

**AN ANALYSIS OF ADOLESCENT INVOLVEMENT AT PUBLIC
HORTICULTURE INSTITUTIONS**

by

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of the requirements for the degree of Master of Science in Public Horticulture

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ABSTRACT

While gardens typically offer educational programming for adults and elementary school-aged children, many institutions struggle with serving the teenage audience, defined in this research as youth ages 13-19. The purpose of this research is to investigate the current state of adolescent programming in order to aid and inspire institutions to create and implement positive development opportunities for teenagers, and to take on a greater role in the cultural and horticultural education of today's adolescents.

Using a mixed methods approach, both qualitative and quantitative data were collected to characterize adolescent programming, as well as to identify the institutional benefits, the potential challenges, and the strategies of offering long-term adolescent programming. Institutional members of the American Public Gardens Association completed an initial survey. The Chicago Botanic Garden and the Brooklyn Botanic Garden were selected to serve as case study sites representing large institutions; the perspectives of smaller institutions were captured through phone interviews with staff at the Delaware Center for Horticulture, Fellows Riverside Garden, and Bowman's Hill Wildflower Preserve. A follow-up survey of directors of institutions offering long-term adolescent programming was also completed.

The results of the survey yielded statistics on the current state of adolescent programming, including the amount and types of programming being offered. Seven institutional benefits emerged, with the three major benefits being building relationships with new audiences, building interest in horticulture, and

supporting the institution's mission and growth. And seven potential challenges were identified, with the three major challenges being funding, staff time, and adolescent interest. A list of seven overarching strategies was also developed, highlighting the areas of high quality staff, curriculum, partnerships, youth decision-making, compensation, engaging activities, and evaluation.

Chapter 1

INTRODUCTION

One role of public horticulture institutions, and museums in general, is the education of their visitors and their community. While many gardens offer educational programming for adults and elementary school-aged children, the teenage audience seems to be largely underserved. Stereotypes of both teenagers and museums can make museums hesitant to attract teenagers, and teenagers hesitant to come to museums (Beane, 2000). However, stereotypes should not be a barrier to new programming, and public gardens and adolescents can be productive partners. Engaging teenagers can develop and provide a new audience, enhance future visitation, and cultivate potential donors; and the unique youth perspective can greatly contribute to programs (Association of Science-Technology Centers Inc [ASTC], 2001; Batcke, 2007). There is a wealth of literature addressing adolescent development and successful programming, which offers guidance and program strategies. Are public horticulture institutions capitalizing on this research to play a significant role in the lives of today's adolescents?

Teenagers are ready and willing to be involved with cultural institutions. In fact, many teenagers need these types of experiences to develop into healthy and productive adults. More studies indicate that teenagers are not prepared for college and for the work place, and that traditional education does not build certain life skills, such as communication and leadership (Casner-Lotto and Barrington, 2006; Catalano et al., 2004; Eccles and Gootman, 2002; Mancini and Marek, 1998). Well-designed

after-school programs can be extremely beneficial for adolescent development (Beane, 2000; Bowles and Brand, 2009; Carnegie Corporation of New York [Carnegie], 1995; Catalano et al., 2004; McLaughlin, 2000; Quinn, 1999). Teenagers are looking for opportunities to interact with peers and adults in fun settings, to be empowered, and to gain new skills for their future (Sturman, 2006).

The potential impact for effective adolescent programming at public horticulture institutions is huge. Enrollment in plant science and horticulture curricula is declining (Darnell and Cheek, 2005; Lyons, 2008). Children are spending less time outdoors interacting with nature, leaving some wondering who our next generation of naturalists and environmentalists will be (Louv, 2005). However, youth programs at museums have proven to build specific knowledge and skills related to the institution (Koke and Dierking, 2007; Koke and Dierking, 2010). Public gardens can be partners with the community to both support youth development and to actively engage youth in horticulture and environmental issues. Providing real-life and long-term horticultural experiences during these formative years could help ensure an active and engaged future generation of horticulturalists and public garden advocates.

The purpose of this research is to discover and provide public horticulture institutions with specific institutional benefits of adolescent programming, as well as potential challenges and specific strategies of running successful programs. It is also meant to assess the current state of adolescent programming at public horticulture institutions. The research questions were:

1. What is the current state of adolescent programming at public horticulture institutions? How is the public garden community serving adolescents?

2. What are perceived and actual institutional benefits to offering long-term adolescent programming?
3. What are the perceived and actual institutional barriers to offering long-term adolescent programming?
4. How are successful long-term adolescent programs using and supporting different strategies? Are there strategies specific to public horticulture institutions?

For the purposes of this study, the terms, “teenager,” “youth,” and “adolescent” were used interchangeably and referred to children ages 13-19. “Long-term” programming was defined as programming lasting a total of seven or more days.

The results of this research are meant to aid and inspire institutions to create and implement positive development opportunities for teenagers, and to take on a greater role in the cultural and horticultural education of today’s adolescents.

Chapter 2

LITERATURE REVIEW

Adolescence is generally agreed to begin with puberty, which usually occurs between the ages of eight and fourteen for girls, and ten and fifteen for boys, and typically extends into the early to mid 20s (Beane, 2000). During this time, children are experiencing many physical changes, often resulting in increased feelings of fear, worry, and inferiority. They are maturing cognitively, developing the abilities of abstract thought, moral reasoning, and enhanced reflective ability. They are also coping with social changes in their friend groups, families, and schools (Beane, 2000). The experiences youth have during adolescence have a serious impact on their future. “[Adolescence] is the time when youth need to acquire the attitudes, competencies, values, and social skills that will carry them forward to successful adulthood. It is also the time when they need to avoid choices and behaviors that will limit their future potential” (Eccles and Gootman, 2002). While many adolescents manage to navigate this time period and become well-adjusted adults, many more are reaching adulthood ill-equipped and ill-adjusted to be productive members of society. Youth from low-income families are especially susceptible to destructive activities, such as drug and alcohol use, and violence, as they have more unsupervised time and fewer positive role models (Eccles and Gootman, 2002).

There are many assets that can facilitate healthy development. One of the most commonly referenced frameworks of positive youth development characteristics is the “Five Cs”: competence, confidence, connections, character, and

caring (Lerner, 2007). Having all these characteristics means the youth is thriving and is theorized to produce a sixth characteristic: contribution. Eccles and Gootman (2002) also list assets in the realms of personal, intellectual, psychological/emotional, and social development. These assets are acquired through positive experiences and opportunities to gain life skills, and the majority of them are not dependent on family life (Eccles and Gootman, 2002).

Along with these assets, there is growing concern that teenagers are graduating from high school and college lacking the basic career skills they will need to be successful citizens. An intensive study surveying over 400 businesses across the United States found that most high school graduates are deficient in the most valued skills that businesses are looking for in their employees: oral and written communication skills, professionalism/work ethic, teamwork/collaboration, and critical thinking/problem solving (Casner-Lotto and Barrington, 2006). In addition to these business basics, youth programming at public horticulture institutions could also build important, applied horticultural skills. Youth who have gardening experience and who consider gardening valuable are more likely to pursue horticulture as a major in college (Bradley et al., 2000). Teenagers need an avenue to learn and experience these applied skills, and increased academic rigor is not the only solution (Ready by 21, 2006).

An alternative and effective solution is to provide after-school and summer programs for youth that foster healthy adolescent development and life skills acquisition. These “positive youth development programs” are in stark contrast to the deficit-based models that focus on the remediation of specific teen risk behaviors. Positive youth development programming typically comes from national

organizations (e.g. 4-H and Boy Scouts), public agencies (e.g. libraries and parks), and private organizations (e.g. religious programs and museums) (Quinn, 1999). Although many after-school programs exist, over 11 million youth are not involved in one, which indicates a clear need for more programs, especially a diverse range thereof to meet different needs and interests of today's adolescents (Eccles and Gootman, 2002).

The majority of parents want their children to participate in after-school programs and a 1998 survey indicated that 93% of parents and non-parents supported their expansion (Quinn, 1999). The teenagers also understand the benefits of such programming and many are looking for ways to build their résumés, acquire applied and work readiness skills, and explore career options (Carnegie, 1995). They want to participate in environments that are interesting, social, and safe, and youth development programs can provide this (Baum, Hein and Solivay, 2000; Downs, 2008; Koke and Dierking, 2007; Quinn, 1999; Schwartz, 2005; Sturman, 2006).

However, at many museums and public gardens, teenagers are a difficult audience to attract, even when there is teen programming available. While many institutions offer school programs at the high school level, the focus on subject matter testing in these grades usually results in few field trips, and therefore, low turnout (Schwartz, 2005). Adolescents do have different needs and demands than children or adults, which must be taken into account when designing teen programs (Batcke, 2007; Koke and Dierking, 2007; Innovation Center for Community and Youth Development [Innovation Center], 2001; McLaughlin, 2000; Quinn, 1999).

Other museums are not even trying to attract teenagers, believing the popular stereotypes that teenagers are, “overscheduled, over-stimulated, isolated by

technology, and spoiled” (Batcke, 2007). Many practitioners, however, dispute this one-dimensional view. Anna Batcke, a Chicago arts consultant, says, “Today’s teenager is part of a generation primed for cultural involvement. They are diverse, open-minded, curious and in search of experiences beyond the everyday” (Batcke, 2007). Although there is often a presumption that teenagers have different values than they did in the past, the values and activities of teenagers have changed very little since the 1970s and many teenagers today are hardworking and looking for opportunities (Bales, 2001).

Teenagers may have similarly dim perceptions and stereotypes of museums. They might believe that museums are elitist, dull, too regulated, or too much like school. Research has shown that teenagers, whether they realize it or not, are looking for chances for personal development, social interaction, and relevant resources, especially if they are from low-income families (Downs, 2008; Schwartz, 2005).

Museums and public gardens are primed to provide adolescent programming with their inherent and invaluable assets: rich content, expertise, community trust, quality learning environments, leadership opportunities, access to technology, career development, and family/community connections (Downs, 2008). Museums “are uniquely qualified to help young people develop 21st century skills such as problem solving, accessing information, and cultural awareness” (Wilson-Ahlstrom and Yohalem, 2005). Under an umbrella of commitment to education, these organizations are extremely diverse and have a wealth of resources for all different interests (Baum, Hein and Solivay, 2000; Wilson-Ahlstrom and Yohalem, 2005). They also offer an intriguing “behind-the-scenes” look at museum and garden

operations, and career paths (Schwartz, 2005). Given this range of opportunities, many teenagers can be served and can succeed (Downs, 2008).

Public gardens may actually have societal and ethical obligations to serve the teenage audience, according to the American Association of Museums (AAM), which includes botanic gardens in both their definition of museums and their membership pool. Their report, “Excellence and Equity: Education and the Public Dimension of Museums,” encourages museums to serve and empower all citizens through education. Museums should, “understand, develop, expand, and use the learning opportunities that museums offer their audiences” (American Association of Museums [AAM], 2008). In addition, The AAM Code of Ethics states that sound museum programs, “further the museum's mission and are responsive to the concerns, interests, and needs of society” (AAM, 2000). These statements imply that to be exemplary, museums should try to reach all audiences and support their community, which is exactly what positive youth development programs would do (Batcke, 2007; Innovation Center, 2001; Koke and Dierking, 2007; McLaughlin, 2000; Schwartz, 2005; Wilson-Ahlstrom and Yohalem, 2005).

This type of programming, however, may still be lacking in many institutions. One reason is that engaging programs that rely on significant community and youth input are not easy to plan and carry out because, “these are complex challenges that require time, resources, and commitment” (AAM, 2008). Civic engagement breaks the mold of traditional museum programming, where the community comes to learn rather than to contribute. This alternative programming requires time and thought; however, community engagement is becoming increasingly important for museums (AAM, 2002).

One constant challenge in creating any new program is funding. In one study looking at the challenges of adolescent programming, 49% of projects said they had difficulty obtaining the funding needed (Mancini and Marek, 1998). Especially in programs that are grant funded, the money is often coming from a variety of different sources and is not stable from year to year (Quinn, 1999). Part of the challenge with funding long-term adolescent programming is that these types of in-depth programs require significant input for each participant, and there are no direct returns on this investment. In a study analyzing the full costs of out-of-school time programs serving teenagers, the average cost per student was \$15 daily or \$1,880 annually, though there was great variability in this number (Grossman et al., 2009). The majority of this went towards staff salaries and benefits, with other major expenditures including space, and utilities and administrative costs (Grossman et al., 2009). Because of this funding challenge, the institution needs to be prepared and committed to offering these programs.

There are a variety of other challenges to offering adolescent programming. Some of these are related to the adolescents themselves, such as whether they will be interested enough to participate in programming, or whether they will have access to the institution (Quinn, 1999). Other challenges are institutional, such as increased staffing needs, pertinent staff experience, and evaluating program effectiveness (McLaughlin, 2000; Quinn, 1999). Oftentimes the goals of these programs, such as increased confidence or communication skills, are not easily quantified. This can make programs hard to justify to donors and granting agencies, though there is often very touching anecdotal evidence available (Quinn, 1999). For

all of these challenges, strategies to manage and overcome them have been successful in the past.

In practice, some museums have formed partnerships with teenagers or with youth development, community-based organizations and are running successful teen programs (Beane, 2000), though it is unclear how often this occurs in public horticulture institutions. Although the Institute of Museum and Library Services (IMLS) does include botanic gardens in its definition of museums, there are no public horticulture institutions in the fifteen case studies of the intensive study of IMLS supported youth programs (Koke and Dierking, 2007). In addition, in the early 1990s the YouthALIVE! Initiative provided funding and technical assistance for adolescent programming to a range of institutions, but only 1% of this support went to botanic gardens (ASTC, 2001). This may indicate a lack of teen programming at public horticulture institutions.

Although these programs require careful planning and many resources, the benefits of engaging teenagers are mutual. Teenagers build their résumés, get work experience, interact with adults and peers, and have fun. There is strong evidence that programming that addresses youth development can benefit youth in a large variety of ways, providing them with assets that can facilitate healthy development (Eccles and Gootman, 2002; Learner, 2007; Quinn, 1999). Researchers have found a range of positive effects, which reinforce what practitioners observe, including vocational competence, increased knowledge of content, increased academic achievement, growth of social skills, increased civic involvement, and increased confidence (Bowles and Brand, 2009; Catalano et al., 2004; Luke et al., 2008; McLaughlin, 2000). In addition, such programming could develop career skills

valued by a range of businesses, such as communication and teamwork (Cochran and Ferrari, 2008).

Positive benefits that are typically experienced by museums would be equally valuable to the public garden world. Teenagers represent the museum's pool of future patrons and donors, and having positive experiences as youth will build more institutional advocates (Batcke, 2007). Involving teenagers can also bring energy and new perspectives. Staff will gain experience and understanding by working with adolescents, which should lead to improved design and decisions about new programs (Batcke, 2007; Innovation Center, 2001; Schwartz, 2005). Youth programming may also help an institution fulfill its educational mission and demonstrate its value to the community, a necessity for any institution (Batcke, 2007; Innovation Center, 2001; Wilson-Ahlstrom and Yohalem, 2005).

While these are all excellent benefits, they are achieved only with well-designed youth programs. Successful programs are integral to a museum's mission; they must have commitment from all staff, be connected to other community programs, and involve youth in decision-making. In 2008, IMLS released a series of reports from its leadership initiative, "Engaging America's Youth." Data were collected from 247 youth programs across the United States that had received IMLS funding between 1998 and 2003, with a survey, workshops, and fifteen case studies contributing to the data pool. The product of this study is *Nine to Nineteen: Youth in Museums and Libraries: A Practitioner's Guide*, which gives specific steps to cultural institutions in regards to how to make a difference in their own community, as well as strategies for what roles young people can play, and how to develop partnerships, evaluate programs, and sustain funding and support (Downs, 2008).

Nine to Nineteen used four characteristics to help summarize the variety of youth program frameworks, namely, capacity building, partnerships, youth-driven programming, and opportunities for youth to contribute (Downs, 2008; McLaughlin, 2000). Capacity building refers primarily to the institution whereby institutional support should be clearly established, both through the mission and through committed resources and staff (Innovation Center, 2001; Mancini and Marek, 1998). Program staff will serve as role models and mentors who are trustworthy, accessible, flexible, resourceful, and enthusiastic, and should be trained to work with adolescents (Beane, 2007; Bowles and Brand, 2009; Downs, 2008; Eccles and Gootman, 2002; Koke and Dierking, 2007; Mancini and Marek, 1998; McLaughlin, 2000; Schwartz, 2005). The institution must provide a safe and social environment with age-appropriate structure, clear rules and expectations, and a curriculum that builds competencies and life skills (Bowles and Brand, 2009; Catalano et al., 2004; Downs, 2008; Eccles and Gootman, 2002; McLaughlin, 2000; Schwartz, 2005). Both staff and institutional support should be stable and consistent (Beane, 2007; Quinn, 1999) and reliable funding sources should also be identified and secured (Downs, 2008; Mancini and Marek, 1998).

Partnerships are a consistent characteristic of successful youth programs. Institutions are most successful when they work with their community to identify needs and gaps, and create a support network for the youth and the program (Downs, 2008; Mancini and Marek, 1998; McLaughlin, 2000; Quinn, 1999). Partnerships with organizations that specifically support youth development are particularly helpful, as they contribute expertise and a social policy background (Batcke, 2007; Beane, 2000; Downs, 2008).

Youth-driven programming refers to the inclusion of youth in all aspects of program decision-making and leadership (Downs, 2008). Teenagers want to master challenges, be independent, and gain life and career skills, rather than remain passive program participants (Baum, Hein and Solivay, 2000; Bowles and Brand, 2009; Downs, 2008; Eccles and Gootman, 2002; McLaughlin, 2000; Sturman, 2006). From this inclusive process, the institution receives fresh ideas and perspectives (Downs, 2008). It also ensures that programs will be based on what teenagers really want, rather than adult assumptions about what they want (Batcke, 2007; Downs, 2008).

Contribution to the museum and to the community helps youth become productive and thoughtful citizens (Cochran and Ferrari, 2008; Eccles and Gootman, 2002). Work or service learning that is both meaningful to the teenagers and for which they receive compensation and/or recognition helps them build confidence and an understanding of the difference they can make (Bowles and Brand, 2009; Downs, 2008; Koke and Dierking, 2007). It also ensures personal investment and can help retain those teenagers who need to work (Batcke, 2007; Cochran and Ferrari, 2008). Two additional aspects are consistently mentioned as important for success. Adolescents must feel that they belong in the program, in the community, and in general (Beane, 2007; Downs, 2008; Eccles and Gootman, 2002; McLaughlin, 2000; Sturman, 2006); there must also be assessment and evaluation at all stages of programming (Catalano et al., 2004; Downs, 2008; Quinn, 1999; Mancini and Marek, 1998; McLaughlin, 2000).

After surveying 247 cultural institutions, IMLS found support for these strategies. Key observations indicated that many of the strongest programs were

purposely kept small and manageable, had extended participation, had a strong understanding of audience needs, and had youth-decision making at all stages (Koke and Dierking, 2007). These observations and the aforementioned strategies are very helpful for public horticulture institutions, which function in very similar ways to traditional museums. However, there is need for a more focused understanding of adolescent programming, specifically for public horticulture institutions; this understanding must include the range of programs currently being offered, strategies for engagement in public horticulture, and the benefits that institutions have witnessed. Given these tools, it will be easier for public horticulture institutions to justify and build meaningful teenage programming.

Chapter 3

METHODOLOGY

Data collection for this research followed a mixed methods approach, in which both qualitative and quantitative data were collected. This method provides a richer, and therefore stronger, supply of evidence, which allows for investigation of more complex research questions (Yin, 2009). This was a sequential mixed methods approach, whereby the findings from one method are further explained and amplified with another method (Creswell, 2009).

A web-based questionnaire captured both quantitative and qualitative data from an audience of professionals in order to analyze the state of adolescent programming at public horticulture institutions. Additional qualitative data were gathered through site visits that included observations, interviews with staff, and the collection of materials related to programming, including application and evaluation forms, mission statements, and recruitment of promotional materials. These data were analyzed and developed into case studies, a useful tool when investigating a program within a real-life context (Yin, 2009), as was the case with adolescent programming at public horticulture institutions. Case studies were completed at large institutions with robust adolescent programming. Interview data were also collected at small- and medium-sized institutions to gain further understanding about the opportunities and challenges of offering adolescent programming. Based on the findings from the survey, a follow-up survey with directors of institutions offering long-term adolescent

programming was also conducted to probe their perceptions from the perspective of an administrator.

For the purposes of this study the terms, “teenager,” “youth,” and “adolescent” were used interchangeably and referred to children ages 13-19. “Long-term” programming was defined as programming lasting a total of seven or more days.

Human Subjects Review Board

This research followed all regulations and practices of the University of Delaware’s Office of the Vice Provost for Research. The researcher completed Human Subjects Review Board (HSRB) Training in December of 2008 (Appendix A1). All data collection instruments were provided to and approved by HSRB (Appendix A2 and A3). This study was considered exempt and fit the following exemption criteria,

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects, AND (b) any disclosure of the human subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liberty or be damaging to the subjects’ financial standing, employability, or reputation.

American Public Gardens Association Institutional Members Surveys

As the primary professional organization for public horticulture institutions, the American Public Gardens Association (APGA) institutional members

were chosen as the sample for this study. The APGA Executive Director provided a list of institutional member contacts, as well as any individual member who had “education” as part of their work title, in case any designated institutional member contacts were not sufficiently familiar with adolescent programming at their institution. The researcher cross-referenced these lists and, where applicable, replaced designated institutional contacts with a more appropriate education department contact. Utilizing this list, an in-depth survey was conducted in order to make generalized inferences about the populations’ attitude and behavior regarding the thesis topic (Creswell, 2009). The survey was administered concurrently via email to 481 contacts using Qualtrics, a Web-based survey tool that is free and accessible to the University of Delaware community.

This phase of the study utilized a single-stage sampling procedure, in which the entire population received the survey at the same time. The survey consisted of 40 questions, and was developed with built-in logic to gather information from different subsets of research participants and to streamline any one individual’s time to respond (Appendix B1). Research participants were prevented from taking the survey more than once and partially completed surveys that were not officially submitted were not included in the results. Portions of the survey instrument were modified from an online survey developed by the Institute for Learning Innovation for the Institute of Museum and Library Services’ (IMLS) Museums and Libraries Engaging America’s Youth Initiative in 2006 (Koke and Dierking, 2007). Both the Institute for Learning Innovation and IMLS gave permission to use portions of this survey and modify it as needed. The usability, reliability, and validity of the instrument were thoroughly tested, with feedback from four tiers of users. The final

survey used in this study was significantly different from the original; therefore, the thesis committee, eight Longwood Graduate Program students, and one public garden education coordinator tested it for usability, reliability, and validity, and several changes were made before administering it.

Prior to receiving the questionnaire electronically, a pre-survey letter (Appendix B2) was sent in late April 2009 to all 481 institutions to raise awareness of the study and improve the response rate (Dillman, Smyth, and Christian, 2009) (Appendix B2). The survey was distributed through an email invitation on May 5, 2009 and two reminders were sent to those who had not yet completed the survey later in May (Appendix B3). After the first two email notifications, the researcher reviewed the list of institutions that had not responded for those of particular importance to the study. An alternate contact at these 32 institutions was identified, and the survey was distributed electronically to this subset on May 18, 2009 with one reminder several days later. The survey closed for all responses on May 23, 2009.

Based on the survey findings, a follow-up survey was sent to the directors of institutions who indicated that they were offering long-term adolescent programming (Appendix B4). The survey was sent to a total of 53 individuals on November 18, 2009, with two reminders sent in late November and early December to individuals who had not yet responded (Appendix B5).

Public Horticulture Institution Case Studies

A two-case study design was chosen to provide a more in-depth perspective, without overextending the data and resources of the researcher. The researcher sought replication logic, where the outcomes are either similar or are dissimilar for particular reasons (Yin, 2009).

Case study institutions were selected based on data analysis from the first survey. The focus for the case studies was on large institutions, because typically they offered multiple programs, and had the resources to allow for in-depth study. Large institutions are defined by APGA as institutions with a budget of over \$2 million. Potential institutions needed to be offering long-term youth development programming, state that overall they were successful to a great extent, and that their programs aimed to increase awareness of horticulture to a great extent. From this list, additional survey responses were considered, as well as geographical location. Chicago Botanic Garden and Brooklyn Botanic Garden met the criteria and were chosen as the two case study sites for this research. For a description of these institutions and their adolescent programs, see Appendix C1. At each institution, the staff member who filled out the survey was contacted about the institutional willingness to serve as a case study. Both institutions agreed to participate and interviews were arranged with the most relevant staff, as determined by the contact. The researcher requested that interviews be set up with staff on several levels within the organization, including administration and program instructors. The Chicago Botanic Garden was running a satellite program of the Fairchild Challenge, originally developed at the Fairchild Tropical Botanical Garden. Therefore, a staff member from Fairchild was interviewed as well, specifically about the satellite at the Chicago Botanic Garden. All interviewees received the questions and an informed consent form in advance (Appendix C2 and C3), which they signed prior to the interview. All interviews were conducted in person, were digitally recorded, and were subsequently transcribed.

In addition to interviews, the researcher observed programming at both institutions, and gathered materials related to programming, including application and evaluation forms, mission statements, and recruitment and promotional materials. For a full list of resources gathered from the case studies, see Appendix C4. This data were combined and analyzed for trends in each of the major research areas.

Public Horticulture Institution Phone Interviews

In addition to the case studies at large institutions, it was important to get the perspective of small- and medium-sized institutions. APGA defines small institutions as those with an operating budget of less than \$1 million, and medium-sized institutions as those with an operating budget between \$1 million and \$2 million. Since most institutions of this size offered only one program, and programs greatly varied in design among institutions, the researcher determined that case studies would not accurately represent the state of adolescent programming at these sites. In addition, in most cases there was only one staff person in charge of adolescent programming at small- and medium-sized institutions, therefore, less information could be gathered to produce a case study. Therefore, interviews with the most relevant staff member were considered sufficient for gathering data from institutions of this size. Interview institutions were selected by analyzing data from the first survey. Potential institutions needed to be offering long-term youth development programming. From this list, additional survey responses were reviewed for robustness of program offerings. Twelve institutions were contacted and asked to provide more specific information on their programming. From the institutions that responded to this request, three agreed to participate in a phone interview, including

the Delaware Center for Horticulture (Wilmington, DE), Bowman's Hill Wildflower Preserve (New Hope, PA), and Fellows Riverside Garden (Youngstown, OH). For a description of these institutions and their adolescent programming, see Appendix D1.

Each of these institutions participated in a phone interview, conducted with the staff member most involved with the adolescent programming. Interview questions and an informed consent form were sent prior to the interview (Appendix D2 and C3). The informed consent form was signed prior to the interview, and in some cases, program materials were also gathered for further insight into program offerings. For a full list of resources gathered from the phone interview sites, see Appendix D3.

Data Analysis

Quantitative data from the surveys were compiled, entered, and analyzed using basic descriptive statistics. Non-continuous scales typified a majority of the quantitative questions, preventing some types of statistical tests.

Qualitative data were analyzed for themes. Case study interviews and phone interviews were digitally recorded and transcribed and recurring themes were identified in both of these data sets; in the open-ended questions in the survey, themes were extracted by analyzing all data and pinpointing themes that were mentioned often. The researcher then went back through all the data and color-coded sentences or sentence fragments that related to the identified themes. This allowed the researcher to determine the frequency at which certain themes were mentioned.

Survey participants were not anonymous, but they were kept confidential, with no personally identifiable information used in the results. Case study and phone

interview participants signed an informed consent form (Appendix C3) that allows use of direct quotations, their name, and the name of their organizations to be referenced in the final documents. All raw data will be stored securely and destroyed two years after the collection date.

Chapter 4

RESULTS

The APGA institutional members' survey was sent to 481 contacts and was completed by 190 individuals, resulting in a response rate of 39.5%. This falls above the average response rate for online surveys, which has been estimated at 30% (Division of Instructional Innovation and Assessment, 2007). The majority of those responding identified their institution as a botanic garden (50.8%), a display garden (32.6%), or an arboretum (31.0%) (Fig.4.1). The 18.7% that said "other" were most often parks or natural areas. The majority of the institutions were urban (45.7%) (Fig.4.2) and small (48.7%) (Fig.4.3).

The follow-up survey to directors of institutions offering long-term adolescent programming was sent to 53 contacts and was completed by 32 individuals, resulting in a response rate of 60.4%. However, of the 32 individuals responding, 16 indicated that their institution did not offer long-term adolescent programming, despite someone from their institution indicating that they were, as part of the first survey. In addition, one individual indicated that they were not the appropriate person within their institution. Therefore, only 13 research participants were deemed qualified to fill out the remainder of the survey.

The results were grouped into four main categories relating to the research questions: current state of adolescent programming, institutional benefits, potential challenges, and strategies. Figures and tables will be displayed at the end of sections so as not to interrupt the flow of text.

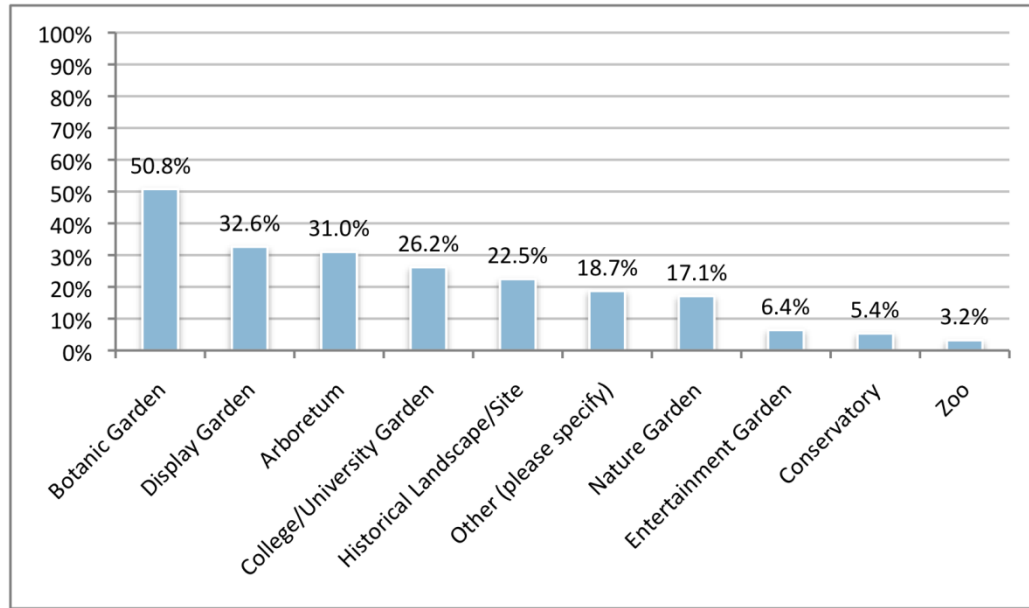


Figure 4.1: Type classification of responding institutions (n=187).

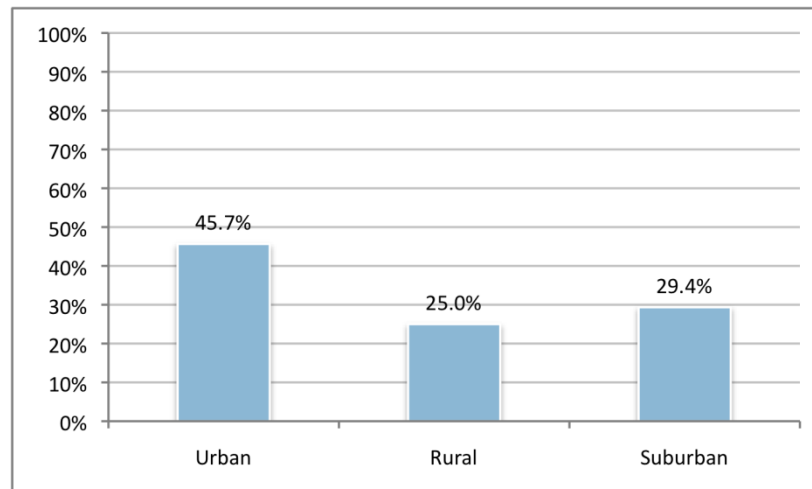


Figure 4.2: Location classification of responding institutions (n=184).

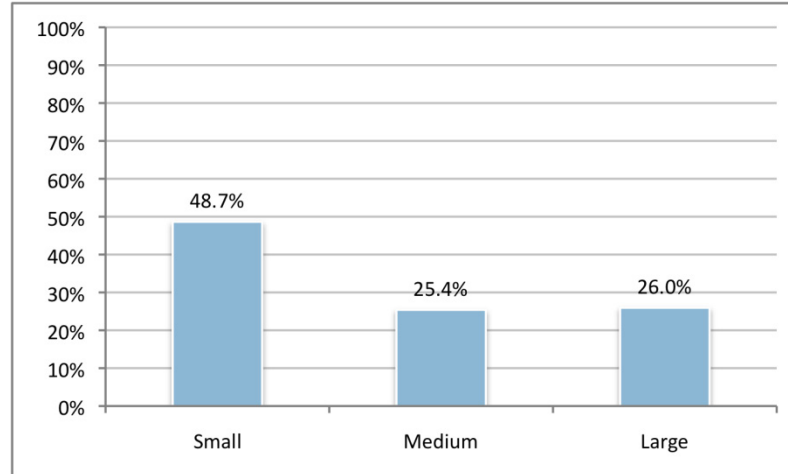


Figure 4.3: Size classification of responding institutions (n=185).

State of Adolescent Programming

APGA Survey

The survey revealed that 65.8% of institutions do offer adolescent programming. A total of 8.4% of institutions were not currently offering adolescent programming, but had in the past. And a total of 12.6% of institutions had never offered adolescent programming but had considered it (Fig.4.4).

Of those responding who indicated that their institution was offering adolescent programming, the majority stated that they were offering school tours (71.2%), group tours (47.2%), and service-learning opportunities (41.6%) for this age group. Some stated they were offering more in-depth programming, such as internships (36.8%) or youth development programming (25.6%) (Fig.4.5). Many of the responses in the “other” category were for specific programs or volunteer programs, indicating some confusion over the term “service-learning.” Research participants were asked what percentages of their education programs were designed for specific audiences. The adult group had the highest average percentage at 35.4%,

followed by schools at 21.9%, families at 14.9% and children at 13.3%. The average percentage of programs designed for adolescents was the lowest at 8.9% (Fig.4.6). Responses in the “other” category included such audiences as seniors and college students.

A total of 28.9% of survey participants indicated that their institutions were offering long-term adolescent programming (Fig.4.4). Compared to all survey participants, these institutions were more likely to be urban (Fig. 4.7) and large (Fig.4.8). A total of 16.3% of participants said their institution is currently offering short-term adolescent programming, but has considered long-term (Fig.4.4).

A series of questions was asked of institutions offering long-term adolescent programming to get a better descriptive sense of program offerings. The majority of long-term programs served more than 50 adolescents (45.5%) (Fig.4.9). The average minimum age was 12.6 (SD 12.5), and the average maximum age was 29.9 (SD 17.9). The average number of full-time staff devoted to adolescent programming was 3.0 (SD 3.4) and the part-time staff average was 2.9 (SD 6.1). Programs served an equivalent average percentage of males (43.0%) and females (48.2%). The majority of adolescents served were urban (41.9%), followed by suburban (24.9%) and rural (17.5%) (Fig.4.10).

Several questions were aimed at examining the purpose and success of the programming. A majority, 61.8%, indicated that their programming for adolescents aimed to increase awareness and understanding of horticulture. Only 3.6% of participants said this was not at all an aim (Fig.4.11). When asked a closed-end question (check all that apply) on what aspects of public horticulture their programming focused on, the most frequent response was horticultural techniques

(76.4%) (Fig.4.12). Responses in the “other” category included specific aspects of one of the provided options, such as native plants, and skills that were not horticultural, such as marketing. When asked about the success of their programs, 69.8% of participants indicated that their programs were overall successful. High levels of success were shown in specific categories, with 65.5% showing success in engaging participants and 61.8% showing success in meeting programmatic goals. Some areas had lower levels of success, with 38.2% showing success in impacting the community and 45.5% showing success in recruiting participants (Fig.4.13).

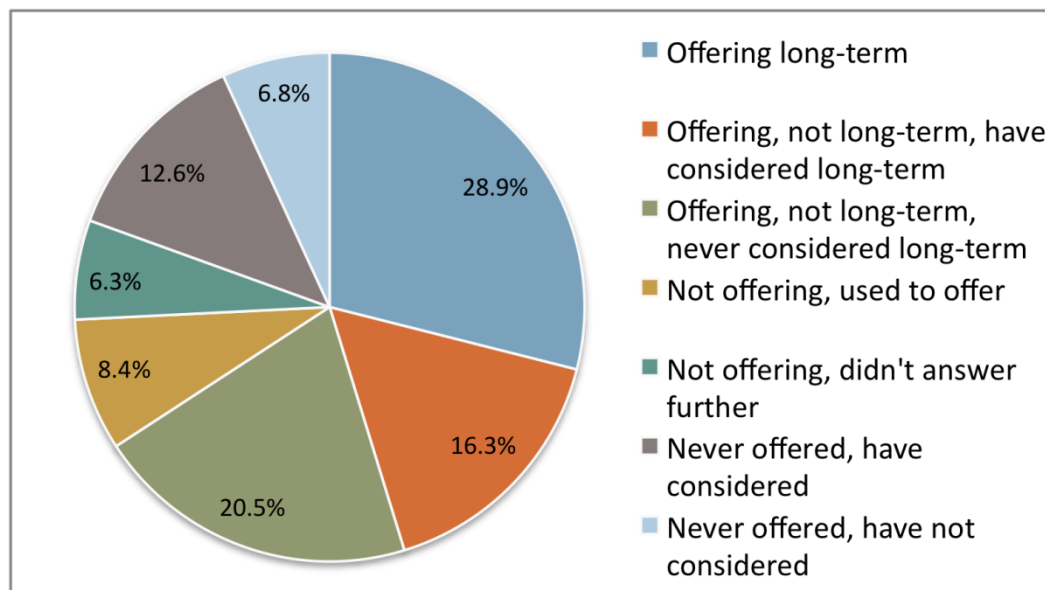


Figure 4.4: Combined results showing overall percentages of survey participants offering or not offering adolescent programming (n=190).

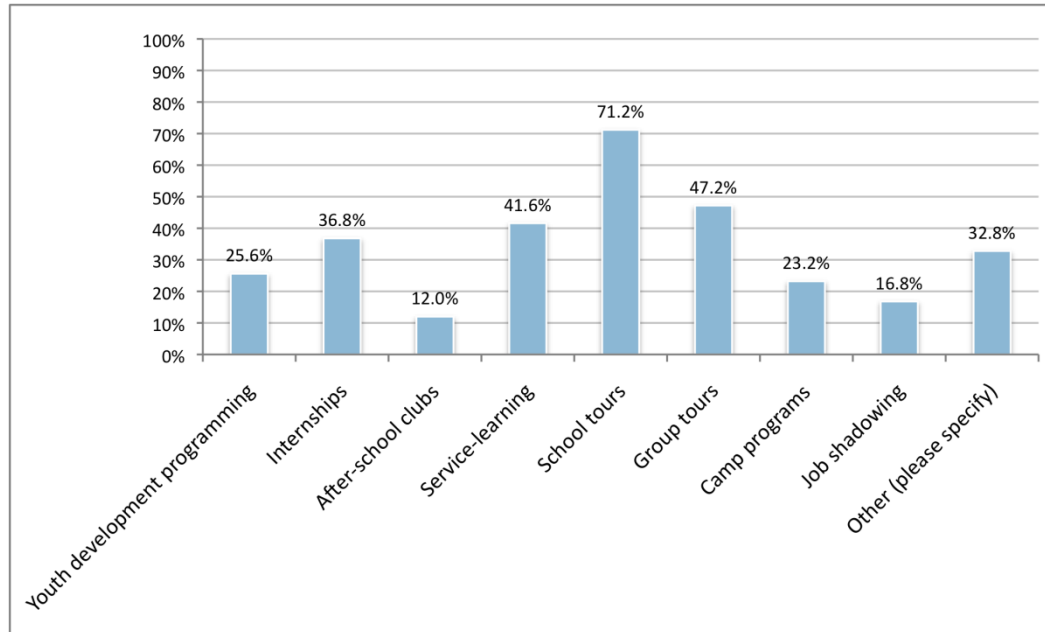


Figure 4.5: Types of adolescent programming being offered by institutions participating in the survey (n=125).

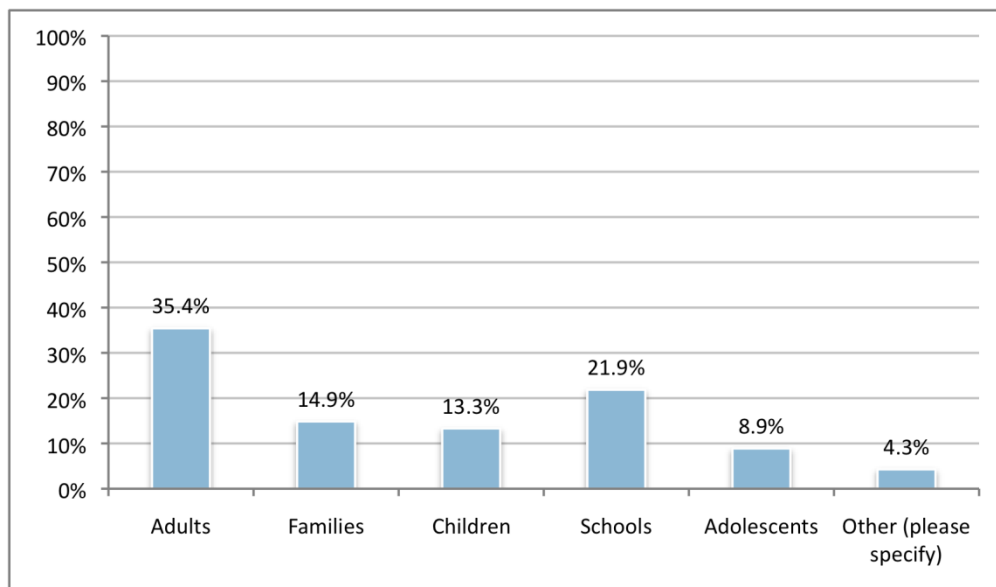


Figure 4.6: Average percentages of educational programs designed for specific audiences by responding institutions (n=125).

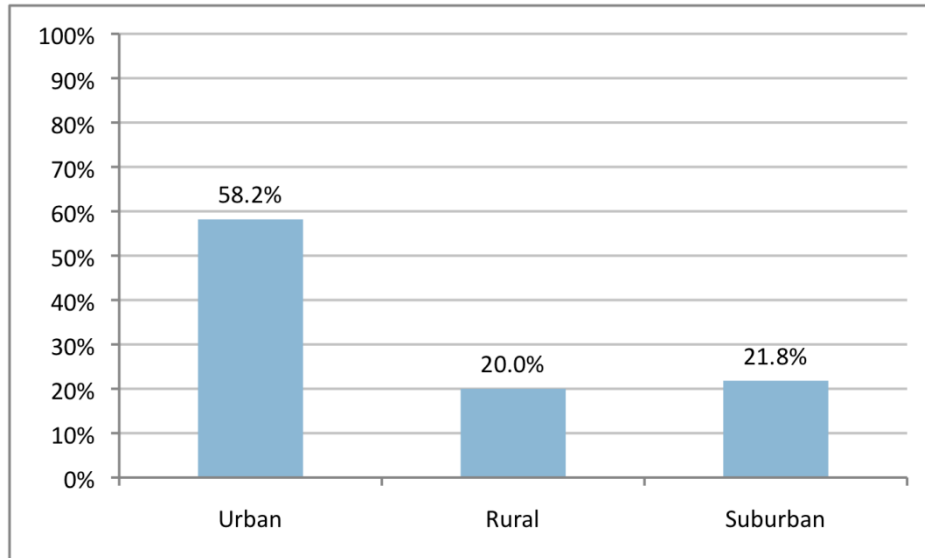


Figure 4.7: Location distribution of responding institutions offering long-term adolescent programs (n=55).

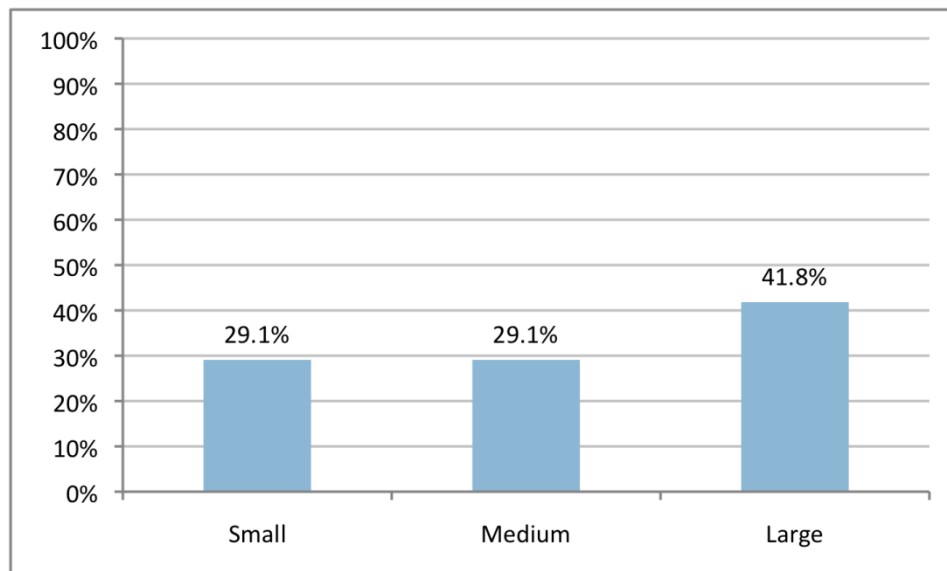


Figure 4.8: Size distribution of responding institutions offering long-term adolescent programs (n=55).

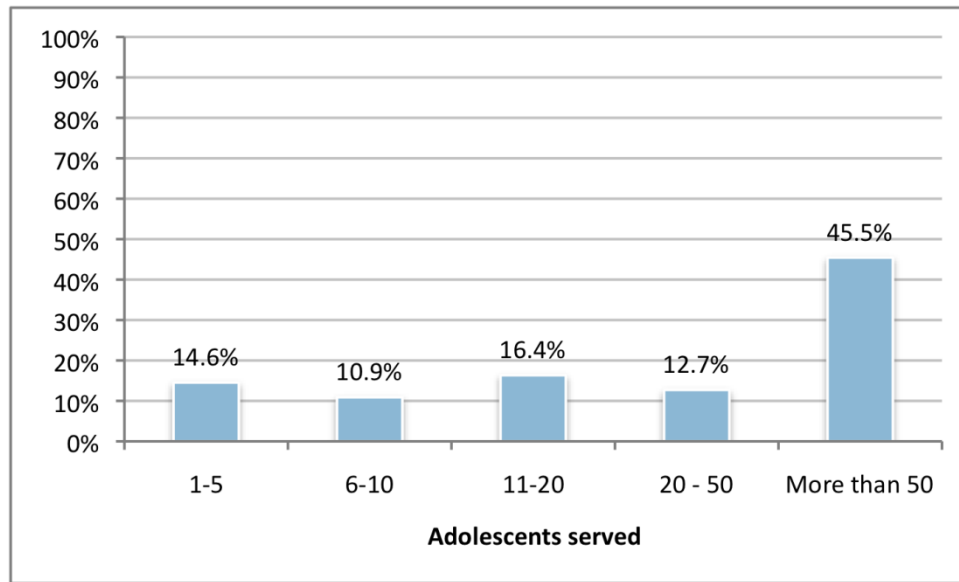


Figure 4.9: Frequency of number of adolescents served by responding institutions offering long-term adolescent programming (n=55).

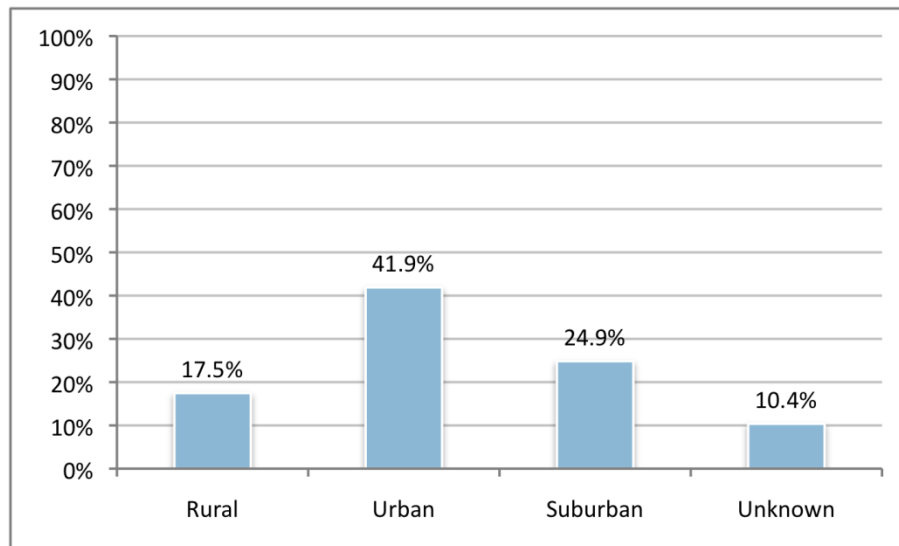


Figure 4.10: Average percentage of home communities of adolescents served in long-term adolescent programming at responding institutions (n=55).

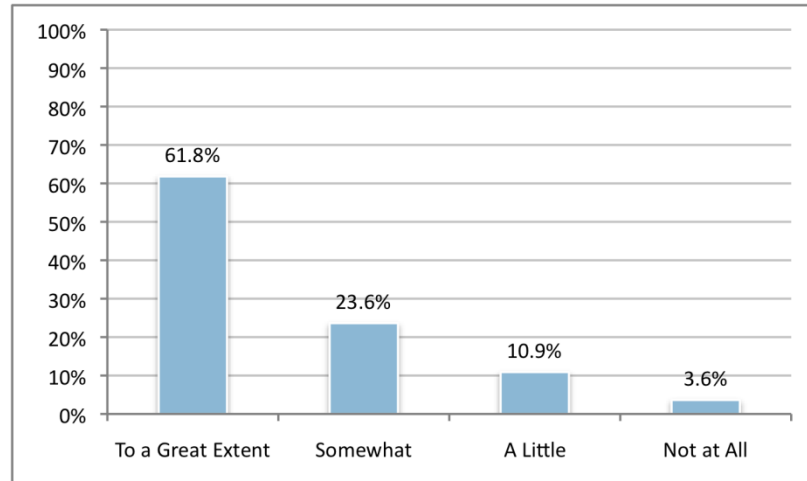


Figure 4.11: The extent to which long-term adolescent programming at responding institutions aimed to increase awareness and understanding of horticulture (n=55).

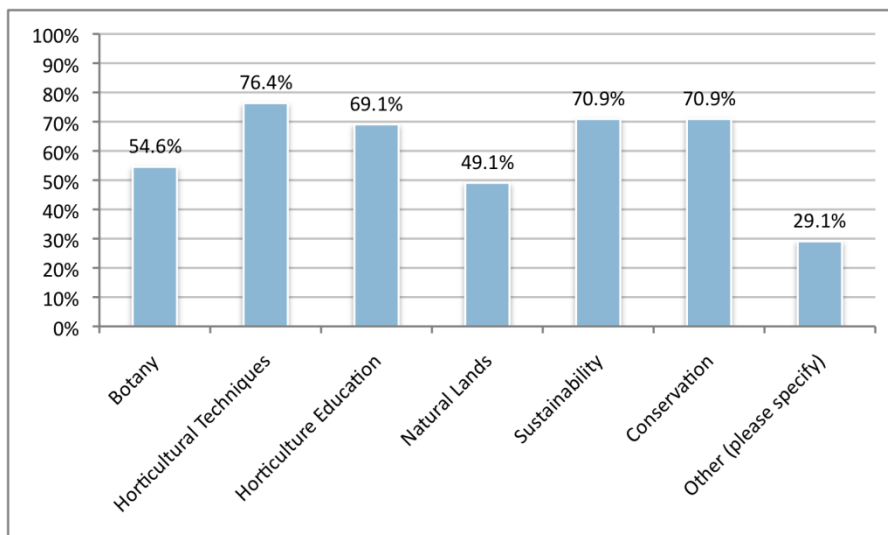


Figure 4.12: Percentage of long-term adolescent programs at responding institutions focusing on specific aspects in public horticulture (n=55).

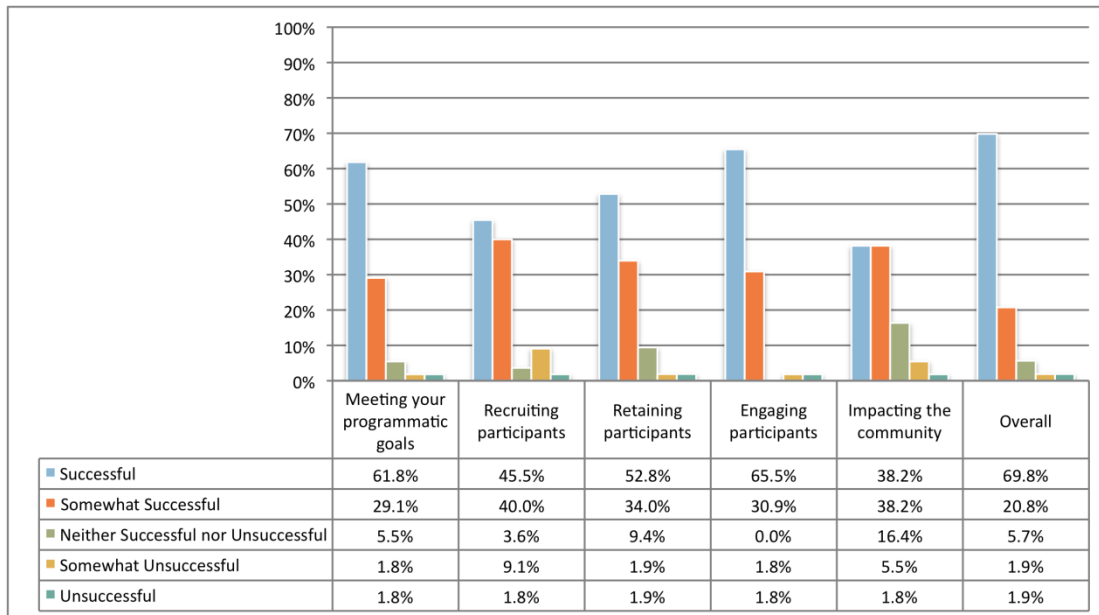


Figure 4.13: Degree of success in different areas of responding institutions offering long-term adolescent programming (n=53-55).

Case Studies and Phone Interviews

The case studies were completed at Chicago Botanic Garden (CBG) and Brooklyn Botanic Garden (BBG), both large institutions. The phone interviews were completed at the Delaware Center for Horticulture (DCH), a medium-sized institution, and Bowman’s Hill Wildflower Preserve (BHWP) and Fellows Riverside Garden (FRG), both small institutions. For a description of programming at these institutions, see Appendices C1 and D1.

Institutional Benefits

In analyzing the data from surveys, case studies, and phone interviews, seven primary institutional benefits for offering long-term adolescent programming emerged. They have been grouped into major and minor themes based descending

order of frequency. The major themes were mentioned most often across the surveys, case studies, and phone interviews; the minor themes were mentioned less frequently, though still consistently.

Table 4.1: Major and minor institutional benefits of offering long-term adolescent programming.

	Institutional Benefits
Major	Builds relationships with new audiences who may be future employees or contributors
	Builds interest in horticulture and environmental issues, including career interests
	Supports the institution's mission and growth
Minor	Helps the institution contribute to and build the strength of the community
	Provides an inexpensive labor source
	Brings in new energy, ideas, and perspectives
	Provides new funding opportunities

While not specifically benefiting the institution, two additional reasons for offering adolescent programming also emerged:

- Request to serve this specific audience
- Desire to provide benefits to the adolescents

APGA Survey

Of the 34.2% of responding institutions not offering adolescent programming, 75.7% believed that adolescent programming would support their mission (Fig.4.14). When prompted why, research participants overwhelmingly stated

that education is part of their mission and includes all audiences. When prompted why not, the most common responses were their focus was not on education or that they had limited resources and therefore limited goals. Those institutions that were offering adolescent programming were asked the extent to which it supported their mission. A majority, 61.6%, indicated that it supported their institution's mission to a great extent and no participants said it did not support their mission at all (Fig.4.15).

The research participants who indicated that their institution was offering some adolescent programming, but not long-term programming, were asked what they saw as the potential institutional benefits of long-term adolescent programming. Of the total of 57 written responses, 52.6% mentioned building relationships with new audiences. As a representative statement, one participant wrote, "they might become more involved with our garden—by volunteering, taking classes, becoming interns, becoming members, bringing their families here in the future." A total of 31.6% mentioned building interest in horticulture and environmental issues as a potential benefit; one participant wrote about the benefit of, "developing conscientious future stewards of global plant diversity." And a total of 28.1% of participants mentioned that supporting the institution's mission and growth would be a benefit. "It would help us connect people to our mission, and provide opportunities for engaging them with our mission," wrote one participant. Other institutional benefit themes that emerged are shown in Figure 4.16.

When institutions offering long-term adolescent programming were asked an open-ended question about how this programming has benefited their institution, the same seven themes were seen. Again, one of the most common responses was building relationships with new audiences, which was mentioned by 32.7% of

research participants. One person wrote, “adolescents have parents, and become adults, and these folks typically continue to be supporters.” The same percentage of research participants (32.7%) mentioned the adolescents providing an inexpensive source of labor. One person wrote that the adolescents are, “bright, hard workers that allow us to get special projects completed.” Another wrote, “We have directly benefited from hundreds of hours of volunteer service.” “Supporting the institution’s mission and growth” and “helping the institution contribute to the community” were both mentioned by 20.0% of research participants. For example, one person wrote that the adolescents have, “the capacity to carry our mission well beyond the walls of the Botanic Garden,” while another indicated that this programming helps the institution, “improve the urban environment and build community capacity.” Other themes that came up less frequently are listed in Figure 4.16.

These institutions were also asked why they offered long-term adolescent programming. Each of the seven themes was mentioned at least twice, with building interest in horticulture mentioned by 30.4% of research participants and supporting the institution’s mission and growth mentioned by 26.8%. Although not direct institutional benefits, two new themes also emerged from this question. The first was the desire or request to serve this audience, which was mentioned by 26.8% and typified by, “We feel there should be offering[s] for people of all ages from 0 to 100.” The second new theme referred to the benefits that long-term programming can have on the adolescent, mentioned by 21.4% of research participants (Fig.4.16). One person wrote, “We offer programming to teach job skills (being on-time, how to deal with difficult situations, etc.) that will help them no matter where they go.” Another wrote, “Teen years are so essential in helping to encourage critical thinking skills,

public speaking, confidence, and other life skills that they will need as they move into adulthood.”

A follow-up survey was conducted with directors of institutions that were offering long-term adolescent programming so as to capture their perspective on the benefits of such programming. They were asked to rank the seven themes and an optional “other” category on a scale of 1-8, with 1 being the most important benefit. Building interest in horticulture and environmental issues and helping the institution contribute to the community emerged as the most important benefits, with averages of 3.3 and 3.5, respectively. Providing an inexpensive labor source was deemed the least important benefit, with an average of 5.5 (Fig.4.17). Those who used the “other” category did not specify.

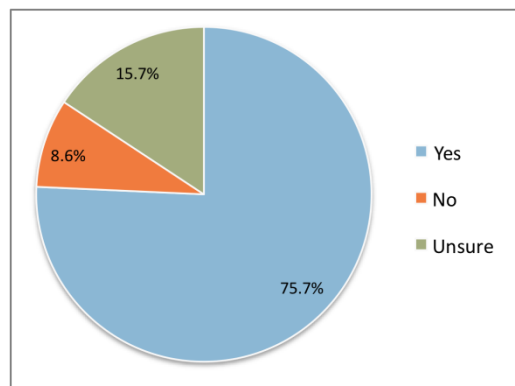


Figure 4.14: Perception of responding institutions not offering adolescent programming on whether doing so would support their institution’s current mission (n=70).

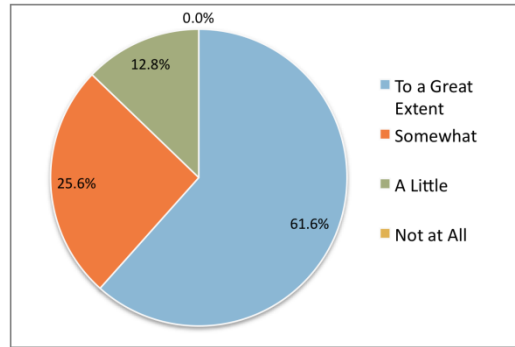


Figure 4.15: The extent to which responding institutions offering adolescent programming felt that these programs supported their institutions' mission (n=125).

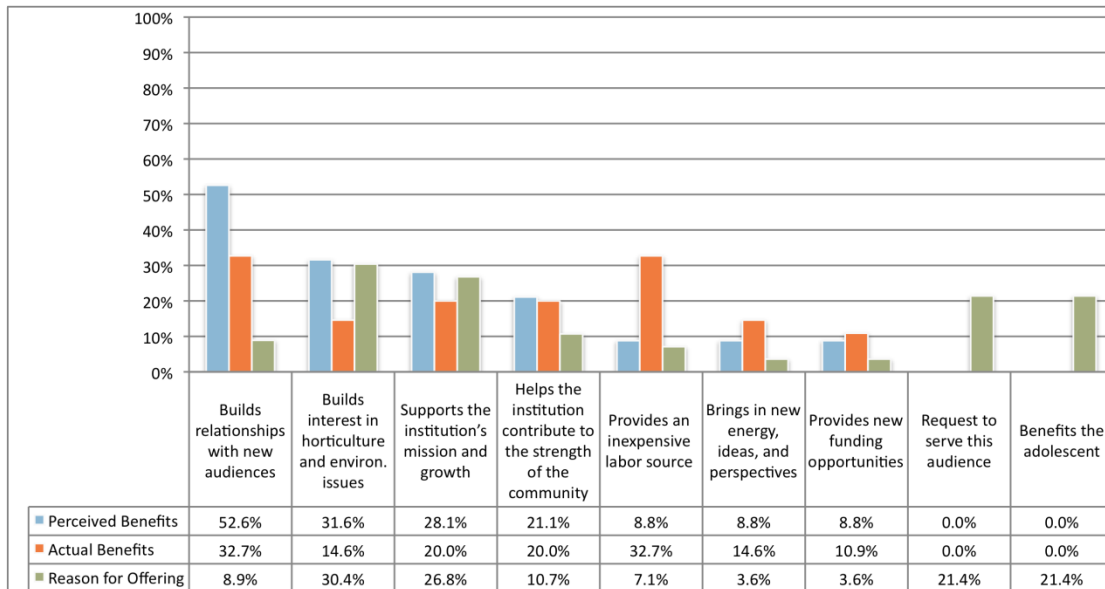


Figure 4.16: Frequency of emergent themes of institutional benefits of offering long-term adolescent programming. “Perceived benefits” refers to answers from institutions offering only short-term adolescent programming (n=57). “Actual benefits” refers to answers from those offering long-term programming (n=55). And “reasons for offering” refers to why those institutions offer long-term programming (n=56).

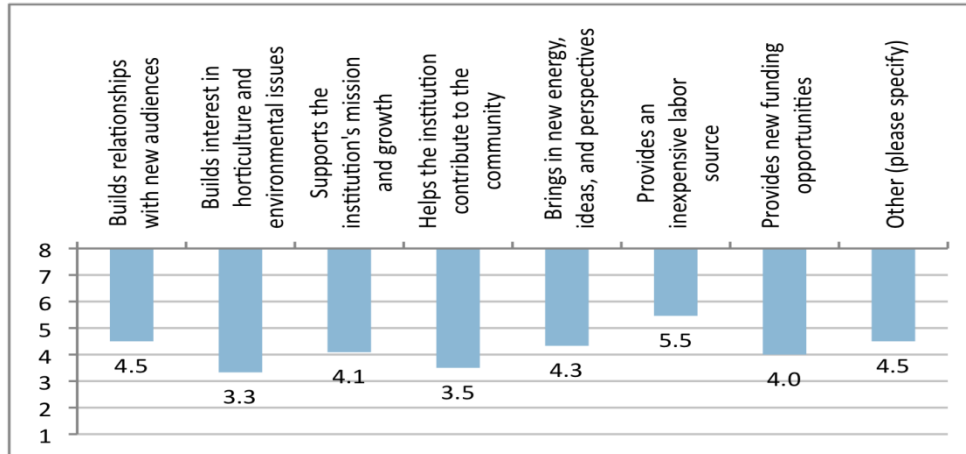


Figure 4.17: Results of the follow-up survey question asking directors to rank institutional benefits (n=10-13, n[other]=2). Participants were asked to rank on a scale of 1-8, with 1 being the most important benefit.

Case Studies

Interviewees at the case study institutions were asked several questions about institutional benefits of adolescent programming. The two most consistently asked and relevant questions were open-ended questions regarding why their institution offered adolescent programming and a question about what the institutional benefits were. They were also provided with a table on their question sheet to fill out regarding benefits, but so few interviewees filled it out, it was not used in data analysis. At times, interviewees were prompted regarding the benefits listed in this table.

The answers to these two questions were coded using the themes that emerged from survey participant answers. If an interviewee mentioned the same theme in both questions, it was only counted once. Other themes were also identified, but were not found to occur significantly and were not included in analysis. There were two themes that were mentioned by more than 50% of interviewees at both

institutions. These were building relationships with new audiences (62.5% at CBG and 83.3% at BBG) and helping the institution contribute to the community (75.0% at CBG and 50.0% at BBG) (Table 4.2).

Chicago Botanic Garden

The interviewees at CBG represented two main groups. Three of the interviewees were full-time staff that oversaw the programs and five were part-time instructors that had little to do with administration. This dynamic led to some different results, though they agreed on the areas that emerged as the highest (Table 4.3).

The strongest theme that emerged from CBG interviews, mentioned by 80.0% of instructors and 66.7% of administrators, was helping the institution contribute to and build the strength of the community. The instructors indicated how offering these programs not only makes a real contribution to the community, but in turn makes the community much more aware of the Garden and the great work that they are doing. The one Green Youth Farm staff member spoke in particular about tangible contributions to the community, since this program offers fresh, organic produce to community members.

Both groups felt that adolescent programming helped to build relationships with new audiences, with 60.0% of instructors and 66.7% of administrators mentioning it. This is particularly true of the programs that are transporting youth from downtown Chicago, as many of these teenagers have never been to the Garden. One instructor said, “I’m almost sure that everybody goes home and tells their family about it, and their friends and neighbors.” They also agreed that adolescent programming benefited the adolescent, as evidenced by 60.0% of instructors and 66.7% of administrators in concurrence, with one saying, “You don’t

need to be a PhD to figure out that long, sustained, repeated, intensive engagement at that age is what's necessary." Although this is not an institutional benefit, it is clear from program documents that this is a goal of several of the programs. Science First and College First are meant to fill the gaps in science education and prepare youth for careers and college and Green Youth Farm is intended to build work skills.

Some themes were not mentioned at all by the instructors but were mentioned much more frequently by the administrators. All administrators viewed the programs as having major benefits by offering a compelling opportunity for granting agencies and donors to give to a program that is really making a difference. One interviewee said, "Donors are hugely attracted to these programs so they are the most popular programs with all our foundation and corporation groups." They went on to say that donors are often invited to sit in on classes and can understand the impact these programs have. Another interviewee said that having adolescent programming, "sweetens the program for those donors who like supporting education generally."

In addition, two out of the three administrators mentioned the benefits of an additional labor force, adolescents bringing in new energy and perspectives, and the need to fill a gap in programming. For example, one interviewee spoke about the benefit to the institution's staff, saying that working with adolescents is important in, "enriching their work experience here and also having help in doing some of their research or horticulture."

Brooklyn Botanic Garden

All of the interviewed staff was full-time, as BBG had a more significant emphasis on year-round staff being engaged with the adolescents, rather than bringing in specialized part-time staff. All the interviewed staff mentioned

adolescent programming bringing in new ideas and perspectives, and 83.3% specifically said that it has strengthened the skills of their staff. One staff member said, “I think they are a source of inspiration to all of us here because we see the good we’re doing.” It is not only professional development, but it reconnects staff with this age group and allows them to better serve this audience. In addition, the BASE program has given BBG staff greater insight into the mechanics of the public school system and a better understanding of the needs of teachers and students.

A total of 83.3% of interviewees mentioned how important and central education is to their mission, a historic and proud aspect of BBG. In addition, 50.0% of interviewees mentioned how connected to their community they are. One staff member said that offering these programs goes, “Beyond just saying let’s fill in this age range that we weren’t really serving very effectively, but saying we want to have a deeper impact long-term on the young people in our community.”

A total of 83.3% of interviewees wanted to continue the relationship with this age group; particularly important to BBG because they have a very strong Children’s Garden program, which is popular right up until adolescence. The Garden Apprentice Program serves the need of those adolescents who want to continue to participate, and 66.7% of interviewees said it is important to build interest in horticulture with this age group. The BBG Director said that when he talks to middle school students he tells them, “We’re counting on you, we need you in our field and I hope some of you will commit to public gardens.”

The higher-level management also spoke about the energy of the adolescents regarding fundraising. One staff member said, “We can just sit down and

shut up if we've got our teens out there talking in their own words.” These programs create a compelling set of stories to share with funders as well as elected officials.

Table 4.2: Frequency of emergent themes of institutional benefits at case study institutions.

Theme	Response¹ (CBG¹)	Percentage¹ (CBG¹)	Response² (BBG²)	Percentage² (BBG²)
Builds relationships with new audiences who may be future employees or contributors	5	62.5%	5	83.3%
Provides an inexpensive labor source	2	25.0%	2	33.3%
Supports the institution's mission and growth	1	12.5%	5	83.3%
Helps the institution contribute to and build the strength of the community	6	75.0%	3	50.0%
Brings in new energy, ideas, and perspectives	2	25.0%	6	100.0%
Builds interest in horticulture and environmental issues, including career interests	3	37.5%	4	66.7%
Provides new funding opportunities	4	50.0%	2	33.3%
Benefits the adolescent	5	62.5%	2	33.3%
Need to serve this audience	2	25.0%	2	33.3%

¹ Chicago Botanic Garden, where eight interviews were held

² Brooklyn Botanic Garden, where six interviews were held

Table 4.3: Frequency of themes of institutional benefits of instructors and administrators at the Chicago Botanic Garden case study. Of the eight interviews, five were with instructors and three were with administrators.

Theme	Instructor Response	Instructor Percentage	Administrator Response	Administrator Percentage
Builds relationships with new audiences who may be future employees or contributors	3	60.0%	2	66.7%
Provides an inexpensive labor source	0	00.0%	2	66.7%
Supports the institution's mission and growth	0	00.0%	1	33.3%
Helps the institution contribute to and build the strength of the community	4	80.0%	2	66.7%
Brings in new energy, ideas, and perspectives	0	00.0%	2	66.7%
Builds interest in horticulture and environmental issues, including career interests	2	40.0%	1	33.3%
Provides new funding opportunities	0	00.0%	3	100.0%
Benefits the adolescent	3	60.0%	2	66.7%
Need to serve this audience	0	00.0%	2	66.7%

Phone Interviews

Each institution had unique thoughts about institutional benefits, although some themes came up in all three interviews (Table 4.4). Everyone mentioned that the adolescents are a great source of volunteer labor. The staff from BHWP said, “They

really help at the most crucial time of the year for us.” The other benefit that everyone mentioned was building and maintaining relationships with this age group.

Staff from two of the three institutions mentioned that these programs support their mission, connect youth with their community, and benefit to the teenagers. In addition, the interviewee from DCH mentioned that their program brings in a new funding source, the interviewee from FRG explained how their program keeps the teenagers learning about horticulture, and the interviewee from BHWP talked at length about teenagers boosting morale among the staff.

Table 4.4: Institutional benefit themes mentioned by the interviewees from the phone interview institutions. An “X” denotes interviewee mention.

Theme	DCH ¹	FRG ²	BHWP ³
Builds relationships with new audiences who may be future employees or contributors	X	X	X
Provides an inexpensive labor source	X	X	X
Supports the institution’s mission and growth	X		X
Helps the institution contribute to and build the strength of the community	X	X	
Brings in new energy, ideas, and perspectives			X
Builds interest in horticulture and environmental issues, including career interests		X	
Provides new funding opportunities	X		
Benefits the adolescent	X	X	

¹ Delaware Center for Horticulture

² Fellows Riverside Garden

³ Bowman’s Hill Wildflower Preserve

Potential Challenges

Seven challenges were identified through the literature review and provided as options in survey questions. An open-ended question about challenges was asked during interviews, and an “other” category was provided on the survey, however, there were no significant challenges that fell outside of the identified themes. These have been grouped into major and minor themes. The major themes were ranked higher and mentioned more frequently; the minor themes were mentioned less frequently, though still consistently.

Table 4.5: Major and minor potential challenges of offering long-term adolescent programming.

	Potential Challenges
Major	Funding
	Staff time
	Adolescent interest
Minor	Expertise in working with adolescents
	Institutional support
	Organizational leadership
	Community support

APGA Survey

As previously mentioned, 8.4% of responding institutions were not currently offering adolescent programs but had offered them in the past (Fig.4.4). When asked why their institution discontinued these programs, 41.7% of the 12 responses mentioned a lack of adolescent interest. The only other theme that arose was limited staff time, which was mentioned by 25.0% of participants (Table 4.6).

The institutions that were not offering adolescent programming were asked if they considered the provided challenges as barriers to offering programming. The largest barrier was staff time, identified by 76.0% as “definitely” a barrier, followed by funding, identified by 56.0% as “definitely” a barrier. Research participants had mixed feelings about expertise in working with adolescents, with 52.0% saying “definitely” or “probably” a barrier, and 40.0% saying “probably not” or “definitely not” a barrier. And research participants were unsure about adolescent interest, with 48.0% indicating that they don’t know if this is a barrier (Fig.4.18).

Research participants at institutions that were offering some adolescent programming, but not long-term, were asked if they considered the provided challenges as barriers to offering long-term programming, with similar results. Staff time was the largest barrier, followed by funding with 75.4% and 63.2%, respectively, saying it was “definitely” a barrier. Expertise with adolescents still had mixed results, with 43.1% saying “definitely” or “probably” a barrier and 55.4% saying “probably not” or “definitely not” a barrier. Adolescent interest still had high uncertainty, with 36.9% of research participants stating they don’t know if this is a barrier (Fig.4.19).

Lastly, participants whose institutions were offering long-term adolescent programming were asked which of the provided challenges were actual challenges to offering programming. Funding moved to the number one challenge, identified by 55.4% as “definitely” a challenge. Staff time was identified by 50.0% as “definitely” a challenge. Adolescent interest, which those not offering long-term programming had been unsure about, emerged as an actual challenge, with 62.5% saying it was “definitely” or “probably” a challenge. Institutional support became more bi-modal. Although 58.9% said it was “probably not” or “definitely not” a challenge, 26.8% said

it was “definitely” a challenge (Fig.4.20). Across all three types of responses, community support and organizational leadership were not often seen as challenges. In all of these questions, research participants had the option to add other challenges they had faced. Nothing significant emerged from this, though transportation was mentioned several times.

The follow-up survey conducted with directors of institutions that were offering long-term adolescent programming captured their perspective on the challenges of adolescent programming. They were asked to rank the seven themes and an optional “other” category on a scale of 1-8, which 1 being the most challenging. Funding and staff time emerged as the biggest challenges, with averages of 2.9 and 3.9, respectively. Institutional support and organizational leadership were seen as the least challenging, with averages of 5.8 and 6.0, respectively (Fig.4.21). Responses in the “other” category included access to adolescents and program capacity.

Table 4.6: Frequency of emergent themes of why responding institutions had stopped adolescent programming that they used to offer (n=12).

Theme	Response	Percentage
Adolescent interest	5	41.7
Staff time	3	25.0

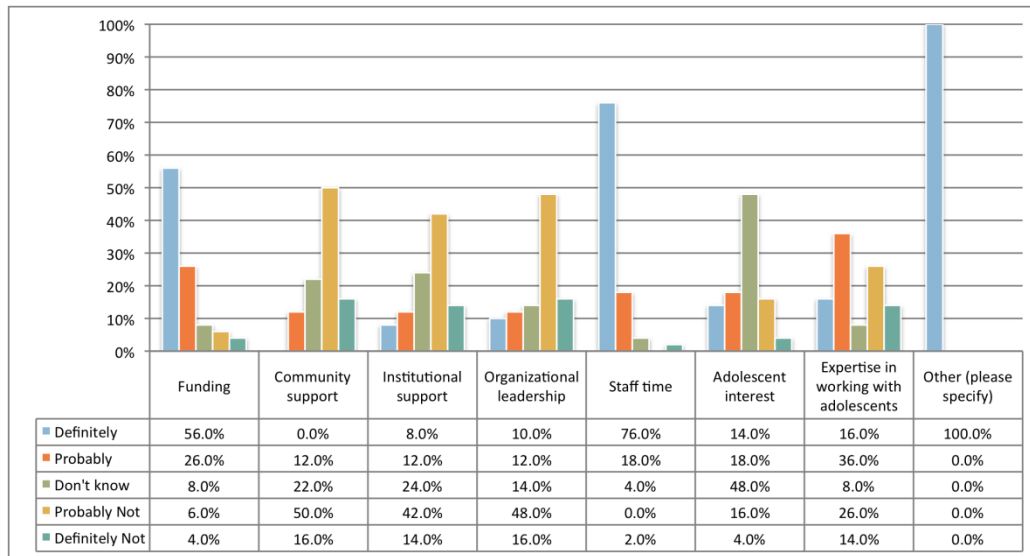


Figure 4.18: Perceived barriers to offering adolescent programming, as reported by institutions not offering any adolescent programming (n=50, n[other]=2).

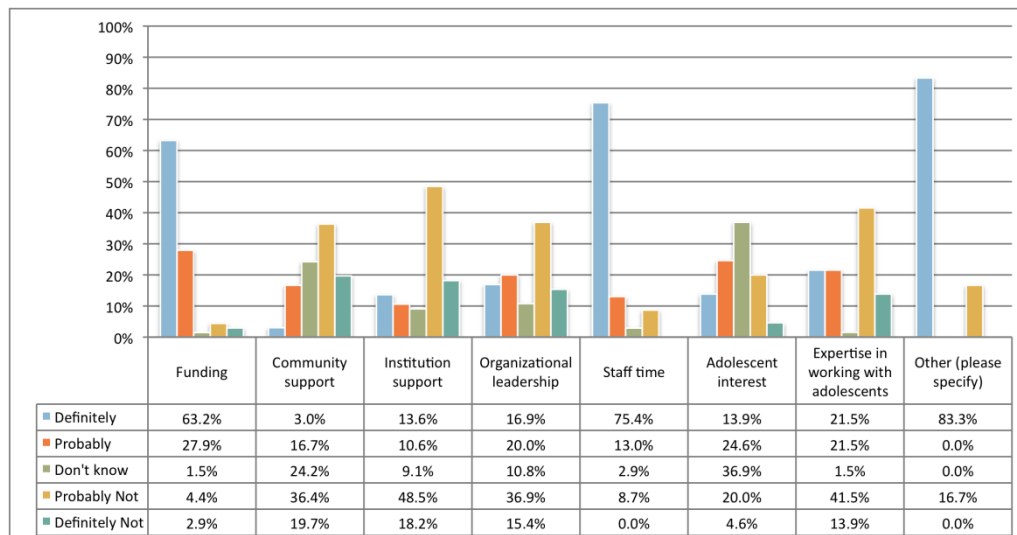


Figure 4.19: Perceived barriers to offering long-term adolescent programming, as reported by institutions offering some adolescent programming, but not long-term (n=65-69, n[other]=6).

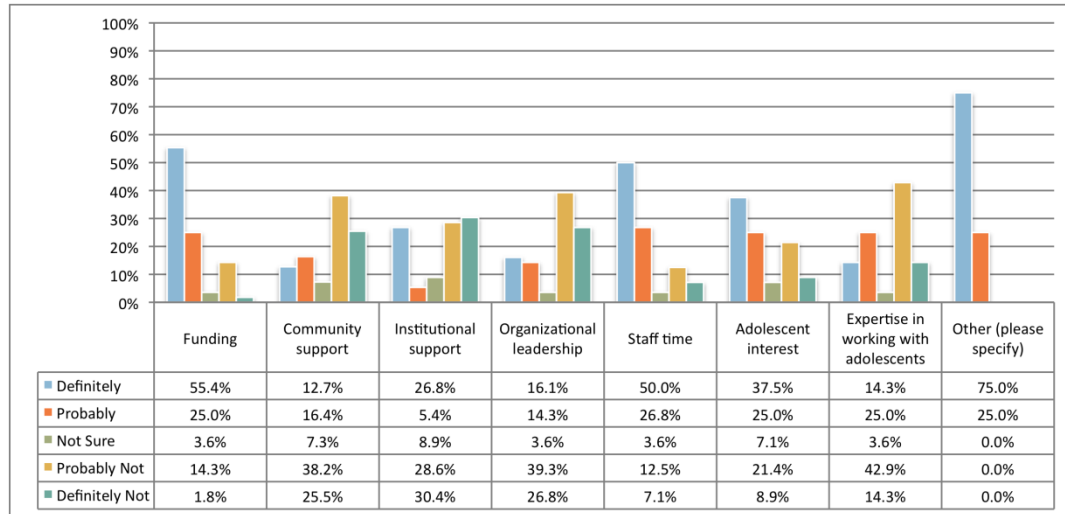


Figure 4.20: Actual challenges of offering long-term adolescent programming, as reported by institutions that offer it (n=55-56, n[other]=8).

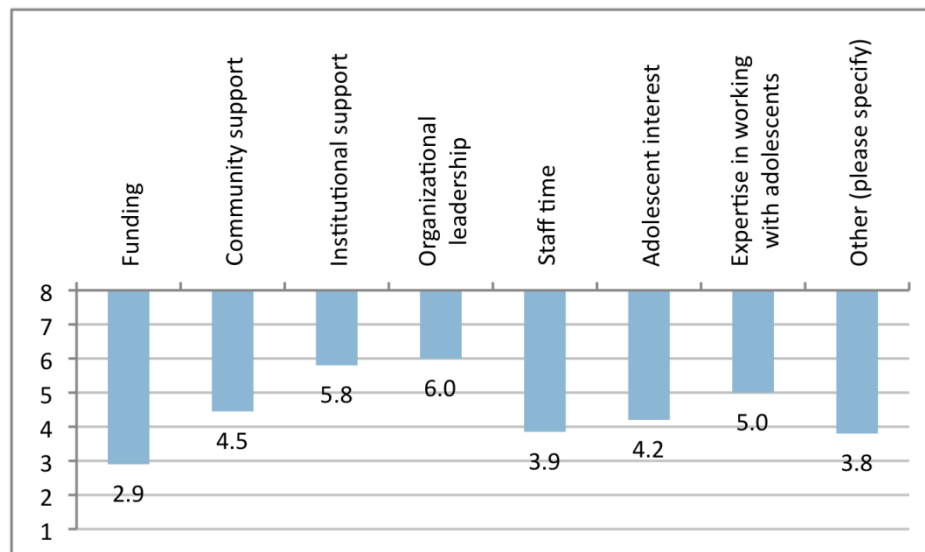


Figure 4.21: Results of the follow-up survey question asking directors to rank challenges (n=9-13, n[other]=5). Directors were asked to rank on a scale of 1-8, with 1 being the most challenging.

Case Studies

In general, the case study institutions were not facing large challenges, though often the interviewees discussed past challenges that had been overcome. The two notable challenges were funding at CBG, indicated by 50.0% of interviewees, and limited facilities at BBG, indicated by 66.7% of interviewees (Table 4.7).

Chicago Botanic Garden

Interviewees' perspective on the challenge of funding varied based on their position. The instructors that mentioned funding often did so in the context of having to provide experiences and results for the donors. Higher level staff also saw funding as a challenge because of the constant cycle of fundraising and the time and resources it takes to sustain funding. Some spoke about the competition for institutional attention, with one interviewee saying, "In a large institution, you're as much competing for the attention of the institution in promoting your programs as you are competing for funding and community support outside of your institution."

The only other challenge to come up more than once was adolescent interest (37.5%) (Table 4.7). While CBG no longer had trouble attracting applicants to the program, several instructors mentioned that it is challenging to motivate the youth to learn during the summer months. The College First and Science First programs are both very academic, with classroom time and lessons, and the instructors stressed the need to make the lessons fun and active so that the teenagers do not feel like they are still in school.

Brooklyn Botanic Garden

One of the biggest and ongoing challenges at BBG is space. There is no room for expansion and they constantly have to negotiate the space they have. Several interviewees mentioned that space was not taken into serious consideration

the first year of programming, which resulted in scheduling problems. Several people said that staffing was a challenge (33.3%), but more so initially when the organization had to come to terms with the amount of staff time it realistically took to run these programs. And several interviewees also mentioned adolescent interest, specifically in regards to commitment (33.3%). The Garden Apprentice Program is intensive over the summer and there have been problems with youth not being able to make the full commitment.

Although no one mentioned expertise with adolescents as a current challenge, many referenced it as a past challenge that has been overcome. A lot of the education staff members in place at the time of program implementation were not comfortable working with adolescents, and this challenge was addressed head on. One interviewee said,

“I think that is probably one of the best moves we ever made in designing the program was to equally at the same time admit to the fact that we were just not quite ready...we had to really confront some of those concerns and issues that we had and really become much more confident in our teaching abilities to an older group.”

The institutional support and organizational leadership was and is strong. The entire Garden staff is now more used to working with this age group and they are reminded every year that the adolescents are coming and that they should be treated like other staff members. What could have been a large challenge was turned into an opportunity for everyone to learn more about teenagers and to contribute to something meaningful.

Table 4.7: Frequency of case study interviewees mentioning challenges of offering adolescent programming.

Challenge	Response (CBG ¹)	Percentage (CBG ¹)	Response (BBG ²)	Percentage (BBG ²)
Funding	4	50.0%	1	16.7%
Community Support	0	0.0%	0	0.0%
Institutional Support	1	12.5%	0	0.0%
Organizational Leadership	0	0.0%	0	0.0%
Staff Time	1	12.5%	2	33.3%
Adolescent Interest	3	37.5%	2	33.3%
Expertise working with adolescent	1	12.5%	0	0.0%
Limited Facilities	1	12.5%	4	66.7%

¹ Chicago Botanic Garden, where eight interviews were held

² Brooklyn Botanic Garden, where six interviews were held

Phone Interviews

The two major challenges that came up through these interviews were staff time and funding (Table 4.8). Staff time was seen as the biggest challenge at FRG and BHWP. The interviewee from DCH mentioned funding as a real challenge, since they seek funds each year for staff time and materials. However, both FRG and BHWP brought up funding by saying that they ran these programs at a very low cost and did not need to do any outside fundraising for them.

The interviewee from BHWP also mentioned adolescent interest as a challenge. They said that they occasionally get a student who is not motivated to work and is only there to get credit for volunteer hours. The interviewee from FRG said that

their program is specifically for teenagers who are interested in being involved, so they do not have many problems with adolescent interest.

Table 4.8: Challenges of offering adolescent programming at phone interview institutions. An “X” denotes interviewee mention.

Challenge	DCH ¹	BHWP ²	FRG ³
Funding	X		
Staff time		X	X
Adolescent interest		X	

¹ Delaware Center for Horticulture

² Bowman’s Hill Wildflower Preserve

³ Fellows Riverside Garden

Strategies

Specific strategies and youth development frameworks identified during the literature review were addressed in several questions of the survey. Based on the IMLS study (Koke and Dierking, 2007), the following categories were probed:

- Capacity Building: incorporating new funding sources after inception, ensuring continuity of leadership, supporting continuity of staff, providing access to key resources and materials, and having a curriculum that builds life skills
- Partnerships: creating community awareness of impacts, and developing partnerships with community groups or corporate entities
- Youth-driven Programming: involving adolescents in decision-making and assessment, and providing leadership roles for adolescents

- Opportunities to Contribute: providing adolescents compensation and/or recognition for contributions, and involving adolescents in contributing to the broader community

In addition, research participants were asked how often they conducted assessment and whether they felt their institution's programs fostered the "Six Cs" of positive youth development: competence, confidence, connections, character, caring, and contribution (Lerner, 2007). Both survey participants and interviewees were also asked open-ended questions about strategies.

APGA Survey

When asked to what extent their institutions' long-term adolescent programming utilized a range of specific strategies identified through the literature review, there were several significant findings. Within capacity building, having a curriculum that builds life skills and competencies was utilized "to a great extent" or "somewhat" by 92.7% of institutions (Fig.4.22). Both of the partnership strategies were utilized, with 80.0% of institutions creating community awareness of impacts and 83.6% developing partnerships with community groups or entities "to a great extent" or "somewhat" (Fig.4.23). Youth-driven programming strategies were somewhat less common, with 76.4% involving adolescents in decision-making and assessment and 76.4% providing leadership roles for adolescents "to a great extent" or "somewhat" (Fig.4.24). And strategies involving opportunities to contribute were a bit more common with 81.8% providing adolescents with compensation and/or recognition for contributions and 81.8% involving adolescents in contributing to the broader community "to a great extent" or "somewhat" (Fig.4.25). A separate question was asked to gauge to what extent these strategies actually contributed to the success of programming. The results of this question were not significantly different from that of the first question.

When asked how often assessment was conducted for adolescent programming, 30.2% said continuously, and 5.7% said never (Fig.4.26). In response to a question regarding the “Six Cs”, five of the positive youth development characteristics were fostered “somewhat” or “to a great extent” by over 94%. The characteristic of “caring” was fostered “somewhat” or “to a great extent” by 90.6%. No research participants indicated that these characteristics were not fostered at all (Fig.4.27).

Research participants were also asked an open-ended question on what their strategies were for engaging adolescents, specifically in public horticulture. Out of the 52 responses, six themes emerged. Providing a range of engaging activities was mentioned by 30.8% of participants; one wrote, “We also try to vary activities, tasks, and projects so there’s always something new to gain experience in.” In a related theme, providing hands-on, physical work was mentioned by 23.1% of research participants. “Get them involved in hands-on, minds-on activities that match their interest,” wrote one person, and another wrote, “We try to keep them physically engaged in their work.” Having connections with local schools and organizations was mentioned by 15.4% of participants, as was providing the opportunity to work directly with staff. Offering payment or credit was mentioned by 13.5% of participants and supporting and recognizing student involvement was mentioned by 11.5% (Table 4.9).

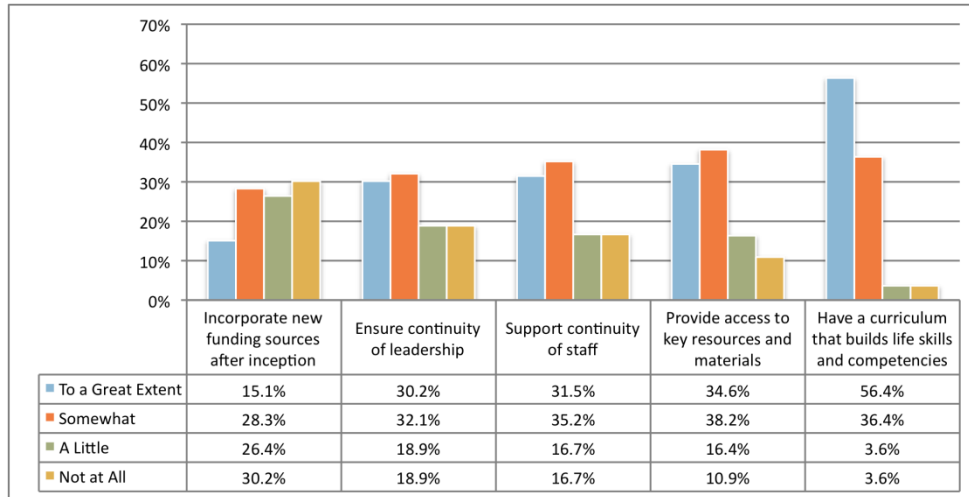


Figure 4.22: Extent to which responding institutions utilized capacity-building strategies in their long-term adolescent programs (n=53-55).

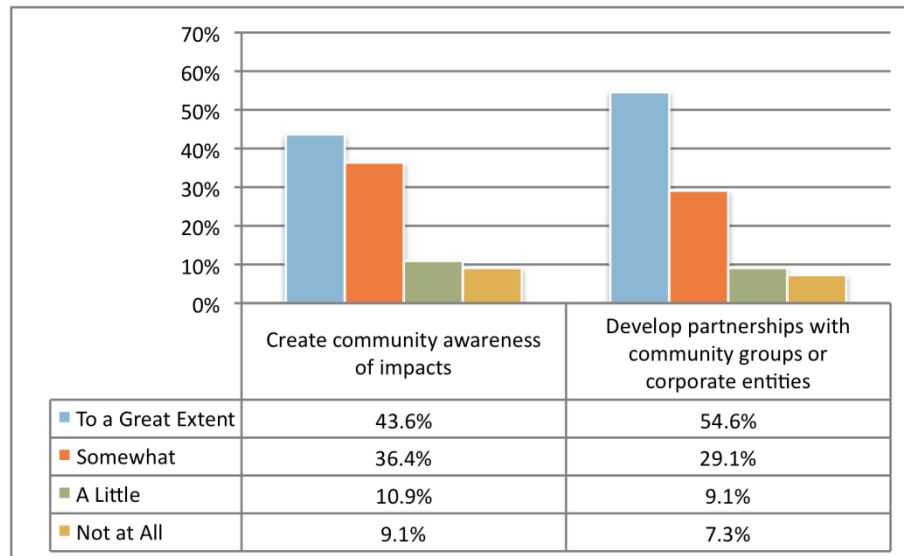


Figure 4.23: Extent to which responding institutions utilized partnership strategies in their long-term adolescent programs (n=55).

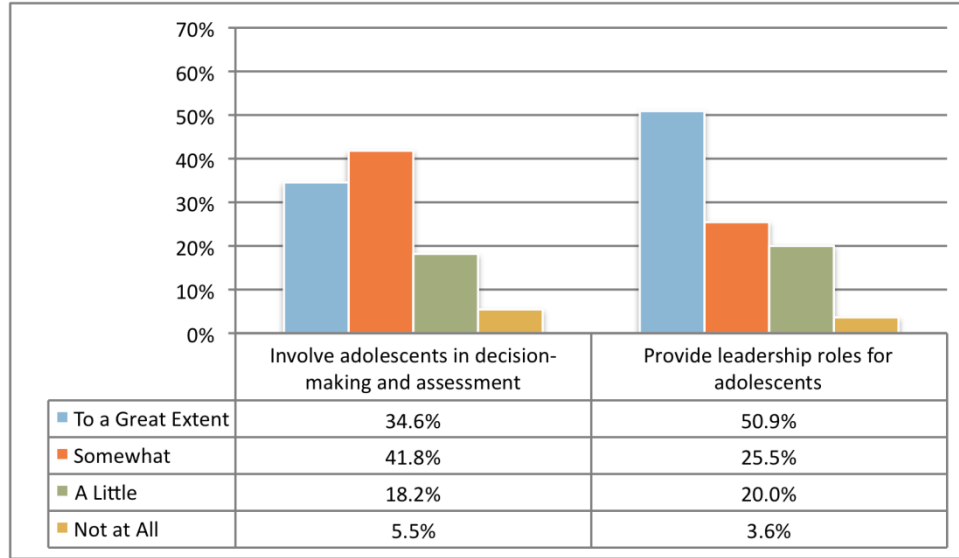


Figure 4.24: Extent to which responding institutions utilized youth-driven programming strategies in their long-term adolescent programs (n=55).

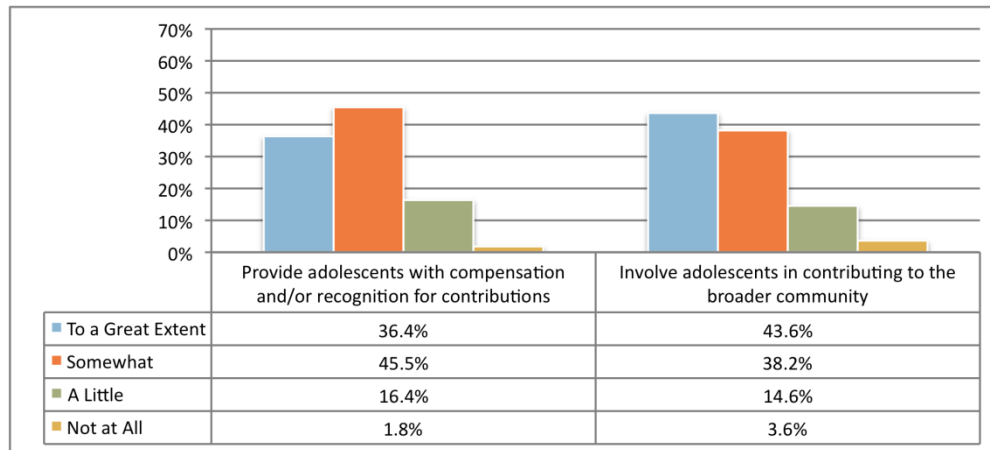


Figure 4.25: Extent to which responding institutions utilized opportunities to contribute as strategies in their long-term adolescent programs (n=55).

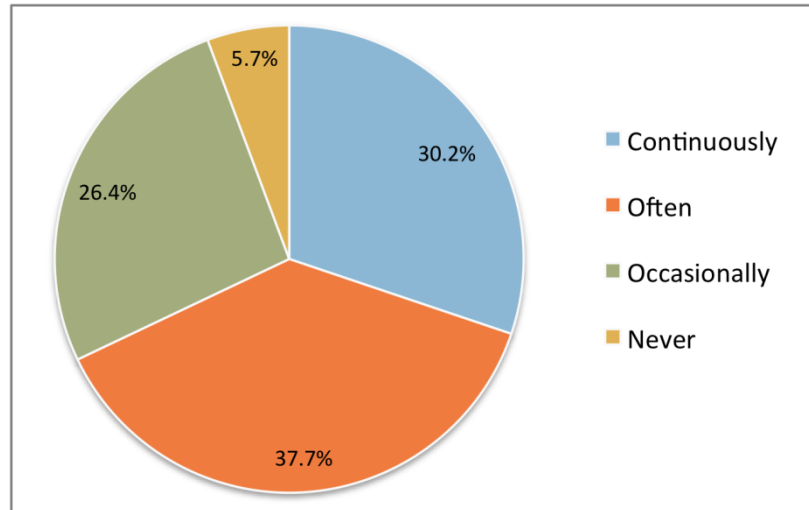


Figure 4.26: Frequency of responding institutions conducting assessment for their long-term adolescent programming (n=53).

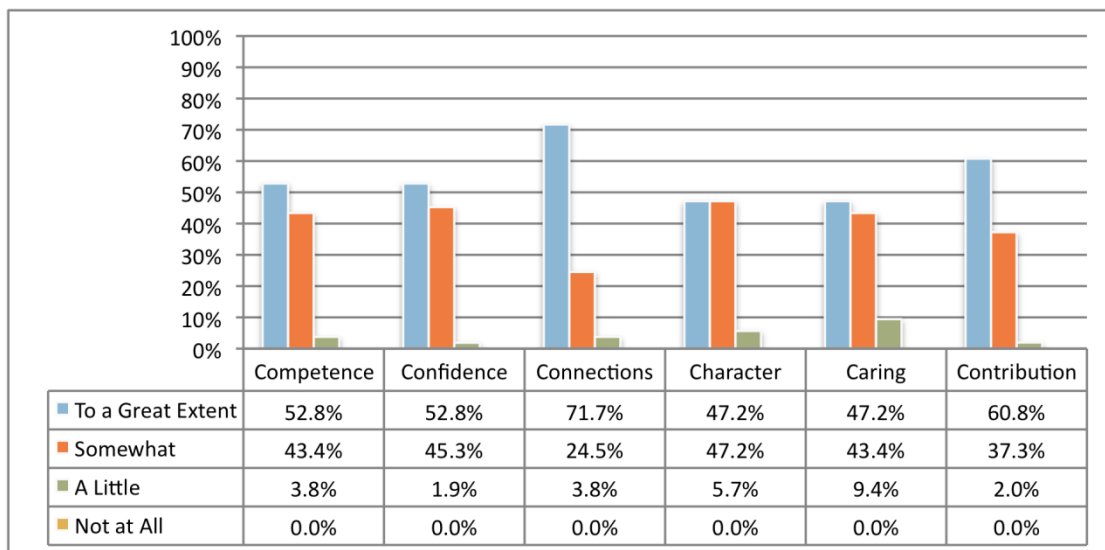


Figure 4.27: Extent to which research participants believed that their institutions' programming fostered the characteristics of Learner's 6Cs (n=51-53).

Table 4.9: Emergent themes of strategies for engaging adolescents from responding institutions offering long-term adolescent programming (n=52).

Theme	Response	Percentage
Providing a range of engaging activities	16	30.8%
Providing hands-on, physical work	12	23.1%
Having connections with local schools and organizations	8	15.4%
Providing the opportunity to work directly with staff	8	15.4%
Offering payment or credit	7	13.5%
Supporting and recognizing student involvement	6	11.5%

Case Studies

The wide range of strategies available made the answers to questions about strategies difficult to code and analyze. Therefore, general themes will be discussed without frequencies assigned to individual interviews.

Chicago Botanic Garden

In this area, the full-time staff had more insight than the part-time instructors. The instructors tended to focus on classroom management rather than institutional strategies. They did mention having a range of engaging activities and being flexible as important. When prompted, they could talk about how their curriculum builds life skills and competencies. There is a strong focus in all the programs on communication skills, and the teenagers are often presenting their work and speaking to the media. The Green Youth Farm program has a built-in leadership structure, where the teenagers can become “crew leaders” once they have worked in the Garden one summer. Both Green Youth Farm and Science First/College First staff

mentioned the stipends and felt that fewer youth would be involved if stipends were not offered.

In Science First and College First there is less hands-on work in the Garden, and more hands-on work in the lab or the classroom. This is very different from Green Youth Farm where the adolescents are running and working on their own organic farm. However, Green Youth Farm has very limited interaction with the Garden and the Garden staff, since it is an off-site program. In contrast, Science First and College First have a lot of interaction with Garden staff and one interviewee mentioned this as an important component of the program. Several of the interviewees mentioned that CBG collaborates with a lot of outside organizations to run these programs.

A question was asked of some of the interviewees about whether the program focuses on horticultural topics. They all answered along the lines of horticulture being important in the program, but not something that was stressed to the adolescents. Recruitment does not focus on horticulture, but rather the basic things that teenagers are looking for: fun, social, and outdoors. One interviewee said, “I cannot imagine ever recruiting based on horticulture. Folks don’t know what that word means, at all.”

In reviewing the program documents it was evident that the Green Youth Farm program is using all the strategies asked about in the survey, and in particular, they are creating community awareness of impacts and involving adolescents in contributing to the broader community. It is a program that is focused on youth development. In contrast, Science First and College First, while supporting youth

when they need it, are much more focused on the science content, rather than youth development.

The Fairchild Challenge program was not addressed often in the interviews, as only one CBG staff member works with this program. The Fairchild Challenge does follow all of the strategies for youth development programs, but it does this in different way than the typical resource-intensive, small programs. The other programs at CBG have multiple staff members and in total serve less than 100 teenagers. The Fairchild Challenge at Chicago Botanic Garden has one staff member and reaches approximately 3,500 teenagers.

Brooklyn Botanic Garden

The strategies that the interviewees at BBG felt were crucial to success varied a lot. The answer that came up most often was having hands-on activities, which is a main component of the Garden Apprentice Program (GAP), where teenagers maintain their own garden plot in the Children's Garden. One person mentioned the interaction with real scientists and people in the field as important, specifically in the context of the internships that BASE students can do at BBG, though this is also part of GAP.

Other strategies that were mentioned include peer-to-peer learning, paying a stipend to the older teenagers, being flexible, internal communication and training, and starting off with a strong and diverse core of youth. Although most of these strategies did not seem to relate specifically to public horticulture, one interviewee did say, "I think it's a calming place and so you can't help but come in to this space and feel a sense of calmness and security and safety."

Interviewees were also asked about whether these programs have a strong emphasis on horticulture. Because GAP participants have their own garden plots, they are all being exposed to horticulture. During recruitment, it is made clear that this is a component of the program. Growing and taking home their own produce is a way to successfully connect and engage the teenagers with horticulture and the Garden.

Program materials from the BASE program are up-front about strategies and building youth development. One brochure reads, “Leadership and youth development programs challenge students to become confident speakers and capable listeners, and to prepare for the future.”

The GAP program materials also emphasize work skills and horticulture. Participants have numerous choices of activities to be involved in. The training for the different tiers is focused on learning how to be a leader and communicate well within a team, and is accomplished through a range of activities, games, and group discussions. The teenagers also create and sign cooperative contracts, getting them invested in the rule-setting process.

Phone Interviews

Each phone interview institution had its own strategies based on their situation and what they are offering. Table 4.10 uses the themes that emerged from the survey to show some of the strategies they are using. DCH offers a stipend, which they use as a tool for discipline, since participants can lose some of their stipend for misbehaving. They also create strong partnerships with other organizations in the community and have hands-on work opportunities. The interviewee also mentioned that when they recruit, they emphasize the fun aspects of the program.

BHWP offers volunteer credit, which is the reason that most of the adolescents are there. They recruit through guidance counselors, which has been very successful. The interviewee also mentioned engagement through the exposure to career paths and environmental issues and said, “Adolescence is a time when kids have causes that are kind of counter cultural...our mission really reverberates with them.” They also mentioned that they try to do a lot of team-building activities and they have created a very social and inter-generational group of volunteers.

FRG also stressed the importance of social time and the interviewee spoke about how they see the teenagers bonding over their mutual interest in horticulture, which is not exactly a popular interest. They mentioned several times that they make sure that the teenagers know how important they are to the program. In addition, they have a broad range of hands-on activities, which keep the adolescents busy and engaged.

Table 4.10: Strategies utilized by phone interview institutions. The themes are those that emerged in the survey. An “X” denotes interviewee mention.

Theme	DCH ¹	BHWP ²	FRG ³
Providing a range of engaging activities	X	X	X
Providing hands-on, physical work	X	X	X
Having connections with local schools and organizations	X	X	
Providing the opportunity to work directly with staff		X	X
Offering payment or credit	X	X	

Supporting and recognizing student involvement		X	X
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¹ Delaware Center for Horticulture

² Bowman's Hill Wildflower Preserve

³ Fellows Riverside Garden

Chapter 5

DISCUSSION

There is an opportunity for public horticulture institutions to better serve the teenage audience and to benefit as an institution by doing so. This research focused on long-term adolescent programming to highlight the sustained involvement that is developmentally appropriate and supportive for teenagers (Beane, 2000; Bowles and Brand, 2009; Carnegie, 1995; Catalano et al., 2004; Downs, 2008; Koke and Dierking, 2007; McLaughlin, 2000; Quinn, 1999). It is meant to aid and inspire institutions to play a larger role in the cultural and horticultural education of today's adolescents.

State of Adolescent Programming

The first step in this research was to determine the current state of adolescent programming. Awareness of this creates a shared knowledge of current offerings, as well as gaps, in serving the adolescent audience and helps institutions think critically about their own program offerings. There is a lack of data on adolescent programming at public horticulture institutions, therefore, the results of this research give insight and direction into this area. In some cases, further research is needed to draw concrete conclusions.

One key result is that the adolescent audience is, on average, served less than any other audience (Fig.4.6), indicating a potential opportunity to expand in this area. Although a majority (65.8%) of the research participants do offer some type of

adolescent programming (Fig.4.4), this most often consisted of school and group tours (Fig.4.5). In contrast to these one-time programs, programs that specifically foster healthy adolescent development and build life skills are called positive youth development programs and are typically intensive and long-term, such as internships or after-school programs (Quinn, 1999). These types of programs have a greater impact on the youth and the institution (Catalano et al., 2004; Downs, 2008; Koke and Dierking, 2007; McLaughlin, 2000; Schwartz, 2005), however, only 28.9% reported that they were offering long-term programming lasting more than seven days (Fig.4.4). There is a definite opportunity for growth in this area. In addition, 16.3% of institutions were not offering long-term programming but had considered it, indicating that there is interest.

Taking a closer look at the institutions that were offering long-term adolescent programming, a majority of them were urban and large (Fig.4.7 and 4.8). Conjecturing, this may be because urban institutions have access to a larger geographic pool of adolescents to recruit from and large institutions have more resources and diversification of education programs. In a related result, a majority of the adolescents being served were from an urban home community (Fig.4.10). This study did not explore underserved youth as a specific audience, and further research in this area would be helpful in determining if and how public horticulture institutions are contributing to the community in this way. Teenagers that live in low-income communities are significantly more at-risk of encountering negative environments and not becoming a successful adult (Eccles and Gootman, 2002). Youth development programming can have a particularly important impact on the lives of these teenagers.

Perhaps due to the fact that large institutions were more often running long-term programs, a majority of institutions reported serving more than 50 adolescents (Fig.4.9). The distribution of males and females served was about equal, indicating that both males and females are interested in and successful in long-term programming at gardens. Statistics for the average minimum and maximum age and the average number of full-time and part-time staff had large standard deviations, indicating that these numbers can vary a lot. Based on this variation of responses, it is evident that there are a variety of logistical approaches to running these types of programs.

When asked about the success of long-term programming, 69.8% of institutions said they were overall successful (Fig.4.13), with only 3.8% of institutions saying that they were somewhat or totally unsuccessful. Although adolescent programming may seem challenging, this finding indicates that success is widely attainable.

Institutional Benefits

For institutions that are considering long-term adolescent programming, concrete institutional benefits are useful justifications, especially when proposing the idea to organizational leadership or other stakeholders. Our data indicates that expected benefits can be grouped into major and minor themes, based on how frequently they were mentioned (Table 4.1). The major themes were mentioned most often across the surveys, case studies, and phone interviews, and are determined to be the most beneficial and/or frequently occurring. The minor themes were mentioned less frequently, though still consistently.

Major themes

Builds relationships with new audiences

This theme consistently emerged most often. Teenagers are often not a heavily served audience at public horticulture institutions (Fig. 4.5), indicating a real opportunity for educators. Many survey participants wrote about engaging teenagers that could then volunteer, bring their parents and siblings, become members, spread awareness of the institution, take classes, and become future interns, employees, or patrons; as one survey participant put it, “building a larger, more loyal base of support.” Teenagers who have a meaningful experience with an institution are likely to end up donating their time and money as adults (Batcke, 2007). Interviewed staff mentioned that it is not always about building relationships with new youth, but maintaining relationships with involved youth who have aged out of programs for children. One interviewee said,

“If you don’t serve the teenage audience, the kids that come to the Garden when they are young are not going to see it as a place that they can continue to participate in and then they are off to college and good luck getting them back before they have their own children.”

Clearly, engaging teenagers at their formative age has the potential for long-term and substantial institutional benefit. In addition, engaging a diverse group of teenagers can help to build diversity within the field of public horticulture and raise awareness about how to promote visitor diversity.

Builds interest in horticulture and environmental issues

This benefit emerged frequently. Long-term programming can lead to an increased knowledge of the content of the institution (Koke and Dierking, 2007; Wenger and Foutz, 2010), which is an especially important benefit for adolescent programming because adolescence is a time when college and career choices are

being influenced and made. Having learning experiences at the age leads to self-efficacy, which is strongly related to career interests and choices (Tang, Pan, and Newmeyer, 2008). Many research participants spoke directly about fostering career interests, as evidenced by this representative response, “We want to develop an educated workforce of horticulturists and landscape/environmental stewards.” Our data indicates that this is more of an idealistic benefit, as it was mentioned more often as a perceived benefit by institutions not offering long-term programming, or as a response to the question, “Why does your institution offer long-term adolescent programming?” Some comments reflected this idealistic nature such as, “I think that it is important for them to connect with the natural world and to understand the relationship between people and plants as well as our environment.” Although this may seem like an indirect institutional benefit, directors of institutions offering adolescent programming ranked this benefit as the most important (Fig.4.17). Building this interest early is very important to the future of public horticulture.

Supports the institution’s mission and growth

This is typically an inherent benefit of any programming and many research participants simply stated that adolescent programming fulfilled their mission. When asked directly, a majority of research participants said that adolescent programming would support their mission or does to a great extent (Fig.4.14 and 4.15). Some comments were more in-depth and addressed the opportunity that comes with long-term programming. For example, one research participant wrote that long-term programming provides, “opportunities to explore the institutional mission from various approaches.” Another mentioned the teenagers’, “ability to work to fulfill the mission.” Our findings are supported by the report issued by the Innovation Center for

Community and Youth Development, that indicated, “most organizations found that young people help clarify and bring focus to the organization’s mission” (2001).

Therefore, institutions could see a direct benefit to their mission and growth, particularly when they think of youth, and especially underserved youth, as assets to the community rather than deficits.

Minor themes

Helps the institution contribute to and build the strength of the community

Our data indicated that better serving adolescents helps bring institutions closer to the community, as well as gives the institution a chance to better engage the community. Cultural institutions not only have a wealth of resources, such as collections and knowledgeable staff, they are also safe and trusted locations (Downs, 2008; Wilson-Ahlstrom and Yohalem, 2005). Providing these assets to teenagers and, in turn, the parents of teenagers, through long-term programming inherently helps contribute to the community. Survey participants wrote comments on the benefits of, “the creation of additional ties to the community,” and how long-term programming could, “help us have a stronger presence and more visibility in the community.” As youth become more involved in an institution, staff becomes more aware of, connected to, and responsive to youth in the community as a whole (Innovation Center, 2001), and also build stronger bonds with community organizations (ASTC, 2001). This was evident at Brooklyn Botanic Garden (BBG), where staff had learned more about the school system and needs of local teenagers as they began serving them. Other case study and interview staff mentioned that their adolescent programming has helped them be more connected to other organizations in their community as well. This theme was also ranked second most important by directors

of institutions offering long-term adolescent programming (Fig. 4.17), indicating a respect for this institutional benefit.

Provides an inexpensive labor source

Some research participants also mentioned the benefit of having additional people that could work and assist staff in the institution. They made comments such as, “extra hands help maintain the garden where labor is short” and that youth, “provide hands-on programming for hundred of thousands of visitors each summer.” This finding is not well supported in the literature, most likely because of the high costs associated with running long-term adolescent programs (Grossman et al., 2009). However, despite the costs, this is a direct benefit to the institution that is not often seen from programs for adults and children. Long-term involvement means that adolescents become very familiar with the institution and can serve as advocates, as well as a capable labor source. Directors of institutions offering adolescent programming rated it as the least important benefit (Fig. 4.17), however, the staff who work directly with adolescents often mentioned this benefit, most likely because they are seeing and benefiting from this additional labor source.

Brings in new energy, ideas, and perspectives

Although this benefit was mentioned less often than others, those that did mention it felt strongly that it benefited their institution. One survey participant wrote, “Our teen volunteers have definitely brought energy to our institution. They tend to look at things that older staff members take for granted, in a new & fresh way. The teens have great ideas & a new approach to old problems.” Staff in both case studies spoke about this energy and the benefit it has on them and their institution. One of those interviewed at the Chicago Botanic Garden (CBG) said working with the

adolescents enriches the work experience of the staff mentors throughout the garden. This data is supported in the literature (Batcke, 2007; Innovation Center, 2001, Schwartz, 2005); as one source puts it, “An interactive or collaborative relationship with teenagers can provide a unique perspective and a substantial contribution to programs and products” (Batcke, 2007). These findings also support the notion of taking an asset-based approach to youth and what they bring to an institution.

Provides new funding opportunities

The opportunity to tap into new grants and pools of money, or appear attractive to donors, emerged as a benefit in some cases. For example, one research participant said, “It has also helped us attract grant funding that is important for our economic stability.” Directors of institutions offering long-term programming saw this as an important benefit (Fig.4.17), as did the higher-level administrators in the case study institutions, as these are often the staff members that regularly work on fundraising. This data is supported by the YouthALIVE! Initiative, where adolescent programs often expanded the, “potential base of sponsors” (ASTC, 2001). However, funding remains one of the largest challenges of offering programming.

Potential Challenges

Identifying and understanding the challenges of adolescent programming is an important step in planning and addressing them. Our data indicates that potential challenges can be grouped into major and minor themes, based on how they were ranked in the surveys and how frequently they were mentioned in interviews (Table 4.5). The major themes were ranked higher and mentioned more frequently, and therefore are determined to be the most challenging and/or frequently occurring. The minor themes were mentioned less frequently, though still consistently. Although

some challenges are unavoidable, the discussion of the challenges is followed by a discussion of overarching strategies.

Major Themes

Funding

This was consistently rated as a definite challenge and was the largest actual challenge when rated by institutions that were offering long-term programming and by the directors of these institutions (Fig.4.20 and 4.21). This is supported by literature discussing the high cost of running long-term adolescent programming (Grossman et al., 2009; Mancini and Marek, 1999) and the typical instability of funding from year to year (Quinn, 1999). These traits may leave adolescent programming vulnerable during budget cuts. The current economic recession may have had an impact on these results, as many institutions are struggling. Although long-term adolescent programming is expensive, it can be an opportunity to bring in new funders that are particularly supportive of these types of programs, as shown in the discussion of benefits above.

Staff time

This was rated as the second largest challenge by institutions offering long-term programming and the directors of these institutions (Fig.4.20 and 4.21). In order to have long-term programming that engages and meets the needs of every participant, dedicated staff needs to be in place (McLaughlin, 2000). Interviewees at BBG spoke about the initial challenge of coming to terms with the amount of staff that was needed to effectively run programming. Fellows Riverside Garden almost had to stop offering their adolescent programming because of the staff time it took.

For this challenge in particular, institutional support needs to be in place in order to dedicate the amount of staff time that is needed.

Adolescent interest

Although a majority of the institutions not offering adolescent programming were unsure whether interest would be a challenge, it did emerge as an actual challenge, ranked third highest by institutions offering adolescent programming and directors of these institutions (Fig. 4.18, 4.19, 4.20, and 4.21). The data indicated a challenge with actual recruitment of adolescents into a program. Recruitment depends not only on promotion but also on the developmental appropriateness of the program (Quinn, 1999). Peer-to-peer promotion is particularly helpful at this age, and social media can be utilized in this process (ASTC, 2001). Another challenge was motivation and commitment to the program once the adolescent starts participating. At case study and interview sites, it was this latter interest issue that came up more often, especially with summer programs that had academic components. Having youth input on both the design and evaluation of the program may help to address some of these challenges. In addition, paying teenagers a stipend can provide an appropriate motivation for youth that need to have an income, especially those from low-income communities (Wenger and Foutz, 2010).

Minor Themes

Expertise in working with adolescents

Some research participants felt that expertise in working with this age group was a challenge, though it was more of a perceived challenge than an actual challenge (Fig. 4.18, 4.19, and 4.20). It was hardly mentioned in case study and phone interviews, except to say that it had been addressed in program design, and there were

several ways to approach this. For example, CBG hires part-time staff that has expertise, and BBG made an institutional commitment for their staff to become comfortable and experienced with working with this age group. When this is a challenge, it should be addressed as part of preparing an institution for offering long-term programming for adolescents (McLaughlin, 2000; Quinn, 1999). Beyond having expertise or training to work with adolescents, program staff should have a culturally responsible understanding of youth and be approachable and relevant to the teenage participants.

Institutional support

Similar to the above challenge, this is also part of capacity building (Koke and Dierking, 2007), and as such, was not often perceived as a challenge (Fig.4.18 and 4.19). However, 26.8% of institutions that were offering long-term adolescent programming said it was definitely a challenge (Fig.4.20). There could be many reasons for this result, such as competing for attention within a large institution, as reported by one case study interviewee. In any case, having institutional support is a contributing factor to program success (Koke and Dierking, 2007).

Organizational leadership

Across the board, organizational leadership was not seen as a big challenge (Fig. 4.18, 4.19, 4.20, and 4.21). It has been linked to the success of programming (Koke and Dierking, 2007), but does not seem to be a common challenge itself.

Community support

Community support was also not seen as a large challenge (Fig. 4.18, 4.19, and 4.20), though directors of institutions offering adolescent programming

ranked it as the fourth largest challenge (Fig. 4.21). Adolescent programming is usually welcomed by a community, as seen in this research by the institutional benefit of building the strength of the community.

Strategies

Due to the large number of strategies, and often their specificity to an institution, it is difficult to draw conclusions from this research about which strategies work best. The case study conversations about strategies were so diverse and specific that it was not even possible to code them for themes. Fortunately, previous research has been done to identify strategies of successful youth development programming. These strategies and frameworks can be very useful in conceptualizing, planning, and evaluating adolescent programming at public horticulture institutions, though again, which strategies will be the most helpful is often institution-specific.

Characteristics of Successful Youth Development Programs

A set of eleven characteristics, in four general categories, was developed through literature review and asked about directly in the first APGA survey. Results were not very conclusive except to demonstrate that most of the strategies were used.

Capacity-Building

Incorporate new funding sources after inception

This was the only characteristic that the majority of those responding reported they did not do at all (Fig.4.22). This may be because funding was coming from the same sources or was diversified even upon inception. The reasoning behind this strategy is that this type of long-term programming often has youth involvement for multiple years, therefore the funding needs to be stable in order to concretely plan

and run the program (Mancini and Marek, 1998). Diversifying funding can help keep it stable from year to year (Downs, 2008).

Ensure continuity of leadership

A total of 62.3% of responding institution used this strategy to a great extent or somewhat (Fig.4.22). This is fairly low when compared to the other strategies. There may have been some confusion over whether “leadership” referred to institutional leadership or program leadership. In general, building trust with youth requires stability and consistency (ASTC, 2001; Beane, 2000). Ensuring that the leadership remains the same, primarily through investment in salary and professional development, can help retain important bonds and commitment to the adolescents (Mancini and Marek, 1998; Quinn, 1999). In addition, staff should have the opportunity to connect with other public horticulture professionals that are working with adolescents, who provide an invaluable network of knowledge and support (ASTC, 2001).

Support continuity of staff

A similar 66.7% said their institutions used this strategy to a great extent or somewhat (Fig. 4.22). The rationale is the same as the above strategy; to provide stability and consistency for the youth and retain quality staff members.

Provide access to key resources and materials

A total of 72.7% of institutions use this strategy to a great extent or somewhat (Fig. 4.22). The resources that cultural institutions can offer are one of their greatest assets and sharing them with the adolescents can make them feel engaged and

involved in the institution (ASTC, 2001; Downs, 2008; Schwartz, 2005). This is especially meaningful to low-income youth who have very little access to resources and can include access to collections, technology, or staff (ASTC, 2001). Providing the opportunity to work directly with staff was a strategy that came up fairly often in case study and phone interviews, indicating the importance of this strategy in a real-life context.

Have a curriculum that builds life skills and competencies

This strategy had the highest percentage of responding institutions using it to a great extent or somewhat, at 92.7% (Fig. 4.22). Building life skills and competencies is part of positive youth development programs, where youth are given guidance and support to reach their potential (ASTC, 2001; Catalano et al., 2004; Eccles and Gootman, 2002; Downs, 2008; McLaughlin, 2000). Our data is consistent with research looking at what the teenagers themselves want, which recommended the promotion of, “life skills development, college preparedness, and self-sufficiency” (Sturman, 2006).

Partnerships

Create community awareness of impacts

A total of 80.0% of institutions used this strategy to a great extent or somewhat (Fig. 4.23). As one source puts it, “Youth development means community development” (McLaughlin, 2000). When the community understands the impact a program is having, they can better understand why the program is worth their time, effort, and money, and can help with promotion (Mancini and Marek, 1998).

Develop partnerships with community groups or corporate entities

Another aspect of community interaction is partnerships. A total of 83.6% of institutions used this strategy to a great extent or somewhat (Fig.4.23). Developing partnerships, especially during the planning and implementation of a program, can help ensure that programs meet community needs and resources (ASTC, 2001; Downs, 2008; Mancini and Marek, 1998). Having working relationships with other community organizations that are serving youth can set up a helpful network of knowledge and resources, especially when it comes to promotion and recruitment (ASTC, 2001; Batcke, 2007; Beane, 2000; Downs, 2008; McLaughlin, 2000; Quinn, 1999). Case study and phone interview participants brought up this point, especially in regards to partnering with local schools.

Youth-Driven Programming

Involve adolescents in decision-making and assessment

A total of 76.4% of responding institutions used this strategy to a great extent or somewhat (Fig. 4.24). This aspect of youth-driven programming is frequently called for in the literature (Batcke, 2007; Beane, 2000; Downs, 2008; McLaughlin, 2000; Quinn, 1999; Sturman, 2006). In a study about what teenagers are looking for in programming, one recommendation was to, “empower teenagers to make meaningful decisions” (Sturman, 2006). It is not only developmentally appropriate, but a way to turn program feedback into positive change. As one source puts it, “When you begin to program ‘with’ as opposed to ‘for’ youth, you will find your institution changed at the core, making youth a resource as well as an audience, sharing their strengths and expertise” (Downs, 2008).

Provide leadership roles for adolescents

A total of 76.4% of responding institutions used this strategy to a great extent or somewhat (Fig.4.24). Providing some sort of hierarchy, where youth can advance and be in charge of other teenagers, is one way to positively engage them and build life skills (ASTC, 2001; Cochran and Ferrari, 2008; Downs, 2008; Quinn, 1999; McLaughlin, 2000). Both case study institutions were structured to allow for advancement and, in some of their programs, leadership positions. Participants were ready to take on additional responsibilities and were proud of their accomplishments.

Opportunities to Contribute

Provide adolescents with compensation and/or recognition for contributions

A total of 81.8% of responding institutions used this strategy to a great extent or somewhat (Fig. 4.25). Being paid or getting credit for their time can help a student gain work experience and job skills (ASTC, 2001; Batcke, 2007). This was often mentioned in case study and phone interviews. Teenagers that are of working age often want or need to be making money, and in order to compete with the job market, programming needs to offer them that opportunity (Wenger and Foutz, 2010). Many of the interviewees spoke about the importance of consistently recognizing the contribution that the teenagers make. This can be accomplished through special events, youth presentations, or highlighting teenagers in publications. Adolescents want to feel like they belong and are part of the institution (Sturman, 2006).

Involve adolescents in contributing to the broader community

A total of 81.8% of responding institutions used this strategy to a great extent or somewhat (Fig. 4.25). Programs that foster community awareness and

contribution, such as those with field trips and service-learning components, can help retain the interest of adolescents as well as prepare them to be better citizens (Cochran and Ferrari, 2008; Eccles and Gootman, 2002).

Assessment and Evaluation

As with any programming effort, assessment and evaluation can offer insights into whether programming is meeting the intended purpose and the audience's need (Steil and Lyons, 2009). Measuring program outcomes and effectiveness using sound evaluation methods is stressed in the literature (Catalano et al., 2004; Downs, 2008; Mancini and Marek, 1998; McLaughlin, 2000; Quinn, 1999). Most responding institutions reported that they were conducting assessment, with 30.2% doing so continuously (Fig.4.26). Case study institutions, with their robust programming, had evaluation methods in place. One emergent challenge of evaluation was the difficulty of identifying or proving the long-term benefits that programming has on the teenagers, specifically for the funders who are interested in this. Alumni tracking is becoming more common, and it often done through social media due to the transient nature of teenagers' contact information. Further research is needed on developing new ways of assessing and reporting long-term program effectiveness.

Fostering Positive Youth Development Characteristics

One way of visualizing strategies is to think about the environment that is appropriate and positive for the youth. An important framework in the youth development world is the "Five Cs" of positive youth development. Supporting the characteristics of competence, confidence, connections, character, and caring can help youth thrive and can produce a sixth characteristics of contribution (Learner, 2007).

Our data showed that long-term adolescent programming supported all of these characteristics. When asked to what extent these characteristics were fostered, institutions overwhelming said they were supporting them all, with no institutions reporting that they were not at all fostering any of them (Fig. 4.27). Connections was the characteristic that was fostered most, probably due to the institutional and social connections that youth are exposed to in long-term programming. Thinking critically about providing opportunities for youth to build these characteristics can help an institution to achieve programming that helps adolescents become healthy and well-balanced adults (Luke et al., 2007).

Additional Themes

Two additional and related themes emerged from and were mentioned most often in an open-ended survey question and interviews (Table 4.9 and 4.10). Providing a range of engaging activities was often mentioned. The youth need to be busy, engaged, and have variation in their schedules to keep programming fun. And providing physical, hands-on work was another strategy that emerged. One survey participant wrote that their institution engaged the adolescents, “by offering a variety of opportunities that offer real life experiences, hands-on investigation and engaging activities to enhance knowledge and skills.” Adolescents do need some amount of physical activity (ASTC, 2001). This strategy can be uniquely addressed in public horticulture institutions, where collections are living and changing and adolescents can be out in the garden planting and caring for them.

Sources of Error

As with any response rate that captures only a portion of the sample, there is a certain degree of non-response error, meaning that those institutions that did not participate in the survey may have had an important effect on the results (Dillman, Smyth, and Christian, 2009). Since participation was strong from different types, sizes, and locations of institutions, this error should not be significant. However, institutions that were offering adolescent programming might have been more inclined to fill out the survey.

In analyzing the data, several possible sources of measurement error emerged having to do with the readability of questions. Although a definition was provided for “long-term programming”, some survey participants incorrectly indicated that they were offering this programming lasting a total of seven or more days. This was evident when small- and medium-sized institutions, whose contacts said they were offering long-term programming, were contacted to participate in phone interviews, as several replied that they were not actually offering this type of programming. This misunderstanding was also evident in the follow-up survey to directors of institutions, where the institutional contact had indicated in the first survey that they were offering long-term adolescent programming. The first question asked directors to verify that their institution was offering long-term programming for adolescents and over 50% said they were not.

In addition, the definition of adolescent had an unintended result. Because adolescent was defined as youth between 13 and 19 years of age, institutions that were offering very little at the high school level, but were offering internships for college students, were able to say that they were offering long-term adolescent programming. While it is true that adolescence extends into college years, this may have skewed the

data towards offerings for older youth, and youth that already have an interest in horticulture.

Lastly, there were several survey questions that asked participants to place values in categories or to check all categories that applied, where these categories overlapped in meaning. For example, in the question, “What percentage of your institution’s education programs are designed for the following audiences?” there were categories for both “Children” and “Schools”. The categories were intended to provide a distinction that some institutions make in their programming. However, it may have caused some confusion on the part of the participant and had an impact on the results. In future research, it would be recommended to specifically test the usability of definitions and categories with representatives from the survey audience.

Chapter 6

RECOMMENDATIONS

This research provides support and guidance for discussion, planning, and review of long-term adolescent programming, whether or not an institution has ever contemplated these programs, is seriously considering starting them, or has had them for years. The analysis of adolescent programming presented in this thesis has also led to a better understanding of what public horticulture institutions are currently offering and can provide ideas for comparison and/or program initiation.

Public horticulture institutions can make a real and significant difference in the lives of their communities' adolescents. In return, not only does adolescent programming grow the audience of the garden and build interest in horticulture, it also can provide new inspiration and meaning to the organizational mission. Understanding the major and minor institutional benefits can assist in proposing and promoting long-term adolescent programming. Such programming is not without its challenges and being aware of the potential challenges can help institutions assess their challenges in advance and plan how to meet them. It is recommended to use the following list of institutional benefits and major challenges to assist in beginning and preparing for long-term adolescent involvement.

Table 6.1: Major and minor institutional benefits of offering long-term adolescent programming.

	Institutional Benefits
Major	Builds relationships with new audiences who may be future employees or contributors
	Builds interest in horticulture and environmental issues, including career interests
	Supports the institution's mission and growth
Minor	Helps the institution contribute to and build the strength of the community
	Provides an inexpensive labor source
	Brings in new energy, ideas, and perspectives
	Provides new funding opportunities

Table 6.2: Major and minor potential challenges of offering long-term adolescent programming.

	Potential Challenges
Major	Funding
	Staff time
	Adolescent interest
Minor	Expertise in working with adolescents
	Institutional support
	Organizational leadership
	Community support

In addition to awareness of the benefits and challenges, it is recommended that strategies of successful youth development programming be considered and implemented when planning and reviewing adolescent programming. Strategies have

been combined and reworded here to offer a concise and practical set of recommendations.

Table 6.3: Strategies of offering long-term adolescent programming.

#1. High Quality Staff	Hire experienced and high-quality program staff and ensure their continuity and stability.
#2. Curriculum	Have a curriculum that builds life skills and competencies and provide access to key resources and staff.
#3. Partnerships	Develop partnerships with local schools and community groups to assess community needs and create awareness of your programming and its impact.
#4. Youth Decision-Making	Involve adolescents in decision-making and assessment and provide leadership roles and opportunities for advancement.
#5. Compensation	Provide adolescents with compensation and recognition for their contributions.
#6. Engaging Activities	Provide a range of hands-on and engaging activities that build positive youth development characteristics.
#7. Evaluation	Evaluate and assess program outcomes and effectiveness and make changes as necessary.

On a personal note, conducting this research has been illuminating and inspiring. I not only saw how teenagers have been positively affected by gardens, but also witnessed first-hand the passion and commitment that garden staff have for these programs and the young adults in them. It is a natural and enlivening partnership and one that I hope that public horticulture institutions will continue to embrace.

Appendix A:

UNIVERSITY OF DELAWARE HUMAN SUBJECTS REVIEW BOARD

**Appendix A1: Certification of Training in Human Subjects Protocol by the
University of Delaware**

Certification of Human Subjects Training

The University of Delaware certifies that *Keelin Purcell*
(Name of researcher)

attended an institutional training session on the use of human subjects in research on

December 9, 2008.
(Date)

The session included the following topics:

- The Belmont Report
- Federal regulations for using humans in research (45 CFR 46)
- The University's Federalwide Assurance
- Informed consent
- Institutional procedures
- Sources for additional information.



Elizabeth Duggins Peloso
Director of Compliance

**Research Office
University of Delaware
Newark DE 19716
302-831-2136**

**Appendix A2: Approved Protocol from the University of Delaware's Human
Subjects Review Board**

HUMAN SUBJECTS PROTOCOL
University of Delaware

Protocol Title: Adolescent Involvement at Public Horticulture Institutions

Principal Investigator

Name: Keelin Purcell
Contact Phone Number: (302) 831-2517
Email Address: kpurcell@udel.edu

Advisor (if student PI):

Name: Dr. Robert Lyons
Contact Phone Number: (302) 831-2517
Email Address: rlyons@udel.edu

Other Investigators:

Type of Review:

☒ Exempt

☐ Expedited

☐ Full board

Exemption Category: 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Minimal Risk: ☒ yes ☐ no

Submission Date: 4/13/09

HSRB Approval Signature <i>Elizabeth Duggan Peloso</i>	Approval Date 4/22/09
HS Number XMP 412	Approval Next Expires n/a

Investigator Assurance:

By submitting this protocol, I acknowledge that this project will be conducted in strict accordance with the procedures described. I will not make any modifications to this protocol without prior approval by the HSRB. Should any unanticipated problems involving risk to subjects, including breaches of guaranteed confidentiality occur during this project, I will report such events to the Chair, Human Subjects Review Board immediately.

Signature of Investigator: _____

Date: _____

1. Is this project externally funded?

No

If so, please list the funding source:

2. Project Staff

Please list personnel, including students, who will be working with human subjects on this protocol (insert additional rows as needed):

NAME	ROLE	HS TRAINING COMPLETE?
Keelin Purcell	PI	Yes
Dr. Robert Lyons	Advisor	Yes

3. Special Populations

Does this project involve any of the following:

Research on Children? No

Research with Prisoners? No

Research with any other vulnerable population (please describe)? No

4. RESEARCH ABSTRACT Please provide a brief description in LAY language (understandable to an 8th grade student) of the aims of this project.

The purpose of this study is to document the extent to which institutional members of the American Public Gardens Association are providing programming for adolescents, as well as to offer insights about the institutional barriers to and benefits of doing so. Information from this study will aid public horticulture institutions that are interested in beginning programming for adolescents.

5. PROCEDURES Describe all procedures involving human subjects for this protocol. Include copies of all surveys and research measures.

A pre-survey mailing will be sent to all participants explaining the study and that they will soon receive a questionnaire. An e-mail will be sent a week later with the survey link. And a reminder email will be sent 1-2 weeks after this. See the attached files for the survey and invitations.

6. STUDY POPULATION AND RECRUITMENT

Describe who and how many subjects will be invited to participate. Include age, gender and other pertinent information. Attach all recruitment fliers, letters, or other recruitment materials to be used.

This survey will be sent to approximately 500 identified institutional member contacts of the American Public Gardens Association. They are all professional adults working in the public horticulture field.

Describe what exclusionary criteria, if any will be applied.

Describe what (if any) conditions will result in PI termination of subject participation.

7. RISKS AND BENEFITS

Describe the risks to participants (risks listed here should be included in the consent document). If risk is more than minimal, please justify.

What steps will be taken to minimize risks?

Describe any direct benefits to participants.

Describe any future benefits to this class of participants.

If there is a Data Monitoring Committee (DMC) in place for this project, please describe when and how often it meets.

8. COMPENSATION

Will participants be compensated for participation?

No

If so, please include details.

9. DATA

Will subjects be anonymous to the researcher?

No

If subjects are identifiable, will their identities be kept confidential?

Yes

How and how long will data be stored?

Information will stay on PI's computer for two years

How will data be destroyed?

Electronic files will be erased. Any paper documentation will be shredded.

How will data be analyzed and reported?

The data collected will be analyzed using statistically valid methods. It will be reported in the results section of the final thesis research document.

10. CONFIDENTIALITY

Will participants be audiotaped, photographed or videotaped during this study?

No

How will subject identity be protected?

Is there a Certificate of Confidentiality in place for this project? (If so, please provide a copy).

11. CONSENT and ASSENT

_____ Consent forms will be used and are attached for review.

_____ Additionally, child assent forms will be used and are attached.

X Consent forms will not be used (Justify request for waiver).

12. Other IRB Approval

Has this protocol been submitted to any other IRBs? No

If so, please list along with protocol title, number, and expiration date.

Please submit this form to the e-mail address: hsrb-research@udel.edu

Appendix B:
APGA SURVEY RESEARCH

Appendix B1: APGA Survey Questions

Survey Introduction on Web site:

Welcome to the on-line questionnaire for a national study of APGA institutional members intended to examine the scope of adolescent programming at public horticulture institutions, including the barriers, strategies, and benefits of offering such programming. The study is being conducted by Keelin Purcell, a Fellow in the Longwood Graduate Program, University of Delaware. Results of this study will be the basis for her Master's thesis and will be available upon request. She also plans to publish findings from this study.

Individual responses will be collected on a secure web server. This data will remain confidential and viewed only by the researcher. The data will be destroyed after two years. Your participation is entirely voluntary. Close the web browser to leave the study at any time. Any responses you previously made will not be included in the study.

If you have any questions concerning the study, please contact the researcher, Keelin Purcell, Longwood Graduate Program, University of Delaware at kpurcell@udel.edu. For questions about your rights as a subject or about any issues concerning the use of human subjects in research, please contact the Chair of the Human Subjects Review Board at the University of Delaware at (302) 831-2136.

Thank you in advance for your assistance in this important effort. Please press the "Next" button to continue.

Survey Questions

SECTION 1: INTRODUCTORY

In this survey "adolescent" refers to youth ages 13-19.

1. Does your institution currently offer any programming for adolescents?

- ☐ Yes (*Go to Section 2*)
☐ No

2. Would offering programming for adolescents support your institution's current mission?

- ☐ Yes

- ☐ No
☐ Unsure

3. [If they answered yes] Why? [Open-ended]

4. [If they answered no] Why not? [Open-ended]

5. To the best of your knowledge, has your institution ever offered programming for adolescents?

- ☐ Yes
☐ No (*Go to Question 7*)

6. [If they answered yes] Why did you stop offering programming for adolescents? [Open-ended] (*Go to Question 8*)

7. To the best of your knowledge, has your institution ever considered offering programming for adolescents?

- ☐ Yes
☐ No

8. Do you consider the following as barriers to offering programming for adolescents?

(Likert scale: Definitely, Probably, Don't Know, Probably Not, Definitely Not)

- ☐ Funding
☐ Community support
☐ Institutional support
☐ Organizational leadership
☐ Staff time
☐ Adolescent interest
☐ Expertise in working with adolescents
☐ Other (please specify)

----Go to Section 6---

SECTION 2: ADOLESCENT PROGRAMMING

In this survey "adolescent" refers to youth ages 13-19.

9. Which of the following best describes the type(s) of adolescent programming your institution offers? (check all that apply)

- ☐ Youth development programming
☐ Internships

- ☐ After-school clubs
- ☐ Service-learning
- ☐ School tours
- ☐ Group tours
- ☐ Camp programs
- ☐ Job shadowing
- ☐ Other (please specify)

10. To what extent does offering programming for adolescents support your institution's current mission?

[4-point Likert scale: To a Great Extent, Somewhat, A Little, Not at All]

11. Please explain your answer:

12. What percentage of your institution's education programs are designed for the following audiences?

Note: These items may have estimated percentages. Total should equal 100%

- ☐ Adults
- ☐ Families
- ☐ Children
- ☐ Schools
- ☐ Adolescents
- ☐ Other (please specify)

13. Does your institution offer long-term programming for adolescents? *For the purposes of this study, "long-term" is defined as programming lasting a total of seven or more days.*

- ☐ Yes (*Go to Section 4*)
- ☐ No (*Go to Section 3*)

SECTION 3: LESS THAN SEVEN DAYS

14. *For the purposes of this study "long-term" is defined as programming lasting a total of seven or more days.*

To the best of your knowledge, has your institution ever considered offering long-term programming for adolescents?

- ☐ Yes
- ☐ No

15. Do you consider the following as barriers to offering long-term programming for adolescents?

(Likert scale: Definitely, Probably, Don't Know, Probably Not, Definitely Not)

- ☐ Funding
- ☐ Community support
- ☐ Institutional support
- ☐ Organizational leadership
- ☐ Staff time
- ☐ Adolescent interest
- ☐ Expertise in working with adolescents
- ☐ Other (please specify)

16. What do you see as the potential *institutional* benefits of offering long-term programming for adolescents? [Open-ended]

Go to Section 6

SECTION 4: OVERALL PROGRAMS

Your answers in this section will greatly aid this research. Thank you for your participation.

17. Why does your institution offer programming for adolescents? [Open-ended]

18. How has offering programming for adolescents benefited your institution? [Open-ended]

19. What are your strategies for engaging adolescents, specifically in public horticulture topics? [Open-ended]

20. Do you consider the following as challenges to offering programming for adolescents?

(Likert scale: Definitely, Probably, Not Sure, Probably Not, Definitely Not)

- ☐ Funding
- ☐ Community support
- ☐ Institutional support
- ☐ Organizational leadership
- ☐ Staff time
- ☐ Adolescent interest
- ☐ Expertise in working with adolescents
- ☐ Other (please specify)

21. Please share any further thoughts about offering programming for adolescents: [Open-ended]

SECTION 5: PROGRAMMING BACKGROUND

The following questions refer to your institution's long-term programming for adolescents. *For the purposes of this study, "long-term" is defined as programming lasting a total of seven or more days.*

22. Approximately how many adolescents are typically served through programming?

- ☐ 1-5
- ☐ 6-10
- ☐ 11-20
- ☐ 20-50
- ☐ More than 50

23. What are the approximate age ranges for the adolescent audience served through programming? Please give the complete age ranges, even if they go below or above the adolescent age range defined as 13-19.

Minimum Age ____ (##)

Maximum Age ____ (##)

24. How many staff members are currently responsible for the implementation and administration of programming for adolescents? [Open-ended]

Number of full-time staff:

Number of part-time staff:

25. Please provide the following demographic information for the adolescent audience(s) served through programming at your institution.

NOTE: These items may have estimated percentages. Total for each category should equal 100%.

Gender:

___ Male

___ Female

Home Community/Neighborhood:

___ Rural

___ Urban

___ Suburban

___ Unknown

26. To what extent does your programming for adolescents aim to increase awareness and understanding of public horticulture?

[4-point Likert scale: To a Great Extent, Somewhat, A Little, Not at All]

27. What aspect/s of public horticulture does your programs focus on? [Check all that apply]

- ☐ Botany
- ☐ Horticulture Techniques
- ☐ Horticulture Education
- ☐ Natural Lands
- ☐ Sustainability
- ☐ Conservation
- ☐ Other (please specify)

28. To what extent does the programming for adolescents do the following: [4-point Likert scale: To a Great Extent, Somewhat, A Little, Not at All]

Capacity-Building:

- ☐ Incorporate new funding sources after inception
- ☐ Ensure continuity of leadership
- ☐ Support continuity of staff
- ☐ Provide access to key resources and materials
- ☐ Have a curriculum that builds life skills and competencies

Partnerships:

- ☐ Create community awareness of impacts
- ☐ Develop partnerships with community groups or corporate entities

Youth-Driven Programming:

- ☐ Involve adolescents in decision-making and assessment
- ☐ Provide leadership roles for adolescents

Opportunities to Contribute:

- ☐ Provide adolescents compensation and/or recognition for contributions
- ☐ Involve adolescents in contributing to the broader community

29. How successful has the programming been with: [5-point Likert scale: Very Successful, Somewhat Successful, Neither Successful or Unsuccessful, Somewhat Unsuccessful, Unsuccessful]

- ☐ Meeting your programmatic goals
- ☐ Recruiting participants
- ☐ Retaining participants
- ☐ Engaging participants
- ☐ Impacting the community
- ☐ Overall

30. To what extent have the following contributed to the success of the programming? [5-point Likert scale: To a Great Extent, Somewhat, A Little, Not at All, Not Applicable]

Capacity-Building:

- ☐ Incorporating new funding sources after inception
- ☐ Ensuring continuity of leadership
- ☐ Supporting continuity of staff
- ☐ Providing access to key resources and materials
- ☐ Having a curriculum that builds life skills and competencies

Partnerships:

- ☐ Creating community awareness of impacts
- ☐ Developing partnerships with community groups or corporate entities

Youth-Driven Programming:

- ☐ Involving adolescents in decision-making and assessment
- ☐ Providing leadership roles for adolescents

Opportunities to Contribute:

- ☐ Providing adolescents compensation and/or recognition for contributions
- ☐ Involving adolescents in contributing to the broader community

31. How often is assessment conducted for the programming for adolescents?

[Choose one]

- ☐ Continuously
- ☐ Often
- ☐ Occasionally
- ☐ Never

The following question is based on one of the most commonly referenced frameworks for influencing positive young development. Researchers have identified what they call the "Five Cs"—competence, confidence, connections, character and caring—as both characteristics that can facilitate healthy youth development and as important outcomes for programs focused on youth . When youth possess these characteristics, it is theorized that they are then in a position to accomplish a sixth outcome, making contributions to self, family, community, and society (Lerner, et.al., 2005).

32. To what extent do you believe that your programming fosters the following characteristics in youth? [4-point Likert scale: To a Great Extent, Somewhat, A Little, Not at All]

- ☐ Competence (social, academic, cognitive, vocational)
- ☐ Confidence (overall positive self-worth)
- ☐ Connections (positive bonds with people and institutions)
- ☐ Character (respect, standards, morality)

- ☐ Caring (sympathy, empathy)
- ☐ Contribution (to self, family, community, and society)

SECTION 6: BACKGROUND

33. What position do you currently hold at your institution? [Open-ended]

This information is requested to aid in further inquiries and will be kept entirely confidential. No personally or institutionally identifiable information will be associated with your responses in any reports of this data.

34. Please fill in the following information:

This information is requested to aid in further inquiries and will be kept entirely confidential. No personally or institutionally identifiable information will be associated with your responses in any reports of this data.

Name of institution

Contact name

Contact email address

35. Which of the following best characterizes your institution? [Choose one in each category]

Type (check all that apply):

- ☐ Arboretum
- ☐ Botanic Garden
- ☐ College/University Garden
- ☐ Conservatory
- ☐ Display Garden
- ☐ Entertainment Garden
- ☐ Historical Landscape/Site
- ☐ Nature Garden
- ☐ Zoo
- ☐ Other (please specify)

Location:

- ☐ Urban
- ☐ Rural
- ☐ Suburban

Size:

- ☐ Small (operating budget less than \$1 million)
- ☐ Medium (operating budget between \$1 and \$2 million)
- ☐ Large (operating budget over \$2 million)

Please click the "Next" button to submit the survey.

Thank you for your time and assistance!
Your participation is very important to the success of this research.

If you have any questions, please contact Keelin Purcell at kpurcell@udel.edu

Appendix B2: Letter to APGA Survey Pool

April 27, 2009

Name

Title

Address

Address

Dear [First Name],

I am writing to ask for your help with an important study I am conducting as part of my Master's Thesis entitled, *Adolescent Involvement in Public Horticulture Institutions*. The purpose of this study is to better understand the scope of programming being offered for adolescents at public horticulture institutions, as well as the institutional barriers to, strategies for, and benefits of such programming.

In the next few days you will receive an e-mail request asking you to participate in this study by completing a web-based questionnaire about the educational offerings of your institution. I am writing in advance because many people like to know ahead of time that they will be asked to fill out a questionnaire. This research can only be successful with the generous help of colleagues such as yourself.

The questionnaire will be distributed to **all Institutional Members of the APGA**, not just those currently offering programming for adolescents. I hope you will take 10-15 minutes of your time to participate in this study.

Thank you in advance for your consideration and time. Please don't hesitate to contact me with any questions or comments. I look forward to working on this study and providing the field with new information about adolescent programming.

Sincerely,



Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware
kpurcell@udel.edu

Appendix B3: Emails to APGA Survey Pool

Survey Invitation Email:

Date: May 5, 2009

Subject: Adolescent Involvement in Public Horticulture Institutions Questionnaire

Dear [First Name],

I am writing to ask you to participate in a national study I am conducting for my Master's thesis, *Adolescent Involvement in Public Horticulture Institutions*. The purpose of this study is to document the extent to which APGA Institutional Members are providing programming for adolescents, as well as to offer insights about the institutional barriers to, and benefits of, doing so. For the purpose of this study, "adolescent" refers to youth 13-19 years of age. I am looking for input from institutions that do or do not offer programs for adolescents. The study will be greatly enhanced by your involvement and input.

The Web-based questionnaire takes approximately 10 minutes to complete and should be completed by a staff member who is involved in, or familiar with, educational programming at your institution. Please follow the link below to access the questionnaire:

Follow this link to the questionnaire:
\${l://SurveyLink?d=Take the Survey}

Or copy and paste the url below into your internet browser:
\${l://SurveyURL}

Your participation in this survey is entirely voluntary and you are under no obligation to participate or to continue once you have begun. All of your responses will be kept confidential and no personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at kpurcell@udel.edu or 302-831-2517.

Thank you in advance for your participation! I appreciate your time and consideration in completing this questionnaire. Findings from this research will inform the field and it is only possible because of this network of garden professionals such as yourself.

Many thanks,

Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor
University of Delaware

Follow the link to opt out of future emails:
\${l://OptOutLink}

First Reminder Email

Date: May 12, 2009

Subject: Adolescent Involvement in Public Horticulture Institutions Questionnaire

Dear [FirstName],

You recently received an email asking you to fill out a Web-based questionnaire to assist with a national study of adolescent involvement in public horticulture institutions. If you have already responded, thank you very much for your help. Your responses to this questionnaire are important and will help contribute to a new base of knowledge regarding adolescent programming.

The questionnaire should only take you 15 minutes or less to complete. Again, **this questionnaire is intended for all institutions**, whether or not they offer adolescent programming, or are even in a position to do so. I encourage you to take a few moments to complete the questionnaire. The higher the response rate, the more representative the results will be.

Follow this link to the Survey:

\${l://SurveyLink?d=Take the Survey}

Or copy and paste the url below into your internet browser:

\${l://SurveyURL}

Your response is important. Getting direct feedback from as many institutions as possible is critical to this study. Thank you for your help.

Sincerely,

Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor
University of Delaware

Follow the link to opt out of future emails:
\${l://OptOutLink}

Second Reminder Email

Date: May 19, 2009

Subject: Reminder: Thesis Questionnaire

Dear [First Name],

My questionnaire supporting research on adolescent involvement in public horticulture institutions will be closing this coming **Saturday, May 23rd**. I would appreciate it if you took a few moments to complete the questionnaire.

Follow this link to the questionnaire:
\${l://SurveyLink?d=Take the Survey}

Or copy and paste the url below into your internet browser:
\${l://SurveyURL}

All of your responses will be kept confidential and no personally identifiable information will be associated with your responses in any reports of this data. The study will be greatly enhanced by your involvement and input. Thank you for your help.

Sincerely,

Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor
University of Delaware

Follow the link to opt out of future emails:
\${l://OptOutLink}

Additional Contacts Survey Invitation Email

Date: May 18, 2009

Subject: Adolescent Involvement in Public Horticulture Institutions Questionnaire

Dear [FirstName],

I am writing to ask you to participate in a national study I am conducting for my Master's thesis, *Adolescent Involvement in Public Horticulture Institutions*. The purpose of this study is to document the extent to which APGA Institutional Members are providing programming for adolescents, as well as to offer insights about the institutional barriers to, and benefits of, doing so. For the purpose of this study, "adolescent" refers to youth 13-19 years of age. I am looking for input from institutions that do or do not offer programs for adolescents. The study will be greatly enhanced by your involvement and input.

The Web-based questionnaire takes approximately 10 minutes to complete and should be completed by a staff member who is involved in, or familiar with, educational programming at your institution. **This questionnaire will be closing Saturday, May 23rd.**

Follow this link to the questionnaire:

\${l://SurveyLink?d=Take the Survey}

Or copy and paste the url below into your internet browser:

\${l://SurveyURL}

Your participation in this survey is entirely voluntary and you are under no obligation to participate or to continue once you have begun. All of your responses will be kept confidential and no personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at kpurcell@udel.edu or 302-831-2517.

Thank you in advance for your participation! I appreciate your time and consideration in completing this questionnaire. Findings from this research will inform the field and it is only possible because of this network of garden professionals such as yourself.

Many thanks,

Keelin Purcell
Longwood Graduate Program Fellow

University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor
University of Delaware

Follow this link to opt out of future emails:
\${l://OptOutLink}

Additional Contacts Reminder Email

Date: May 21, 2009

Subject: Reminder: Public Horticulture Institutions Research Questionnaire

Dear [FirstName],

You recently received an email asking you to fill out a Web-based questionnaire to assist with a national study of adolescent involvement in public horticulture institutions. **This questionnaire will close this Saturday, May 23rd.** Your responses are important and will help contribute to a new base of knowledge regarding adolescent programming.

The questionnaire should only take you 15 minutes or less to complete. Again, **it is intended for all institutions**, whether or not they offer adolescent programming. I encourage you to take a few moments to complete the questionnaire. The higher the response rate, the more representative the results will be.

Follow this link to the Survey:

\${l://SurveyLink?d=Take the Survey}

Or copy and paste the url below into your internet browser:

https://delaware.qualtrics.com/SE?SID=SV_cUDlkLL0HawQc&SVID=Prod

Your response is important. Getting direct feedback from as many institutions as possible is critical to this study. Thank you for your help.

Sincerely,

Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor

University of Delaware

Follow the link to opt out of future emails:

[\\${1://OptOutLink}](#)

Appendix B4: Follow-up Survey Questions

Survey Introduction on Web site:

Welcome to the on-line follow-up questionnaire for a national study examining adolescent programming at public horticulture institutions. This Master's thesis research is being conducted by Keelin Purcell, a Fellow in the Longwood Graduate Program at the University of Delaware. Results will be available upon request and future publication is anticipated.

Your participation is entirely voluntary. Individual responses will be collected on a secure web server and data will remain confidential and viewed only by the researcher. The data will be destroyed after two years. Close the web browser to leave the study at any time and any responses you previously made will not be included in the study.

If you have any questions concerning the study, please contact the researcher, Keelin Purcell, Longwood Graduate Program, University of Delaware at kpurcell@udel.edu. For questions about your rights as a subject or about any issues concerning the use of human subjects in research, please contact the Chair of the Human Subjects Review Board at the University of Delaware at (302) 831-2136.

Thank you in advance for your assistance in this important effort. Please press the "Next" button to continue.

Survey Questions

For the purposes of this study, “adolescent” is defined as 13-19 years of age, and “long-term programming” is defined as programming lasting a total of seven or more days.

Do you currently offer long-term adolescent programming at your institution?

- ☐ Yes
- ☐ No (end survey)

Are you the director or the designated person with the primary responsibility for leading/decision-making at your institution?

If not, please forward the link for this survey to the appropriate person within your institution.

- ☐ Yes
- ☐ No (end survey)

The following areas have been identified as institutional benefits to offering long-term adolescent programming. Please rank the importance of these benefits to you and your institution (with 1 being the most important). [Scale is from 1-8. Each option must have unique number in the scale]

- ☐ Builds relationships with new audiences (who may be future employees or contributors)
- ☐ Builds interest in horticulture and environmental issues (including career interests)
- ☐ Supports the institution's mission and growth
- ☐ Helps the institution contribute to and build the strength of the community
- ☐ Brings in new energy, ideas, and perspectives
- ☐ Provides free or inexpensive labor
- ☐ Provides new funding opportunities
- ☐ Other (please specify)

The following areas have been identified as institutional challenges to offering long-term adolescent programming. Please rank these by how challenging they are for your institution (with 1 being most challenging). [Scale is from 1-8. Each option must have unique number in the scale]

- ☐ Funding
- ☐ Community support
- ☐ Institutional support
- ☐ Organizational leadership
- ☐ Staff time
- ☐ Adolescent interest
- ☐ Expertise in working with adolescents
- ☐ Other (please specify)

Please click the "Next" button to submit the survey.

Thank you for your time and assistance!
Your participation is very important to the success of this research.

If you have any questions, please contact Keelin Purcell at kpurcell@udel.edu

Appendix B5: Follow-up Survey Emails to Survey Pool

Follow-up Survey Invitation Email:

Date: November 18, 2009

Subject: Adolescent Programming Follow-up Questionnaire

Dear [First Name],

I am writing to ask you to participate in a follow-up questionnaire for a national study I am conducting for my Master's thesis, *Adolescent Involvement in Public Horticulture Institutions*. The purpose of this study is to document the extent to which public horticulture institutions are providing programming for adolescents, as well as to offer insights about the institutional barriers to, and benefits of, doing so.

Initial data has been collected and I am now following up with directors at institutions that indicated they were offering long-term adolescent programming. The purpose of this questionnaire is to understand which institutional benefits and challenges to offering adolescent programming are most important to directors.

The Web-based questionnaire is only four questions and will take less than five minutes to complete. Please follow the link below to access the questionnaire:

Follow this link to the Survey:

[\\${l://SurveyLink?d=Take the Survey}](#)

Or copy and paste the url below into your internet browser:

[\\${l://SurveyURL}](#)

Your participation in this survey is entirely voluntary and you are under no obligation to participate or to continue once you have begun. All of your responses will be kept confidential and no personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at kpurcell@udel.edu or 302-831-2517.

Thank you in advance for your participation! I appreciate your time and consideration in completing this questionnaire. Findings from this research will inform the field and it is only possible because of a network of garden professionals such as you.

Many thanks,

Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor
University of Delaware

Follow the link to opt out of future emails:
\${l://OptOutLink}

First Reminder Email

Date: November 23, 2009

Subject: Reminder: Follow-up Questionnaire

You recently received an email asking you to fill out a follow-up Web-based questionnaire to assist with a national study of adolescent involvement in public horticulture institutions. This questionnaire is meant to capture the opinion of Executive Directors. Your response to this questionnaire is important and will help contribute to a new base of knowledge regarding adolescent programming.

The questionnaire is only four questions and should take no more than five minutes to complete. I encourage you to take a few moments to complete the questionnaire. The higher the response rate, the more representative the results will be.

Please click on the link below to go to the survey website:

Follow this link to the Survey:

\${l://SurveyLink?d=Take the Survey}

Or copy and paste the url below into your internet browser:

\${l://SurveyURL}

Your response is important. Getting direct feedback from as many institutions as possible is critical to this study. Thank you for your help.

Sincerely,

Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor
University of Delaware

Follow the link to opt out of future emails:
\${l://OptOutLink}

Second Reminder Email

Date: December 1, 2009

Subject: Last Reminder: Adolescent Programming Follow-up Questionnaire

Dear [First Name],

My questionnaire supporting research on adolescent involvement in public horticulture institutions will be closing this coming **Saturday, December 5th**. This questionnaire is meant to capture the opinion of Executive Directors. I would appreciate it if you took a few moments to complete this four-question questionnaire.

Follow this link to the Survey:

\${l://SurveyLink?d=Take the Survey}

Or copy and paste the url below into your internet browser:

\${l://SurveyURL}

All of your responses will be kept confidential and no personally identifiable information will be associated with your responses in any reports of this data. The study will be greatly enhanced by your involvement and input. Thank you for your help.

Sincerely,

Keelin Purcell
Longwood Graduate Program Fellow
University of Delaware

Dr. Robert Lyons
Longwood Graduate Program Director & Professor
University of Delaware

Follow the link to opt out of future emails:
\${l://OptOutLink}

Appendix C:
CASE STUDY RESEARCH

Appendix C1: Case Study Institution and Program Description

Chicago Botanic Garden

The Chicago Botanic Garden (CBG) is a 385-acre public garden in Glencoe, IL, a suburban area approximately 20 miles outside of Chicago. CBG currently offers four long-term adolescent programs: Science First, College First, the Fairchild Challenge, and Green Youth Farm.

- Science First consists of two four-week summer sessions for Chicago Public School students in 7th, 8th, and 9th grades. This program serves 40 youth each summer and is focused on science enrichment.
- College First is an eight-week summer paid internship program for Chicago Public School students in 10th and 11th grade. This program serves approximately 20 youth each summer and is focused on science enrichment as well as career and college preparation.
- The Fairchild Challenge is a program developed by the Fairchild Tropical Botanical Garden and spread to different “satellite” institutions nationally and internationally. Students participate in different challenges through their schools, competing for points to win awards. At CBG, the Fairchild Challenge is aimed at high school students.
- Green Youth Farm is an organic farming program for teenagers ages 15-18. Youth receive a stipend for working 20 hours a week throughout the summer on organic farm sites around the Chicago area. They also can work four hours a week in the spring and fall.

Brooklyn Botanic Garden

The Brooklyn Botanic Garden (BBG) is a 52-acre public garden in Brooklyn, NY, right in the heart of urban Brooklyn. BBG is currently offering two long-term adolescent programs.

- The Garden Apprentice Program (GAP) is a tiered program for high school students in which adolescents participate during the summer, and with weekly meetings throughout the school year. Tier 1 youth work in the Children's Garden as Discovery Guides. Tier 2, the Garden Corps, work with a mentor in another department at BBG. Tier 3, Junior Apprentices, create and work at environmental education stations for visitors. And Tier 4 youth work alongside Children's Garden Instructors as paid Senior Apprentices. There are also opportunities for teenagers who have graduated out of this program to continue as paid employees in the Children's Garden.
- BBG serves as a partner and part of the campus for the Brooklyn Academy for Science and the Environment (BASE), a part of the New Century High School Initiative. They have dedicated staff to contribute to school leadership and create and lead appropriate lessons and activities.

Appendix C2: Case Study Questions

Case Study Interview Questions

An Analysis of Adolescent Involvement at Public Horticulture Institutions

Keelin Purcell, Longwood Graduate Program

All questions are intended to capture the opinion of the interviewee. Questions that are italicized are meant for higher-level management who are in a position to give an overview of all adolescent programming. Not all of the below questions will be asked of all interviewees.

Overview

1. What is your current staff position and how does it relate to adolescent programming at your institution?
2. Why does your institution offer long-term adolescent programming?
3. *Which of programs that your institution offers are the most popular? Why do think this is?*
4. How does the program you work for impact the adolescents? *Of all the adolescent programs that your institution offers, which has the biggest impact on adolescents? Why do you think this is?*
5. How successful is the adolescent program you work for? How do you measure success?

Institutional Benefits

1. In your opinion, how does offering teenage programming support your institution's mission?
2. In what other ways does offering teenage programming benefit your institution?
3. *How do different types of adolescent programs benefit the institution in different ways? What is the benefit of having more than one adolescent program?*
4. Do the following benefits occur frequently? Please rate on the below scale.

	Definitel y	Probabl y	Don't Kno	Probabl y Not	Definitel y Not

			w		
Provides volunteer/labor force					
Can provide grants and community recognition					
Builds relationships early (future contributor/staff/student , brings in parents and friends)					
Institution can have a large influence on youth					
Builds overall interest in horticulture, environmental issues, and public gardens					
Brings in new energy, ideas, and perspectives					
Helps institution contribute to the community					

Institutional Barriers

1. What are the main barriers to offering adolescent programming?
2. Are the following common challenges? How are they coped with?
 - a. Funding
 - b. Community Support
 - c. Institutional Support
 - d. Organizational Leadership
 - e. Staff Time
 - f. Adolescent Interest
 - g. Expertise in working with adolescents
 - h. Others?
3. Did you have perceived barriers or challenges when starting your job or planning for programming? Did perceived barriers pose actual challenges in a real-life context? Why do you think this is?

4. What is the balance between the benefits and the challenges of providing adolescent programming?

Strategies

1. To what extent is the program that you work for based on horticulture topics?
How do you see horticulture capturing the interest of adolescents?
2. The following question is based on one of the most commonly referenced frameworks for influencing positive young development. Researchers have identified what they call the "Five Cs"—competence, confidence, connections, character and caring—as both characteristics that can facilitate healthy youth development and as important outcomes for programs focused on youth .
When youth possess these characteristics, it is theorized that they are then in a position to accomplish a sixth outcome, making contributions to self, family, community, and society (Lerner, et.al., 2005). How do you see your program building the following characteristics in youth:
 - a. Competence (social, academic, cognitive, vocational)
 - b. Confidence (overall positive self-worth)
 - c. Connections (positive bonds with people and institutions)
 - d. Character (respect, standards, morality)
 - e. Caring (sympathy, empathy)
 - f. Contribution (to self, family, community, and society)
3. Which strategies are the most crucial to success? Why do you think this is?
4. Are the following strategies equally important for success? How are they supported?
 - a. Capacity Building
 - i. Incorporate new funding sources after inception
 - ii. Ensure continuity of leadership
 - iii. Support continuity of staff
 - iv. Provide access to key resources and materials
 - v. Have a curriculum that builds life skills and competencies
 - b. Partnerships
 - i. Create community awareness of impacts
 - ii. Develop partnerships with community groups or corporate entities
 - c. Youth-driven programming
 - i. Involve adolescents in decision-making and assessment
 - ii. Provide leadership roles for adolescents
 - d. Opportunities to contribute
 - i. Provide adolescents with compensation and/or recognition for contributions
 - ii. Involve adolescents in contributing to the broader community
5. *Where is the priority for funding sustainability for adolescent programming?*

6. Are there strategies that are specific to public horticulture institutions? What about the strategies listed below?
 - a. Hands-on physical work
 - b. Displaying a joy and enthusiasm for horticulture
 - c. Offering a broad range of activities and experiences

Appendix C3: Informed Consent Form for Interviews

Informed Consent Form for Interviews

The Longwood Graduate Program

An Analysis of Adolescent Involvement at Public Horticulture Institutions

You have been invited to participate in a research study concerning adolescent programming at public gardens to gain your perspective on this topic. The purpose of this study is to better understand and analyze the institutional benefits and barriers of offering adolescent programming, as well as to identify successful engagement strategies.

For the purpose of this study, “adolescent” refers to youth 13-19 years of age. The end result will be the development of recommendations for public horticulture institutions interested in offering adolescent programming.

Please read the information below describing this study and feel free to ask questions about anything you do not understand before deciding to take part. Your participation is voluntary and you are free to refuse to answer any question or withdraw from this study at any time without penalty.

Procedures of the Study

This research began with a survey to all APGA Institutional Members. Case studies will be completed for two large gardens and a series of interviews will be conducted with small and medium sized gardens. You have been selected to participate in this research because of your garden’s noteworthy adolescent programs and geographical distribution. This interview will last approximately one to two hours. Audio recordings of interviews will be necessary to ensure proper collection and comprehension of data by researchers. Audio recordings and notes taken during the interviews will serve as the basis of the research. Audio recordings will be destroyed two years after the study is complete. Direct quotations, your name, and the name of your organization might be referenced in the final document. There is no compensation for your voluntary participation in this study.

If you understand that this interview will be audio recorded and you agree to this, please initial here: _____ **Subject’s Initials**

Contact Information

If you have questions about this research, please contact Ms. Keelin Purcell (e-mail: kpurcell@udel.edu), Longwood Graduate Fellow, or Dr. Robert Lyons, Longwood Graduate Program Coordinator by phone at (302) 831-1369. If you have any concerns about your rights as a participant, contact the Chair of the University of Delaware Human Subjects Review Board at (302) 831-2136.

If you agree to participate in this research, please print and sign your name below.

Name of Subject (Please Print)

Signature of Subject

Date

Appendix C4: Materials Gathered from Case Study Research

Chicago Botanic Garden

* = information gathered from Fairchild Tropical Botanical Garden

- Interviews
 - Sonji Davis, College First Instructor
 - Angela Ulrey, College First Instructor
 - David Cooper, Science First Instructor
 - Milton Harris, Science First Instructor
 - Tree Sturman, Manager, Teacher and Student Programs
 - Jennifer Gebhardt, Temporary Program Coordinator
 - Patsy Benveniste, Vice President for Community Education
 - Heidi Weigent, Green Youth Farm Instructor
 - Netiva Kolitz, Fairchild Challenge Satellite Program Coordinator*
- Observations
 - Science First Classroom
 - Science First Poster Session
 - College First Presentation
 - Green Youth Farm Workday
- Materials
 - Green Youth Farm
 - Open House Invitation
 - Mission Statement
 - Pre and Post Evaluations
 - Web Site
 - College First
 - Four PowerPoint class presentations
 - Pre-Content Assessment
 - Post-Content Assessment
 - Presentation Rubric
 - Attitude Survey
 - Web Site
 - Application
 - Syllabus
 - Program Overview
 - 2008 Evaluation Results
 - Examples of Program Activities
 - Survey for Past Graduates

- Recruitment Posters
- Science First
 - Pre-Content Assessment
 - Post-Content Assessment
 - Presentation Rubric
 - Attitude Survey
 - Web Site
 - Application
 - 2008 Curriculum Overview
 - Program Overview
 - 2008 Evaluation Results
 - Examples of Program Activities
 - Recruitment Posters
- Fairchild Challenge
 - 2009 Summary
 - 2008-2009 Brochure
 - Web Site
 - 2008-2009 Annual Report*
 - An Evaluation of the Fairchild Challenge Program at Fairchild Botanic Garden*
- Summer Science: Reaching Urban Youth Through Environmental Science: A Manual for Educators, Administrators, and Museum Staff by Jennifer Schwarz Ballard

Brooklyn Botanic Garden

- Interviews
 - Saara Nafici, Garden Apprentice Program Coordinator
 - Scot Medbury, President
 - Sharon Myrie, Vice President of Education
 - Ely Arnone, Brooklyn Academy of Science and the Environment Program Manager
 - Patricia Hulse, Family Programs Manager
 - Marilyn Smith, Director of Children's Education
- Observation
 - BASE Field Studies Class
- Materials
 - Brooklyn Academy of Science and the Environment (BASE)
 - Web Site
 - Informational Brochure
 - Three articles profiling BASE
 - Field Studies Lesson Plan
 - Garden Apprentice Program (GAP)
 - Web Site

- Applications (for each year)
- Informational Flyer
- Acceptance Letter
- Keys to Success
- Placement Forms
- 2009 Discovery Guides Training Schedule with Teacher Notes
- 2009 Junior Apprentice Training Schedule
- 2009 Summer Schedules
- Cooperative Contract Creation Worksheet

Appendix D:
PHONE INTERVIEW RESEARCH

Appendix D1: Phone Interview Institution and Program Description

The Delaware Center for Horticulture

The Delaware Center for Horticulture (DCH) is an urban greening organization in Wilmington, Delaware with less than one acre of on-site space, and additional garden spaces around the city. DCH has two adolescent programs. Horticulture and Environmental Leadership Program (HELP) is for students entering 8th grade. The youth spend five weeks engaged in environmental education activities around the Wilmington area. The second program, Youth Environmental Steward (YES), is for 12-18 year olds. This is an ongoing service-learning program in which individuals or groups can participate in greening opportunities around Wilmington.

Bowman's Hill Wildflower Preserve

Bowman's Hill Wildflower Preserve (BHWP) is a 135-acre preserve in the suburb of New Hope, Pennsylvania. BHWP has a somewhat informal high school volunteer program. This is a summer program where adolescents come on their own schedule and get volunteer credit. They typically have about 20 teenagers each summer, who are up to 16 years old. The adolescent volunteers work primarily with the Nursery Manager and the Grounds Manager.

Fellows Riverside Garden

Fellows Riverside Garden (FRG) is a 12-acre display garden that is part of the Mill Creek Metro Parks in urban Youngstown, Ohio. They have a two-year summer vegetable gardening program for elementary school-aged children and have developed a “Green Thumb Program” for youth who age out of the vegetable gardening program, but still want to be involved in the garden as volunteers. They have 10 to 15 Green Thumbs each year, ranging from 10-18 years old.

Appendix D2: Phone Interview Questions

Phone Interview Questions

An Analysis of Adolescent Involvement at Public Horticulture Institutions

Keelin Purcell, Longwood Graduate Program

All questions are intended to capture the opinion of the interviewee. Not all of the below questions will necessarily be asked of all interviewees. Italicized questions are of secondary importance and will be asked if time permits.

Overview

1. What is your current staff position and how does it relate to adolescent programming at your institution?
2. Why does your institution offer long-term adolescent programming?
3. How does the program you work for impact the adolescents?
4. *How successful is the adolescent program you work for? How do you measure success?*

Institutional Benefits

1. In your opinion, how does offering teenage programming support your institution's mission?
2. In what other ways does offering teenage programming benefit your institution?
3. *Do the following benefits occur frequently?*
 - a. Provides volunteer/labor force
 - b. Can support grant-making and community recognition
 - c. Builds relationships early (future contributor/staff/student, brings in parents and friends)
 - d. Institution can have a large influence on youth
 - e. Builds overall interest in horticulture, environmental issues, and public gardens
 - f. Brings in new energy, ideas, and perspectives
 - g. Helps institution contribute/give back to the community

Institutional Barriers

1. What are the main barriers to offering adolescent programming? Why are there barriers? What could help remove or ameliorate them?

2. Does your institutions have funding sustainability for adolescent programming as a funding priority? Why or why not?
3. *Did you have perceived barriers or challenges when starting your job or planning for programming? Did perceived barriers pose actual challenges in a real-life context? Why do you think this is?*
4. What is the balance between the benefits and the challenges of providing adolescent programming?

Strategies

1. Do you see horticulture capturing the interest of adolescents? How? When you recruit students for this program, is there any emphasis on the horticultural skills they would gain?
2. Which strategies are the most crucial to the success of your adolescent programs? Why do you think this is?
3. Are the strategies below relevant to your institution's success in adolescent programming?
 - a. Capacity Building
 - i. Incorporating new funding sources after the program has begun
 - ii. Ensuring continuity of leadership
 - iii. Supporting continuity of staff
 - iv. Providing access to key resources and materials
 - v. Having a curriculum that builds life skills and competencies
 - b. Partnerships
 - i. Creating community awareness of impacts
 - ii. Developing partnerships with community groups or corporate entities
 - c. Youth-driven programming
 - i. Involving adolescents in decision-making and assessment
 - ii. Providing leadership roles for adolescents
 - d. Opportunities to contribute
 - i. Providing adolescents with compensation and/or recognition for their contributions to the institution
 - ii. Involving adolescents in opportunities to contribute to the broader community
4. Are there strategies that seem particularly relevant to successful adolescent programming at public horticulture institutions? Are the strategies listed below effective? Why or why not?
 - a. Providing opportunities for hands-on physical work
 - b. Displaying a joy and enthusiasm for horticulture
 - c. Offering a broad range of activities and experiences

Appendix D3: Materials Gathered from Phone Interview Research

Delaware Center for Horticulture

- Interview—Sarah Deacle, Assistant Director of Programs
- Materials
 - 2009 Final Schedule
 - Information Letter
 - Permission Form
 - Web Site
 - Student Guidelines
 - Student Packet

Bowman's Hill Wildflower Preserve

- Interview—Kathleen Muth, Volunteer Coordinator

Fellows Riverside Garden

- Interview—Anita Wesler, Horticulture Educator

REFERENCES

- American Association of Museums. 2000. Code of Ethics for Museums. American Association of Museums, Washington, D.C. 26 November 2008.
<<http://www.aam-us.org/museumresources/ethics/coe.cfm>>
- American Association of Museums. 2002. Mastering Civic Engagement: A Challenge to Museums. American Association of Museums, Washington, D.C.
- American Association of Museums. 2008. Excellence and Equity: Education and the Public Dimension of Museums. American Association of Museums, Washington, D.C.
- Association of Science-Technology Centers Incorporated. 2001. From Enrichment to Employment: The YouthALIVE! Experience. Association of Science-Technology Centers Incorporated. Washington, D.C.
- Bales, S.N. 2001. Perceptual Barriers to Valuing and Supporting Youth, p. 55-76. In: P.L. Benson and K.J. Pittman (eds.). Trends in Youth Development: Visions, Realities and Challenges. Kluwer Academic Publishers, Norwell, MA.
- Batcke, A. 2007. Calling All Teenagers. Cultural Quarterly. Winter 2007: 8-9.
- Baum, L., Hein, G. & Solivay, M. 2000. In Their Own Words: Voices of Teens in Museums. Journal of Museum Education. 25(3): 9-14.
- Beane, D.B. 2000. Museums and Healthy Adolescent Development: What We Are Learning from Research and Practice. Journal of Museum Education. 25(3): 3-8.
- Bowles, A. & Brand, B. 2009. Learning Around the Clock: Benefits of Expanded Learning Opportunities for Older Youth. American Youth Policy Forum, Washington, DC.
- Bradley, J.C., Kohlleppe, T., Waliczek, T.M. & Zajicek, J.M. 2000. Factors Affecting the Recruitment of Horticulture Students at Major Universities. HortTechnology. 10(3): 631-636.

- Carnegie Corporation of New York. 1995. *Great Transitions: Preparing Adolescents for a New Century*. Carnegie Corporation of New York, New York.
- Casner-Lotto, J. & Barrington, L. 2006. *Are They Really Ready to Work? Employer's Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce*. The Conference Board, Inc, the Partnership for 21st Century Skills, Corporate Visions for Working Families, and the Society for Human Resource Management, New York.
- Catalano, R.F., Berglund, M.L., Ryan, J.A.M., Lonczak, H.S. & Hawkins, J.D. 2004. Positive Youth Development in the United States: Research Findings on Evaluations of Positive Youth Development Programs. *The Annals of the American Academy of Political and Social Science*. 591(1): 98-124.
- Cochran, G.R. & Ferrari, T.M. 2008. *After-School Programs and Workforce Preparation: Exploring the Opportunities to Prepare Youth for the 21st Century Knowledge Economy*. Ohio State University Extension, Columbus, O.H.
- Creswell, J.W. 2009. *Research design: Qualitative, quantitative, and mixed method approaches*. 3rd ed. Sage Publications, Thousand Oaks, CA.
- Darnell, R.L. & Cheek, J.G. 2005. Plant Science Graduate Students: Demographics, Research Areas, and Recruitment Issues. 15: 677-681.
- Dillman, D.A., Smyth, J.D., & Christian, L.M. 2009. *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method*. 3rd ed. John Wiley & Sons, Hoboken, NJ.
- Division of Instructional Innovation and Assessment. 2007. *Response Rates*. The University of Texas at Austin, Austin, Texas. 10 February 2010. <http://www.utexas.edu/academic/diia/assessment/iar/teaching/gather/method/survey-Response.php>
- Downs, M. 2008. *Nine to Nineteen: Youth in Museums and Libraries: A Practitioner's Guide*. Institute of Museum and Library Services Office of Policy, Planning, Research and Communications, Washington, D.C.
- Eccles, J. & Gootman, J.A. (eds.) 2002. *Community Programs to Promote Youth Development*. National Academy Press, Washington, D.C.

- Innovation Center for Community and Youth Development. 2001. At the Table: Making the Case for Youth in Decisions-Making. Innovation Center for Community and Youth Development and National 4-H Council University of Wisconsin-Madison in partnership with the National Association of Extension 4-H Agents Youth in Governance Taskforce, Takoma Park, M.D.
- Koke, J. & Dierking, L.D. 2007. Museums and Libraries Engaging America's Youth: Final Report of a Study of IMLS Youth Programs, 1998-2003. Institute of Museum and Library Services, Washington, D.C.
- Koke, J. & Dierking, L.D. 2010. Engaging America's Youth. ASTC Dimensions. March/April 2010: 13.
- Lerner, R.M. 2007. The Good Teen: Rescuing Adolescence from the Myths of the Storm and Stress Years. Crown Publishing Group, New York.
- Louv, R. 2005. Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder. Algonquin Books of Chapel Hill, Chapel Hill, N.C.
- Luke, J.J., Stein, J., Kessler, C. & Dierking, L.D. 2007. Making a difference in the lives of youth: Mapping success with the "Six Cs". Curator. 50(4): 417-434.
- Lyons, R.E. 2008. Personal Communication, Program Director, Longwood Graduate Program. University of Delaware.
- Mancini, J.A. & Marek, L.I. 1998. Patterns of Project Survival and Organizational Support: The National Youth at Risk Program Sustainability Study (Publication 350-800). Virginia Cooperative Extension Service, Blacksburg, V.A. 2 November 2008. < <http://www.ext.vt.edu/pubs/family/350-800/350-800.html>>.
- McLaughlin, M.W. 2000. Community Choice: How Youth Organizations Matter for Youth Development. Public Education Network, Washington, D.C.
- Quinn, J. 1999. Where Need Meets Opportunity: Youth Development Programs for Early Teens. When School is Out. 9(2): 96-116.
- Ready by 21. 2006. Advocates Series Action Brief #1: Ready for College. Forum for Youth Investment, Washington D.C.
- Schwartz, D.F. 2005. Dude, Where's My Museum? Inviting Teens to Transform Museums. Museum News. 16 November 2008, <http://www.aam-us.org/pubs/mn/MN_SO05_teenagers.cfm>.

- Steil, A. & Lyons, R.E. 2009. Improving the Evaluation of Public Garden Educational Programs. *HortTechnology*. 19(3): 601-608.
- Sturman, T.D.M. 2006. Recommended Practices for Public Gardens Wishing to Serve the Teenage Audience. Univ. of Delaware, Newark, MS Thesis.
- Tang, M., Pan, W. & Newmeyer, M.D. 2008. Factors influencing high school students' career aspirations. *Professional School Counseling*. 11(5): 285-295.
- Wenger, A. & Foutz, S. 2010. A Journey with a CAUSE: Putting Positive Youth Development into Museum Youth Programs. *ASTC Dimension*. March/April 2010: 13.
- Wilson-Ahlstrom, A. & Yohalem, N. 2005. Out-of-School-Time Policy Commentary #9: When School is Out, Museums, Parks, and Libraries are in. Forum for Youth Investment, Washington, D.C.
- Yin, R.K. 2009. Case study research: design and methods. 4th ed. Sage Publications, Thousand Oaks, CA