identified major stakeholders (i.e. farm manager, program director, etc.) at each student farm within my inventory. The message stated my research goals and expressed my desire for their responses to the survey invitation (Appendix 1). This email also included my explanations of the project's confidentiality documents and a link to my



research survey via Survey Monkey. The first round of email messages included all seventy-seven (77) stakeholders. After ten days, another friendly reminder message was sent via email to all stakeholders who had yet to respond to the first online survey message. No other email contact was attempted with the stakeholders beyond these two rounds of emails regarding the research survey.

### ***1.3 Qualitative In-depth Phone Interviews with Major Stakeholders of Student Farms with Youth Programs***

Once the survey was completed, utilizing pre-selected survey criteria, I selected five student farms to be potentially contacted for in-depth phone interviews. These criteria narrowed down the original survey inventory pool to consider potential interviews with the farm stakeholders who indicated the following responses to these general questions:

***Table 2: Quantitative Survey Criteria***

Survey Question	Question	Response
#3	Do you (the institution) currently have a student farm?	Yes
#6	Does the student farm have a youth program?	Yes
#10	Would you be willing to engage in a confidential follow-up interview?	Yes or Maybe

I chose these criteria because the goals of my phone interviews were to gain deeper insight into *youth programs* on student farms, not just any outreach program that

the farm might offer or engage in with the community. In addition, survey question #3 (Figure 1) insured that these farms originally gleaned from online inventories and *Fields of Learning* actually still existed and were in operation. Finally, question #10 (Figure 1) was included as a phone interview criterion to provide additional student farm stakeholder information. It also provided me with the confidence that these stakeholders would be willing to engage in a follow-up interview in the near future.

Based on the results of my pre-selected survey criteria and with the appropriate respondent permissions, I sent two rounds of emails (Appendix 3) to identify student farm youth program stakeholders between April and June of 2012. This letter thanked the identified stakeholders for their original participation in the on-line survey and requested their further research participation in the form of a brief 60-90 minute phone interview to be conducted within the next few weeks. I utilized the “standard open-ended interview” research process which consisted of a set of questions (Appendix 4) carefully worded and arranged with the intention of taking each interviewee through the same sequence and asking each respondent the same questions with essentially the same words. This approach helped to minimize variation in the questions initially posed to the student farm stakeholders, increased comparability of responses, and maximized the time efficiency of each interview. This interview consistency was crucial for my interview analysis.

Through correspondence via response to my phone interview email, I arranged the logistics of the phone interview with several of the stakeholders, such as the appropriate phone number and time to call. With the consent of these stakeholders who responded to my request, the interviews were recorded using a digital recorder and a cell phone on speaker mode and eventually transcribed to Word documents. I also manually took notes

during the interview sessions for back-up purposes during the actual interview. These phone interview research sessions were conducted between April and June, 2012.

## **CHAPTER THREE: Research Findings**

### ***1.1 Quantitative Research (On-line Survey)***

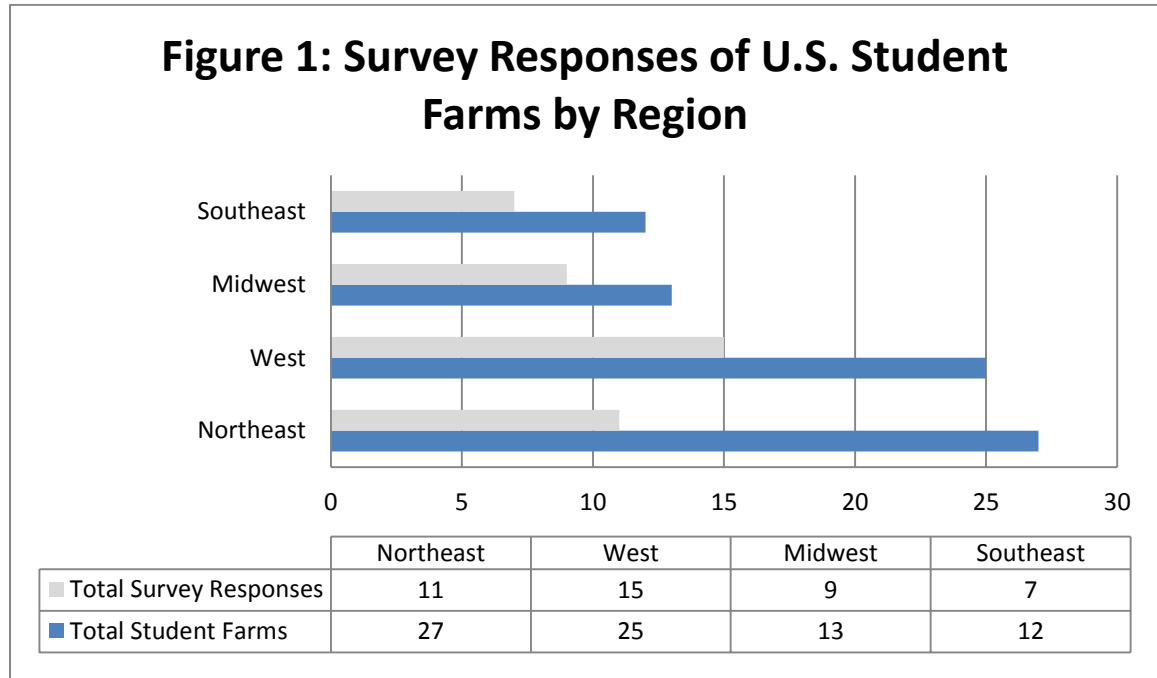
As mentioned earlier, eighty (80) student farms were originally identified from multiple resource inventories and individual research, while three were discovered to no longer have an existing student farm. Of the seventy-seven (77) verified student farms that were sent a request and link to participate in the on-line survey, forty-six (46) completed the survey while two responded that they would not or could not participate in the survey at all. In summary, forty-six (46) out of seventy-seven (77) potential responders completed the survey research, resulting in a 60% response rate.

Here are further summary details of the survey categorized by question and corresponding responses:

#### ***“What is the name AND location of your institution?”***

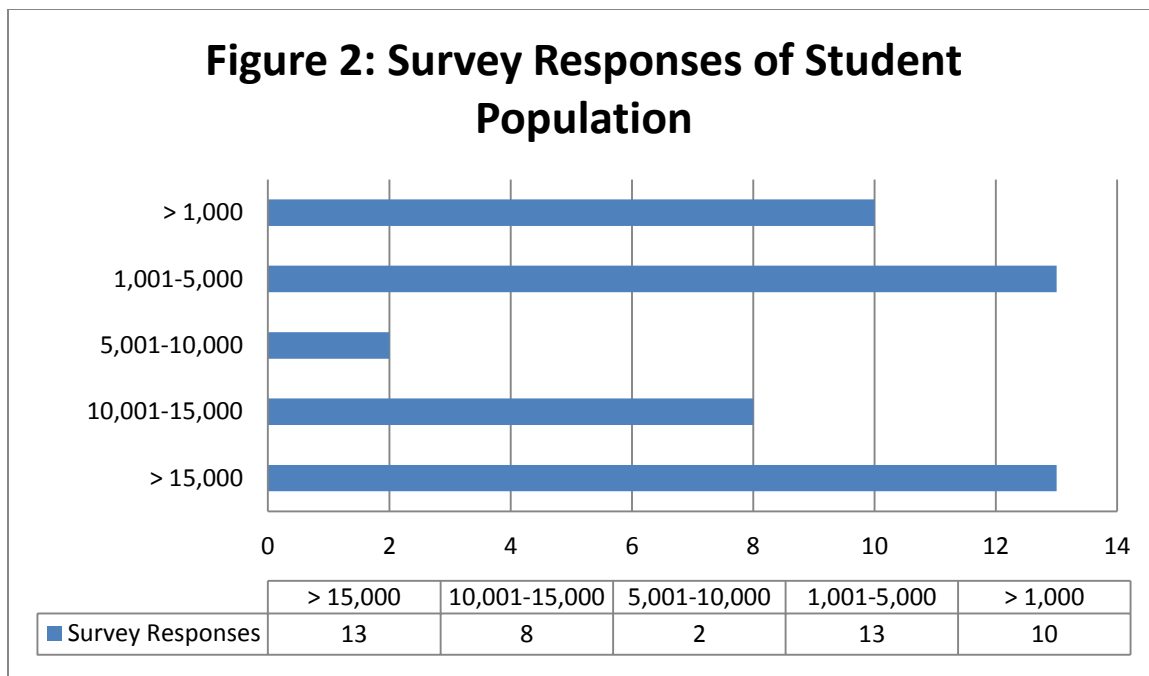
Forty-two (42) responders answered while four skipped this first question of the survey. Answers to the “location” part of this question revealed data regarding where these student farms were geographically located by region; Northeast, Southeast, West, and Midwest. The West had the most responses with fifteen (15), while the Northeast had eleven (11), the Midwest had nine (9) and the Southeast had seven (7). The original student farm survey contact list of seventy-seven (77) potential responders yielded the following numbers per geographical region: Northeast, twenty-seven (27); West, twenty-five (25); Midwest, thirteen (13); and the Southeast, twelve (12). When these potential responders by region are compared to the actual responses by region, it is revealed that the Midwest had the best response rate by region at seventy (70) percent. The response

rates for the rest of the U.S. were sixty (60) percent for the West region, fifty-eight (58) percent for the Southeast region, and forty-one (41) percent for the Northeast.



***“What is the size of your institution in terms of numbers of students?”***

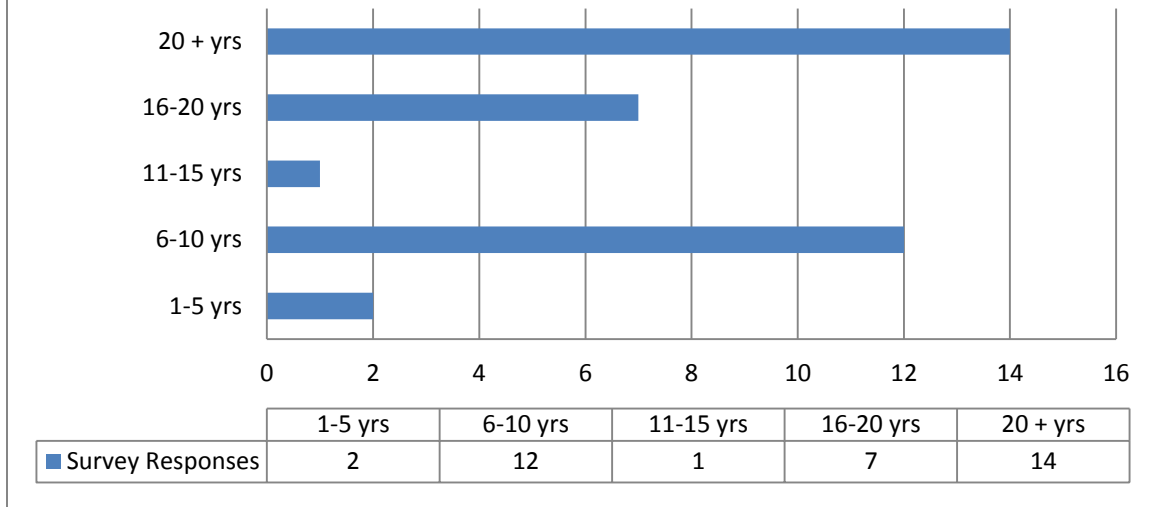
All forty-six (46) responders answered this question. On the survey, the respondents were given five selections to choose, ranging from “less than 1,000 students” to “15,001 or more students”. Of the possible institution student population size ranges, thirteen (13) responders answered “15,001 or more students” and “1,001-5,000 students” respectively. The next highest answered selection was “less than 1,000 students” with ten responses, “10,001-15,000 students” with eight responses and “5,001-10,000 students” with two responses.



***“Do you currently have a Student Farm?”***

Forty-three (43) responded “yes” to this question. Out of those forty-three (43), thirty-six (36) responded to both parts of the follow up question, “If YES, what is the name of your Student Farm AND the year established?” From these thirty-six (36) responses, two (2) student farms (5%) were identified to have been in existence less than five years. Twelve (12) student farms (33%) have been in existence between six and ten years. One (1) student farm has been in existence between eleven and fifteen years. Seven (7) student farms have been in existence between sixteen and twenty years. Fourteen (14) student farms have been in existence for at least twenty-one years or more.

**Figure 3: Survey Responses of U.S. Student Farm Establishment**



***“Does the Student Farm have any outreach programs? (An outreach program is defined as efforts to increase the availability and utilization of services, especially through direct intervention and interaction with the target population.)”***

Thirty-nine (39) responders answered “Yes” to this question indicating that they had at least one outreach program in place. Two responders skipped this question and the other five answered “No” and were directed to skip to the end of the survey.

***“What kinds of outreach does the Student Farm engage with the community? (Check all that apply)”***

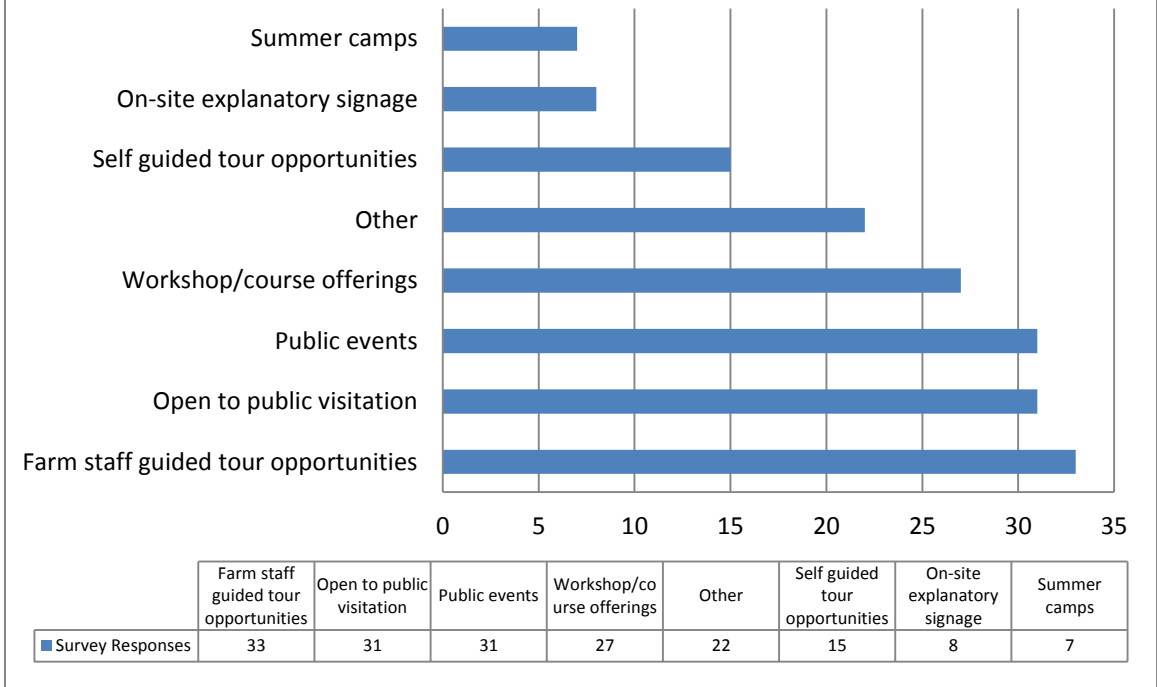
Forty (40) responders answered this question while six skipped it. The purpose of this question was to gain a better understanding of the types of outreach activities that were being conducted by the student farms with the community by providing a broad list

of outreach categories, as well as an option to specify “other” activities not listed on the survey. It is important to emphasize that the responders were allowed to “check” all answers that applied, including the “other” category. Of the total possible outreach choices, “farm staff guided tour opportunities” were the most popular with thirty-three (33) responders selecting this choice. The selections “open to public visitation” and “public events (fairs, festivals, open house, etc.)” were the next most popular answers, both receiving thirty-one (31) responses. Rounding out the rest of the outreach survey choices were as follows: “workshop/course offerings” with twenty-seven (27) responses; “other” with twenty-two (22) responses; “self-guided tour opportunities” with fifteen (15) responses; “on-site explanatory signage about the farm itself” with eight responses; and “summer camps” with seven responses.

The twenty-two (22) responses stated “other” types of outreach engagement revealed many other distinct and specific outreach activities, as stated and defined by the responders themselves. Several of these activities were duplicated in other responses. The consolidated list of outreach activities includes: informal outreach; livestock/animal sales; working with students on campus kitchens; field trips; working with high school interns; hosting work days with the community; offering a service learning site; farmer’s market and CSA opportunities; established community gardens; volunteer opportunities offered; student employment; food bank donation programs; community dinners; 4-H and Master Gardener tours; seedling adoption program; Green Eaters program with local Boys and Girls Club; and service learning components working on commercial farms.



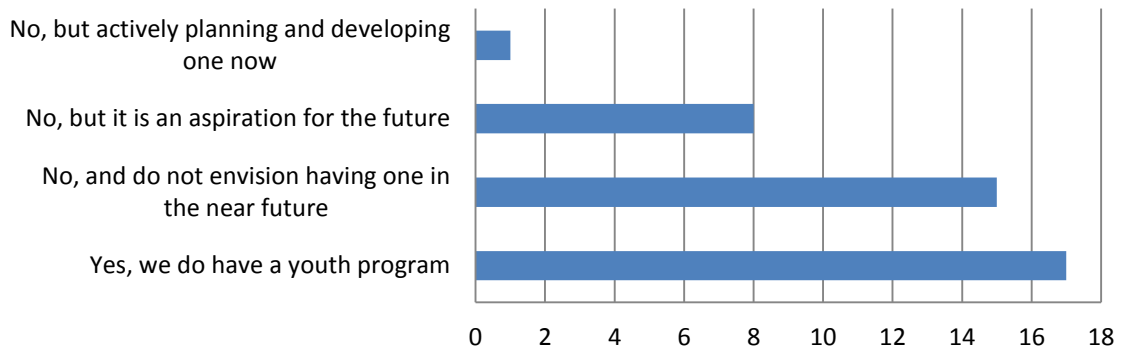
**Figure 4: Survey Responses of Types of Outreach Activities**



***“Do you have a youth program? (A youth program is defined as any outreach activities specifically targeted for age ranges from pre-schoolers through adolescents.)”***

Forty-one (41) responders answered the question while five skipped the question. Of those forty-one (41) responses, seventeen (17) responders answered “Yes, we do” indicating that they did have a youth program. Fifteen (15) responded “No, we don’t have a youth program and do not envision having one in the near future” and were directed to advance to the end of the survey. Eight responders answered “No, but it is an aspiration for the future” while one responder replied “No, but we are actively planning/developing one now.” Both of these answers were also directed to advance to the end of the survey.

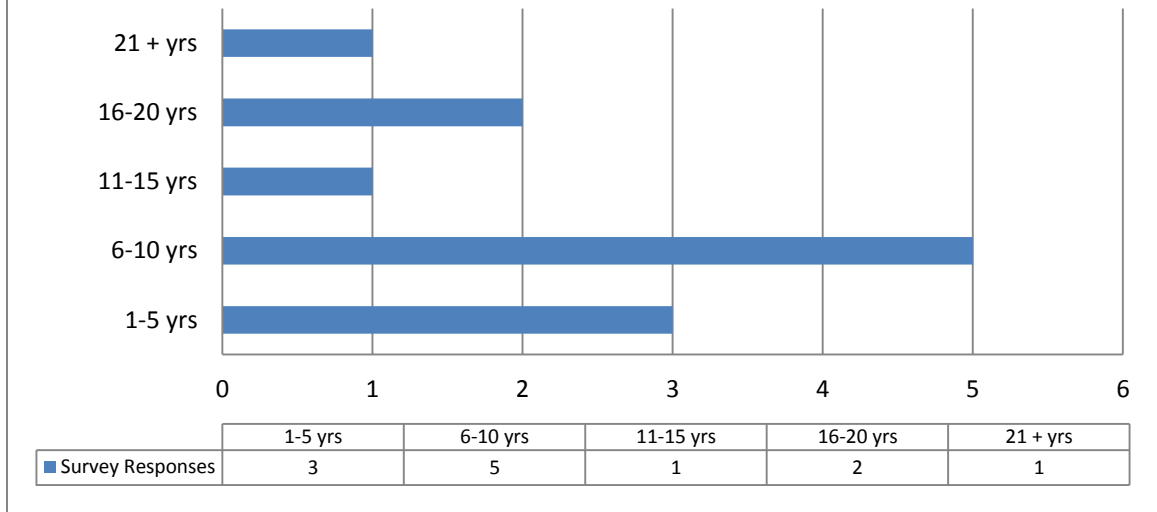
**Figure 5: Survey Responses of Youth Program Existence**



	Yes, we do have a youth program	No, and do not envision having one in the near future	No, but it is an aspiration for the future	No, but actively planning and developing one now
■ Survey Responses	17	15	8	1

Twelve (12) of the seventeen (17) responders answered the follow-up question, "If answer is YES, what year was the program implemented?" Five responders indicated that their youth program was established between six and ten years ago, forty-two (42) percent. Three responders stated that their program was established between recently and within five years ago, for twenty-five (25) percent. Two responders indicated that it was established between sixteen and twenty years ago, seventeen (17) percent. One responder each stated that their youth program was established between eleven and fifteen, and over twenty-one years ago respectively.

**Figure 6: Survey Responses of Youth Program Establishment**



***“What are the age ranges (youth audience) of children participating in the Youth Program?”***

Seventeen (17) responders answered this question while twenty-nine skipped. The seventeen (17) responses revealed an age range from 4-18 years old for the youth audience participating in the youth program.

***“What is the average annual operating budget for the youth program?”***

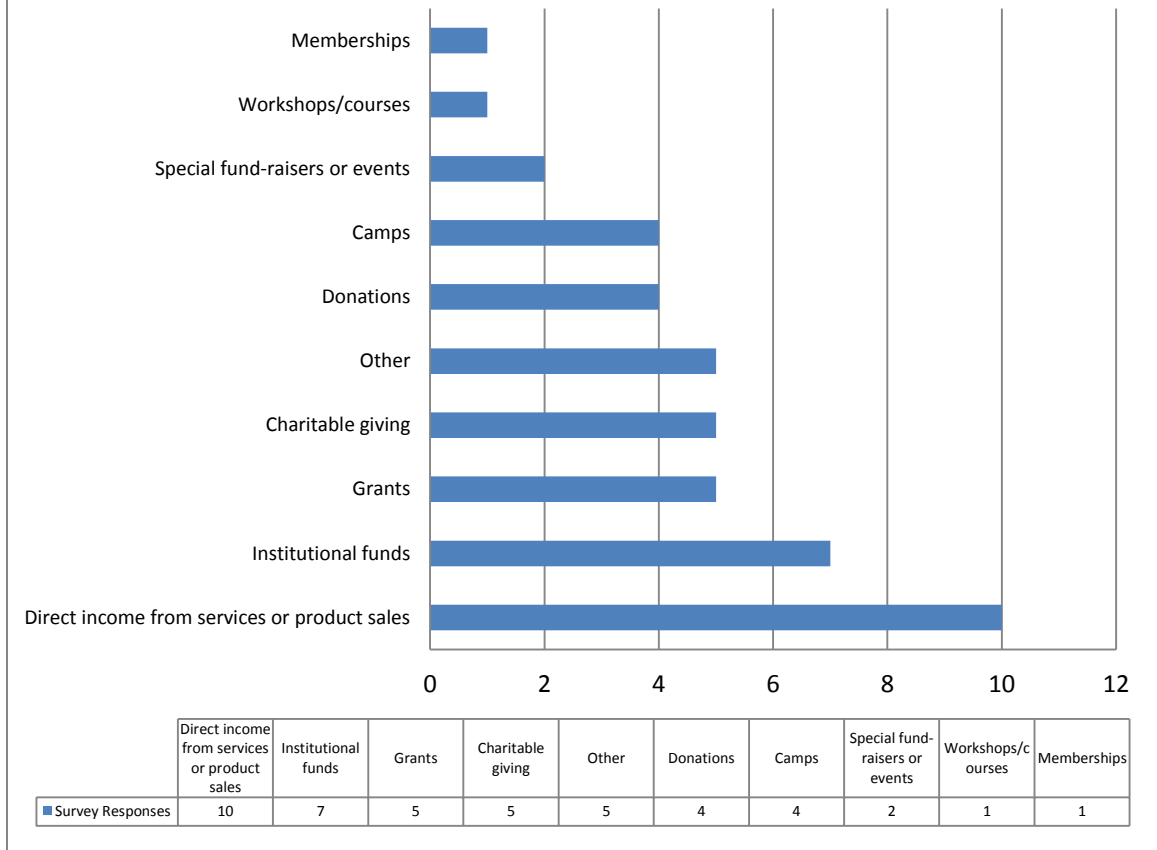
Seventeen (17) responders answered this question while twenty-nine skipped. Of these seventeen (17) responses only seven stated any annual budget at all; one estimated at over \$100,000, four from \$18,000-50,000, and two from \$250-500. Of the remaining ten responses, four stated that they had no money in the budget for these programs and

six stated that they did not know or could not produce any numbers available to even calculate what a budget might be.

***What are the current sources of funds for the youth program? (Check all that apply)***

There were fifteen (15) responders who answered this question while thirty-one (31) skipped. Responders were allowed to “check all that apply” for this question, including an opportunity to submit their own individualized answer under the choice of “other”. The most popular answer was “direct income from services or product sales” with ten total responses. The next most frequent responses were “institutional funds (general operating funds from the institution to support youth program)” with seven answers, and “grants”, “charitable giving” and “other” each with five answers. The “other” category yielded multiple answers consolidated as “field trips”, “AmeriCorps”, and “tour fees”. Remaining answers included: “donations” and “camps” with four answers apiece; “special fund-raisers or events” with two answers; and “workshops/courses” and “memberships” each with one answer.

**Figure 7: Survey Responses of Youth Program  
Current Sources of Funding**



***“Would you be willing to participate in a confidential follow-up phone interview regarding more details of the student farm and its outreach programs?”***

Forty-six (46) responses were received with no responders skipping this question. Of those forty-six (46) responses, twenty-one (21) responders stated that “Yes, I would be willing to participate in a confidential interview”. Eleven (11) responses stated “Maybe, please provide me with more specifics”, while fourteen (14) answered “No, thanks”. A combined total of thirty-two (32) responders indicated that they would

definitely be willing or could possibly be willing to participate, with more information, in a confidential interview. This represents approximately seventy percent (70%) of the total responders surveyed, with the other thirty percent (30%) indicating that they did not want to participate. Of the seventeen responders who indicated that they did have a youth program, thirteen (13) student farms were willing to participate or needed more information to consider participation in a follow up phone interview.

## ***1.2 Qualitative Research (Phone Interviews)***

### ***1.2.1 Student Farm Descriptions***

In order to maintain confidentiality, I have changed the names of the student farms and the phone interview informants who participated in this research. However, other broad institutional and farm characteristics, such as regional location or acreage, as well as certain broad details specific to the individual informants, such as role and position on the farm was revealed to add more tangible meaning to the data and paint an overall picture of the student farms and programs.

#### ***Alder Farm***

Alder Farm is located in the Northwestern region of the United States and was established in 1996 residing on approximately ten acres. It is located on the campus of a publically funded research institution with a student population size of approximately 14,200 students. Alder Farm grows field and horticultural crops, raises poultry, offers CSA shares and donates to the local community Food Bank. The farm currently engages

in several different kinds of outreach such as open public visitations, farm staff guided tour opportunities, public events, workshop/course offerings, summer camps, and educational field trips for local schools. Alder Farm's youth program was established in 2005 serving the age ranges of 3-18 year olds. The average annual operating budget for the youth program is around \$50,000 with current sources of funding coming from direct income from services or product sales, grants, donations, charitable giving, and camps (in no particular order).

### ***Birch Farm***

Birch Farm is located in the Northeastern region of the United States and was established in 1994 residing on approximately seven acres. The farm is located on the campus of a private liberal arts institution with a student population around 1,000 students. Birch Farm grows field and horticultural crops, offers CSA shares, participates in a local farmers market, and grows some portion of food for the institutional dining hall. The farm currently engages in several different kinds of outreach such as open public visitations, on-site explanatory signage about the farm itself, self-guided tour opportunities, farm staff guided tour opportunities, public events, workshop/course offerings, and summer camps. The Birch Farm's youth program was established in 2007 and serves the age ranges of preschool through twelve-grade. There is no established average annual operating budget for the youth program. Current sources of funding come from grants, donations, and camps (in no particular order).

### ***Chestnut Farm***

Chestnut Farm is located in the Western region of the United States and was established in 1967 residing on approximately twenty-seven (27) acres. The farm is located on the campus of a publically funded research institution with a student population of approximately 17,500 students. Chestnut Farm grows horticultural crops, raises poultry, offers CSA shares and donates to the local community Food Bank. The farm currently engages in several different kinds of outreach such as open public visitations, on-site explanatory signage about the farm itself, self-guided tour opportunities, staff guided tour opportunities, public events, workshop/course offerings, summer camps, school field trips, and school educator workshops. Chestnut Farm's youth program was established in 1979 serving the age ranges of 4-18 year olds. The average annual operating budget for the youth program is an unknown portion of the larger outreach budget, which is around \$840,000. Current sources of funding come from direct income from services or product sales, institutional funds, grants, special fund-raisers or events, donations, workshops/courses, charitable giving, camps, and field trips (in no particular order).

### ***Dogwood Farm***

Dogwood Farm is located in the Northeastern region of the United States and was established in 2003 residing on approximately one acre. The farm is located on the campus of a private Ivy League university with a student population size of approximately 11,900 students. Dogwood Farm grows horticultural crops, raises poultry,



offers CSA shares and donates to the local community Food Bank. The farm currently engages in several different kinds of outreach such as open public visitations, self-guided tour opportunities, farm staff guided tour opportunities, public events, and workshop/course offerings. Dogwood Farm's youth program was established in 2004 serving the age ranges of 4-18 year olds. The average annual operating budget for the youth program is around \$500, not including substantial in-kind contributions including staff time paid from other sources. Current sources of funding come from direct income from services and institutional funds.

### ***Elm Farm***

Elm Farm is located in the Southeastern region of the United States and was established in 1995 residing on approximately five acres. The farm is located on the campus of a community college with a student population size of approximately 4,700 students. Elm Farm grows horticultural crops, raises poultry, offers CSA shares and donates to the local community Food Bank. The farm currently engages in several different kinds of outreach such as open public visitations, farm staff guided tour opportunities, public events, workshop/course offerings and summer camps. Elm Farm's youth program was established in 2009 serving the age ranges of preschool-middle school. There is no official average annual operating budget for the youth program and is included as part of the college's general department budget. Current sources of funding come mainly from institutional funds.

Table 3, “Student Farm and Youth Program Comparisons from Qualitative Phone Interviews” summarizes the general characteristics of the five student farms whose stakeholders I interviewed.

**Table 3: Student Farm and Youth Program Comparisons  
From Qualitative Phone Interviews**

		<b>Alder Farm</b>	<b>Birch Farm</b>	<b>Chestnut Farm</b>	<b>Dogwood Farm</b>	<b>Elm Farm</b>
<b>Institution</b>	U.S. Region	NW	NE	W	NE	SE
	Type*	A	B	A	C	D
	Year Established	1893	1869	1965	1701	1961
	Student Enrollment*	14,200	1,000	17,500	11,900	4,700
<b>Student Farm</b>	Year Established	1996	1994	1967	2003	1995
	Size (acres)	10	7	27	1	5
	Production Types*	A,B,C	A,B	B,C	B,C	B,C
	Types of Outreach* Activities	A,D,E,F,G,H	A,B,C,D,E,F,G	A,B,C,D,E,F,G,H	A,C,D,E,F	A,D,E,F,G
<b>Youth Program</b>	Year Established	2005	2007	1979	2004	2009
	Age Ranges	3-18 yrs.	preschool-12th grade	4-18 yrs.	4-18 yrs.	preschool- middle school
	Average Annual Budget	\$50,000	n/a	<\$840,000	\$500	n/a
	Sources of Funding*	A,C,E,G,I	C,E,I	A,B,C,D,E,F,G,I,J	A,B	B

<b>Institution (Student Enrollment):</b> Enrollments are approximate based on 2012 data
<b>Institution (Type):</b> A= publically funded research; B= private liberal arts; C= Ivy league research; D= community college
<b>Student Farm (Production Types):</b> A= field crops; B= horticultural crops; C= livestock
<b>Youth Program (Types of Outreach):</b> A= open to public visitation; B= on-site explanatory signage about the farm itself; C= self-guided tour opportunities; D= farm staff guided tour opportunities; E= public events; F= workshops/course offerings; G= summer camps; H= other
<b>Youth Program (Sources of Funding):</b> A= direct income from services or product sales; B= institutional funds; C= grants; D= special fund-raisers or events; E= donations; F= workshops/courses; G= charitable giving; H= memberships; I= camps; J= other

### ***1.2.2 Phone Interview Summaries***

As mentioned earlier, thirteen (13) out of the seventeen (17) student farms that indicated they had a youth program agreed to participate in the phone survey or would consider participation with more information. All thirteen (13) student farms were contacted via email in early April to request their participation in the survey as well as explain the logistics of the confidential interview (Appendix 4). This initial request resulted in three positive responses from Alex at Alder Farm, Bonnie from Birch Farm, and Casey from Chestnut Farm. These phone interviews took place on April 19 and April 26, 2012.

Following these interviews I made a second attempt in late May, 2012 to contact the other ten student farms that had not yet responded to my original phone interview requests, using the same email and content as before. This second attempt yielded two more positive responses and subsequent phone interviews with Daniel at Dogwood Farm on June 15, 2012 and Erin at Elm Farm on June 18, 2012.

The following is a summary of the various responses from the informants, organized by specific questions asked during the respective interview sessions:

***“Tell the story of how the youth program began and how you became a part of it.”***

#### ***Alder Farm***

In the past, according to the Community Education Director, the student farm has had

persistent interests from local public schools to come to the farm for field trips. In 2005, one of the university's graduate students was interested in enhancing these field trips by creating a more structured program. She applied for, and eventually received an \$8,000-9,000 grant in the fall of 2005.

The graduate student used some of these funds to create a 400-level practicum class, incorporated into the farm, to give university students some practical experience doing outdoor education with a focus on sustainable agriculture. The graduate student recruited and taught undergraduate and graduate students for this class whose purpose was to prepare them to be the farm's teachers.

In Fall 2005, the first year of the practicum class drew about 500-700 kids for farm visits, with university students leading the field trips and learning about outdoor education. The following year, another graduate student took over the practicum class and received the same grant from the year before. In 2007 the farm started to incorporate some service projects, summer camps, and more field trips. In 2008, after maintaining the funding from 2005 and the practicum class, the program took off, serving over 2,000 kids for the year.

After the success of 2008, the farm started adding program income with the summer camps and started working with local schools to start and maintain their school gardens. Now in 2012, the student farm is serving about 3,000 students a year on field trips to the farm at four different summer camps, while also working with multiple local schools to maintain their student gardens. The Community Education Director emphasized though, that even with all of this expansion and success, the interest and desire from the

community is still more than the student farm can currently serve.

### ***Birch Farm***

The Program Manager stated in the interview that local schools in the community have heard through word of mouth that the student farm has a youth program, so teachers will call the farm and want to bring their students out for field trips. The Program Manager also said that the student farm operates a CSA, which has helped to draw attention to the farm and the program since it does not officially advertise its services or programs.

Depending on interest from faculty and staff, the student farm has had camps in the past such as morning camps for “kinder gardeners”, summer exploration day school, gardening, nature craft program, and introduction to entomology.

### ***Chestnut Farm***

The Co-director stated that the student farm youth program started in 1979, when a principal at a local elementary school came to a few teachers at the university and asked if they could turn a school parking lot into a garden, and the teachers eventually did. Out of that transformation the university teachers found that the children were not only learning about gardening but about science and the investigation of science as well. It was from the success of this garden project that initially started the youth program as a non-profit and “things just kept growing.”

Over the next several years this group of teachers received several large national grants to write curriculum, do research on language acquisition using gardens to enhance science

education at rural schools, and travel throughout the country to look at other school/learning gardens to identify best practices for starting a garden. Soon after, several other grants were secured to build the youth program teaching garden space.

Overwhelming support from the local communities and schools has enabled the farm's outreach program to grow steadily throughout the years. The youth program now serves over 130 field trips per year in the spring and fall and nutrition workshops in the winter, to go along with its on-site programs. The farm also offers summer camps and a teenager empowerment program, in which students get paid for their work on the farm, while learning about healthy eating habits and doing work with the community food bank. The student farm and youth programs also do a lot of teacher training in curriculum and environmental education.

A crucial element of the programs growth has been the establishment of a robust internship training program with over 65 university student interns a year. These interns are put through intense training programs and many go on to lead summer teaching programs and farm field trips offered during the year.

### ***Dogwood Farm***

The Student Farm Director stated that while programs involving youth with the student farm have taken many different forms throughout the years on the student farm, opportunities for children to come to the farm were originally created by graduate and staff initiatives. Graduate research assistants at the university primarily take on these youth program outreach initiatives, especially over the last 6 years because the funding

was already available for grad students to do some type of community outreach work. These research assistantships have grown out of the Department of Forestry.

The research awardees coordinate the youth program with the help from other student volunteers to deliver the curriculum and to work with the kids who come to the farm.

They have developed a Peer Mentorship Model in which every pair of research graduate students will have a mentor and a protégé (i.e. senior student with two years of experience and a junior student with 1 year experience together). This has been going on for the last five years.

These student farm youth programs involve repeated visits by local school classes so that the children who come to the farm can work on a project as it progresses through a growing season. It is based on the idea that with a “one shot visit” to the farm, it is very difficult to figure out how this really impacts the kids. With the repeat visits there is a reinforcement of learning experiences and practice that the teachers can start to build upon and thus better document the impact the experience has on the kids. The Student Farm Director pointed out that this is why they have emphasized having higher quality visits, rather than larger numbers of kids coming to the farm. That means that the grad students year to year are working to improve on the prior year’s experiences. They are building on these established relationships from the visitation. They do some collaboration with the school teachers to make sure that they are integrating it with their school curriculum.

After about five years of exploratory workshops, the student farm youth program has developed into something with a more standardized curriculum, with more evaluation

built into it, so the graduate students and farm staff can understand how the children are affected when they come to the farm. The program is now better scheduled, managed, and equipped to work within the standardized curriculum through collaboration with the teachers on curriculum, training volunteers, and training for the student volunteers. The learning objectives change slightly from year to year depending on the graduate research students and the needs of the community and/or individual schools that the program is working with from year to year.

### *Elm Farm*

The Supervisor to the farm manager stated in the interview that the student farm was on the college campus before the youth outreach program was established. In the beginning, the college had a recruiter who would work mainly in middle-schools, so a lot of students would come to the farm on career day. In addition, the college also has a preschool daycare on campus, so the young kids from the preschool would often come to the farm as well to explore and experience the gardens. This eventually led to gardens being created at the preschool by various college student projects. Over the years, college students have also established an ongoing relationship with the preschoolers from student projects as well. While there is no real curriculum or program consistency, these college student visits with the preschoolers often occur several times a year.

The Supervisor continued in saying that some students who are completing their service-learning requirement now have the option to get credit to create a student project that works with the preschoolers and the gardens. The service project can be something that connects with local organizations that are doing advocacy or sustainable food systems or



agriculture. This is an option that students have within the sustainable agriculture class at the college.

The student farm has also hosted different events like summer camps that other local community organizations are running. These organizations want their campers to have a farm experience for the day to learn about agriculture. The student farm also offers guided tours on the farm to public, private and charter schools. Since the college also has a very strong alternative energy and building curriculum, many schools in the community are looking for an all-around college field trip experience to explore topics in energy, building and farming.

***“What is your role with the youth program and how long have you had it”***

#### ***Alder Farm***

The informant’s title at the student farm is Community Education Director. The Community Education Director’s role is mainly associated with youth education since the student farm youth program does not offer adult educational opportunities. The informant did also state that the title Youth Education Director would probably be more appropriate.

#### ***Birch Farm***

The informant’s title at the student farm is Program Manager. The responsibilities of this position include overseeing the farm’s functions and CSA program and the implementation of the college’s energy education programs. The Program Manager also participates in various farm camps and youth programs when the faculty and staff need assistance.

### ***Chestnut Farm***

The informant is the Co-director for the youth program.

### ***Dogwood Farm***

The informant is the Director for the student farm and related programs. The responsibilities of this position include running the student farm, teaching, and organizing speakers, workshops and student participation on the student farm. The Director is also involved in operational reforms with the university campus dining.

### ***Elm Farm***

The informant has been the Supervisor for the farm manager since 1999, especially in various technical capacities. The Supervisor's responsibilities include student flow and teaching on the farm, such as classes in organic crop production, plant science, pest management, CSA marketing, intro to sustainable agriculture and sustainable livestock management.

***“Who carries out the program (staff? volunteers? mix?) and who do they report to?”***

### ***Alder Farm***

Until 2012, the Community Education Director was the only employee in the youth program. Now the Community Education Director utilizes an assistant during the summer, an unpaid intern that works close to full time for 14-16 weeks since the summer is a busy time with the camps and production. In 2012, the program also added another

position, a school garden coordinator from extra money earned through the student farm's programs. This new position will work  $\frac{3}{4}$  time in the growing season for 30 weeks of the year and will take over a lot of the school garden responsibility, maintenance, and new projects.

The Community Education Director teaches the practicum class in the fall and works for the university as an adjunct. The youth program does utilize volunteers and relies a lot on the PTAs through the local schools to line up volunteers on behalf of the school garden. However, coordinating these volunteers can be a lot of work.

The Director also stated that the youth program utilizes students in one of three ways. The students can take the fall practicum class (sustainable agriculture education class) and participate in a twice-a-week field trip with the local schools for 5-6 weeks in the fall. The students can also participate through the practicum class by getting an opportunity to develop curriculum and lesson plans, which is a requirement for the class.

Another way the students are utilized is through Campus Corps, an AmeriCorps program that actively engages members in meeting community-identified needs through meaningful service. Students may choose to participate in either the Service Team Campus Corps Program or the Service Learning Campus Corps program. There is one Campus Corps person per year. The Community Education Director admits that without that person, they would not have been able to do all the things that they have been able to do. The Director also stated that most of those Corps students go on to continue in some

kind of agriculture or youth education from the experience that they get within the youth program at the student farm.

### ***Birch Farm***

The Program Manager stated that the student farm uses a variety of staff, students, and volunteers, depending on the interest of those involved. Since the farm manager is so busy with the day-to-day work of the farm, the Program Manager often tries to do most of the youth programming and be the person on the ground when the school groups come to the farm for field trips. Occasionally, depending on the particular work and the particular interest of the farm manager, the Program Manager can get some college interns to help on the farm and in the youth program. The Program Manager has also used community volunteers, many of which are environmental educators. In general, the help comes from whoever the Program Manager can get to help and that wants to be involved.

### ***Chestnut Farm***

The Co-director stated that the youth program has one person full-time and one person half time doing the field trips, two full-time people doing the youth empowerment program, one full-time person doing garden workshops, one half-time administrative person, a half-time garden person to help take care of the maintenance of the space, and one full-time “everything person”, working on outreach, teacher training, and the website.

The youth program does not get a lot of volunteers, but there are about 60 interns a year, with the majority of these intern students getting credit for structured field trip trainings. At the beginning of the program, the Co-director stated that the program used to have to beg students to be interns, but now “we have plenty of interest.” The internship program associated with the youth program is focused on making sure that the program and university gives back to the students as much as they give to the program through their time and hard work. The Co-director also stated that coordination is a big part of the youth program staff’s jobs since it is crucial to the overall success of the youth program on the student farm.

### ***Dogwood Farm***

The Director stated that the student farm has both student and non-student volunteers who also work through the other academic programs at the university. The Director also mentioned that in the actual youth programs themselves, the volunteers are coordinated by the pair of research graduate associate students. However, there is also room for volunteers to do general work on the farm that is not program specific, such as supporting organization events.

### ***Elm Farm***

The Supervisor stated that the actual planting of the beds at the institution preschool/daycare is organized by student volunteers from the sustainable agriculture department.

***“Is there a plan for ongoing staffing that sustains program quality? If so, please provide more details.”***

***Alder Farm***

The Community Education Director stated that having the same person to maintain consistency and establish relationships is very crucial. The consistency is what makes the program most successful. Constant turnover, especially in the director position, because the institution doesn't want to pay for a permanent position, can cause a lot of problems. Student-run programs are not a sustainable model. The Director emphasized that the program won't have as deep an impact in the community if there is not that consistency and reliability in the position and partnerships of the program.

***“How is the youth program currently funded and financially supported?”***

***Alder Farm***

The Community Education Director stated that the program has been funded by the same foundation since it began in 2005. The foundation continues to fund the program partially because the youth program has increased the program income through field trips and other activities. In 2007, when the Director first started, there was no program income. Now the youth program is generating about \$14,000 per year in program income, which is a large increase in 4 ½ years. The Director stated that this offers a lot of stability to the program because he feels like eventually the foundation will stop giving and the program is likely to be more financially independent.

The youth program income is about 1/3 of the overall budget and the rest is through grant money, the Director stated. The Director would like to diversify even more but it is difficult as a non-profit, especially working with the school district since they cannot really charge money. What the youth program has been successful in doing is to create as many partnerships as possible with PTAs, after-school programs, and local businesses that are willing to donate to these projects with money or materials. Those partnerships and in-kind donations associated in addition to program income account for about 50% of the total budget. Overall, 50% of the program's budget comes from grants and 50% comes from in-kind donations and program income.

Establishing these relationships is especially important with expanding the school garden projects since the schools don't have money. The Director stated that getting people excited about the youth program is not hard, but providing a way for people to help beyond cash donations is a little more challenging.

### ***Birch Farm***

The Program Manager stated that the student farm youth program has no budget and never has. However, the program does have the support of the college. The student farm does occasionally ask for donations from general field trips or visitations, but not from the school classes. The Program Manager also stated that the operating income for the youth program as a whole comes from income generated by the CSA. The Program Manager's position and the position of the farm manager come from an endowment. The rest of income for the student farm and the youth program comes from CSA income,

grants, and donations. Any revenue, if any, for camps goes back into the general college budget.

### ***Chestnut Farm***

The Co-director stated that when the program first started over 18 years ago it was 99.9% grant funded and usually by only one or two grants. At the time the Co-director knew that this was a problem because large grants provide lots of money, but only for a finite amount of time. What results is that you don't have consistent staffing because you are hiring them only for a specific amount of time, or a specific project and then they are gone or you have to scramble to get more money to keep them. What the Co-director found out over time is that diversity in funding sources is the key to why the youth program is still here today. The trick however with diversified funding is that you don't have the cash flow you need all the time, so it is a little harder to manage cash flow. However, if you can establish a buffer with diversified funding, then you can withstand the really rough times.

Now, the youth program gets grants from longer-term foundation grants and smaller grants from various sources. The Co-director also stated that the program charges fees for services, such as \$125 for field trips, and fees for summer camps at various levels. The program also sells books and merchandise from an on-line store. The program also makes money from benefits, community events, and various donations.

The Co-director summed up the overall distribution of her budget as the following: 40% grants, 25% fees for service, 25% donations and 10% from merchandise sales.



### ***Dogwood Farm***

The Director stated that the youth program has been able to continue thanks to continued funding of the research assistantships that come through the university graduate school. This funding is approximately \$3,000-5,000 per student per year. The students are paid on an hourly basis and they are allocated 10 hours per week. The Director said that this is what ensures that there will be skilled and committed students to the program.

The Director continued by saying that there are fairly insignificant material costs, under \$500 per year and this is paid out of the student farm's budget. The farm's budget mainly comes from produce sales.

The Director also stated that the student farm and the youth program are totally part of university and under its umbrella of insurance and governance, which is critical for any future survival of the children's programs. The Director couldn't imagine the student farm and youth program working independently with the way it is currently structured.

### ***Elm Farm***

The informant stated that there isn't any budget for random school tours or interaction with schools in the community since there isn't an organized youth program. The program's activities are just part of the sustainable agriculture program at the university and its budget.

***“What are the funds spent on (Operating budget/ insurance)?”***

***Alder Farm***

The Community Education Director stated that somewhere around 2/3 of the budget was spent on payroll, wages, and administration costs. About 10%, is spent on bussing the kids to the farm from the schools. The Director emphasized that the youth program offers (pays for) free bussing for any public school that wants to come to the farm, which adds up to a lot of gas and transportation costs in general. The Director continued by saying that materials and supplies such as seeds, weed mat, and various curriculum costs account for about 10% of the budget. The fuel costs (to travel to various school gardens) can be significant because there are so many school gardens to maintain. A lot of transportation is needed to get to and from the school gardens. A small portion is educational supplies, but the Director tended to use what is on the farm already. Insurance such as general liability, auto and farm liability insurance amounts to about 5% of the budget.

***Birch Farm***

The Program Manager stated that funds spent for the staff and faculty time for the instructors and facilitators constitute the biggest piece of the overall budget. The Program Manager emphasized that community outreach was a mission of the college in general so the salaries associated with work on the farm and in the youth program was financially justified even if there was not a formal budget for such activities. Occasionally, there might be some small amounts of supplies depending on the activities, such as printing costs for hand-outs, small supplies, or maps. The Program Manager added that these costs were minimal, but that they added up over time. In summary, the Program Manager

stated that less than \$500 a year would be a fair estimate for the average total yearly costs for supplies associated with the youth program.

### ***Chestnut Farm***

The Co-director stated that the funding for the youth program budget was mostly spent on salaries and health insurance for the employees and staff. The total health insurance budget alone costs about \$125,000 a year. The Co-director emphasized that they were committed to taking care of their youth program staff, so they make sure that the staff has a “living wage” and health insurance. This investment is worth it because keeping quality employees is crucial for continuity and program success. The Co-director also mentioned that they use some of the budget for land rental from the university and stipends for the youth empowerment program. Budget money is also spent on incidental costs that add up such as copy machine usage, general printing, and other administrative necessities. However, the Co-director added that they had a pretty low over-head, which averages about 10% or less per year.

***“In your opinion, is the funding model a sustainable model over time?”***

### ***Alder Farm***

The Community Education Director stated that the current foundation that has been funding them every year since the youth program began will eventually begin to fund less or not. The Director also admitted that the youth program had just been really lucky to have a grant relationship with the same foundation for 7-8 years. However, the Director added that the current partnerships and program income are solid and sustainable.

### ***Chestnut Farm***

The Co-director stated that the program had already been sustainable for 32 years and that it was set up that way from the beginning. The Co-director did have real concerns over what was going to happen in the current economy. Health care costs are one of the biggest concerns for the long-term sustainability of the program because insurance companies are increasing their rates all the time. In addition, the Co-director also stated that the last two years had been really tough financially and now the program did not have much of a buffer anymore.

***“What are some opportunities and barriers in regards to funding, staffing, and educational issues?”***

### ***Alder Farm***

The Community Education Director stated that it would be great to expand the volunteer base sometime in the future.

### ***Birch Farm***

The Program Manager stated that one of the biggest strengths at the college is the Education Department. This department in the past has already connected with the youth program and the students involved are now bringing the kids to the farm as well. There is real potential to strengthen and develop this relationship into the future by tapping into the existing education department and students with environment education interests.

The Program Manager did share several challenges for the youth program. One is that school district severe budget cuts have resulted in the kids from the local community not being able to come to the farm as often as they used to. Another challenge was how to make a better connection between the college students on the main campus and the student farm itself. An ongoing challenge for the Program Manager through the years has been to remain careful with scheduling community farm visits so they do not disrupt or conflict with other farm activities, functions, or activities.

There were also several challenges addressed by the Program Manager that focus more on the insufficiencies of facilities on the student farm. Specific facility needs that were raised were concerns with not enough covered teaching and classroom space during raining weather and not enough bathrooms for public and community field trip visitations. However, the Program Manager revealed that several grants recently awarded to the student farm might be able to meet all of these needs soon in the form of a new farm building, equipped with classroom space and bathrooms.

### ***Chestnut Farm***

The Co-director stated that they wished they had more space for garden and youth program expansion. The annual youth empowerment program is especially needy because 250 at-risk kids apply for only 50 positions. The Co-director also said that the program is currently working on the funding to expand in these areas mostly through grants.

### ***Dogwood Farm***

The student farm Director stated that one limiting factor to current youth program growth was that there was surplus demand in the community, but that the assistantships were limited to 10 hours per week during the academic year. There are also physical restraints since the student farm is relatively small – only one acre. The Director admitted that there is nothing that can be done about these physical constraints right now, because there is no other land on campus that can be used for the farm.

The Director mentioned as well that there are constraints to keeping the student farm a student emphasized program because the university students would always be balancing the needs of their other academic commitments. Therefore, students would never have the time to devote their entire attention to the youth program.

The Director summarized the constraints of the program as constraints of time, physical constraints of land and strategic constraints of trying to balance the larger university's educational missions and the mission of this particular program.

### ***Elm Farm***

The Supervisor to the farm manager stated that there were no real plans to expand the youth outreach in regards to kids at the local schools right now. The Supervisor added that other than supporting student's interests in childhood education in agriculture, they did not currently have a direct pathway for students to get involved.

***“What, if any, are the tensions between instruction and financial stability?”***

***Alder Farm***

The Community Education Director stated that there are tensions between the youth program and the PTA, regarding who is going to do the fundraising and how much money it raised, and who gets it. Then there is tension between the youth program and those local schools that want the garden installation service but cannot pay for it. The Director said that the program has come to the point where it is going to do as much as it can with the schools for free. If the program cannot do it for free, then it is not going to offer the service. The Director emphasized that they would rather scale back than overextend.

The Director continued by saying that there is very little cost sharing, because the youth program is paying for everything. Even the university is doing little cost sharing with the student farm. The university contributes no operating costs, so the youth program is completely funded through the student farm non-profit. The Director added that as far as institutional money goes, he did not think that much money would be put towards the farm and sustainable agriculture in general from his experiences. The program has learned to get creative in how they are going to expand and figure out where to grab funds when they can.

***Birch Farm***

The Program Manager admitted that one of her biggest challenges up until this year has been the buy-in from the farm staff regarding youth education opportunities. The

previous farmer was an excellent farmer, but community members' visits to the farm created conflicts for his time and farm responsibilities. However, the Program Manager has recently hired a new farm manager who is completely supportive and equally positive with growing the youth program.

Another major challenge that the Program Manager mentioned has always been the logistics of time with everything else going on the farm. She emphasized that you need buy-in from all of the stakeholders at the farm in order to make the youth program work.

Another challenge comes from needing extra financial support especially concerning the farms' facilities and general maintenance. Maintenance and upkeep with the farm has always been a major challenge.

### ***Chestnut Farm***

The Co-director stated that the biggest issue is that the current demand from the community is far more than the youth program can financially afford or logistically keep up with without more funding. One major concern from this expanding demand from the community is that the staff is maxed out already and which can quickly lead to burnout. The Co-director also said that there needs to a balance of youth program responsibilities and work-load limitations. It takes the whole community to share and to help. In general, the Co-director emphasized that there is always a looming tension of how much does he ask his staff to do in regards to programming or raising money.



***“Is there anything that you would like to add or re-emphasize?”***

***Alder Farm***

The Community Education Director wanted to reemphasize how critical partnerships were to long-term program success. The Director also emphasized that “keeping the focus of making the youth program as much about the kids as possible is the best way to appeal to these people and partnerships because you can get bogged down with ideals and mission statements and all the logistics.” The Director continued in saying that focusing on the kids and getting the kids in a position to understand food, gardening and farming and nutrition and the holistic nature of the farm guaranteed that continued support would always be there for the program.

***Chestnut Farm***

The Co-director emphasized the benefits that the program’s website has had on positive exposure to the community as well as national recognition of the program’s success. The Co-director also wanted to emphasize how important research regarding youth education on farms was to their program’s current success. She believes strongly that this type of research is crucial to raising awareness about the importance of farm-based and garden-based education.

***Dogwood Farm***

The student farm Director emphasized that the youth program was meeting the overall mission of the institution because it was involving academia with community outreach, while improving the university student’s academic experience greatly. The support for

this program comes from the Director being able to reemphasize the quality of the program to the institutional stakeholders that this type of community engagement is creating a richer experience, which helps to sustain the youth program overall. It has allowed the Director to keep the program growing and well respected in the university and community. The Director also emphasized that the quality of impact on the community and local kids was more important than the quantity of visits to the farm. In general, the youth program and supporting university are more focused on training leaders than creating farmers.

### ***Elm Farm***

The farm manager Supervisor emphasized that the support and involvement of the Sustainable Agriculture program at the university would continue to help the youth program grow and expand in the future, by offering opportunities for students to receive credit for interacting with children from local community schools on the student farm.

Table 4, “Youth Program Stakeholder Response Comparisons from Qualitative Phone Interviews” summarizes the general responses from the informants of the five student farms whom I interviewed.

**Table 4: Youth Program Stakeholder Response Comparisons**  
**From Qualitative Phone Interviews**

	<b>Alder Farm</b>	<b>Birch Farm</b>	<b>Chestnut Farm</b>	<b>Dogwood Farm</b>	<b>Elm Farm</b>
<b>Institution Characteristics</b> (*2012 data)	1) Northwest Region 2) Publically funded research institution 3) Established in 1893 4) *14,200 students	1) Northeast Region 2) Private Liberal Arts institution 3) Established in 1869 4) *1,000 students	1) West Region 2) Publically funded research institution 3) Established in 1965 4) *17,500 students	1) Northeast Region 2) Ivy League research institution 3) Established in 1701 4) *11,900 students	1) Southeast Region 2) Community College institution 3) Established in 1961 4) *4,700 students
<b>Student Farm Characteristics</b>	1) Established in 1996 2) Ten (10) acres 3) Production types include field crops, horticultural crops, and livestock	1) Established in 1994 2) Seven (7) acres 3) Production types include field crops and horticultural crops	1) Established in 1967 2) Twenty-seven (27) acres 3) Production types include horticultural crops and livestock	1) Established in 2003 2) One (1) acre 3) Production types include horticultural crops and livestock	1) Established in 1995 2) Five (5) acres 3) Production types include horticultural crops and livestock
<b>Youth Program Characteristics</b>	1) Established in 2005 2) Age Ranges: 3-18 years old 3) Average annual budget: \$50,000	1) Established in 2007 2) Age Ranges: preschool-12th grade 3) Average annual budget: none	1) Established in 1979 2) Age Ranges: 4-18 years old 3) Average annual budget: \$840,000	1) Established in 2004 2) Age Ranges: 4-18 years old 3) Average annual budget: \$500	1) Established in 2009 2) Age Ranges: preschool-middle school 3) Average annual budget: None
<b>Who carries out the program?</b>	a) The Community Education Director; b) One unpaid summer assistant intern; c) One school garden coordinator; d) Community volunteers; e) Numerous university students receiving credit for farm-based teaching practicum class; f) One annual AmeriCorps or Campus Corps student	a) The Program Manager; b) A variety of staff and students; c) Institutional & community volunteers	a) The Co-directors; b) One full-time farm field trip leader; c) One part-time farm field trip leader; d) Two full-time youth empowerment staff; e) One full-time garden workshop staff; f) One part-time administrative staff; g) One part-time maintenance staff; h) One full-time "everything" staff; i) Sixty (60) university interns annually	a) The Director; b) Two annual research assistants; c) Numerous student and community volunteers	a) The Supervisor; b) College student volunteers from the Sustainable Agriculture Program
<b>How is the youth program currently funded and financially supported?</b>	The funding is split evenly between two different sources: a) Grant funding by same foundation since 2005, and b) Field trips, direct income for services and products, camps, and in-kind donations	a) Currently no budget; b) Most support comes from the college; c) Moderate support comes from the student farm CSA memberships, grants, and donations for student farm tours; d) Two student farm positions come from an endowment; e) Any revenue from camps goes back into general college budget	a) Longer-term and shorter-term grants; b) Direct income for fees associated with field trips, summer camps, merchandise, benefits, and community events	a) Research assistantship positions paid through the university graduate school; b) Student farm budget mainly comes from produce sales	All budgets and costs are part of the university's Sustainable Agriculture program
<b>What are the funds spent on?</b>	a) 70% Payroll, wages, and administration costs; b) 10% on free bussing for local schools to come to farm; c) 10% farm supplies; d) 5% each on educational supplies and insurance	a) Staff and faculty salaries; b) Small amount on educational supplies	a) Mostly on staff salaries and health insurance; b) Moderate amount on leasing the student farm land and stipends for the youth empowerment program; c) Small amount on administration costs and educational supplies	Two annual research assistant positions	Faculty salaries

**Table 4: Youth Program Stakeholder Response Comparisons  
From Qualitative Phone Interviews (Continued)**

<p align="center"><b>Is the funding model a sustainable model over time?</b></p>	<p>a) Current foundation funder will eventual begin to fund less; b) Partnerships and program income are solid and sustainable</p>	<p>No answer</p>	<p>a) Confident in the fact that the youth program has been around for 32 years; b) Concerns are focused on overall state and federal economies in general and how this will affect health insurance costs; c) Concerns of contracting savings account since nation-wide recession</p>	<p>No answer</p>	<p>No answer</p>
<p align="center"><b>What are the opportunities and barriers in regards to funding, staffing, and educational issues?</b></p>	<p>Expanding the volunteer base</p>	<p>Challenges include: a) severe state budget cuts impacting the ability of local schools to visit the farm; b) strengthening connections between student farm and main campus; c) remaining mindful of the balance between farm tours from the community and the daily logistics of student farm activities; and d) insufficiencies in current facilities to meet the needs of the student farm and youth program</p>	<p>More space garden and youth program expansion is always a challenge as community demand continues to increase</p>	<p>a) Limited time and energy of research assistants to meet the increasing needs of the community because of part-time schedule; b) Physical constraints of land for farm expansion; c) Barriers to balancing the university's educational missions and the mission of the youth program</p>	<p>a) Limited funds and land for student farm and youth program expansion; b) No direct pathway for students to get involved with the youth program and other community outreach activities</p>
<p align="center"><b>What are the tensions between instruction and financial stability?</b></p>	<p>Tensions between the youth program and a) the local PTA regarding who is going to do the fundraising, how much money it raised, and who gets it; b) those local schools that want garden installation service but cannot pay for it; and, c) the university because there is very little cost sharing</p>	<p>Tensions between the needs and operations of the student farm and the needs of the youth program</p>	<p>a) Community demand is more than the youth program can financially or logistically handle; b) Struggles with balancing youth program responsibilities and staff workload limitations</p>	<p>No answer</p>	<p>No answer</p>
<p align="center"><b>Is there anything that needs to be re-emphasized?</b></p>	<p>a) Partnerships are critical to long-term program success; b) Always keep the program focus about meeting the needs of the youth and school teachers in the community</p>	<p>No answer</p>	<p>a) Benefits of youth program website has had a positive exposure to the community as well as national recognition of the youth program's success; b) Garden-based and farm-based education research is critical to raising awareness about it's value to the community</p>	<p>a) The youth program is meeting the overall mission of the institution because it is involving academia with community outreach, while improving the university student's academic experience; b) The quality of impact from the youth program on the community and local kids is more important than the quantity of visits to the farm from the community</p>	<p>The support and involvement of the Sustainable Agriculture program at the university would continue to help the youth program grow and expand in the future</p>

## **CHAPTER FOUR: Discussion & Recommendations**

### ***1.1 Quantitative Research (On-line Survey)***

In general, forty-six (46) out of seventy-seven (77) identified United States student farms participated in the survey, a response rate of sixty (60) percent. The following discussion is organized by question asked within the on-line survey.

#### ***“What is the name AND location of your institution?”***

Forty-two (42) responders answered this survey question with the location of the institution included in the response. These answers were then organized by regions of the U.S.: Northeast, West, Midwest and Southeast. Based on this data, the West region had the most survey responses at fifteen (15). The Northeast (11), Midwest (9) and Southeast (7) all had less survey responses in general. When these response numbers are compared to the original group of potential responders who were identified through various inventories, a different story begins to emerge. Of the original seventy-seven (77) identified student farms in the U.S., twenty-seven (27) were from the Northeast and twenty-five (25) from the West. These regions combined together represent approximately sixty-eight (68) percent of all student farms in the entire U.S. The Northeast and West regions individually had twice as many student farms as the Midwest, thirteen (13) student farms, and the Southeast, twelve (12) student farms, combined. These results seem to indicate that the Northeastern and Western regions of

the U.S. have over three times as many student farms as the rest of the country combined. This data does not give any clues as to why this is the case.

In regards to regional participation rates to the student farm on-line survey, the Midwest had the best response rate at seventy (70) percent, with the West region at sixty (60) percent, and the Southeast at fifty-eight (58) percent. Even though the Northeast region had the most identified student farms at twenty-seven, it had the worst survey response rate at forty-one (41) percent. The data does not give any clear reason why the region with the most student farms had the worst response rate.

***“What is the size of your institution in terms of numbers of students?”***

Based on the data received from the survey, there appears to be a fairly even distribution of institutional student population size among the survey choice categories. Of the total forty-six (46) responders, twenty-one (21) said that their institution had at least 10,001 students or more, forty-six (46) percent, while twenty-three (23) said that their institution had 5,000 or less students, fifty (50) percent, with the remaining two responses citing that their institutional size was between 5,001 and 10,000 students. This seems to show within this sample size of forty-six (46) student farms who responded to the on-line survey that student population size is not necessarily a strong indicator of whether or not a student farm exists on a campus, except for the student size populations between 5,001 through 10,000 students. While many more factors must be considered, my data for this particular question shows that student farms exist at both large institutions, 10,000 or more, and smaller institutions, 5,000 or less. This is consistent with the other literature and research

investigated for my research regarding institutional student population size in comparison to student farm existence upon these institutions.

***“Do you currently have a Student Farm?”***

Of the forty-three (43) responses to this question, thirty-six (36) also responded to the follow up question of what year was the student farm established. Based on my literature review and research of student farms in the U.S., I would have assumed that most student farms were established within the last ten years. While I do not have concrete data to test this assumption for all seventy-seven student farms identified in the U.S., The data from the thirty-six survey responses suggests a different reality. Fourteen (14) of the thirty-six (36) responses to this survey question indicated that their student farm was established over twenty-one (21) years ago. In fact, twenty-one (21), or fifty-nine (59) percent of the total responses indicated that their student farm was at least sixteen (16) years or older. Twelve (12) responses stated that the student farm was established between six and ten years ago, with only two student farms being established within the last five years.

While this data is from only thirty-six (36) of the total seventy-seven (77) student farms identified in the U.S., it does provide some interesting data regarding the age of the student farms themselves. Perhaps the more established farms were more willing and capable to participate in the on-line survey because of various assumptions such as more staff, stronger marketing capabilities or willingness to share information about their experiences. While more research is definitely needed to answer this question, the

responses to this survey indicate that there is currently a good sample size of established student farms in the U.S.

***“Does the Student Farm have any outreach programs? (An outreach program is defined as efforts to increase the availability and utilization of services, especially through direct intervention and interaction with the target population.)”***

Of the forty-three (43) responders who answered “YES” to having a student farm, thirty-nine (39) also responded “YES” to having at least one outreach program or one specific outreach activity currently in practice, ninety-one (91) percent. This strongly suggests that most student farms within this research not only engage in curricular activities, but also engage in outreach activities as well. The reasons for this are not consistent throughout each specific student farm, but the literature seems to suggest that the most important aspects these outreach activities provide for the student farm is to raise awareness about the farm’s activities, raise funds for the farm’s operations, and provide students with additional outlets for curriculum enhancement and community involvement beyond the physical and academic borders of the student farm.

***“What kinds of outreach does the Student Farm engage with the community?(Check all that apply)”***

Of the forty-three (43) responders who answered “YES” to having a student farm, forty (40) also responded at least once to the list of potential choices regarding kinds of



outreach on the student farm. Responders were also given the choice to submit additional answers, under the “other” category, not already provided on the survey list. Three choices were favored heavily from the eight different types of outreach choices given. These were “farm staff guided tour opportunities” chosen by eighty-three (83) percent of the responders, “open to public visitation” and “public events” chosen by seventy-eight (78) percent of the responders, and “workshop/course offerings” chosen by sixty-eight (68) percent of the responders.

The data shows that guided tours on the farm appear to be the most common form of ongoing outreach on the student farms who were surveyed. The reasons for this consistency could come from the relatively simple logistical nature of giving tours on the farm itself. Aside from the busiest times of year, offering and engaging in guided tours for various community and student populations can be done without much preparation and without any material resources. While resources of time from farm staff, volunteers or even current farm program students can be considered a cost or resource used, the overall logistics of successfully offering guided farm tours is relatively straightforward and achievable in most cases. In addition, the audience for these tours is coming to the farm as opposed to the farm “going out” into the community, which also reduces overall costs and increases the consistent likelihood of ongoing farm tours when coordinated with seasonal farm work schedules.

Being open to public visitations and public events, a seventy-eight (78) percent response rate, can also be considered a fairly simple strategy to cultivate and provide support for ongoing engagement. Most public institution student farms that operate on institutionally owned land must be open to the public for most of the year, simply by the public nature

of its status. This does not mean trespassers can run amuck on the farm at any time, but it does mean that the invitation for public visitation must exist at all times, under the guidance of the farm managers and student farm staff.

Public events are also crucial for student farms for fundraising and exposure purposes. Annual festivals and fairs raise awareness about the farm and help establish and strengthen valuable relationships between the campus, community, and the student farm. These public events are also ideal times to fundraise, sell farm products and solicit potential donations. These can also be a time for staff and students to simply celebrate the farm for all it represents and does for the students involved, the institution and the community. It is not surprising that these categories were selected at a high rate on the survey.

Workshops and course offerings, a sixty-eight (68) percent response rate, seemed higher than what I would have expected from my literature review, because of the additional organizational and financial support that is required to engage in these forms of outreach activities. However, this data suggests that student farms who participated in this on-line survey are interested in offering educational opportunities beyond those offered to institutional students. It is not known from my research how much demand exists for these workshop and course outreach activities, but it can be assumed that there must be enough for these activities to exist at all on the student farm. The survey data did not indicate what the student farm's primary purpose is for these activities, such as adding valuable revenue or satisfying community demand for educational opportunities.

“Self-guided farm tour opportunities”, a thirty-eight (38) responses rate, was a little lower than expected, especially considering such a high rate of student farms that are “open to public visitation”, a seventy-eight (78) percent response rate. This could possibly be accounted for by the potential liability and safety dangers of allowing outside community members on the farm without supervision, as well as the potential disruptions this might cause the academic programs and physical work conducted on the farm itself. Without strong support for self-guided tours, it would make sense that these student farms would also not have extensive “on-site explanatory signage about the farm itself”, a twenty (20) percent response rate. The time of year the survey was distributed to the student farm stakeholders could also play a role in explaining these response rates, due to seasonal demands in farm responsibilities and staffing.

Finally, the category “other” representing other categories not pre-determined on the survey was selected at a fifty-five (55) percent response rate. However, the individual responses within this category were not consistent enough to yield any meaningful results beyond involvement with “food banks” and “farmers markets” each being stated twice. The choice “summer camps” was selected at a eighteen (18) percent response rate in the survey. This seems to indicate the potential difficulty of organizing and financially supporting a summer camp on a student farm. This low response rate could also indicate that local community demand is low or that the physical features of the farm itself are incompatible with the space and safety requirements that a summer camp could dictate.

***“Do you have a youth program? (A youth program is defined as any outreach activities specifically targeted for age ranges from preschoolers through adolescents.)”***

Of the forty-three (43) responders who answered “YES” to having a student farm, seventeen (17) responded that they also had an established “youth program” on the student farm, a forty (40) percent response rate. This amount of student farms with a youth program was more than anticipated. While these youth programs can vary in size, scope and impact, according to the research, their very existence at such a response rate of student farms surveyed seems to indicate that outreach geared toward involvement with youth, defined as 18 years and younger, is higher than assumed. In addition, eight responders indicated that they did not have a youth program currently, but that it was “an aspiration for the future” while one other student farm responded that they also did not currently have a youth program but were “actively planning/developing one now.”

When merged with student farms with youth programs, the data shows that sixty (60) percent of all student farms identified through the survey either have an existing youth program, are aspiring to create a program or are actively developing a program right now. The other forty (40) percent indicated that the student farm did not have a youth program and did “not envision having one in the near future”. This data suggests that the majority of student farms in this research are in some way, either actively or passively, pursuing outreach activities geared toward youth in the community.

***“What are the age ranges (youth audience) of children participating in the Youth Program?”***

Of the seventeen (17) student farms identified as having an existing youth program, all seventeen offered varying responses to age ranges of the youth involved in these programs. In summary, the age ranges varied from four to eighteen years old, depending on the student farm and the specific program. Since the survey model did not categorize smaller age ranges into potential survey selections, such as four to seven year-olds or eight to ten year-olds, I was unable to detect any meaningful patterns of specific youth age ranges.

***“What is the average annual operating budget for the youth program?”***

Of the seventeen (17) student farms identified as having an existing youth program, only seven, a forty-one (41) percent response rate, indicated having any real documented annual budget at all. Of these seven responses, one had an annual budget of over \$100,000 while four responders indicated budgets between \$18,000-50,000. The last two stated that their annual budget were extremely small, between \$250-500 a year. These figures seem to showcase a large financial discrepancy between annual youth program budgets among the seven responders that indicated they indeed had a budget at all. While the majority of responses express annual budgets between \$18,000-50,000, the sample size is too small to gain any significance from this data. In addition, one program was at least twice as big as these other program budgets at \$100,000 and two others were fifty to

a hundred times smaller. With no additional program details to compare these budgets to, any discussion concerning this data is limited.

Of the remaining ten responses, four stated that they had no money in the annual budget for these programs and six stated that they did not know or could not produce any numbers available to even calculate what their budget might be. Therefore, almost sixty (60) percent of those student farms who stated that they have a youth program, also responded that there was no real budget or that any information concerning annual costs was unattainable or nonexistent.

This analysis may indicate that the youth programs on these specific student farms are either very undeveloped or minimal in scope at best. It also may indicate that these programs are part of a larger student farm budget, with financial resources and potential individual program budgets merged into other larger annual budgets. What is clear from the data is that the majority of student farm youth programs, who responded to this survey question, operate with no specific annual or consistent budget, documented or undocumented.

***What are the current sources of funds for the youth program? (Check all that apply)”***

Of the seventeen (17) student farms identified as having an existing youth program, fifteen (15) stated that their youth program acquired funds from at least one of the suggested survey choices, a eighty-eight (88) percent response rate, including the “other” category, in which responders could include additional sources of funding not already mentioned on the survey. Almost fifty-nine (59) percent of the seventeen (17) responders

stated that “direct income from services or product sales” was a source of current funding. This finding is consistent with the literature regarding student farm activities. The overwhelming majority of student farms across the United States engage in vegetable and/or animal production, often resulting in potential revenue-generating produce and products. In fact, according to the literature, produce and product sales are often part of the overall academic and organizational missions of the student farm, not only for the financial stability of the farm itself, but also for the educational value to the institutional students within these associated student farm programs.

“Institutional funds,” general operating funds from the institution to support youth program, was also cited at a forty-one (41) response rate as a source of current youth program funding. This is lower than originally expected based on the literature review and seems to indicate a certain level of financial independence on these particular student farms, at least in regards to funding their respective youth programs. A lack of institutional funds within most of the youth programs highlighted in the research may also help explain why the majority of these youth programs, sixty (60) percent, stated that they had no real and/or documented budget specifically for the youth program itself. A lack of institutional funds would indicate that funding is being acquired from other “non-institutional” sources perhaps, which could also blend into other overall student farm operational budgets. Without specific follow-up questions within the survey to this specific funding source inquiry, it is difficult to draw any further conclusions.

“Grants,” “charitable giving,” and “donations” were cited sources of funding, averaging between a twenty-five (25) and thirty (30) percent response rate. According to the literature regarding funding, these sources of revenue are extremely crucial for most

student farms and in some cases make up most of the consistent sources of funding, especially for those in non-profit status. From the results of this survey data, it appears that at least one third of all youth program funding comes from either grants, charitable giving, donations, or some combination of all three.

“Camps” also seem to be an important source of potential youth program funding as indicated with a twenty-four (24) percent response rate. It is unclear from the survey what types of camps are being referenced, such as youth camps, day camps, or summer camps. According to the literature, camps can offer a valuable stream of funding with the proper organization, institutional support (if needed), farm space, and community demand. However, meeting all of these requirements can often be difficult to accomplish for most student farms.

Field trips, tour fees, special fund raisers, workshops, and memberships were also cited as potential funding sources, but only at a twelve (12) percent response rate or lower. The survey data shows that these sources are not relied upon as consistent types of funding and while acutely valuable at times, should probably be incorporated into other forms of diverse funding sources. This is also consistent with the literature.

***“Would you be willing to participate in a confidential follow-up phone interview regarding more details of the student farm and its outreach programs?”***

In general, all forty-six (46) original survey participants responded to this question, with twenty-one responders stating that they “would be willing to participate in a confidential interview”, a forty-six (46) percent response rate. Another eleven (11) responders stated



that they would “maybe” be willing to participate in the interview if more specifics were provided. That makes approximately seventy (70) percent of all original survey responders willing or potentially willing to engage in another tier of student farm research.

This high percentage of willingness to participate further seems to indicate that student farm survey responders, such as farm managers, farm program directors, and faculty, are interested in continuing to assist in student farm research, at least for this particular project. This could also mean that many of these respondents recognize that there is not currently very much research regarding student farms in general, let alone the additional outreach activities and various programs that they engage in. This could mean that they are interested in the results of this research for their own student farm growth and stability. However, without further research into what their specific motivations are in regards to willingness to participate in further research, I can only analyze this data in a very broad way.

In summary, the quantitative survey research has revealed several clear findings concerning student farms in general, farm outreach activities and the financial of specific youth programs on these farms.

- Sixty (60) percent of all identified student farms in the United States participated in the online survey research. The Midwest had the highest response rate at seventy (70) percent. The Northeast had the lowest response rate at forty-one (41) percent.

- Student population size at a particular institution is not a strong indicator of whether or not a student farm will also exist at that same institution. Student farms exist fairly equally at both larger institutions (10,000 plus students) and smaller institutions (less than 5,000 students) according to the survey data.
- Fifty-eight (58) percent of student farms surveyed have been in existence for at least sixteen (16) years or more. Only six percent of student farms were five years or younger in existence.
- Ninety-one (91) percent of existing student farms that participated in the survey participate in at least one outreach activity/program.
- The three most cited outreach activities/programs are “farm staff guided tour opportunities”, “open to public visitation” and “public events,” with response rate ranges between sixty-eight (68) and eighty-three (83) percent. “Summer camps” were the least cited of the given survey response choices.
- Forty (40) percent of student farms have a youth program or engage in some sort of youth outreach activities. Another twenty (20) percent are aspiring or are actively developing a youth program currently.
- The age ranges of the youth being served in these outreach efforts vary greatly from four to eighteen years old.
- Only forty-one (41) percent of these student farms have an official annual budget for their youth programs/activities, with the majority of annual budgets averaging between \$18,000-50,000 per year.

- Sixty (60) percent of these student farms either have no budget at all or expenses are part of a larger student farm budget, and thus specific information regarding the youth program/activities is not available.
- Of the student farms with a youth program, approximately sixty (60) percent stated “direct income from services or products” as a source of funding for the youth program/activities, more than any other potential funding source. Institutional funds had a forty-one (41) percent response rate, while grants, donations and charitable giving had response rates between twenty-five (25) and thirty (30) percent.
- Seventy (70) percent of all original survey responders, with or without a youth program, were willing to or potentially willing to participate, with more information, in a future follow up phone interview.

### ***1.2 Qualitative Research (On-line Survey)***

The following is a synthesis of the phone interview sessions with the five individual student farm informants. All of their responses have been investigated and analyzed for potential patterns, themes and possible best practices.

***“Tell the story of how the youth program began and how you became a part of it? How was the youth program first funded and/or implemented?”***

I decided to group the answers to these two questions together, even though they were asked at different points in the live interview sessions. After analyzing the answers given, it was clear that “how the program began” and “how it was first funded” provided

pieces to the same youth program creation story. These pieces also revealed several major themes shared by many of the informants. These themes are 1) Community demand and interest, 2) Graduate student leadership, 3) Grants, non-profits and research, and 4) Courses, workshops, and camps.

When asked about how the youth program was first implemented, many informants explained how strong community demand and interest eventually sparked the creation of the program. According to the informants, this interest mainly came from local schools in the community. Often it was the teachers at these schools who, having heard that there was a student farm, would call for possible farm tours for their young students. This interest in field trips would materialize and build upon itself with even more tours for other local schools as well. Eventually the student farm would have to make a choice to either create an established youth program to better serve the needs of the school classes in the community, or continue with fairly unorganized and under-financed field trips.

This community demand would also spread through existing student farm programs and services such as CSA memberships and larger farm events. These services and programs would create excitement and recognition surrounding the student farm, often resulting in an increased desire from the community for more involvement with youth and local schools. One informant stated that students and staff on the student farm originally would work with youth “off the farm” and in the local community. This service eventually churned up so much demand and institutional support that the student farm stakeholders found a way to start their own youth program on-site, while still providing services out in the community.

Several of the informants also mentioned how collaborations with the on-campus daycare center eventually led to the development of a youth program on the student farm. It was explained how many years of university student projects involving environmental education and the young students at the daycare center created a real momentum and perceived need for a more organized youth program. In many ways, the daycare, with support from its staff and teachers, became the testing grounds for the early stages of a fully developed youth program.

These student projects often originated from graduate student leadership and research which provided the early stages of the youth program with the invaluable networking, inspiration, and business planning that was needed to kick-start the program. In many cases, the graduate students would often receive institutional credit for their efforts on the student farm working with youth from the community, which created a precedent of multiple opportunities for future graduate students to take advantage of as well. This was crucial, since this continuous support and student interest created glimpses of program consistency and provided the strong evidence for student farm and institutional stakeholders to eventually provide financial support for an established youth program.

On one student farm in particular, graduate students were actually paid through graduate research assistant positions awarded annually to two students out of the Department of Forestry at the institution. These graduate students coordinated the program with other student volunteers to deliver the curriculum and work with local school classes on the farm. A peer model system was utilized, where current graduate

assistants would mentor incoming graduates while providing training and support. This created a strong program of consistency that was crucial for initial success.

Another major theme revealed by several informants was the role that establishing a nonprofit and conducting research played in establishing and implementing a youth program. Grants were secured by efforts from graduate student or faculty research in most cases, which consequently led to youth program formation. One example of how this grant funding was utilized included offering free busing to local schools to engage in field trips on the student farm. One student farm's grant funded initiatives and projects included writing curriculum on ways to enhance science education in rural schools. Another used funds to conduct research with school children to find out what they wanted in a school garden environment. This research overwhelmingly indicated three elements most desired from children in a school garden: food to pick and eat, some kind of water feature or potential for water interaction, and some type of hiding, quiet and safe places. These conclusions and the success of the research eventually led to additional funding to create an interactive garden site and vibrant youth program on the university's student farm.

The final theme that emerged from the phone interviews regarding youth program implementation focused around the role that institutional courses and student farm workshops played in eventually starting an established youth program. One informant stated how a graduate student, through funding from a grant and support from the university, created a practicum class for undergraduates to gain experience doing outdoor education and sustainable agriculture on the student farm. This practicum class would basically teach students how to give student farm tours to local school children, while

developing curriculum and working with the local school teachers to meet state standards. This class had so much success and university student demand that it was continued for three to four years, being taught by a series of graduate students. This eventually created overwhelming support from the institution and the community to fund an established youth program.

Several other student farms began to offer classes on food and nutrition to the undergraduate university students which generated increased interest on the farm. These courses eventually expanded into nutritional classes for young children, teaching them how to eat well and prepare simple foods found on the student farm.

For several student farms, summer camps and teacher training workshops were also instrumental in the eventual creation of an established youth program. In many cases, the summer camps started out slowly, with attendance at first being stagnant. However, as stated by the informants, once word of mouth spread throughout the community, these camps quickly expanded, becoming a valuable fund generating and youth program supporting service. Hosting events for other local businesses and organizations on the student farm along with youth-camp offerings was also stated by several informants as critical for generating community interest and establishing funding for eventual youth program creation.

***“What is your role with the youth program and how long have you had it?”***

I received a variety of answers to these questions from the informants. The titles were all distinct and original, yet they had similar roles within the youth program and on

the student farm. Some examples of titles included: Community Education Director, Farm Program Manager, Executive Co-Director of the Youth Program, Farm Director, and Supervisor for the farm manager. In every case however, these individuals all had multiple responsibilities in addition to the youth program and the student farm. Some taught classes at the university or college while others directed multiple departments within the institution. However, all informants played an active role in the youth program's core elements such as community involvement, program service delivery, business structure, funding and future goals. There was not a real consistency with how long they had been involved with the youth program or the student farm. While some had been involved for twenty years or more, several were fairly new to their positions. There was not a correlation between years on involvement and level of responsibility. Every informant was very knowledgeable and passionate about the youth program and the student farm.

***“Who carries out the program (staff, volunteers, mix) and who do they report to?”***

When it came to who actually does the work within the youth program, three major groups were identified as having the most involvement: 1) Directors, managers and coordinators, 2) Volunteers, and 3) Student, interns and “Corps” positions. What is interesting about these responses and important to understanding program implementation, is that the student farm manager is not heavily involved in any of these youth programs, beyond input and logistical coordination of farm tours and camp offerings. A possible explanation is that the farm manager is already busy with their day-



to-day responsibilities, both agricultural and educational. This is why it is crucial to find additional staffing or student supported positions to implement the youth program. In all cases, the farm manager was simply too busy to provide the youth program with the extra time and support it needed to get off the ground, no matter how emotionally supportive they were in the process.

Most informants stated how their roles as directors, managers, and coordinators at one time or another also included youth program implementation and ongoing functions. Many stated how they were, or still are, primarily responsible for the success of the program. Real youth program success came only after additional staffing or interns were introduced into the program. All agreed that this additional support was slow to materialize, often taking years to gather enough institutional or grant funded support to afford additional staffing. However, the benefits of this type of additional support to the youth program quickly paid off in the form of program consistency and growth into the community.

One youth program has had so much success that they now currently employ five full-time, three half-time staff, and two co-directors. Another program has recently hired a school garden coordinator at  $\frac{3}{4}$  time for 30 weeks of the year with responsibilities of maintenance and new projects. However, even with these additional staffing hires, the majority of the youth program responsibilities and decision making still fall on the shoulders of the directors, managers and coordinators.

Another significant group of individuals who carry out the youth program's services are the base of volunteers from both the university and the local community.

These volunteers mostly come from the undergraduate and graduate students involved in other university classes such as sustainable agriculture or community gardens. However, there is also a dedicated group of community, non-student, volunteers who also participate in various parts of the youth program and student farm when needed. One youth program relies especially on Parent Teacher Associations (PTA) through the local schools to hire, train, and coordinate volunteers. Another program utilizes the community school teachers themselves for volunteer opportunities, especially on student farm field trips. There was also a general agreement among informants that many adult volunteers in the community are current or former environmental educators who value an avenue to connect with children on farms.

Students, interns, and Corps positions were also stated as valuable for maintaining the functions of the youth program. As mentioned by several informants, students, and interns are crucial for the longevity of the program, either through farm associated programs or direct research projects associated with environmental and/or youth education. My informants said that the most successful scenarios involving students and interns were the ones in which they received credit and/or wages for their time and research within the youth program. This provided extra incentive for quality work and maintained a steady pipeline of inspired and qualified students involved with the program. In some cases, the students and interns actually got to develop curriculum, conduct farm tours and work with local teachers to help meet state standards. AmeriCorps and Campus Corps positions filled by students were also identified as crucial for the ongoing success of the youth programs.

One final theme from youth program staffing and support from all informants was that they all have at one point or another, asked for support from whomever could help, no matter what their community or student standing. While some have tremendous demand and support from students, volunteers and interns, others still need help from a variety of sources in the community. One pattern that is clear from these responses is that a youth program requires steady and consistent forms of staffing and support to become successful and remain viable within the community. Directors, managers, and coordinators eventually must yield to the overwhelming workloads associated with these programs. Without a variety of support and the internal infrastructure to maintain and manage this support, youth programs will have very little chance of growth or sustainability into the future.

***“Is there a plan for ongoing staffing that sustains program quality? If so, please provide more details.”***

All informants agreed that staffing consistency is crucial for maintaining institutional and community relationships. Constant turnover and short-lived staffing positions can be extremely disruptive and inefficient. While student-run programs or grant funded projects can jump start various program initiatives, it is not sustainable over time. Staff turnover can eventually burn out the program and cause stagnation. Eventually the youth program must hire permanent staff if it is to grow and be successful over time. As mentioned earlier, the student farm manager does not have the time to run a youth program as well.

***“How is the youth program currently funded and financially supported?”***

According to the informants interview statements, there are several ways in which their youth programs are funded: 1) Grants, 2) Fees from programs, products, events and camps, 3) Donations, endowments and partnerships, and 4) Institutional support from the parent college or university.

Grants appeared to be the most crucial form of funding for several of the youth programs, both currently and as initial program implementation. One informant mentioned that their youth program has had the same funder for almost eight years. Another revealed that their program gets larger grants from longer term foundations and smaller grants from shorter term sources. Several stated that grants still make up about 40-70% of their overall annual budget. However, they all admitted that while grants funds may be valuable for program implementation, they are not as preferred for long-term program sustainability because of the unreliable nature of the funding sources.

Funds from programs, fees, products, events and camps were preferred and desired by all informants over grants for long term program viability. The inherent values and exposure gleaned from the student farm also benefited the youth program as well in the form of various products and event fees from festivals. Often these funds were separate from the student farm, such as the student farm CSA memberships. But in many cases, the youth program itself generated its own funding while utilizing elements of the student farm.

While all informants claimed that they did receive funds from these sources at some level, some programs had more developed funding sources than others. One informant stated that at first they had zero program income, but it was now at \$14,000 a year, about a third of the overall budget. Several other programs stated that these funding sources made up about 25% of their budgets as well, offering the program much needed stability.

Most funds came from fees associated with day and summer camps offered through the youth program. These camps were also opportunities to sell merchandise such as books or value-added products such as jams. All informants stated that camps were crucial for program independence and stability, even though the camps often take several years to support themselves. Major events were also mentioned as major funding opportunities throughout the year and a great way to network and reach out to the community.

Donations, endowments, and partnerships with local businesses were also stated as being important to the overall budget of the youth program. Donations for two programs constituted around 25-30% of the youth program's overall annual budget. Another informant stated that they sometimes request donations from adult farm tours, but never from the local schools. Donations also come from major events or occasional auctions held on the student farm grounds. Institutional endowments paid for the positions of director and farm manager on one student farm. Another informant explained how they have created a lot of partnerships with PTAs, after school programs, and local businesses that are willing to donate time, materials and/or money. This has been crucial for their budget stability.

Institutional funding, in one way or another, was crucial for several of the youth programs and in one case was almost the entire source of funding. One type of institutional funding came in the form of youth program budgets, both for staffing and materials, simply being absorbed into larger program or department budgets. This often resulted in no real separate account information for the youth program, since it was “under the umbrella” of the institution. Youth programs that were not as developed in terms of staffing and programming fell into this category.

Another type of institutional funding for one youth program came in the form of two paid graduate research assistants, paid through the institution’s Department of Forestry. These positions were paid between \$3,000-5,000 each for the year and were crucial for the sustainability of the youth program. While these students did have other academic commitments other than the youth program, this funding did insure that a consistent student staff would be compensated for their efforts and research within the program every year. This provides less program flexibility but more program consistency.

In general, all informants agreed that diversified funding was key to program sustainability, but that it made it harder to manage cash flow. Most informants also emphasized how important it was to establish a buffer and savings to weather hard times.

***“What are the funds spent on (operating budget/insurance)?”***

When it came to what the funds were spent on within the youth program, the overwhelming response among informants was salaries for staff. Insurance and overhead

costs were mentioned as less than 10% of the budget, while materials and general program supplies were consistently mentioned as insignificant or extremely small. In one case, free busing for local school students to the student farm was a significant cost every year, but was currently being covered by ongoing foundation grants. Another youth program mentioned that it used a small portion of its budget to rent a trailer for supplies and storage. One youth program was able to provide a very detailed break-down of its budget as follows: 70% payroll, wages and administration costs, 10% free busing for school classes to the farm, 10% materials and supplies, 5% insurance, and 5% on fuel and educational supplies. Overall, the only real consistency was that salaries constituted most of the youth program budgets.

***“In your opinion, is the funding model a sustainable model over time?”***

Overall, it was agreed by all informants that current funding models were not as sustainable as they needed to be to provide confidence and security into the future. Only two responses were positive in regards to sustainability due to confidence in how long the program had already been in existence (32 years) and confidence in current partnerships in the community. However, many issues were discussed that prevent youth program funding sustainability. The most popular statement raised concerns about the uncertainty from year to year of support from current foundations and their willingness or capability to continue funding into the future. The informants also emphasized that they believed that this annual uncertainty was a natural state of most non-profits, especially in time of economic recession. However, most admitted that they were unsure where their funding

would come from in the near future. Other statements concerning unsustainable funding models mentioned issues relating to rising health costs, shrinking program savings (post-recession), shaky state economies, and the need for more diversified funding.

***“What are some opportunities and barriers in regards to funding, staffing, and educational issues?”***

The opportunities expressed by the informants covered a wide range of program goals. Expanding the youth program volunteer base was stated as a desire from several informants. Volunteers were also seen as crucial for program stability and growth into the future. Another frequently mentioned opportunity was strengthening connections with existing institutional education departments and programs. Many informants agreed that connecting the youth program curriculum with teaching and education curriculum at the university had the potential to enhance both programs. In addition, students interested in outdoor and environmental education could gain valuable experience through the youth program. One institution also had a daycare on campus that was identified as a potential collaboration and educational opportunity for students and the youth program.

Other opportunities expressed included connecting school class activities with state learning standards. This was seen as a crucial next step for youth program growth by several informants, while a few others had already realized this potential through years of working with community teachers to enhance curriculum. All informants agreed that making stronger connections between the youth program and the parent institution was crucial for long term success. Getting the word out to the students, faculty and staff of the



supporting institution was equally as important as making those connections with the local community. This was emphasized by several of the informants since their programs relied so heavily on university student involvement, participation, and research.

The barriers mentioned by all of the informants are bundled into three main constraint categories, land, staffing, and institution. Within the land category, physical constraints such as limited land for program expansion, and inadequate farm facilities and infrastructure, were mentioned by several informants as major barriers for the future. Simply not having enough space for classrooms or youth program activities created real tension without much relief in sight for the foreseeable future. In most cases, this constraint was tied directly into constraints of the existing student farm, which was feeling many of the same barriers within its structure. All agreed that more land was desired to ensure program success into the future.

The second category identified by informants as a barrier in regards to funding, staffing and educational opportunities concerns the issue of people, or the lack of qualified staffing. In almost all cases, informants stated that a lack of funding was a major barrier for hiring and retaining quality youth program staff. While some programs utilized annual paid research graduate students for program staffing, most informants insisted that hiring permanent staff was the only way to maintain program stability and sustainability.

There were also several institutional barriers that were expressed by informants. One barrier expressed was pressure to maintain constant focus on the institution's mission and pedagogy. While this mission sometimes aligned well with the mission and

goals of the youth program, other times it did not. This was particularly an issue with those youth programs that were primarily financially tied into the associated institution. This was mainly seen as a potential barrier to youth program growth and creativity. In addition, balancing needs of student volunteers and staff with other institutional academic programs created natural barriers due to academic conflicts in limited time and energy. Essentially, youth programs that relied on student involvement the most had the most barriers to program sustainability on many levels because of the overlapping institutional constraints and the dueling responsibilities of the students themselves. It was emphasized again by most informants the importance of permanent staffing for the long term success of the youth program.

All informants agreed that demand from the local community for the youth program's services irritated these barriers even more. While the community demand was considered desirable from the informant's perspective, not being able to meet those demands was extremely frustrating and often crippling for the youth program's growth. Creativity, persistence and patience were expressed as essential elements for program survival, despite the barriers.

***“What, if any, are the tensions between instruction and financial stability?”***

There were three main tensions identified by informants regarding instruction and financial stability, financial support and buy-in, and time and demand. Financially, tensions exist in several areas. One was the lack of institutional financial support for new farm facilities and farm facility maintenance. Many informants stated that this put a

constant strain on student farm and youth program staff. In most cases, this tension has been stressed even more by tightening institutional budgets.

Several informants also mentioned financial tensions between services provided in the community and the lack of cost sharing. Most program leaders agreed that providing free services and activities to local schools was always the priority if possible. However, as community demand increases, several youth programs have started charging for a few of their services, such as summer and day camps. But when it comes to local schools, these services usually remain free. This eventually creates a tension with the quality of instruction and financial stability because of limited program financial and staffing resources. All informants agreed though, that if they could not provide their services for free to local schools, then they would not provide them at all.

Another identified tension that affects instruction concerned support and buy-in from student farm and institutional staff and faculty. This was particularly acute in regards to student farm manager buy-in. In an example provided by one informant, a former student farm manager did not provide buy-in to the youth program because this individual was already so busy with his responsibilities as a manager. He did not have the time or energy to assist in planning school tours or building community partnerships. This was identified as a major barrier to youth program stability, even though this individual was considered a quality farm manager. Buy-in from student farm stakeholders within the supporting institution was also deemed extremely important from all informants. These stakeholders might be faculty, facility managers, or institutional staff. Their support was seen by informants as crucial for continued youth program viability and the financial link back to the institution.

Finally, time and demand were also seen as ongoing tensions between youth program instruction and financial stability. In all cases, informants agreed that staff time was already maxed out as community demand was increasing. Staff in most cases is being asked to do more and more to keep up with this demand. This tension, as witnessed by the informants, leads to burn out and program instability.

***“Is there anything that you would like to add or reemphasize?”***

At the end of the interviewing sessions, each informant was given the opportunity to add or reemphasize any points crucial to youth program viability and sustainability. One concerned partnerships. Several informants stressed how important partnerships were to long-term success and stability of the youth program. These partnerships came in many forms such as financial and volunteer based support. However, these informants also reemphasized that finding the right people within these community organizations and schools to work with was equally as important as financial support. With time being so thin already for youth program staff and students, knowing whom to talk to within the community and knowing who has the authority to make decisions was crucial.

Institutional and community outreach was also seen as crucial to youth program success. Getting the word out about the services and value of the youth program, especially to the supporting institution, was a priority for all informants. This institutional outreach insured a continued stream of interested students and provided increased evidence to student farm stakeholders that the youth program was still a valuable service to the university and the community. Community outreach was also deemed crucial for

program long-term viability, even though the tactics for this outreach were sometimes different than institutional outreach. One informant expressed how powerful the Internet and youth program website has been in promoting their services to the community, while strengthening partnerships and exposure. Digital and social platforms also play an important role in sharing youth program research and resources.

The third point reemphasized by several informants was to always keep the program focus on the services being offered to the children in the community and the benefits provided to the institution, especially its university students. One informant stated that it was crucial to always remember that the program's focus should be getting children in a position to understand food, gardening, farming, nutrition and holistic nature. This message was also crucial to maintain when engaging community partners. Positive involvement in the youth program from university students was also seen as important for program stability and continued institutional support. Several informants stated that the youth program was one of many ways that students could accomplish goals of community engagement which improved their overall academic experience at the university. This involvement with the community through the youth program developed communication and leadership skills that were viewed as extremely valuable to all informants. All agreed that the quality of experiences by the children of the community and the institutional students involved in the program was more valuable than the quantity of experiences.

The final point reemphasized by all informants was how much the youth program has influenced other programs at the institution. In some cases this influence has even led to new programs and courses being created from student and community demand. One

informant stated that new academic and course offerings had sprung from their youth program and its interactions in the community such as nutrition and culinary opportunities courses at the college. Another informant stressed how the success of the youth program has influenced an increase in demand for freshly cooked meals on campus. All agreed that this influence from the youth program, combined with community and student interest, created a vibrant recipe for new opportunities to form and evolve into the future.

### ***1.3 Promising Practices***

#### ***1.3.1 Strategic Planning***

After analyzing the data acquired from the informant interview sessions, many promising practices were identified in the areas of strategic planning, staffing, funding, programming, and partnerships. These promising practices were also compared to the best practices identified from the research literature (Table 1). These comparisons revealed many common themes and patterns. These comparisons also revealed several promising practices not mentioned in the literature review.

In regards to strategic planning, most informants stated that project initiatives from university graduate students were the catalyst to youth program implementation. Student created projects such as creating a farm tour curriculum or working with local schools to install campus gardens were the initial spark that provided momentum and support for a structured youth program eventually. Another example included graduate research that led to grant funding for student farm activities with local school children. Yet another example included a graduate student writing a business plan for the youth

program while receiving academic credit through the university. In almost every case, graduate student projects, coupled with their academic interests and passion for youth education, were the driving forces behind initial program planning. From writing grants to creating partnerships in the community, student led efforts were critical for program development. However, without the stakeholder support from the institution and the student farm, these student inspired projects and research would have never been possible. There is a direct correlation between youth program initiation and the strength of this type of ongoing institutional support. Students that are well supported from their institution and student farm are more willing and capable of creating youth programs from the ground up.

Another promising practice concerning strategic planning involves identifying crucial stakeholders and allies early on in the program initiation process. In every case, local schools, specifically teachers at these schools, were absolutely crucial for initial program implementation. These teachers were valuable on several levels. One, they were willing and inspired to participate in farm tours involving the children in their classrooms, which created community support for the budding youth program. Second, these teachers provided valuable mentorship and resources to the graduate students on effective environmental education curriculum and activities, and on ways to connect curriculum to the state standards. Third, the teachers helped to spread the word out into the community about the program which generated more partnerships and opportunities. In general, the teachers gave back as much as the programs gave to them and their classrooms. Not every teacher according to the informants was as willing or as able to participate to this level of involvement. However, enough teachers were fully engaged to

provide the extra support needed to these graduate students and program stakeholders to create the needed momentum for initial program implementation.

When these promising practices stated by the informants are compared with the best practices identified from the literature, several similarities appear. Developing simple and manageable program goals and business plans was the most important best practice revealed in the literature. Graduate student projects were identified through the informant interviews to be critical for program implementation. These initial graduate student inspired projects on all cases were simple in scope and delivery. In several examples, graduate student projects consisted of conducting farm tours with local schools for academic credit. Another graduate project found funding in order to provide these local schools with free bussing to the student farm. Yet another graduate project developed curriculum that was focused on meeting state standards while teaching farm-based education concepts. These projects were modest in delivery and scope, even though the students worked aggressively to meet their project goals. It was this simplicity, one graduate student project at a time, which eventually led to the support and vision needed for youth program implementation.

Another commonality between literature and informant best practices was the early identification of who the key audiences and stakeholders were within the community. It was emphasized that meeting the needs of the children within the community was the most effective way to create positive impacts. Just because the youth program might offer cooking classes does not necessarily mean that it is what the community needs at that moment. Identifying local schools as a primary audience and allowing them to communicate what their specific needs were was critical in youth



program establishment. In addition, identifying major stakeholders at the supporting institution and in the community was stated by several literature resources and all informants to also be critical in the early stages of program development.

### *1.3.2 Staffing*

The most significant best practice identified regarding staffing and the youth program workforce base from both the literature and informant interview research was maintaining consistency. All agreed that a successful and sustainable youth program required a steady and consistent form of dedicated staffing and support to remain viable within the community. This consistency was also crucial for maintaining institutional and community relationships. Constant turnover and short-lived staffing positions can be extremely disruptive and inefficient. Eventually, the youth program must hire permanent staff if it is to grow and be successful over time according to all resources and research results. Student-run programs or grant-funded projects can jump-start various program initiatives, but these approaches are not sustainable over time. Hiring a program director capable of program management, fund-raising, and generating community support was seen as ideal. It was also emphasized that asking the farm manager to assume this director role was not a suggested organizational structure. Farm managers were often too busy with the responsibilities of the farm to focus much attention on youth program development or sustainability. Farm managers were viewed as critical allies to the program at best.

Cultivating interest and support from graduate students was also seen as a best practice. The most successful models identified within the literature and interview research revealed that graduate students who could receive academic credit for their efforts within the youth program were more likely to fully engage and participate in various program activities. This would also encourage other graduate students to spread the word about the student farm and the youth program within the university. This structure creates a positive cycle of newly inspired students participating in the program as other students are graduating and leaving the program. One example showcased by an informant was a peer model system, which compensated two research graduate assistants to participate in various research and youth program activities, while mentoring and training incoming graduate student assistants. This provided a support network that was student led and initiated.

Several informants recommended that, in general, a student volunteer base was preferred to a community volunteer base. This was not because the community was lacking in any way. Instead, student volunteer bases helped to generate more interest and support through the institution. In addition, the informants revealed, this student base was also generally more accessible and willing to provide their time than community volunteer bases. Several informants mentioned that AmeriCorps and Campus Corps positions had provided valuable sources of staffing in the past. These were most successful in situations in which the student farm or youth program could not afford to hire a permanent director or permanent staffing. The informants noted that the most successful scenarios involving students and interns were the ones in which they received credit and/or wages for their time and research within the youth program.

In general, the best practices from the literature and the best practices identified from the informants were very similar and consistent with each other. Communication and striking a balance between student leadership, staff, and faculty was emphasized as being crucial for program success. Providing financial and academic support to graduate student projects, student volunteer work bases, and various Corps positions was agreed to be ideal. Financing a highly trained and permanent position, such as a director or manager to handle the main responsibilities, instead of spreading the load among existing staff, was also viewed as a critical best practice.

### ***1.3.3 Funding***

With respect to funding youth programs, there were several best practices identified by the informants during the interview process. Creating a non-profit and securing grant funding were the most likely ways to start a student farm youth program. According to the literature and informant research, these moves gave the youth program more financial control and more program freedom initially. This control and freedom allowed the program to remain flexible and adaptable to the needs of the children of the community. However, grant funding was not deemed ideal over the long haul for program sustainability despite the advantages during program implementation. All resources and research stated that while grant funds may be valuable for program implementation, they are not as preferred for long-term program sustainability because of the unreliable nature of such funding sources.

Institutional funding was also seen as a best practice regarding funding sustainability, but this funding often came with strings attached. Informants and literature that showcased youth program examples of completely institutionalized funding also stated that with this financial support, expectations of program mission and goals aligned with institutional values was demanded. These expectations sometimes caused conflicts between the youth programming and its responsibilities to the university. However, the stability that this institutional funding provided to the youth program as a whole was viewed as a more positive funding source, capable of establishing long-term sustainability within the program structure.

Diversifying funding sources was agreed by all informants and the literature to be a desired best practice, but that it often made it harder for the program to manage cash flows. All informants preferred funds from programs, fees, products, events, and camps over grants for long term program viability. All informants also emphasized that camps in particular were crucial for program independence and stability, even though the camps often take several years to support themselves. Diversified funding, with successful camps programs, were deemed as best practices in regards to successful funding models.

Creating a strong donation network with local businesses, PTAs, and after school programs was also viewed as a best funding practice. These relationships take years to cultivate and require a steady and consistent staff base to develop and sustain.

### ***1.3.4 Programming***

When it came to programming, both the literature and the interview research agreed that student farm field trips and the activities associated with those field trips (harvesting vegetables, planting seeds, feeding livestock, etc.) were the most effective in establishing youth program support, while also meeting the needs of the community. Most field trips are simple in delivery and scope, yet provide quality hands-on learning experiences for children. In addition, these field trip experiences often integrate several different disciplines and educational themes, which gives the children a greater positive farm experience. These educational opportunities are also deemed as best practices in the literature.

Another best practice emphasized by all informants and the literature was concerned with maintaining the focus of the youth program's mission on the children of the community. It was emphasized from all sources just how crucial it was to always remember that the program's focus should be getting children in a position to understand food, gardening, farming, nutrition, and holistic nature.

Some sources also stated that it was a best practice to ensure that the educational quality of the university students involved with the program was equally important to maintain. The youth program was one of many ways that institutional students could accomplish goals of community engagement, which had the potential to improve their overall academic experience at the university. This involvement with the community through the youth program developed communication and leadership skills that were viewed as extremely valuable to all informants.

Working with the local teachers to accomplish their educational goals for their students was also viewed as a crucial best practice for long-term program sustainability and community viability. This process created trustworthy lines of communication between the local school, the teachers, and the staff of the youth program. Out of this solid communication grows lasting partnerships and networking opportunities essential for program growth and sustainability.

### ***1.3.5 Partnerships***

In general, both the literature and informants stated that partnerships were one of the most important best practices for program implementation and program longevity. These partnerships can come in many forms, such as financial and volunteer based support. In every case however, these partnerships take time and patience to establish and even more work to sustain over the years. Once in place though, the partnerships can provide the essential support to a youth program as it grows and expands its services to the community.

Creating and cultivating partnerships within the structure of the institution was also viewed as important for youth program success. Partnerships with on-campus daycare centers were the testing grounds for the early stages of a fully developed youth program according to several informants. Another program established strong support with various academic and research courses at the university that wanted to utilize the student farm and the children involved with the youth program for programming activities. This partnership included nutrition and food concepts courses collaborating

with the youth program to discuss healthy eating for children. Other collaborations included community outreach research regarding local food security among at-risk neighborhoods. The multi-disciplinary nature of environmental education and the youth program's educational goals provides precious opportunities for internal institutional partnerships and is deemed as a desired best practice.

Hosting events at the student farm for other local businesses and organizations was stated as a great way to bring attention to the youth program's services and connection to the children of the community. This was deemed as especially effective for youth programs that have existing day and summer camp offerings. Hosting events at the farm generates community interest and builds potential and ongoing partnerships that are crucial for youth program sustainability.

#### ***1.4 Barriers and Obstacles and Ways of Addressing Them***

There were several consistent barriers and obstacles identified throughout the literature and the qualitative interview research analysis. According to the informants, in some cases these barriers are currently impossible to address or remedy, while other barriers have reachable solutions within the grasp of the various youth programs. The literature also provides recommendations on various strategies to overcome common program barriers. For the sake of research consistency, I have organized these barriers and ways of addressing them into familiar program categories: strategic planning, staffing, funding, programming and partnerships.

### ***1.4.1 Strategic Planning***

One major barrier identified by several of the informants concerned the role graduate students in program initiation. It was mentioned earlier with *Promising Practices* that the efforts of graduate student research and projects has been instrumental in kick-starting a youth program. It was also mentioned that institutional support was crucial for the graduate students and ultimately provided them with the incentive to invest so passionately in their work involving environmental education. However, without financial and academic support these graduate students would not have the opportunities to be so involved with the student farm or youth program. So while properly supported graduate students can be crucial for program support or even program initiation, inadequately supported graduate students will ultimately burn out or lose inspiration in the program and its services to the community. Put simply, students, especially graduate students, have little extra time in their lives beyond academics, research, and possibly earning a little extra income to support their weekly living expenses. Providing a structure where a student could receive academic credit and/or even a stipend for their work within the youth program makes an enormous difference in the quality of work and the quality of students interested in participating in the program. Youth programs that rely on institutional support should create opportunities for their students and graduate students to encourage continued research and program investment.

Other identified barriers within strategic planning that was expressed in the literature and the informant interviews concerned the need for more land for the program's long term viability. More land was a barrier for the student farm associated with the youth program as well. Community and university student demand for



agricultural and environmental education programming has been growing steadily over the last ten years according to the research. This demand has put increased stress on already over-utilized student farms with little or no plans for expansion. There are some cases in which the institution has assisted in farm land expansion. However in most cases, student farm land expansion is simply not an option because of existing land constraints already found on the university or college campus. One way to address this barrier could be to purchase or lease land off-campus that could meet the needs of the program and student farm as well. However, this option can be rather complicated, especially for a larger institution due to financial realities and logistical issues. Most informants admitted that this was not a realistic option and that this would continue to find creative ways to utilize limited student farm and campus land for youth program services and operations.

The final barrier that was emphasized regarding strategic planning is the lack of adequate farm facilities for current and long-term program viability. The real issue is not having enough space for outdoor or indoor classrooms for youth program activities. One informant expressed the lack of restrooms and wash stations for local school farm tours as being a major barrier for program expansion and viability within the community. Again, student farm leaders also expressed the same stress because of the lack of proper facilities on the farm. Lack of institutional financial support, resulting from tight university and college budgets, is the main barrier for facility upgrades or expansion. One way to address this issue would be to gather increased financial support from local partnerships, through donations, or large fund raising events. Another potential remedy would be working with the institution and student farm stakeholders to apply for specific grants that might have interest in supporting environmental education and services for

children in the community. However, if the student farm or youth program is not a non-profit, then this option might prove difficult. All informants agreed that creativity and communication with university and student farm stakeholders was the best way to deal with the lack of facilities for now, until other options present themselves.

### *1.4.2 Staffing*

From both the literature and informant research, staffing consistency was viewed as a major barrier for most student farm youth programs according to best practices. This was especially true for programs without permanent staffing and those that relied on student and volunteer staffing for program functions. As mentioned earlier, constant turnover and short lived staffing positions can often be very disrupting and inefficient within the structure of the youth program. In addition, staff changes year in and year out can cause stagnation among long-term partnerships within the supporting institution and within the community. One way to address this issue is to build the financial support structure to hire a permanent employee dedicated to the program. If this is not an option, as is the case for many financially challenged youth programs, then the next best option is to provide a reliable system for students to receive credit and/or stipends for the time and effort they provide into the program. This system could take the form of an annual financial and academic incentive staff position, or possibly even take the generic form of an AmeriCorps or Campus Corps position. At the very least, best practices suggest that a consistent and reliable way of attracting and retaining motivated students within the youth program while they are in institutional students is the most effective way to meet

the staffing needs of the program. Another barrier emphasized states that temporary student staff are not as engaged because of the overlapping institutional constraints and dueling responsibilities of the students themselves. Maintaining a balance with the student staffing work force is a constant challenge for programs with inadequate funds to make a permanent hire for the program.

For some student farm programs, not having the buy-in or logistical support of the farm manager can be a major barrier for youth program success. According to the literature and research, farm managers are extremely busy with logistics of the farm and many do not have the time or energy to devote to any extra programming not directly related to their responsibilities and duties. Even the managers that are enthusiastic about a youth program may have very little time to give toward program activities such as tours or workshops for children. For emergent youth programs with very little staff, this can be a major issue for program initiation. However, ways to address this include establishing strong temporary student staff and volunteer positions that can bridge the gap. It is clear from the literature and informant interview research that relying on a farm manager to assist in youth program activities and implementation is not viable or sustainable.

All of these staffing barriers would not exist however if there was not a growing demand from the community for youth programs that sense the needs of the children in that community. Demand cannot be seen as a barrier in itself, but it does have the potential to create barriers, even after program success. Consensus from the literature and my qualitative research suggests that success breeds demand which often breeds more success. In summary, staffing barriers and staffing challenges are almost always present

in youth programs, whether emergent or established. Finding creative ways to meet this challenge is what establishes sustainability within the program.

### ***1.4.3 Funding***

Both the literature and my research agreed that a lack of steady, reliable and sustainable funding was a major barrier. It was emphasized that a lack of funding was a major barrier for hiring and retaining quality youth program staff. Lack of stable funding also affected facility maintenance and overall youth program growth. Uncertainty from year-to-year has the potential to create stagnation in program vision and uneven service into the community. Much of this unreliability does not just come from tightening institutional budgets or shrinking foundational funding. It was stated by several informants that rising health care costs and shaky state budgets were also to blame for youth program financial instability. However, several ways of attempting to address this challenge were identified. As mentioned earlier, diversified funding was key to long-term program viability and sustainability. This financial diversity not only included fees for services and camps, but it also included the power of community partnerships. In fact, it was the diversity of these community partnerships that provided the only real financial security, according to many of the informants interviewed. Partnerships were viewed by much of the literature and the qualitative research to be as crucial as any grant or institutional funding, if not more so.

#### *1.4.4 Programming*

The most consistent barrier identified by my research was the challenge of trying to maintain a constant focus on the youth program's supporting institution's mission and pedagogy. Programs that were closely tied to institutional funding often felt pressure to adhere to the mission and values of the institution. It was stated by many informants that this was not necessarily a negative aspect of the program's relationship with the institution all the time. However, youth program goals and institutional sometimes clashed over programming, staffing priorities and adequate funding. These tensions were especially noticeable with more successful programs, because more successful programs needed to be more adaptable and flexible to the needs of the community. This adaptability was often slowed by conflicting institutional stakeholder program goals. According to several informants, one way that this occasional tension was addressed was to generate more program service income. Youth programs that were able to sustain more financial independence through increased funds from services such as camps, workshops and events, were able to eventually create more freedom within their program structure. The connection to the institutional mission was still viewed as vital to program success. However, the financial freedom gave the programs the flexibility and room to grow as needed to serve the community more affectively.

Another way to address potential institutional barriers, identified through the literature and interviews, was to strengthen communication and participation among all student farm and youth program stakeholders. If financial independence is not possible for the youth program, then finding ways to discover common ground within the goals of

the institution and the youth program appears to be key to softening barriers for program viability.

#### *1.4.5 Partnerships*

The only significant barrier identified within the category of partnerships was concerned with was the lack of cost sharing between the youth program and local schools in specific situations. All my informants agreed that providing free services and activities to local schools was always the priority if possible. Examples of these free services included farm tours, workshops, camps, and school garden installations. However, barriers seemed to rise when community demand increased and the youth program did not have the financial capacity to meet that demand. This inadequate ability to meet the community's demand often created tension between certain parts of the community and the youth program. This tension was especially acute in communities that where they were accustomed to receiving free services from the youth program in the past. It was also acute in situations in which the youth program grew too quickly and could not financially or logistically handle all of the needs of the community at once.

According to the informants there are several ways to address this tension and soften these barriers. One is to strengthen communication efforts among the community and the youth program staff as to what services are realistic and sustainable at current levels of support. In some situations, cost sharing and requiring fees for service might be a necessity to maintain youth program services. This must be communicated in a way that is participatory and inclusive among all stakeholders. Program growth requires financial

stability. Alternatively, if cost sharing and fees for service are not feasible or desired by the youth program, then it must be communicated to the community that some services might be reduced or eliminated. All informants agreed though, that if they could not provide their services for free to local schools, then they would not provide them at all.

### ***1.5 Synthesis and Additional Insights***

These insights come from analyzing the quantitative and qualitative data that I have collected over the last few years for this thesis project. They also come from several years of personal experience that I have had as both a college student and employee on a student farm. From my student farm experiences, I was fortunate to have the opportunity to participate and organize student farm tours for pre-school children in the local community. While the student farm did not have an organized youth program, it did have students and staff who were passionate about farm-based education. The demand from the local community for these farm-based education opportunities often translated into student-led farm tours for pre-school age students. However, this was often the extent of the services the student farm could offer, due to financial and organizational barriers. I experienced first-hand many of the same obstacles to develop a more formalized youth program that were identified by the survey and phone interview research. My humble experiences and the data presented within this research project call to light a collection of insights and conclusions that I would like to share concerning youth education on student farms.

### ***1.5.1 Community Demand and Community Building***

One major insight involves community. According to the literature, my survey results and phone interviews, there is no doubt that local community demand for farm-based educational opportunities on student farms is strong and growing. In fact, all of the interview respondents stated again and again that one of their major challenges for the future was keeping up with this demand. There seems to be several reasons why this demand is currently so expansive. The interest in organic and local foods and healthier lifestyles in general has been gaining popularity recently throughout the United States. The increase in farmers markets and organic produce consumption has been well documented in the media and literature. At the same time, many parents and community members have realized the need for a stronger connection between youth and nature. This connection can be strengthened on many levels, one of which is embracing farm-based education opportunities, which are very similar to garden-based education learning opportunities. Their educational missions and public exposures to the local community make student farms ideal candidates for these types of farm-based education opportunities. Mix in a few passionate and inspired university and college students who desire environmental educational experiences and suddenly the demand has a potential outlet to flow toward. However, as mentioned earlier, these student farms are often not equipped to serve the needs and demands of the community, because they lack the financial and operational support to implement a student farm youth program.

The main point is that community demand is growing, which also means that the community recognizes the value of farm-based educational opportunities. This community is not just made up of concerned and inspired parents. It is also made up of



local schools and local school teachers who wish to supplement their teaching goals with elements of environmental education. This adds a very exciting and powerful element to the demand for farm-based educational opportunities. Teachers who incorporate farm-based education into their curriculum not only expose more students to these learning opportunities, but also expose more fellow teachers and school administrators to the values of increased environmental educational learning experiences. From a broader viewpoint, demand from teachers and parents has the potential to sustain a larger farm-based education movement that can enhance the values of environmental education as a whole in the current educational system.

Another insight that was revealed through this research process concerning community was just how powerful the community building aspect was to fueling and justifying youth programs on student farms. There are many ways to build community whether it is in a rural or urban setting. My interviews and literature review indicated that many institutions are especially focused on building community and offering educational opportunities for their university and college students to experience this process. This community building focus, both pedagogical and institutional, creates the foundation needed to support student interests focused in community development. All of the phone interview responders cited this foundational support as crucial for continued youth program and/or farm-based education learning opportunities. Farm-based youth education is seen as just another type of community development and thus is educationally supported through credit generating student projects and internships. This foundation does not always translate into a fully funded youth program, but it does insure that farm-based education is recognized by the institution as a valued form of community

development. This value can be a spring board for future youth inspired initiatives to launch from toward a potential fully operational farm-based youth program.

### ***1.5.2 The Role of Students***

According to the literature and my research, there is a growing trend of college and university students who want more from traditional agriculture programs. This is not to say that students do not still desire formal agricultural education experiences and practical in the field knowledge. These hands-on opportunities are very important to the future of American farming. However, there is also evidence that a growing number of college and university students interested in agriculture are also interested in other related aspects such as nutrition, food justice, agro-ecology and agro-economics. These students are not interested in becoming full-time farmers but still care deeply for the issues and challenges apparent in the current global food system and want to be involved in the processes for positive change.

Some institutions have recognized this growing demand for an increased diversity in food system courses. This recognition spurred by student demand has expanded many institutional science and agricultural departments to include environmental education and community outreach experiences. It has also sparked an increase in student farms of all sizes and educational goals and opportunities. Diverse student farm outreach is already in motion throughout the U.S. Demand from the local community and demand from college and university students has created an educationally charged atmosphere on many campuses. This trend is very promising for even more student farms to develop in the

coming years along with the cast of supporting outreach and farm-based education opportunities as well.

Another promising trend and insight is that inspired and well supported institutional students are often the catalysts to youth program implementation. According to my research, graduate student projects seem to have been the main sparks for the eventual creation of a student farm youth outreach program. Even though I do not have evidence either way to support or deny this assumption, I believe that graduate students are better equipped to create and implement projects that might lead to youth program start-ups. Graduate programs in general have a major focus on research, both through developing strong literature review analyst and research techniques. This skill set can lead to a stronger research project which is supported by the graduate program. This strong research project also requires a dedication and commitment necessary to finish the research in a timely and professional manner. In other words, I believe that graduate students have a distinct advantage to creating program initiatives due to the fact that their graduate program calls for a higher level of academic rigor not usually found in the undergraduate level. This is not to say that all undergraduate programs do not have high standards or that institutions without graduate programs will never support motivated students with high quality research projects. In general, graduate students do have the research skills and the project focus, encouraged and supported by the graduate program itself, to tackle and answer more in-depth research questions for academic credit. In the phone interviews I conducted, three out of five responders agreed that these academic conditions greatly influenced the success of the graduate student projects that eventual led to youth program implementation.

### *1.5.3 The Resiliency of Limited Funding*

When it comes to funding a student farm youth program it appears that most programs do not have an official budget. Not having an official budget includes everything from not spending any extra funds on youth outreach related activities to the actual budget being absorbed into a larger student farm or academic program budget. Only a few student farm youth programs have been able to grow to the point of establishing significant annual budgets capable of sustaining most of the program's services, staff, and operations. The trend however is that most programs operate on a shoe string budget, at least partially (if not fully) supported financially by the associated institution. I believe that this is both a positive and negative situation.

The negative side of youth programs that have no real budget indicates that these programs are still in the infant stages of implementation and operational sustainability. There is either no real hope for an increase in program capacity and financial support or support is slowly being formed internally both at the institutional and youth program level. In other words, some programs have no plan to expand due to a lack of institutional or community support, while some programs are simply remaining patient and building strong partnerships for future financial contributions and support. Either way, these programs will continue to face the documented barriers of unsustainable financial support, struggling to meet the demand from the local community and institutional students for more farm-based learning opportunities.

On the other hand, the reality that student farm youth programs with no budgets are still offering even limited services to the community is also a very positive sign for

the future of farm-based education. I believe that this shows a high level of existing passion of the student farm stakeholders and the college and university students involved toward youth outreach. The fact that so many youth programs still exist and continue to slowly grow despite limited financial support indicates just how dedicated those involved really are to the educational and community values of the services being provided. Dedicated students, staff and faculty keep these programs alive year after year and continue to build strong community partnerships. Creativity and determination fuels these programs despite the constant financial challenges. This trend revealed from the literature and my research, offers tremendous hope for the future of farm-based education in general. It shows that if college and university students are given the academic support and if student farm programs are provided even basic institutional financial support, farm-based youth programs can still provide a valuable impact within the community.

A final insight regarding funding is that direct income from services/products and institutional funds *not* grants, support student farm youth programs. According to my phone interview research grants are a good way to jump-start a program in most cases, but such funds cannot be relied upon for long-term sustainability. I believe that this is overlooked by many students and student farm stakeholders when creating a strategic business plan for a youth outreach program. From my own experiences and from all of the phone interview research responses for this thesis project, it is clear that grants can be very alluring in the early stages of program implementation. In fact, in most cases stated from the interview responders, grants were the only way that the youth program was able to get a running start from the beginning. However, grants can also bind a program to an alternate path beholden to the requirements of the funding foundation. Grant funding can

also end before program implementation is fully realized. While it can be tempting to rely on state and federal grants to sustain a program, building strong financial partnerships in the local community was overwhelming agreed by all interview responders as being the most sustainable path for long-term program viability.

#### ***1.5.4 The Momentum of Farm-based Education Research***

One final insight that became very clear after this research process was that support among student farm and youth program stakeholders for more farm-based education research is passionate and greatly needed. Throughout my research process of soliciting student farm staff to participate in an on-line survey and conducting in-depth phone interviews, I was struck by how excited most responders were that this type of research was being done. The excitement was equally acknowledged regarding the research questions I asked and regarding the interest that I expressed about their respective programs. It was clear that all who participated had pride and meaningful purpose to their student farm responsibilities and believed in the value of their services and educational opportunities to the institutional students and the community. Furthermore, all phone interview respondents agreed that more research was needed to continue the momentum of farm-based education on student farms and in communities throughout the U.S. They realize, as I do, that student farm outreach is still an emerging practice for most institutions. It will take time to fully develop and mature. Research is one ingredient that is needed for this maturation process to continue and for the farm-based education movement to continue into the future. More research is needed and

according to my findings, student farm stakeholders are very eager to participate and contribute.

## **CHAPTER FIVE: Conclusions**

My research objectives were to (a) gain a better understanding of how much a student farm youth program really costs to implement and sustain over time, (b) identify the various funding and organizational opportunities, issues and challenges for these programs, and (c) identify ways for other farms to improve their operations, and possibly stimulate more youth programs on student farms to be established throughout the United States. Whereas previous studies have made an attempt to research basic quantitative characteristics of existing student farms, there is no inventory of those student farms that also have youth education opportunities. Furthermore, in the small but emerging literature about student farms, there is very little organizational analysis regarding how these youth programs are developed, implemented, established and funded/sustained over time. Most research relating to youth programs and student farms can be found in the related areas of nature center and non-profit educational program organization, implementation and structure.

This research attempted to fill these critical literature and research gaps. The study included a review of the literature, a quantitative on-line survey of forty-six (46) identified student farms in the United States and a qualitative phone interview session with five student farm youth program stakeholders. Via my investigations and research, I was able to identify (a) best practices of farm-based education, environmental education and Nature Center program management from the literature; (b) physical and programming characteristics of over sixty (60) percent of existing student farms in the United States; and (c) youth program details such as program implementation, staffing and funding from the qualitative data. With this information I identified and elaborated



on best and promising practices for youth programs in the areas of strategic planning, staffing, funding, programming, and partnerships (Table 1). The five major best practices identified included (1) developing successful strategic planning around the concepts of simplicity, flexibility and participatory processes; (2) providing program stability by financing a highly trained and permanent position, such as a director or manager, who can handle the diverse responsibilities; (3) identifying potential funding sources with a focus on establishing a diversified balance between short-term financial efficiency and long-term resilience with a desired goal of self-sufficiency; (4) establishing programming that is diverse, age-appropriate, efficient in delivery and scope, and responsive to the specific needs of the youth in the community; and (5) identifying partnerships, stakeholders and allies within the community and supporting institution to establish program stability and sustainability. I also identified and discussed youth program barriers and obstacles and ways of addressing them in the future. Major program barriers included, (a) facility, land and staffing shortages; (b) lack of consistent and reliable staffing; (c) unsustainable funding sources; (d) tensions between institutional and program pedagogy; and (e) a chronic inability to keep up with the community's increasing demand for the youth program's services.

Reflecting on these findings, I drew some additional insights and conclusions. First, community demand is strong for farm-based education experiences, and growing. This community development value is often the fuel and justification to implement a youth program as well. Second, inspired and academically supported students, especially graduate students, are often the catalysts to youth program start-up. Third, most student farm youth programs have little to no *official* budget. In addition, these youth programs

are primarily funded with direct income from services or products and parent institutional funds, not grant funding. Finally, there is strong support among student farm stakeholders for future research regarding farm-based education and youth programming.

However, my research does have limitations. Below I will discuss its primary limitations and provide suggestions for further research.

First, while I did receive a sixty (60) percent response rate from my request to all existing student farms, I would have liked to have had about twenty (20) percent or more. I believe that the two factors that prevented an even higher response rate were my personal time for this research and the time of year that I sent out the survey response request. I sent my first and second survey requests out in the spring, which would have been a very busy time of year for student farm stakeholders. Late fall or even wintertime requests might have generated a stronger response rate. In addition, contacting these student farms by phone to encourage survey participation might have generated a higher response rate as well.

Second, I believe that more qualitative phone interviews would have been very beneficial to my research. Again, limited time for my research and seasonal issues prevented me from interviewing all the potential informants who might have participated. Out of twenty-one (21) informants that responded “Yes, I would be willing to participate in a confidential interview” on the survey, only five interviews were actually scheduled. Another eleven (11) survey responses also indicated that they might participate with more interview details. I believe that many of these eleven (11) would have also been willing to conduct an interview with more follow-up and time for research. I believe that the data

from the five strong interviews I conducted is significant to this research. However, more interviews could have revealed more patterns or themes about youth program structure and financial organization.

Third, I think that in-person visits and observations of these student farms and youth programs would have yielded a wealth of additional information and data. While this is rather cost prohibitive for this research, especially visitations on the east coast, it would have been valuable to schedule a few visits to regional student farms. However, this approach might have altered my research methodology to involve more of a case study approach.

Finally, I would have liked to have learned more about the programming and education elements of these youth programs. Even though, this was a smaller piece of my research, I believe that it would have been valuable to know more about how programming affects funding or vice versus. Two questions emerged from this research: Is there a correlation between types of programming offered and the types of funding utilized by the youth programming? And, do programs that have more stable or sustainable funding achieve higher programming goals?

The future research that I suggest could significantly advance understanding of youth program implementation and sustainability. However, this study has provided current and valuable data identifying student farm youth program best practices and ways to address barriers and obstacles. The research also shows that current student farms are indeed engaged in many different types of outreach in the community, including youth outreach. In addition, student farm stakeholders are also very interested in supporting

farm education research and furthering youth program implementation. They recognize not only the education value of farm-based education but the community building value of student farm outreach as well.

**APPENDIX 1: Quantitative On-line Survey Cover Letter**

Dear Participant:

I am a graduate student at The Evergreen State College in the Master of Environmental Studies program. As part of my graduation requirements in the program, I will be conducting **survey and phone interview research** for my thesis project titled “Youth Education Programs at College/University Student Farms in the United States: An Investigation of Initial Program Implementation and Long-Term Organizational and Financial Sustainability”.

The purpose of my project is to gain a better understanding of how much a **youth outreach program** on a student farm really costs to implement and sustain over time, as well as identify the various funding opportunities, issues and challenges for these programs. Studying the details of funding sources and the factors contributing to success of each individual student farm youth program would also allow other farms to improve their operations, and possibly more youth programs on student farms to be established. My research therefore will investigate and explore this problem and attempt to reveal if there are patterns of best practice.

A portion of my research involves a **short 5 minute survey** that I graciously ask for your participation. Simply click on this link to begin:

<http://www.surveymonkey.com/s/6NFL65T>

**If you have already participated in the survey please let me know.**

All research will be confidential and there are no risks to you. There will be no compensation of any kind available for your participation, which is completely voluntary. You may withdraw your participation at any point or skip any question you do not wish to answer without penalty. The information you provide will only be used by myself and my faculty sponsor, Jean MacGregor. As mentioned above, I will use your responses only as partial resource material for my research paper. I may report your answers in my paper, but I will keep your identity confidential and not reveal any identifying information about you or your institution in my final paper and presentation.

If you have any questions about this project or your participation in it, please **call me at 512.660.8313**. My email address is **olyrogers@gmail.com**. The person to contact if you experience problems as a result of your participation in this project is John McLain, Academic Grants Manager at The Evergreen State College, Library 3821, Olympia, WA 98505; Phone 360.867.6045.

Thank you so much for your participation and assistance!

Sincerely,

Justin Rogers

**APPENDIX 2: Quantitative On-line Survey Questions**

**1. What is the name AND location of your institution?**

**2. What is the size of your institution in terms of numbers of students?**

- Less than 1,000 students
- 1,001-5,000 students
- 5,001-10,000 students
- 10,001-15,000 students
- 15,001 or more students

**3. Do you currently have a Student Farm?**

- No (please skip to question #10)
- If "YES", what is the name of your Student Farm AND the year established?

**4. Does the Student Farm have any outreach programs? (An outreach program is defined as “efforts to increase the availability and utilization of services, especially through direct intervention and interaction with the target population.”)**

- Yes
- No (please skip to question #10)

**5. What kinds of outreach does the Student Farm engage with the community?  
(Check all that apply)**

- Open to public visitation
- On-site explanatory signage about the farm itself

- Self-Guided tour opportunities
- Farm staff guided tour opportunities
- Public events (fairs, festivals, open house, etc.)
- Workshops/Course offerings
- Summer Camps
- Other

If "OTHER" please specify

**6. Do you have a youth program? (A youth program is defined as "any outreach activities specifically targeted for age ranges from pre-schoolers through adolescents.")**

- Yes, we do
- No, but we are actively planning/developing one now  
(please skip to question #10)
- No, but it is an aspiration for the future (please skip to question #10)
- No, we don't have a youth program and do not envision having one in the near future (please skip to question #10)

If answer is "YES", what year was the program implemented?

**7. What are the age ranges (youth audience) of children participating in Youth Program?**

**8. What is the average annual operating budget for the youth program?**

**9. What are the current sources of funds for the youth program? (Check all that apply)**

- Direct income from services or products sales
- Institutional funds (General operating funds from the institution to support the youth program)
- Grants
- Special fund-raisers or events
- Donations
- Workshops/Courses
- Charitable Giving
- Memberships
- Camps
- Other

If "OTHER" please specify

**10. Would you be willing to participate in a confidential follow-up phone interview regarding more details of the student farm and its outreach programs?**

- Yes, I would be willing to participate in a confidential interview
- Maybe, please provide me with more specifics
- No thanks

Please provide name and contact information for who I should speak with



**APPENDIX 3: Qualitative Phone Interview Cover Letter**

Dear (Informant Name),

I wanted to thank you sincerely for participating in my “Student Farm Research” survey recently. I am also pleased that you are willing to participate in a follow-up confidential phone interview.

Here are some details about the phone interview:

- 1) All of my interview questions will seek information about the professional development and implementation of your student farm’s outreach and youth education programs. These questions will not ask for your personal opinions.
- 2) All the reporting of my data will be confidential and anonymous.
- 3) You may withdraw your participation at any point or skip any question that you do not wish to answer.
- 4) Your participation is voluntary and there will be no compensation for providing information.
- 5) I will digitally record the interview as well as manually transcribe notes as back-up.
- 6) After my thesis research is complete, all the data will be destroyed.
- 7) The phone interview will last no more than an hour and will cover the following areas of your youth program in more detail:
  - Start-up story
  - Staffing
  - Funding
  - Educational Programming
  - Opportunities and Barriers

Please let me know what your **availability is for a phone interview this week** or next week. I look forward to speaking with you very soon and thank you again for your participation in this research.

You may contact me at [olyrogers@gmail.com](mailto:olyrogers@gmail.com) or #512-660-8313.

Best,

Justin Rogers

## **APPENDIX 4: Qualitative Phone Interview Questions**

### **Start-up Story:**

- Tell the story of how the youth program began and how you became a part it.
- What is your role with the youth program and how long have you had it?

### **Staffing:**

- Who carries out the program (staff? volunteers? mix?) and who do they report to?
- Is there a plan for ongoing staffing that sustains program quality? If so, please provide more details

### **Funding:**

- How was the youth program first funded and/or implemented?
- How is the youth program currently funded and financially supported?
- What are the funds spent on? (Operating budget/ insurance?)
- In your opinion, is the funding model a sustainable model over time?

### **Opportunities and barriers:**

- What are some opportunities and barriers in regards to funding, staffing, and educational issues?
- What, if any, are the tensions between instruction and financial stability?

### **Close out interview with final question:**

- Is there anything that you would like to add or re-emphasize?

## **REFERENCES**

Abraham, J. (2003). Making Community-Based Education Programs Sustainable?

*Education for Health: Change In Learning & Practice*, 16, (2)

Arnett, J.J. (2004). *Adolescence and Emerging Adulthood: A Cultural Approach (2nd ed)*.

Upper Saddle River, New Jersey: Pearson Education, Inc.

Association for Experiential Education (AEE). (n.d.) *What Is Experiential Education?*

Retrieved July 18, 2011 from the Association for Experiential Education: A Community of Progressive Educators & Practitioners from <http://www.aee.org/about/whatIsEE>

Association of Nature Center Administrators. (1998). *The Nature Center Handbook: A Manual of Best Practices from the Field (Volume 1)*. Dayton, OH: Author.

Ball, A.L., Garton, B.L. & Dyer, J.E. (2001, December). Learning Communities and Agricultural Youth Organizations: Their Influence on College Agriculture Students' Academic Performance and Retention. *28th Annual National Agricultural Education Research Conference*. Lectured from New Orleans, LA.

Barraza, L., Duque-Aristizabal, A.M. & Rebolledo, G. (2003). Environmental Education: from policy to practice. *Environmental Education Research*, 9(3), 347-357.

Best Management Practices in Agritourism. (2007). *Agricultural Marketing Resource Center*. Retrieved January 24, 2012, from [www.agmrc.org](http://www.agmrc.org)

Blair, D. (2009). The Child in the Garden: An Evaluative Review of the Benefits of School Gardening. *Journal of Environmental Education*, 40(2), 15-38.

Bonnett, M. (2002). Education for sustainability as a frame of mind. *Environmental Education Research*, 8(1), 9-20.

Booth, L.S. (2009). Teaching About Living Systems on the Farm: Remembering What We Already Know (winter/spring newsletter). *Farm-Based Education Association*. Retrieved June 17, 2011 from <http://www.farmbasededucation.org/>

Breunig, M. (2005). Turning Experiential Education and Critical Pedagogy Theory into Praxis. *Journal of Experiential Education*, 28 (2), 106-122.

Brophy, J., Allemna, J. & O'Mahony, C. (2003). Primary-grade student's knowledge and thinking about food production and the origins of common foods. *Theory and Research in Social Education*, 31 (1), 9-49.

Byrd, N.J. (1998). *The Nature Center Handbook, Vol.1: A Manual of Best Practices from the Field*. Pompano Beach, FL. Association of Nature Center Administrators.

Carver, R. (1999). Carver's Conceptual Framework of Experiential Education. *Pathways: The Ontario Journal of Outdoor Education*, 12 (2), 11-14.

Chalker-Scott & Tinnemore, R. (2009). Is Community-Based Sustainability Education Sustainable? A General Overview of Organizational Sustainability in Outreach Education. *Journal of Cleaner Production*, 17 (12), 1132-1137.

Chiu, L. (1988). Measures of Self-Esteem for School-Age Children. *Journal of Counseling and Development*, 66, 298-301.

Coblyn, S. (2001). *French Fries and the Food System: A Year Round Curriculum Connecting Youth with Farming and Food*. The Food Project. Retrieved January 23, 2012 from <http://thefoodproject.org/books-manuals>

Davis, B. & Sumara, D. (2002). Constructivist Discourses and the Field of Education: Problems and Possibilities, *Educational Theory*, 52 (4), 409-428.

Davis, S. & Luce-Kapler. (2000). *Engaging Minds: Learning and Teaching in a Complex World*. Mahwah, NJ: Lawrence Erlbaum.

DeMarrais, K. & Lapan, S.D. (2004). *Foundations for Research: Methods of Inquiry in Education and the Social Sciences*. Mahwah, New Jersey. Lawrence Erlbaum Associates, Publishers.

Desmond, D., Grieshop, J. & Subramaniam, A. (2004). Revisiting Garden-Based Learning in Basic Education. *Food and Agriculture Organization of the United Nations*. Retrieved March 9th, 2006 from International Institute for Educational Planning from [www.unesco.org/iiep](http://www.unesco.org/iiep)

Dewey, J. (1902). *The Child and the Curriculum*. Chicago, Illinois: University of Chicago Press.

Dewey, J. (1915). *The School and Society*. Chicago, Illinois: University of Chicago Press.

Dewey, J. (1938). *Experience and Education (1963 ed.)*. New York: Macmillan Publishing Company.

Dillon, J., Rickinson, M., Sanders, D. & Teamey, K. (2005). On Food, Farming and Land Management: Towards a Research Agenda to Reconnect Urban and Rural Lives. *International Journal of Science Education*, 27 (11), 1359-1374.

Dirks, A. & Orvis, K. (2005). An evaluation of the Junior Master Gardener Program in third grade classrooms. *HortTechnology*, 15 (3), 443-447.

Dittmer, A., Fischetti, J. & Wells, D. (1993). Constructivist Teaching and Student Empowerment: Educational Equity through School Reform. *Equity & Excellence in Education*, 26(1), 40-45.

Elkind, D. (1981). *Children and Adolescents: Interpretive Essays on Jean Piaget (3<sup>rd</sup> ed.)*. New York: Oxford University Press.

Evans, B. & Evans, C.C. (2004). *The Nature Center Book: How To Create And Nurture A Nature Center In Your Community*. Fort Collins, CO. The National Association For Interpretation.

Fenwick, T. (2001). *Experiential Learning: A Theoretical Critique from 5 Perspectives*. Columbus, Ohio: ERIC Clearinghouse on Adult, Career, and Vocational Education. (ERIC Document No. ED99CO0013). Retrieved September 18th, 2006 from the ERIC database.

Fleming, D.S. (2000). *A Teacher's Guide to Project-Based Learning*. Charleston, WV: AEL, Inc. (ERIC Document No. ED469734). Retrieved February 21st, 2006 from the ERIC database.

Fonte, M. (2008). Knowledge, Food and Place. A Way of Producing, A Way of Knowing. *Rural Sociology*, 48 (3).

Freire, P. (1968). *Pedagogy of the Oppressed (Translated by Myra Bergman Ramos)*. New York, Herder and Herder.

Gale, G. & DeVoe-Talluto, K. (2001). *Growing Together: A guide for building inspired, diverse, and productive youth communities*. Lincoln and Roxbury, Massachusetts: The Food Project, Inc.

Ganapathy, S., Bliss Duffy, S. & Getz, C. (2005). *A Framework for Understanding Food Insecurity: An Anti-Hunger Approach; A Food Systems Approach*. The Center for Weight and Health, College of Natural Resources, University of California, Berkeley. Retrieved September 7th, 2006 from <http://www.cnr.berkeley.edu/cwh/activities/position.shtml>

Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books, Inc., Publishers.

Gardner, H. (1999). *Intelligence Reframed*. New York: Basic Books, Inc., Publishers.

Gardner, H. (2004). *The Unschooled Mind: How Children Think and How Schools Should Teach*. New York: Basic Books, Inc., Publishers.

Gardner, H. (2006). *Multiple Intelligences: New Horizons*. New York: Basic Books, Inc., Publishers.

Garst, B., Scheider, I., & Baker, D. (2001). Outdoor Program Participation Impacts on Adolescent Self-Perception. *The Journal of Experiential Education*, 24 (1), 41-49.



Gauvain, M. (2001). *The Social Context of Cognitive Development*. New York: The Guilford Press.

Gillham, J.E., Reivich, K., & Shatt, A. (2002). Positive Youth Development, Prevention, and Positive Psychology: Commentary on Positive Youth Development in the United States. *Prevention & Treatment*, 5(18).

Gliessman, S.R. (2007). *Agroecology: The Ecology of Sustainable Food Systems (2nd ed.)* New York, NY. CRC Press.

Gogtay, N. (et. al.) (2004). Dynamic Mapping of Human Cortical Development During Childhood Thru Early Adulthood. *Proceeding of the National Academy of Sciences*, 101 (21), 8174-8179.

Goleman, D. (1995). *Emotional Intelligence*. New York, NY. Radom House, Inc.

Green, S.K. & Gredler, M.E. (2002). A Review and Analysis of Constructivism for School-Based Practice. *School of Psychology Review*, 31(1), 53-70.

Greene, M. (1978). *Landscapes of Learning*. New York: Teachers College Press, Columbia University.

Greene, M. (1988). *The Dialectic of Freedom*. New York: Teachers College Press, Columbia University.

Hansen, E.J. & Stephens, J.A. (2000). The Ethics of Learner-Centered Education: Dynamics that Impede the Process. *Change*, Volume September/October, 42-47.

Harmon, A., Harmon, R. & Marezki, A. (1999). The Food System-Building Youth Awareness Through Involvement. A Guidebook for Educators, Parents, and Community Leaders. The Pennsylvania State University, College of Agricultural Sciences.

Harper, D. (2000). *Reimagining Visual Methods. Handbook of qualitative research*. Thousand Oaks, CA: Sage.

Harris, J.M. (2000). *Rethinking Sustainability: Power, Knowledge, and Institutions*. Ann Arbor, MI. The University of Michigan Press.

Hersch, P. (1998). *A Tribe Apart: A Journey into the Heart of American Adolescence*. New York: The Random House Publishing Group.

Hewitt, N.A. (2007). Application of a Framework for Educational Provision: Research Findings and Implications for Education for Sustainability. *Applied Environmental Education and Communication*, 6, 179-185.

Hubbert, K. (2002). *Service Learning and Learning Communities*. Cerritos College, California.

Imhoff, D. (2007). *Food Fight: The Citizen's Guide to a Food and Farm Bill*. Healdsburg, CA. A Watershed Media Book.

Ivanitskaya, L., Clark, D. Montgomery, G., & Primeau, R. (2002). Interdisciplinary Learning: Process and Outcomes. *Innovative Higher Education*, 27 (2), 95-111.

Jackson, P. (2009). *Changing Families, Changing Food*. Great Britain, England. Palgrave MacMillan.

Jensen, E. (1998). *Teaching with the Brain in Mind*. Alexandria, VA, Association for Supervision and Curriculum Development.

Johnson, B. & Christensen, L. (2004). *Educational Research: Quantitative, Qualitative, and Mixed Approaches (2<sup>nd</sup> ed.)*. Boston, MA: Pearson Education, Inc.

Jorgensen, E.L. (1993). *Agriculture and Environmental Education: A Resource Guide for Non-formal Education Programs*. San Jose, CA: University of California San Jose, Cooperative Extension. (ERIC Document No. 382484). Retrieved February 26th, 2006 from the ERIC database.

Koester, U. (1999). *Experiments & Education on the Farm: Giving Children a Role in Sustainable Agriculture*. Minneapolis: Midwest Food Connection.

Kolb, D.A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. New Jersey: Prentice-Hall, Inc.

Lave, J. (1996). Teaching As Learning in Practice. *Mind, Culture, and Activity*, 3 (3), 149-164.

Leis, A., Whittington, M.S., Bennett, M. & Kleinhenz, M. (2011). Student Farms at United States Colleges and Universities: Insights Gained From A Survey of the Farm Managers. *North American Colleges and Teachers of Agriculture Journal*, 9-15.

Lekies, K.S., Eames-Sheavly, M., Wong, K.J., & Ceccarini, A. (2006). Children's Garden Consultants: A New Model of Engaging Youth to Inform Garden Design and Programming. *HortTechnology*, 16 (1), 139-142.

Lieberman, G.A. and Hoody, L.L. (1998). Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. San Diego, CA: State Education and Environment Roundtable (SEER). Retrieved February 21st, 2006 from

<http://www.seer.org>

Lindberg, A.E. (2009). *Curricular Connections between Outdoor Environmental Education and Classrooms: A Camp Coleman Case Study*. A MES Thesis Essay of Distinction, June 2009.

Lyson, T.A. (2004). *Civic Agriculture: Reconnecting Farm, Food, and Community*. Medford, Massachusetts. Tufts University Press.

MacGregor, J. (2011). *Environmental Education's Precursors and Cousins*. Lecture given in Environmental Education, MES program, The Evergreen State College.

Mack (et.al.) (2005). *Qualitative Research Methods: A Data Collector's Field Guide*. Family Health International.

Mayer-Smith, J., Bartosh, O., & Peterat, L. (2009). Cultivating and Reflecting on Intergenerational Environmental Education on the Farm. *Canadian Journal of Environmental Education*, 14 (1), 107-121.

McAleese, J.D. & Rankin, L.L. (2007). Garden-Based Nutrition Education Affects Fruit and Vegetable Consumption in Sixth-Grade Adolescents. *Journal of the American Dietetic Association*, 662-665.

McCombs, B.L. (2001). What Do We Know About Learners and Learning? The Learner-Centered Framework: Bringing the Educational System into Balance. *Educational Horizons*, Summer, 183-193.

McGeehan, J. (2001). Brain-Compatible Learning. *Green Teacher*, Spring, 7-12.

McKenzie-Mohr, D. & Smith, W. (1999). *Fostering Sustainable Behaviour*. Gabriola Island, Canada. New Society Publishers.

McKeown, R. (2002). *Education for Sustainable Development Toolkit (version 2)*. Knoxville: Energy, Environment and Resources Center, University of Tennessee.

Measham, T.G. (2006). Learning About Environments: The Significance of Primal Landscapes. *Environmental Management*, 38 (3), 426-434.

Miettinen, R. (2000). The concept of experiential learning and John Dewey's theory of reflective thought and action. *International Journal of Lifelong Education*, 19 (1), 54-72.

Moncure, S. & Francis, C. (2011). Foundations of Experiential Education as Applied to Agroecology. *NACTA Journal*. September, 75-91.

Morrison, J.D, Howard, J., Johnson, C., Navarro, F.J., Plachetka, B., & Bell, T. (1997). Strengthening Neighborhoods by Developing Community Networks. *Social Work*, 2 (5), 527-534.

Norberg-Hodge, H., Merrifield, T., & Gorelick, S. (2002). *Bringing the Food Economy Home: Local Alternatives to Global Agribusiness*. Bloomfield, CT. Kumarian Press, Inc.

Olsen, N. (2010). A Start-Up Manual for Farm-Based Education Programs. *Farm-Based Education Association*. Retrieved March 4, 2011 from <http://www.farbasededucation.org/forum/topics/a-startup-manual-for-farbased>

Orr, D.W. (2004). *Earth in Mind: On Education, Environment, and the Human Prospect (10th ed.)*. Washington D.C.: Island Press.

Orr, D.W. (1992). *Ecological Literacy: Education and the Transition to a Postmodern World*. Washington D.C.: Island Press.

Ozer, E.J. (2007). The Effects of School Gardens on Students and Schools: Conceptualization and Considerations for Maximizing Healthy Development. *Health Education & Behavior*, 34, 846.

Patton, M. 2002. *Qualitative Research & Evaluation Methods (Ed. 3)*. Thousand Oaks, CA. Sage Publications, Inc.

Phibbs, E. J. & Relf, D. (2005). Youth in Horticulture: Improving Research on Youth Gardening. *HortTechnology*, 15(3), 425-428.

Poudel, D.D., Vincent, L.M., Anzalone, C., Huner, J., Wollard, D., Clement, W.T., DeRamus, A., & Blackwood, G. (2005). Hands-On Activities and Challenge Tests in Agricultural and Environmental Education. *Journal of Environmental Education*, 36 (4), 10.

The Place-Based Education Evaluation Collaborative (Second Edition). *Promise of Place: The Benefits of Place-based Education (2<sup>nd</sup> ed.)*, Retrieved April 13, 2012 from [http://www.promiseofplace.org/Research\\_Evaluation/Display?id=105](http://www.promiseofplace.org/Research_Evaluation/Display?id=105)

Rodale Institute. *Farming For Credit Directory*. Retrieved February 10, 2012 from [http://www.rodaleinstitute.org/ffc\\_directory](http://www.rodaleinstitute.org/ffc_directory)

Sayre, L. & Clark, S. (2011). *Fields of Learning: The Student Farm Movement in North America*. Lexington, KY. The University Press of Kentucky.

Seidel, S., Aryeh, L. & Steinberg, A. (2002). *Project-Based and Experiential Learning in After-School Programming*. Cambridge, MA: Project Zero, Harvard Graduate School of Education. (ERIC Document No. ED481931). Retrieved February 28th, 2006 from the ERIC database.



Smith, G.A. & Sobel, D. (2010). *Place-And-Community-Based Education in Schools*. NY, New York. Routledge Taylor & Francis Group.

Smith, J.N. (2010). *Growing A Garden City: How Farmers, First Graders, Counselors, Troubled Teens, Foodies, a Homeless Shelter Chef, Single Mothers, and More Are Transforming Themselves and Their Neighborhoods Through the Intersection of Local Agriculture and Community—And How You Can Too*. New York, NY: Skyhorse Publishing.

Sobel, D. (1996). *Beyond Ecophobia: Reclaiming the Heart in Nature Education*. Great Barrington,MA: The Orion Society and the Myrin Institute.

Sobel, D. (2004). *Place-Based Education*. Great Barrington, MA. The Orion Society

Subramaniam, A. (2003). *Garden Based Learning: Considering Assessment from a Learner-Centered Approach*. University of California, Davis, 4-H Center for Youth Development. Retrieved April 2rd, 2010 from <http://fourhcyd.ucdavis.edu>

UNESCO (1975). *The Belgrade charter: A framework for environmental education*. Retrieved April 10, 2012 from <http://unesdoc.unesco.org/images/0001/00017772eb.pdf>

UNESCO (1977). *Intergovernmental conference on environmental education*. Retrieved April 10, 2012 from <http://unesdoc.unesco.org/images/0003/000327/032763eo.pdf>

USDA Farm to School Team: *2010 Summary Report*. Retrieved April 13, 2012 from <http://www.farmentoschool.org/publications.php?pt=case>

Volk, T.L. and Cheak, M.J. (2003). The Effects of an Environmental Education Program on Students, Parents, and Community. *The Journal of Environmental Education*, 34 (4), 12-25.

WA State Office of Superintendent of Public Instruction. (2007). *Environmental Education Report: Empirical Evidence, Exemplary Models, and Recommendations on the Impact of Environmental Education on K-12 Students*. Retrieved June 13, 2012 from <http://www.k12.wa.us/EnvironmentSustainability/Resources.aspx>

Weber, K. (2009). *Food, Inc.: How Industrial Food Is Making Us Sicker, Fatter, and Poorer- And What You Can Do About It*. New York, NY. Public Affairs.

Wheeler,G., Thumlerr,C., Glaser,L., Schoellhamer,M., & Bartosh,O. (2007). *Environmental Education Report: Empirical Evidence, Exemplary Models, and Recommendations on the Impact of Environmental Education on K-12 Students*. Olympia, WA. Office of Superintendent of Public Instruction. Retrieved February 25, 2012 from <http://www.k12.wa.us/EnvironmentSustainability/pubdocs/EEReport.pdf>

Wilkins, J. & Eames-Sheavly, M. (2005). *A Primer on Community Food Systems: Linking Food, Nutrition and Agriculture*. Cornell University. Division of Nutritional Sciences: Discovering the Food System.

Williams, D. & Brown, J. (2012). *Learning Gardens and Sustainability Education: Bringing Life To Schools and Schools To Life*. New York, NY. Routledge.