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I am submitting herewith a thesis written by Melanie Blandford entitled “The Brooklyn Botanic Garden’s Children’s Gardening program: A Case Study”. I have examined the final paper/electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Ornamental Horticulture and Landscape Design.

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The Brooklyn Botanic Garden’s Children’s Gardening Program: A Case Study

A Thesis
Presented for the
Master of Science Degree
The University of Tennessee

Melanie Blandford
December 2002
DEDICATION

This thesis is dedicated to my grandpa
Joseph Blandford.
Your love and support are still with me,
even if you are not.
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ABSTRACT

Children’s gardening is a growing phenomenon in our country, both in schoolyards and in public horticultural institutions. In the last decade, youth gardening has been on the rise as educators are rediscovering through observation and experience that it is an effective means to educate children across the curriculum, inspire a lifelong interest in a healthy hobby, foster positive environmental attitudes, and encourage children to spend time out of doors. While several studies have focused on school gardens, few studies have researched youth gardening in a public garden setting. This qualitative case study is on the Brooklyn Botanic Garden’s (BBG) Children’s summer gardening program. It documents and describes an approach to gardening that has the longest history of any children’s garden in our country. Interview and observational data, as well as a review of Children’s garden documents were triangulated during analysis. Seven major themes emerged from the interpretative analysis: A love of nature, Learning by doing, Acquiring self-reliance, Age appropriate gardening, Attaining understanding of the living world, Getting dirty, and Gardening parents. These seven themes identified in this study specifically addressed ways to approach gardening with youth of various ages. This study also identified the BBG’s Children’s Gardening program goals, the ways in which they achieved their goals, the gardening and educational experiences of its participants, which of those experiences were most significant, and the factors that have contributed to its longevity and success.
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CHAPTER 1
INTRODUCTION

“Green nature enters human experience through innumerable childhood windows and is never entirely forgotten” (Lewis, 1996, p. 3). As we sit in the dawn of the twenty-first century, it is becoming more important to remain connected with nature. Children’s gardening is a growing phenomenon in our country, yet its roots go deep in our history. In 1891, the first school garden in the United States was established in Boston (Shair, 1999) and during the American Industrial Revolution, hundreds of cities in the U.S. built school gardens. This was also a time of growth for many of our country’s public gardens. In 1914, the Brooklyn Botanic Garden (BBG) opened the first public teaching garden for children in the United States (Trelstad, 1997). This garden and its historical program continue to teach children in 2002. It is, however, the only children’s garden, which has survived from the early 1900’s. After World War II, the emphasis on children’s gardening died out and it was no longer a priority among schools. In the last decade, however, youth gardening has been on the rise as educators are rediscovering through observation and experience that it is an effective means to educate children across the curriculum, inspire a lifelong interest in a healthy hobby, foster positive environmental attitudes, and encourage children to spend time out of doors. The National Gardening Association estimates 80,000 educators are involved in youth gardening programs in schools, communities, and public gardens across the country (2001). In the fall of 1999, California’s state legislature passed the Instructional School Gardens Bill that promotes
using a garden to teach across the curricula and encourages schools to establish a garden as a teaching tool (Lownds, 2000).

Children are an important audience for public gardens. Over 50% of all visitors to public horticultural institutions are children (Michigan State, 2002). “Public gardens can and should play an important role in nurturing this relationship between children and plants, for what better way to teach our children to value and respect the earth and to inspire future horticulturists?” (Pastore, 1999, p. 2). Upon opening a children’s garden, public gardens have been overwhelmed by the increase in visitation and in membership. The New York Botanical Garden’s family membership increased by 3,000 after opening its Everett Children’s Adventure Garden in May 1998 and Michigan State’s 4-H Children’s Garden had five to six times as many visitors as anticipated upon opening in 1994 (Mattern, 1999).

Along with a substantial amount of anecdotal evidence, much of the current youth gardening research has focused on school gardens (Skelly and Bradley, 2000; Waliczek and Zajicek, 1999; Skelly and Zajicek, 1998; Jaus, 1982; DeMarco, et al., 1999; Dobbs, et al., 1998). With few studies focusing on community and public garden programs and their means of reaching children, there is a need for documenting and identifying the best approach to teaching children through a garden and assessing the impact and benefits it has upon youth. Research on the impact of garden-based learning can deepen our understanding of the power and potential of gardening in an educational context. Teachers, administrators, community organizations, and parents are in need of research to evaluate the effectiveness of gardening and to assess the breadth and depth of its value. Anecdotal evidence abounds on the subject of youth gardening. With the popularity of
youth gardening on the rise, educators are advocating gardening due to its propensity to allow the study of all subjects in the garden, its impact on the development of children, and its ability to foster environmental awareness. There is significant work to be done to bring this critical information to the educational community and to administrators.

In the rest of this introduction, I will outline the purpose, the research questions, and the significance of this study. Then, I will also review the current research on the subject of youth gardening, and define the methodological approach and procedures I used while studying a youth gardening program. Next, I will report and discuss the findings of the study. Finally, I will address what implications the study might have and put forward suggestions for further research.

Statement of Purpose

The purpose of this research was to examine The Brooklyn Botanic Garden’s Children’s Gardening program, a historical and well-known youth gardening education program, and document its potential significance in the lives of those involved. More specifically, it examined how this children’s garden reaches out to families, children, and the community at large and its activities in relation to its goals associated to both education and youth development. This study focused on the Children’s Gardening program at BBG, which has been in existence since 1914 and is regarded as a model of garden-based youth education. The Children’s Gardening program at BBG in New York was chosen for this study because it is a landmark example of a youth gardening program.
Research Questions

In addition to the identification of general themes, which might emerge from data collected in the case study, the study also attempted to answer the following specific questions.

This study sought to answer the following questions:

1) What are BBG’s Children’s Gardening program’s goals?
2) How does BBG program achieve its goals?
3) What are the gardening and educational experiences of some of its participants at BBG?
4) Which aspects of the BBG’s gardening program do the selected participants identify as being significant to them?
5) What factors have contributed to the longevity and success of BBG’s children’s garden?

Significance of Study

This research is one of the first studies to show the educational community and the public at large the potential that gardening holds for youth. It documents an approach to gardening that has the longest history of any children’s garden in our country. Furthermore, it provides a better understanding of the impacts and benefits of the BBG’s program from the experiences and perspectives of the participants.

The Brooklyn Botanic Garden (BBG)

Ellen Eddy Shaw, a young determined schoolteacher, founded the Children’s Gardening program at BBG in 1914. She wrote in the 1940’s, “Classrooms, buildings,
equipment, and books are not the important factors of education in the children’s work at BBG. We believe with Comenius who long, long ago said: ‘As far as possible men are taught to become wise, not by books, but the heavens, the earth, oaks, and beeches…’” (Maclin, 1999). BBG lies adjacent to the Brooklyn Museum of Art and Prospect Park in central Brooklyn, New York City. The gardens were founded in 1910. The fifty-two acre botanical garden’s mission statement (adopted October 29, 1994) is to serve all the people in its community and throughout the world by:

- Displaying plants and practicing the high art of horticulture to provide a beautiful and hospitable setting for the delight and inspiration of the public. Engaging in research in plant sciences to expand human knowledge of plants, and disseminating the results to science professionals and the general public. Teaching children and adults about plants at a popular level, as well as making available instruction in the exacting skills required to grow plants and make beautiful gardens. Reaching out to help the people of all our diverse urban neighborhoods to enhance the quality of their surroundings and their daily lives through the cultivation and enjoyment of plants. Seeking actively to arouse public awareness of the fragility of our natural environment, both local and global, and providing information about ways to conserve and protect it (Brooklyn Botanic Garden, 2002b).

While BBG offers several different educational experiences for children, the Children’s Gardening program operates within an enclosed area approximately one acre. The Children’s Garden is located in the far southern section of BBG (Brooklyn Botanic Garden, 2002a) Directly behind the Children’s Garden, is BBG’s Discovery Garden, a
designed garden for children. On different occasions, children in the gardening program use the greenhouses, auditorium in the Visitor’s Center, and the other various parts of the garden for educational purposes. The BBG Children’s Garden is the oldest, continuous gardening program in America. Currently, there are several children’s gardening sessions offered throughout the year. The sessions correspond with the seasons. As sessions end and others begin, children leave crops for the new session gardeners. Each fall, the Children’s Garden has a “Harvest Fair”, where children sell the produce they grew. Each spring, the gardening plots are plowed to begin anew. Spring begins with their annual “Planting Day” parade. Since 1914, the smallest child rides in a wheelbarrow pushed by the oldest child at the front of the parade.

Figure 1.1 Brooklyn Botanic Garden
Anyone may register for the Children’s Gardening programs and limited scholarships are available. Children from four to eighteen years old can enroll in the program. Each age group has a different name (Figure 1.2). Children from the age of four to six typically garden in the “Kindergardener” group, who garden communally in linear beds planted with the same crop. Children from seven to thirteen can register for the “City Farmers”. This group gardens in pairs on rectangular beds, which they design and plant themselves. They choose from several crop options, both for produce, herbs, and cut flowers. Youth fourteen to seventeen years old can register to garden as a collective group with the “Earth Movers”. This group creates and works on a project for the entire session. One instructor/intern (summer) and two “Junior Instructors” typically lead the groups. “Junior Instructors” are between fifteen and eighteen, and must volunteer before becoming paid staff. The summer interns develop all activities and lesson plans for their group, while the “Junior Instructors” assist instructing the lessons. There is one manager of Children’s Gardens and Exhibits and an Early Childhood Coordinator directly over the Children’s Gardening program, within the Children’s Educational Department of BBG. Youth have been gardening on the same one-half acre patch of land since 1914 when the children’s garden opened. Records on what was planted and harvested are kept at the BBG’s Library. Though it has a rich documented history and is regarded as a model of youth gardening, no studies have examined the program. While several other gardens in the United States have programs geared toward children and specifically designed landscapes for children, few actively garden with youth. The potential value, worth, and benefits BBG holds for children, parents, educators, and communities stand as a model for garden-based education.
Figure 1.2 BBG Children's Gardening program Group Structure
CHAPTER 2

REVIEW OF LITERATURE

Gardening History

The cultivation of plants is historically embedded in our human existence and experience on earth. “Man began to cultivate plants when he started to live in settled communities and to abandon the earlier subsistence on hunting, or collecting animal food and wild vegetable material. The earliest cultivators seem to have lived around Jericho in Palestine about 8000 B. C.” (Huxley, 1920). Since these early times, plants have sustained our lives on earth. As our communities grow, however, nature and plants are increasingly becoming more threatened. “Homo sapiens learned to survive by listening to and learning from nature” (Lewis, 1996).

Experiencing nature and spending time growing plants for aesthetic value has recently become more popular with Americans. In 2001, the National Gardening Association reported that 85 million U.S. households participate in some type of garden activities (2001). With the landmark study in the early 1990’s, “Human Issues in Horticulture” (Relf, 1992), horticultural therapy and socio-horticulture are becoming prevalent in the field of horticulture. These emerging areas are focusing on the therapeutic benefits people gain from gardening and experiences with plants.

Youth Gardening History

In nineteenth-century Western Europe, educators actively promoted garden play areas for children. Fredrich Frobel, a German educator with a passion for
experiential learning, coined the term “kinder garten” in 1837. The term literally meant “Garden for children”. The idea of gardening rapidly spread to schools and by 1905, Europe had more than 100,000 school gardens (Shair, 1999).

Due to the Nature Study Movement in America in the late 1800’s, which promoted using nature in the classroom to make learning more interactive, school gardens became a popular idea. In America, the first school garden, sponsored by the Massachusetts Horticultural Society, was established in Boston in 1891. During the first two decades of the twentieth century, the American Industrial Revolution gave rise to school gardens in hundreds of cities and manufacturing towns. When the United States entered World War I, the U.S. School Garden Army was organized. Over one million children participated, helping the Army farm more than 60,000 public acres (Trelstad, 1997). After World War II, school gardens began to decrease. However, in the 1980’s, the number of school gardens began to increase again, due to the Back to the Basics movement, which encouraged educational curricula based on school gardening programs.

In 1914, BBG opened the first public garden dedicated to children (Shair, 1999). It remains the proto-type for similar gardens that are currently seeing a rise in popularity in the United States. In the last decade of the twentieth century, children’s gardens became ubiquitous. Michigan State University’s 4-H Children’s Garden, the Children’s Garden at Longwood Gardens, the Everett Children’s Adventure Garden at the New York Botanical Garden, and the Children’s Demonstration Gardens at the American Horticultural Society’s River Farm were all open at the beginning of the twenty-first century. Several are recently completed and others are near completion in numerous cities, such as Atlanta, Georgia, Cleveland, Ohio, Richmond, Virginia and Camden, New
Research on Youth Gardening

Much of the literature on youth gardening is derived from anecdotal evidence. Public gardens, schoolteachers, and parents espouse gardening with youth to be a positive, worthwhile experience. However, empirical research on the benefits of youth gardening is rather limited.

Within the limited literature that does exist, several studies have discovered that gardening with youth improves children’s environmental attitudes (Waliczek and Zajicek, 1999; Skelly and Zajicek, 1998). According to Skelly and Zajicek (1998), found that students who participated in a gardening program (Project GREEN) had more positive environmental attitudes than those that did not participate. Their research supports previous findings that environmental education directly creates a more positive environmental attitude in students (Bradley, et al., 1997; Jaus 1982). This study also supports the previous notion that environmental education has a greater impact on the younger child. Jaus’ findings showed a more significant impact on the environmental attitudes of third-grade children than those in the fifth grade (1982). However, according to Waliczek and Zajicek, if the gardening program was integrated into the curriculum of junior high school students as well as elementary school students, age did not influence the environmental attitude scores of students participating in the school gardening program. Further, their findings showed that “students involved in the outdoor activity of school gardening had more positive environmental attitudes after gardening regardless of time spent, or number of activities completed, in the garden.” One study
showed that after creating a children’s garden in Illinois, the garden was found to be an effective educational tool for preschool children as well. These findings supported the notion that the garden developed an environmental sensitivity in the preschoolers and could be effectively incorporated into a multidisciplinary curriculum (Midden and Chambers, 2000).

Research has also focused on the needs of schoolteachers to successfully use a garden to teach children (Dobbs, et al., 1998; DeMarco, et al., 1999). In one study, a high percentage of teachers’ thought additional training and prepared horticultural-based curriculum would help in successfully teaching with the use of a garden (Dobbs, et al., 1998). Another study’s findings showed that teachers thought having a person directly responsible for school gardening activities, student ownership of the gardening project, integration of the garden into the subject matter, and availability of a site were most essential for school gardening success (DeMarco, et al., 1999). In a survey conducted in Florida to determine the teachers’ perceptions of the importance of a school garden (Skelly and Bradley, 2000), teachers were minimally using the garden as a teaching tool (no more than 10% of the time). However, the research revealed that teachers thought of the garden as an effective tool for environmental education and for fostering experiential learning, but most of the teachers’ gardens were relatively new and the teachers lacked educational resources to assist with the garden based learning.

**Research on Youth Gardening in Public Horticulture**

Another direction of research in the youth gardening literature has been in the public garden realm. A study at the Missouri Botanical Garden in which elementary school children who participated in two environmental education classes illustrated the
courses did not significantly change the students’ attitudes toward interacting with the environment. However, the research showed that the classes did increase the knowledge base of the participating children. In conclusion, this study suggested further research to determine “how to maximize the effectiveness of this type of experience”. It was evident from the study that these informal settings have the potential to instill horticultural awareness in children (Kahtz, 1995). In one study, in which children were taken to a public garden for a field trip, it was shown that for the experience to be most effective, follow-up questions presented about the activities and concepts learned at the garden were best for retention if asked while the children were still at the garden (Farmer and Wott, 1995).

The largest body of research on youth gardening in public gardens has focused on children’s garden design. Eberbach’s research (1988) led the way for elements important for garden design intended specifically for youth. Eberbach analyzed 178 children’s drawings of gardens to find those components a child found important. Some of these were plants, water features, people, fences, and trellises. She also found that “nearly all the drawings depicted activity” (Mattern, 1999). Eberbach’s work, along with Jane Taylor’s design of the Michigan State University’s 4-H Children’s Garden, (planning began in 1986), helped determine ways to make a garden more appealing to children. While design is important, studies are lacking which seek to determine what about a garden promotes learning in children. The profundities of the benefits to children who actively participate in the activity of gardening in a public garden, rather than experiencing a designed children’s garden, have not been examined.
CHAPTER 3

METHODOLOGY

Selection of Site

At a national conference held in Burlington, Vermont in June of 2001, the National Gardening Association (NGA) invited professionals and experts in the area of youth gardening to collaborate on future research needs. I had the opportunity to attend the conference and together we formed the National Committee on Youth Gardening. While discussing research needs, we were asked to think of a ‘model’ youth gardening program from which we could advance our knowledge on the subject. The Brooklyn Botanic Garden (BBG) was the first garden suggested and agreed upon by the committee as an exemplary example of a youth gardening program. NGA is still working on a proposal for further research, “Stating the Case for Youth Gardening”. It is my hope that this study will benefit the National Committee on Youth Gardening in their goals of expanding the research on youth gardening.

Methodological Approach

This study of BBG’s youth gardening program uses a qualitative research approach. Qualitative research differs from quantitative research in several ways. In essence, qualitative research focuses on reality interpretively, rather than seeking to measure through examination of quantities (Denzin and Lincoln, 1998). Taking a qualitative approach to studying BBG lends a specific type of inquiry into the realm of the growing phenomenon of children’s gardening. In qualitative study, importance is placed on “the socially constructed nature of reality, the intimate relationship between the
researcher and what is studied, and the situational constraints that shape inquiry” (p. 8, 1998). It focuses on how social experience is created and given meaning (Denzin and Lincoln, 2000). This interpretative, naturalistic approach to studying humans and their realities in the world offers a crisp, detailed account of the experience of gardening with children in BBG.

The chosen approach of inquiry into BBG was a case study. “As a form of research, case study is defined by interest in individual cases, not by the methods of inquiry used” (Stake, 2000, p. 435). Due to wanting to attain a deep understanding of youth gardening, to advance our understanding of the potential benefits of gardening to children, to describe ways of teaching children through a garden, and to gain an understanding of the aspects of gardening that are most favorable to children as they learn, this study is an instrumental case study. An instrumental case is specific to one case yet instrumental in illustration of a larger topic (Stake, 2000). Therefore, it is the intent of this study to instrumentally illustrate gardening with youth through meaningful and detailed inquiry through a specific case; particularly that of the oldest children’s garden in the United States; BBG.

This case study site was a “bounded system” (Stake, 2000) located only within the gates of BBG. While the research is specific to BBG, the findings hold the potential to benefit educators gardening with children in their own particular setting.

The data collection methods included in-depth, audio-taped interviews with the selected research participants, observations (with data collected through field notes and reflective notes) of activities of the program participants in general at the site, and exploration of BBG children’s garden records and documents made by the program
participants during their experiences with the garden. Observation is a common research tool in qualitative research because it adds to the detail of the data, and when used in a systematic, planned approach it can be used to validate and triangulate findings with interviews and document collection. It also can be used to solidify interviews (Merriam, 1998). The participants’ interviews had a reflective nature about their individual experiences of the program, while observations were conducted as events and behaviors were happening. As the researcher, I continually kept a research journal to allow for bracketing of biases and judgments as research was collected. Triangulation, a comparative association of all data collection methods (Stake, 2000) was used in data analysis to reveal what it is to garden with children at BBG, and this was a strategy I employed in this study.

**Research Paradigm and Epistemology**

Several theoretical paradigms exist in the field of qualitative research. These paradigms are derived from the researcher’s own ontology, epistemology, and methodology. Ontology is the perception about what is real and what is knowable; epistemology is about worldview, a theory of knowledge, about how we come to know what we know, and methodology is the approach taken to what is to be studied. The most prevalent inquiry paradigms in qualitative research are positivism, post positivism, critical theory, constructivism, and participatory (Lincoln and Guba, 2000). Of the theoretical paradigms within the qualitative research perspectives, my personal views are most closely aligned with constructivism. It is centered on the relativism of reality. It is my belief that individuals’ lives are constructed with unique realities as we make sense of the world and that knowledge is co-constructed as we interact with one another. What is
to be known is an entirely human construction as we travel through life making meaning of our experiences. I approached studying human beings and their experience through a lens focused on the individual reality of the various participants of BBG’s Children’s Gardening program. Together those involved in BBG’s children’s garden and myself, as a researcher, co-constructed an understanding of this garden and how it is present in the participants’ realities.

As a researcher, my reality has been shaped by a strong interest in the environment and nature. I am drawn to studying communities that support views of self-sustainability. Teaching children ways to grow their own food, be conscious of the natural environment, and understand sustainability has become important to me. Gardening has been shown to have the potential to recharge a community. An example of this is demonstrated by Louise Bush-Brown’s revitalization of an 80-block section of one of Philadelphia’s most degraded areas. This movement began Philadelphia’s window box tradition (Lewis, 1996). I believe that our culture could benefit in numerous ways through community gardens, sustainable agriculture, and garden-based education.

**Selection of Participants and Research Sample**

Selections of participants were purposeful to the specific goals of the study. Collection of data was divided into three sections:

1) Interviews, 2) Observation, 3) Record and Document Collection
Selection Criteria of Interview Participants

The interview research sample included one instructor, three children, three parents, and one intern. This diverse set of participants was selected in order to gain an understanding of the age continuum of perspectives within BBG’s children’s gardening program, the perspective of those instructing as well as those receiving instruction, the viewpoint of administration, and the parents’ views of what their child was experiencing in this program. Years of experience with the program were chosen as a criterion to provide depth of the interview participants’ reflections. Age groups were selected based on the BBG’s children’s gardening program age delineations. Hence, selection involved representation of the following groups:

Instructor (1)
- Manager of the BBG children’s gardens and exhibits

Children (3)
- Minimum of 2 years experience in the program
- Young (6 to 9 years old)
- Middle (10-14 years old)
- High (15-17 years old)
- Both genders represented

Parents (3)
- Must be parents of child study participants

Intern (1)
- Must be an intern of the 2002 Summer Garden Program
- Selection on site
Data Collection Procedures

Interviews

Interviews were semi-structured in nature allowing for flexibility and a comfortable dialogue. An interview guide provided a springboard for conversation, allowing for detail and elaboration and therefore was developed for this study by the researcher (see Appendices A, B, and C). Each interview lasted approximately 45 minutes. The interviews were conducted in a private office at BBG visitor’s center, which is located in a separate section of BBG than the Children’s Garden. The participants signed a consent form, confirming their participation in the study and guaranteeing their anonymity. Children were read an assent form (Appendix E). The interviews were tape-recorded and transcribed (Appendix I). Two of the participant’s interviews were poorly recorded. As a result, transcription was incomplete. Only the sections that could be transcribed were analyzed. Follow-up interviews were not requested of the participants’ due to travel and expenses. To protect anonymity, all participants have been given pseudonyms in the report of the findings.

Interview Participant Descriptions

Brian: Manager of the Children’s Garden and Exhibits. Grew up in West Tennessee, had family garden, graduate of The University of Tennessee, employed by BBG for 6 years.

Audrey: Six year old gardening participant in the “City Farmers”. Has an older brother who was also in the BBG gardening program and had participated for two years.

Christy: Audrey’s mother, an avid gardener herself, and a resident of Brooklyn.
Millie: Eleven year old gardening participant in the “City Farmers”. Has a younger brother in the gardening program and had participated for four years.

Lynn: Millie’s mother. Was a participant of BBG’s Children’s Gardening starting at nine, still gardens and owns a home in Brooklyn with a garden in the front and back yard.

Steven: Fifteen year old staff Junior Instructor. Participated in the program as a child for several years, has an older sister who participated in the gardening program, volunteered as a Junior Instructor, and was a paid Junior Instructor.

Marie: Steven’s mother. An educator of teachers, an avid gardener, had two children who were in BBG’s gardening program.

Adam: BBG intern. A nineteen year old college student from Chicago, his family lived in Brooklyn, began as a Volunteer, then became a paid Junior Instructor, and in the summer of 2002 was an intern for the Kindergardener group at BBG.

Observations

Observation sessions of the Children’s Gardening program lasted approximately two months during the spring/summer program sessions of 2002. Observations included both factual events and reflections of the researcher. There were fifteen factual observation sessions, each lasting approximately two hours. Reflections of the researcher were written daily, either alongside factual observations or in summation of the day. Data from factual observations were handwritten and recorded in field notes each day the sessions were running. This allowed for a description of the daily practices in the garden and the instructors’, parents’, and children’s’ reactions to the program from the
researcher’s perspective. I drew a detailed map of the garden, documented the details of program participants clothing and mannerisms, and recorded the daily instructions of each lesson. I was a participant observer and therefore did not only observe but participated in daily activities, actively weeding alongside children for example. During the observations I had several informal conversations with gardening participants and administrators. Exploration of objects, projects, and products of the children participants during the program were incorporated into observation collection.

Records & Documents Collection

BBG has kept records on their Children’s Garden program since its creation in 1914. These records were reviewed and used in triangulation along with data gathered from interviews and observations. This offered a depiction of the program to be used in comparison, association, and contrast (triangulation) with the interviews and observations. Each document was systematically assessed for authenticity, recorded, and catalogued. BBG provided several copies of various documents. Other photocopies were made of pertinent documents. Several were read on site and catalogued. The documents included the Instructor’s Handbooks, Children’s Handbooks, several BBG anniversary issues, articles written by Francis Miner (an original instructor of the program and to whom the Children’s Gardening House was dedicated), BBG annual reports, and articles catalogued by the BBG public relations department and the manager. Archival objects and documents were reviewed as well. These included awards given to students, documents from the Boys and Girls Club, letters written from alumni, publications and news clippings, planting lists, and weights of harvest that were recorded. Each document entered the process of data analysis. These documents represented data
unaffected by the researcher and were grounded in the context of the site (Merriam, 1998).

**Data Collection Timeline**

The project timeline was to collect data during the spring/summer of 2002. This included all interviews, observations, and record collections. What I could not gather during my initial six-week stay in Brooklyn, I returned to gather on an additional three-week trip.

**Data Analysis**

Data analysis is an ongoing process that begins at the initial stages of data collection. Due to the nature of a case study, the researcher is focused on an “intensive, holistic description and analysis of a single, bonded unit. Conveying an understanding of the case is the paramount consideration in analyzing the data” (Merriam, 1998, p. 193). In keeping with such traditions, the goal of data analysis was to communicate a comprehension of the entire Children’s Gardening program at the BBG.

The data collected at BBG through interviews, observations, and document collection were processed through triangulation. Each avenue of collection was intertwined to develop an understanding of the single, bounded site. The “thick description” developed by gathering data and analyzing to create an understanding of this single case holds the potential to be used instrumentally in understanding youth gardening.

The data was analyzed using an Interpretative Analysis framework (Hatch, 2002). This framework was chosen for several reasons. As the study was being designed and as
data was collected, impressions were being recorded by the researcher. Hence, interpretation was embedded in the collection process as well as the final analysis. The data (observations, interview transcripts, and documents) was read in entirety, to gain a sense of the whole. Next, all impressions from start to finish, were recorded. The impressions were then written as “memos”. Then, data was read a second time, and coded in places that maintained or contested the preliminary interpretations. Summaries were written based on the memos. Participants were unable to revise the interpretations because of time and travel expense. The summaries were then revised and data was selected to support the individual interpretations.

These interpretations ended data analysis with the identification of seven major themes. Themes were common threads that wove through the various data collection techniques of interviews, observations, and document and record collection. The themes reflected the researcher and participants’ prominent actions and beliefs in making meaning and sense of the gardening program. The seven themes are: A love of nature, Learning by doing, Acquiring self-reliance, Age appropriate gardening, Attaining understanding of the living world, Getting dirty, and Gardening parents. Sub-themes found in the study were incorporated into major themes. Sub-themes are findings that emerged through the data analysis, yet were directly associated with the major themes.
CHAPTER 4
FINDINGS AND DISCUSSION

In this chapter, the program itself and the way it operates are described. The findings of the study, which are discussed as themes and sub themes, are then reported. In addition, findings as they relate to the research questions are addressed. Finally, the research questions are summarized. While these findings are particular to that of the Brooklyn Botanic Garden (BBG), the study is applicable to those seeking knowledge and understanding of youth gardening.

It is through the locked main gate to the BBG’s Children’s Garden, under the white arbor heavy with bright fuchsia and yellow roses and an intoxicating aroma, that one enters the sanctity of a garden growing more than vegetables. Once one passes through the gate, a one-half acre plot of land lies adjacent to the Children’s Gardening House in front of this arbor. It is in this plot that all children’s gardening takes place. To the left of the main gated entrance is a large covered pavilion equipped with four picnic tables. In the pavilion, groups meet to discuss their lessons, work on arts and crafts, and enjoy a snack. I observed various arts and crafts projects being conducted in the pavilion. On one occasion, program participants were tracing each other on large sheets of paper. Each participant then created their “farmer” self. On the first day of a program session, several groups were seated in the pavilion listing rules for the session.

The Francis M. Miner Children’s Garden House is a large off white barn-like structure with a green roof. As one enters the front door, the main large room houses several cabinets, which hold books and art and craft materials. To the right are the
restrooms and to the left is the kitchen. The kitchen is a small room, yet is large enough for a picnic table, lockers, oven, sink, and refrigerator. Obviously, the kitchen is primarily used for cooking. However, on a rainy Friday, I observed a group of “City Farmers” in the kitchen looking under a microscope at lily pollen, cornstarch, and fowl feathers. Located in the back of the house is the tool shed. Some of the Children’s Garden tools date back to the beginning of the program in 1914. There is a back door to the garden shed next to a large scale that participants used to weigh their harvest. They do not weigh their produce currently, but when I inquired why in an informal conversation with an administrator, I was told that bringing the scales back is under consideration.

If you turn right as you leave the Children’s Garden house by the back door, you head towards the gardening “field”, the path splits in two directions. To the right is the “corral”, which is a grassy enclosure. It is enclosed by the same gray brown picket fence that lines the far end of the garden, separating it from the main botanical garden. This “corral” is a meeting place for the youngest program participants. To the left of the “corral” is an entrance to the gardening “field”. There is a small pond built by an “Earth Mover” group on the left and a small herb garden to the right. Through another smaller white arbor, a child-painted sign bears “City Farmers Ave” and “Earth Movers Blvd” at the beginning of the gardening plots. Immediately upon entering the one-half acre gardening “field”, to the left are a series of cold frames and to the right are large sinks, followed by picnic tables and the compost bins. All gardening is organic and cocoa husks are used for mulching the beds, while hay is used on the paths between each plot. If you follow the path of compost bins, you are taken to the middle section of the gardening
“field”. This middle section has a communal area for the Children’s Garden participants. Each year the various program participants design the area. While I was there, this area was planted with hot peppers in beds shaped like the letters H-O-T, a tropical plant bed, and a small corn maze. Beyond this area, is a section of the “field” that a different BBG educational group uses, the “Junior Botanists”. Past the “Junior Botanists” plots lies the Children’s Garden Kindergardeners’ communal beds. Outside the “Kindergardener” plots, separated by a fence, is a designed children’s landscape called the “Discovery Garden”, which is open to all BBG visitors.

Walking up the front side of the gardening “field”, one can observe a series of raised demonstration planter boxes and three small gazebos. The gray brown picket fence is continuous between these boxes and seating areas. BBG visitors observing the Children’s Garden, which they cannot enter, frequently use these seats. Each gazebo is covered with grape vines. The planter boxes are thematic. All the plants within each box are chosen with a certain theme. One in particular was noteworthy as it was a peanut butter and jelly garden. Approaching the Garden House again, one must duck under another small white arbor to get past the “corral” and back into the grassy area. One day during my observations, I drew a map of the area. (Figure 4.1)

BBG offers four Children’s Gardening program sessions a year, one each season. The number of participants in each program session differs according to each season available. Low child to teacher ratios are a constant consideration. Cost also varies accordingly, but an average cost is approximately one hundred dollars for a spring/summer session. BBG’s Children’s Gardening program offers several
Figure 4.1 Observation Map
scholarships for all age groups based on need. Program sessions typically last one to two months depending on the season.

Days vary in the sessions depending on season and type of program. Each program session in the summer lasts approximately 3 hours.

Through data analysis, seven themes emerged. These seven themes are discussed below. In interviews, specific sets of questions were posed (Appendix A, B, C, and H). The various participants’ responses to these questions are reported as part of the themes.

**Theme 1: Instilling a love of nature**

A major theme, which emerged through interviews, observations, and documents in this study, is that BBG children’s gardening participants are instilled with a love of nature. Through my observations, I saw that children gained an appreciation for nature on a daily basis. When asked what she liked most about being in the gardening program, the 6 year-old participant, Audrey, asserted,

“I like listening to the birds. I like smelling the roses in the rose garden. And, I like going through the corn maze in the summer. I like, sometimes, if we pull something up, like if we are weeding and we pull up a vegetable, like me and (her partner) we sometimes take a piece of lettuce or a carrot or something and then start munching on it, even if we don’t wash it.”

This finding clearly points to her love of nature. Love of nature, as a finding should be particularly rewarding to BBG since it indicates that they are achieving the goals of their Children’s Gardening program, which is to instill a love of nature in children through hands-on experience. In a document I reviewed, the founder of BBG’s children’s garden, Ellen Eddy Shaw was quoted,
“perceived the program as ‘a living opportunity for a child to learn lessons of nurture and observe how nature looks out for herself’.

Though BBG does not have a mission statement for their Children’s Gardening program separate from that of BBG, when interviewed and asked what the goals are, the manager, Brian, offered one specific goal,

“The broad goal of the children’s garden program is to infuse children with the love of nature through hands on experience. So we give the kids hands-on experience with plants, we give kids hands-on experience with all of the bugs in the children’s garden, earthworms, with birds. They get to see things up close; they get to see things on, hands-on. And by having that intense hands-on experience repeatedly over the course of an entire season or repeatedly over the course of several years we hope that we’re infusing them with the love of nature, and a real understanding of how things in nature depend on one another, how the cycle of life works and how things are connected in ecological ways.”

He continued to explain how this goal also developed “the next generation of environmental educators” through the children that participated in the program and through the internships offered.

In another document I reviewed, a description of goals in the instructor’s handbook, stated,

“The success of the crops is only one of the rewards the children reap. Of equal importance are the lessons they learn: self-discipline, first-hand experience, dignity of labor, generosity, respect for the rights and property of others, respect for the environment, and responsibility.”
These goals are impressive endeavors. This finding answers one of the study’s research questions: What are BBG’s Children’s Gardening program goals? Previous research supports this notion that children involved in outdoor activity gained a more positive attitude toward the environment. Waliczek and Zajicek (1999) found that gardening at school lead to a positive increase in environmental attitudes and that it affected female, Caucasian students, and students from rural areas more than other students within the study’s group.

**Theme 2: Learning by doing**

A second theme which emerged from this study was that children in BBG’s Children’s Gardening program learn by doing. This theme spoke to the research question of how BBG achieves its goals. Late one afternoon, a group of the Children’s Gardening program participants were planting a communal plot on the edge to the children’s garden. During my observation, I noticed the instructor brought out a digging claw in order to turn the soil. A small boy (approximately 7 years old) wearing a NYFD hat ran up to the instructor wanting to use the gardening tool. As he reached up and began attempting to turn the soil, I observed him trying with all his might. Meanwhile the instructor started to explain why they needed to do this. And as that small child, with all the energy he could muster was working to turn the soil, I heard the instructor talk about aerating the soil so the plant’s roots will get oxygen. In school, we are taught to become auditory learners. In this garden, I saw that participants had the opportunity to learn by experiment, by doing. They were able to incorporate visual and hand-to-eye coordination. Not only
could they learn what a plant was, they could feel it, smell it, touch it, and try various techniques for growing it.

Another example, which supports the experiential learning theme, is that each day at the BBG, children of all ages were continually taking buckets and bright red child-sized wheel burrows full of plant material to the compost bin. Over time, they watched all of their plant material deposited, and turned once in awhile, transform into soil. One can explain how to make compost and what is in it, but these children saw it happening right in front of them. In interview data, several of the participants compared their learning experiences in the garden with that of school. The 15 year-old participant, Steven, explained,

“it's more interactive than school. School, they go up to the blackboard, they say one plus one is two and we write it down in our notebooks. But here, like (the Instructor) says this plant does such and such thing so what, how can you use that to do something fun? And then they do something with that. It's more interactive.”

Later, he continued,

“And learning cosine and tangent is not going to help anything in the world. But learn about plants and how they can benefit the planet will.”

His mother, Marie, an educator of teachers, described how valuable she believed the BBG Children’s Gardening experience was because it involved learning through activity. She stated,

“So I believe very strongly that children learn through play and through doing. And all of my research has shown that this is true. And I believe that children
should have an opportunity for hands on experience and doing things, and seeing the fruits of their own labor regardless of what it is whether it’s gardening or artwork or music or anything...but with gardening the children see a direct result of what they do and it’s exciting.”

Through my observations, I saw that children in the BBG gardening program saw a direct result of what they did each day they participated. This has been a component of the program that dates to its conception. In an anniversary issue in the records and documents at BBG, Francis Miner, an instructor for 43 years and to whom the garden house is dedicated, was quoted as saying,

“I believe that students, especially beginners in this adventure, should be participants rather than spectators. A feeling of ownership and a sense of responsibility for the care of a plant ‘pet’ elicits an entirely different kind of response than viewing displays of plants, no matter how spectacular.”

Perhaps, Millie, the 11 year-old gardener, best sums up the positive feelings about the BBG participant experience,

“Because it gives me a little bit, like up and at ‘em, like when you’re looking to learning, you get a little bit tired. But when you’re going to go grow, you get up and you’re ready to go.”

The theme of learning by doing answers one of this study’s research questions: What are the gardening and educational experiences of some of the participants at BBG? This theme is similar to research, which has been done, in a school garden setting. The findings showed that teachers use school gardens for environmental education and for cultivating experiential learning. Skelly and Bradley (2000), report that 97.1% of
teachers in their study used gardens for environmental education and 72.9% used them for experiential learning.

**Theme 3: Acquiring self-reliance**

A third theme found in the study was that a Children’s Gardening program can teach self-reliance to its participants. This particular theme addresses the research question: What aspects of the BBG gardening program do the participants identify as being significant? There are few living organisms that children feel “need” their assistance and nurturing. Children feel this reliance and their care for the plants lead to more productive crops. This is clearly demonstrated in a quote from eleven-year-old Millie,

“Well, you get to help plants...”

For a child, there are few living organisms that “need” their care for survival. This sense of “need” infuses independence in a child, regardless of age. The independence a child receives through the BBG Children’s Gardening program is gained through much hard work and perseverance. Each day in my observations I saw children at BBG enter through the locked gate, and work diligently. It was their space, all other visitors to the garden were not allowed in, including parents. One day of each program session, parents can enter and see what their child’s independence had grown. Marie, the mother of the 15-year-old participant described her child’s perseverance,

“You can’t ignore the garden! You’ve got to keep coming back and watering it, you’ve got to pick the weeds, you’ve got to nurture the plant, you’ve got to continue to give it attention just as you would if you had a pet in a way. And so the more the child pays attention to what he’s doing and the more he comes every
day or every other day and takes care of these plants; he learns that persevering and keeping track of what you’re doing and continuing to pay attention to something leads to a good result. And so when they do another task, even if it’s something else, they already have this work ethic that they’ve developed from the garden. And I think it’s educational and a wonderful place to take your child, in a garden.”

In turn, this gained independence fostered achievement. As a result, achievement was seen as a sub-theme of the overall acquiring self-reliance theme. As I was observing one morning, two young female participants, who had never met me before, ran up to me with newfound enthusiasm exclaiming, “Look at our radishes!” As I approached, their plot had a row with several large radishes emerging from the soil surface. They carefully pulled the largest two up, went to wash them off, and came back proclaiming their accomplishment to any available ear. Interview data of this study revealed that five participants (Audrey, Millie, Steven, Marie, and Lynn) shared similar experiences of achievement. Harvesting was found to be one of the favorite gardening activities that these participants described. Benefits as well resulted from the participants’ enjoyment for harvesting. All children participants developed a new attitude towards eating vegetables. This attitude for vegetables (better nutrition) is another sub-theme found within the acquiring self-reliance theme. Parents in the study described their child’s nutritional gain from being involved in this gardening program. Audrey’s mother, Christy, when asked what her daughter likes most about the program, responded,
“I just think she just loves to be out there weeding and planting, taking care of her own little plants. We speak about what she now enjoys eating, and how it has expanded her palette.”

This finding adds to research done by Lineberger and Zajicek (2000), who found that gardening improved children’s nutritional attitudes. Their research showed that the attitudes of school children improved because of school gardening, however, their consumption did not significantly improve. At BBG, another benefit that the children participants in this study derived from their love of harvesting was a new found interest in cooking. Two of the study’s participants’ parents described the enjoyment their children received from cooking the food they have grown. While Marie does a lot of cooking at home herself, she described her son Steven,

“He started making salad dressings and things like that to put on the salad because he made the salad. And I mean that helped me actually teach him lots of things and then we learned how to measure...He was interested in what he grew so he wanted to eat it, and he was willing, for example, to taste things that other children might not want to eat.”

This sub-theme of developing other interests due to gardening has been found in other research (Hamilton and DeMarrais, 2001). They found that gardeners in their study were able to connect their love for gardening with their other interests in photography, physical exercise, being outdoors, artistic expression, and earning income.
Theme 4: Age appropriate Gardening

The BBG Children’s Gardening program is structured to support all age groups and gardening tasks for program participants are age appropriate. Through interviews and observations this theme became evident. The gardening program begins gardening with children at the age of 4 and continues through to young adults in their early twenties. I observed that the way in which BBG gears the program to each age is a developmental fit. The “seeds” and “seedlings” (the 4, 5, and 6 year olds) garden communally. Each individual bed is planted with the same crop. They collectively set forth to get the work done. The intern participant of the study, Adam, described the kindergardeners,

“KG’s all communal so they always work together on whatever plot… first they ask my weed checker if he found weeds somewhere and we just all go and we do that one plot.”

So, whether it is weeding, or wearing pollination costumes they made for pollinating flowers, or using Adam’s foam board TV to act as “reporters” on what’s happening in the garden, they do it collectively as a group. My observations confirm that this approach to gardening with children in this age group worked well and kept structure and focus for young children.

On the other hand, the “City Farmers” (the 6 through 12 year olds) garden in pairs. Typically, several pairs garden under an intern and two “Junior Instructors”. At the beginning of a session, I observed the group collectively thinking of a name for their group. The partners are each assigned a 5 x 14 foot plot, which will be under their care for the remainder of the program session. The pairs design their plots, and work together throughout the program session on their space. They are partners for weeding and
harvesting. The interview and observational data showed that this provided a social structure for these children in this age group. Each interview participant discussed the friends they had made. I observed children giggling alongside one another as they meticulously removed the weeds from around their plots.

The adolescents, who developmentally are a hard target population due to a lack of a strong preference for nature (Kaplan and Kaplan, 2002), can be in the gardening program as “Earth Movers” (13 to 17 year olds), or they can become trained as “Junior Instructors”. “Earth Movers” set forth as a group on larger projects. Brian showed me an “Earth Mover” project that was a water pond behind the Children’s Garden House. While small in size, he described the planning and designing the group did in preparation for the installation of the pond. It was a lesson in water ecology.

The “Junior Instructor” level is a component of this particular program that could be beneficial to educators gardening with youth elsewhere. Each “Junior Instructor” starts by volunteering for 75 hours and then becomes paid staff when they are 14. My findings indicated that for adolescence, this provided a safe, productive social community. Marie spoke of her son Steven,

“He could be hanging out on the street corner doing nothing like a lot of kids his age, but he chooses to come here and to work hard. And I think that speaks for itself.”

It also begins to instill responsibility and a work ethic in adolescence. Several “Junior Instructors” continue on to an internship. I observed “Junior Instructors” working together with younger children, instructing and participating alongside them. The young
gardeners aspire to be “Junior Instructors”. Millie told of how she would like to become a “Junior Instructor”. When asked why, she explained,

“Because I like to help people with gardening also.”

Further up the age spectrum still, interns gain experience both in education and in horticulture. Each intern is responsible for daily lesson plans and activities, as well as for instructing about garden maintenance. The intern in this study, Adam, when asked how being involved in the gardening program had affected him, explained,

“Well, I don’t know if I’d be into teaching... And really like the impression that this made on me, being with kids and teaching, that gave me an idea, that’s what I want to do.”

All of the evidence presented in this theme answers the research question regarding how BBG achieves its goals.

**Theme 5: Attaining an understanding of the living world**

Another theme, which emerged from analysis of the data, was that through BBG’s Children’s Gardening program commitment to hands-on learning, children gain an active understanding of the living world around them. This is yet another answer in understanding the research question of how BBG’s Children’s Gardening program achieves its goals. This concept of learning in BBG’s Children’s Garden program is supported by Millie’s statement,

“I learned more about my surroundings.”

This comprehension of the living world is also supported in my observational data. Each day, I recorded children’s reactions and interactions with the living world around them as they were engaged in the garden. I found that beyond plants, children inquired about the
life of soil, were startled by bees, and were intrigued by butterflies. My observations showed that BBG’s Children’s Gardening’s program incorporated understanding of the living world as part of our everyday life. I saw that whether children were making dyes, sushi, soap, or recycled newspaper paper mache bugs to adorn the garden, they were making connections with how important plants are in their lives. Through my exploration of various archival documents, I found that the BBG Children’s Gardening program was conceived and prefaced on exposing the child to nature. Further supporting my observations, in BBG’s archival documents, I reviewed a letter written to the Gardens from a program participant who began gardening at BBG in 1923, it stated,

“For 42 years I have practiced as a physician and in that entire time have never been without a garden and a multitude of houseplants...I will never forget what that three years in the Gardens did for me in developing a life long interest in a hobby where no one is ever too old or too young to get involved. Thank you for a lifetime of pleasure.”

This philosophy of providing children with an understanding of the living world can best be explained by the quote that is painted over the front door of the BBG Children’s Garden house, “He is happiest who hath power to gather wisdom from a flower.”

**Theme 6: Getting dirty**

Another theme interpreted from the interview and observational data was that children like the physical activity of gardening. And as simplistic as it seems, each parent and child of the study, discussed the enjoyment of getting dirty. Marie said of Steven,
“When he was fourteen and he volunteered there and worked very hard; every Saturday he came home filthy and sweaty but he loved it.”

And Steven, the 15 year-old participant, remarked,

“It also helped me physically cause raising beds is kind of difficult, you know, builds your muscles and I’m into weight training so it’s good.”

And 6 year-old Audrey explained that weeding was one of her favorite things because,

“I like getting dirty.”

When observing Millie before I knew her as the study’s interview participant, I described her in my notes because of her filthy knees and hands, but large smile. She approached me one day, inquiring about what I was writing. My reflections on our interaction described how happy she seemed to me. However, getting dirty was slightly frightening for several children. On one occasion, I observed a four-year-old disturbed and shocked because of dirt on his hands. His excited, nervous laugh was particularly noteworthy. The observational data of this indicated that with time, the intimidation of being dirty was quickly overcome as he focused on rapidly filling his bucket with weeds.

Collectively, all of this describes the experiences of the participants which addresses research questions seeking to understand what the participants’ experiences are and which experiences are most significant.

**Theme 7: Gardening Parents**

Another theme arising from the data showed that each of the parents of the program participants have gardening experience and are avid gardeners. Millie’s mother, Lynn, was a gardener in the program and began the program at the age of 9. Another parent, Marie, noted,
“It’s actually quite therapeutic. I don’t know anybody that doesn’t like to look at a flower.”

The mother of the 6 year-old study participant, Christy, also supported this finding and stated,

“Gardening makes such a good example for life in general. You know, you can’t expect it to just happen over night, it has to start and you’ll move things and you won’t like it when some things won’t work, and you’ll have to weed some things out. But I know when I am most frustrated or stressed or something, I’ll go out to my garden...It just really calms me down a lot in a very hectic lifestyle.”

It is interesting to note that all gardening parents found gardening in Brooklyn a challenge due to lack of space and light in their congested urban setting. However, they choose to garden due to the benefits they have found gardening offers. Previous research would suggest that the children in the Children’s Gardening program at BBG, will most likely grow up and garden as adults. A study by Hamilton and DeMarrais (2001) found that adult gardeners are motivated to garden due to fond memories of gardening as children with their parents.

**Responses to Specific Research Questions**

Having identified some general themes that emerged from the interviews, observations and documents and the triangulation of the data, this section discusses the findings regarding the study’s specific research questions posed about BBG’s Children’s Gardening program and its operation.
1) What are BBG’s Children’s Gardening program’s goals?

While BBG, does not have a specific mission statement for its Children’s Gardening program separate from the botanical garden’s mission to educate, my data analysis showed that the main goal is to instill a love of nature in children through hands-on experience. Other goals my data revealed are to teach self-discipline, dignity in labor, generosity, respect for others’ property and rights, respect for the environment, and responsibility.

2) How does BBG achieve its goals?

BBG achieves its goals of instilling a love of nature in children through engaging children to actively participate in nature as they garden. It is a labor-intensive environment, where children must work for their produce. Each summer program session is different because of new interns with new ideas. The new summer interns with their fresh ideas see these goals into fruition.

3) What are the gardening and educational experiences of some of the BBG Children’s Garden program participants at BBG? And 4) Which aspects of the BBG Children’s Gardening program do the selected participants identify as being significant to them?

Through data analysis, significant aspects of the Children’s Gardening program were identified and grouped into seven major themes. These themes included: A love of nature, Learning by doing, Acquiring self-reliance, Age appropriate gardening, Attaining an understanding of the living world, Getting dirty, and Gardening parents.

5) What factors have contributed to the longevity and success of BBG’s Children’s Gardening program?
In addressing the factors that contribute to the longevity of BBG Children’s Gardening program, its endurance can only be explained by its evolution. The Children’s Gardening program has 88 years of fine-tuning. The structure itself, with the age ranges and way in which each age group gardens and interacts, is inclusive and contributes to its efficiency and productivity. Also, being in the center of an urban setting where nature is seldom experienced helps maintain its popularity. Through continuous improvements and refinement, the Children’s Garden program has aged and its wisdom is established. Since 1914, like a new garden each spring, this plowshare is cultivating and growing tomorrow’s adult gardeners.
CHAPTER 5

CONCLUSION AND SUGGESTIONS FOR FURTHER RESEARCH

This study documented and described a unique approach to gardening with children in a public garden setting. It also identified the benefits that children gain from participating in a Children’s Gardening program at the Brooklyn Botanic Garden. This study clearly showed that a Children’s Gardening program in a public garden was a place to instill a love of nature, acquire self-reliance, attain an understanding of the living world, and enjoy getting dirty. Other key elements in the success of this program are age-appropriate gardening and parents who are gardeners themselves.

The seven themes identified in this study specifically addressed ways to approach gardening with youth of various ages. This study also identified the BBG’s Children’s Gardening program goals, the ways in which they achieved their goals, the gardening and educational experiences of its participants, and which of those experiences were most significant.

Investigating the role that BBG’s Children’s Gardening program plays in the adult lives of its alumni participants could expand our knowledge of the impact that youth gardening holds. This suggestion for future research would strengthen the argument for the importance of youth gardening.

Another suggestion for future research would be to focus on other gardening seasons than just the summer season, which this study examined. Studying how to garden with children during the winter and fall, in a setting such as BBG would broaden our horizons of how to approach gardening with youth. In particular, it would contribute to
our knowledge of how to garden in a school setting with children. Research on these other seasons could aid in the dilemma school gardens face due to the growing season not corresponding to the school year.

Another suggestion for future research, would be to look at the retention of knowledge gained through learning in a garden verses learning in a classroom. This would measure the affect of the garden context in experiential learning and could help advocate school gardening being incorporated into the school curriculum.

Future research on designed landscapes versus a working garden such as BBG’s Children’s Garden would offer public gardens a way to assess the most beneficial approach to educating youth about plants.

While this research took a qualitative approach to understanding ways to garden with youth, perhaps other forms of inquiry could lend depth to the knowledge on the subject. Some suggestions include a quantitative approach or a qualitative focus group with educators, parents, or children.
REFERENCES


APPENDICES
APPENDIX A

INTERVIEW GUIDE FOR BBG INSTRUCTOR

1) Tell me about your educational and gardening background prior to being at BBG.

2) Tell me about your role here at BBG.

3) Would you describe a typical day in your role as the manager of the Children’s Gardens and Exhibits?

4) What are the goals of this program?
   a) How do you feel the program achieves these goals?

5) If there were something you could change about the programs here at BBG, what would it be?

6) Tell me what you think makes this program work.

7) Compared to other Children’s Gardening programs, what do you feel is unique to BBG?

8) What do you think has made the BBG children’s garden endure from 1914 to now?

9) What role, if any, has the New York School system had in this Children’s Gardening program?

10) In what ways are the programs run in correspondence with the state education standards?

11) What criteria do you look for in selecting an instructor here at BBG?

13) What are your expectations of selected instructors?
14) Could you describe a typical summer program day for:

   Kindergarteners

   Seeds (3 to 4 year olds)

   Seedlings (5 to 6 year olds)

   The City Farmers (7 to 13 years old)

   The Earth Movers (13 to 17 year olds)

15) Can you describe the reactions that you see in the children that are newcomers to the program?

16) What percentages of the children, in your opinion, continue in the program year after year?

17) How do you assess or evaluate the program?

18) Tell me about your overall experience here at BBG.
APPENDIX B

INTERVIEW GUIDE FOR BBG CHILDREN PARTICIPANTS

Young Age Range (6 to 9 years)

1) I want to talk to you about being in the Children’s Gardening program. Can you tell me what that is like?

2) Tell me about your favorite things that you get to do here in the gardens?

3) Out of all the activities you’ve gotten to do at BBG, which ones did you not enjoy the most?

4) I would like for you to think of your favorite instructor you’ve had in the garden. Would you tell me about that person?

5) Would you tell me some things that you’ve learned in the gardens that you didn’t know before you started at BBG?

6) Tell me what you like most about being at BBG?

7) You’ve done this for more than one summer, would you tell me why you wanted to come back?

8) Do you garden at school?
   a) What kinds of things do you grow?
   b) How do you use your school garden?

9) Do you have a garden at home?
   c) Who do you garden with?
   d) How is your garden at home different than BBG’s?
10) What would you like to be when you grow up?

**Middle Age Range (10-14 years)**

1) I want to talk to you about being in the Children’s Gardening program. Can you tell me what that is like?

2) Tell me about your favorite things that you get to do here in the gardens?

3) Out of all the activities you’ve gotten to be in at BBG, which ones did you not enjoy the most?

4) I would like for you to think of your favorite instructor you’ve had in the garden. Would you tell me about that person?

5) Would you tell me some things that you’ve learned in the gardens that you didn’t know before you started at BBG?

6) What do you think you’ve learned in the garden that is different than in school?

7) What have you learned here at BBG that is the same as at school?

8) Tell me what you like most about being at BBG?

9) Can you describe any ways that being involved in the gardens has affect who you are?

10) Do you garden at school?
    a) What kinds of things do you grow?
    b) How do you use your school garden?

11) Do you have a garden at home?
    e) Who do you garden with?
    f) How is your garden at home different than BBG’s?

12) What would you like to be when you grow up?
High Age Range (15-17 years)

1) I want to talk to you about being in the gardening program. Can you tell me what that is like?

2) Describe a typical day for you at Brooklyn Botanic.

3) Tell me about your favorite things that you get to do here in the gardens?

4) Out of all the activities you’ve gotten to be involved in at BBG, which ones did you not enjoy the most?

5) I would like for you to think of your favorite instructor you’ve had in the garden. Would you tell me about that person?

6) Would you tell me some thing that you’ve learned in the gardens that you didn’t know before you started at BBG?

7) What do you think you’ve learned in the garden that is different than in school?

8) What do you think you’ve learned in the garden that is the same as what you learn in school?
   a) Do you garden at school?

9) What kind of job would you like to have when you are older?

10) Can you describe any ways that being involved in the gardens has affected who you are?

11) How has BBG’s program affected your life?
APPENDIX C

INTERVIEW GUIDE FOR PARENTS OF BBG CHILDREN STUDY PARTICIPANTS

1) Could you explain to me how you became involved in BBG?

2) Tell me about your gardening experience

   Prompts:
   - Plant material
   - Family involvement
   - Where did you learn to garden?

3) Why did you choose to involve your child in the programs at BBG?

4) Can you describe your child’s experience in the program?

5) What do you think your child likes the most about the program?

6) What do you think your child dislikes the most about the program?

7) How does your experience differ than any initial impressions you may have had of the program?

8) What do you feel the value of the BBG’s Children’s Gardening program is?
APPENDIX D
CONSENT FORM

The purpose of this research study is to obtain qualitative information concerning the experiences of participants in the BBG’s Children’s Gardening program.

You will be asked to participate in an informal, semi-structured interview that will last approximately 45 minutes. The interviews will be audio taped. Your response, both in interviews and to this consent form, will be kept completely confidential and the tapes will be stored in a locked filing cabinet. I will be the only person with access to the tapes. The tapes will be erased upon transcription. You will be given a pseudonym to ensure your anonymity in the presentation of the results.

There are no foreseeable risks involved in your participation in the project nor are there direct benefits to you. Participation will, however, provide you with the opportunity to reflect on your own experience and it will help increase the general knowledge concerning youth gardening.

Your participation in this project is entirely voluntary and you may refuse to answer specific questions or you may withdraw at any time without penalty. If you have any questions about this project, please contact Melanie Blandford, email mblandfo@utk.edu or phone (865) 974-7324.

I fully understand the explanation of the study and I agree to participate.

_____________________________ Name      _____________Date

_____________________________ Signature
APPENDIX E

CHILD ASSENT FORM

Researcher:

Hello, my name is Melanie. Your (parent/legal guardian) said that you are willing to help me. I just want to ask you some questions about gardening at BBG. All you have to do is answer them the best you can. It will be really easy, and I am sure you’ll do a good job. I think that what we will learn from your experience will help others to garden with children. Are you willing to help with this project? (Child’s response). Great! I think you will find that this is very easy to do. If you decide that you don’t want to do this anymore, all you have to do is tell me. You can just say, “I don’t want to talk anymore.” Okay? (Child’s response).

I really appreciate it. We will just sit down over here and talk for a while. Are you ready? Let’s begin.

The researcher will use the following procedures during the interview:

-Maintain a pleasant facial expression.

-Give general reinforcement by means of these example comments:

“You’re really paying attention to my questions.”

“You’re doing a great job!”
“I can see that you are really listening to my questions and thinking about your answers!”

The researcher will use the following procedures at the end of the interview:

- If the child wishes to stop during the interview, the researcher will maintain a neutral expression, turn the tape recorder off, and say, “All right, thank you for talking to me again.”

- When the interview is complete the researcher will say, “Thank you for talking to me again. You have done a great job!”

These behavioral guidelines will be followed during the interview:

- Prompts will include phrases such as:

  “Remember to pay attention to me and think about your answers so you’ll do a good job.”

  “Keep listening carefully.”

  “Please wait until I am finished with the question, before you answer.”

  “Please don’t touch the tape recorder.”

- If the child is unable to be interviewed, the interview will be concluded.
APPENDIX F

PARENTAL CONSENT FORM

The purpose of this research study is to obtain qualitative information concerning the experiences of participants in the BBG’s Children’s Gardening program.

You will be asked to participate in an informal, semi-structured interview that will last approximately 45 minutes. The interviews will be audio taped. Your response, both in interviews and to this consent form, will to be kept completely confidential and the tapes will be stored in a locked filing cabinet. I will be the only person with access to the tapes. The tapes will be erased upon transcription. You will be given a pseudonym to ensure your anonymity in the presentation of the results.

There are no foreseeable risks involved in your participation in the project nor are there direct benefits to you. Participation will, however, provide you with the opportunity to reflect on your own experience and it will help increase the general knowledge concerning youth gardening.

Your participation in this project is entirely voluntary and you may refuse to answer specific questions or you may withdraw at any time without penalty. If you have any questions about this project, please contact Melanie Blandford, email mblandfo@utk.edu or phone (865) 974-7324.

I fully understand the explanation of the study and I agree to participate.

_____________________________ Name      _____________Date

_____________________________ Signature
I fully understand the explanation of the study, will explain the study to my child, and I agree to allow my child to participate.

_____________________________ Name  _____________ Date

_____________________________ Signature
APPENDIX G

MEMORANDUM OF UNDERSTANDING

The following is a memorandum of understanding between the researcher, Melanie R. Blandford and BBG (BBG), subject to the fulfillment of the requirements for a Master’s of Science (M.S.) at the University of Tennessee.

In order to fulfill the thesis requirements for the M.S. degree in Ornamental Horticulture and Landscape Design with a concentration in Public Horticulture, I intend to interview 7 participants in the BBG’s Children’s Gardening program and conduct observations of the program in operation. In this naturalistic inquiry, the experiences and reflections of the participants will be portrayed. The qualitative research will be conducted in person by the researcher. This study holds the potential for creating a theoretical base for understanding a youth gardening program in progress.

The following research questions will guide this study: (1) What are the BBG’s Children’s Gardening program’s goals? (2) How does the BBG program achieve its goals? (3) What are the study’s participants gardening and educational experiences at BBG? (4) Which aspects of the BBG gardening program do the selected participants identify as being significant to them? (5) What has made BBG’s children’s garden endure from 1914 to the present?

The findings of this research endeavor will be published in a thesis, according to the requirements of the University of Tennessee and in subsequent journal articles reviewed by Dr. Susan Hamilton, chair of this research study. BBG will also have the
opportunity to review both the thesis and any journal articles prior to publication. A copy of the final product of this thesis and copies of subsequent journal articles will be given to BBG for record purposes.

The researcher holds the right to not disclose any participant names or raw data. BBG has the right to use the results of the study in publications when given proper acknowledgment of the University of Tennessee and/or the researcher.
APPENDIX H

INTERVIEW GUIDE FOR BBG INTERN

1) I want to talk to you about being in the gardening program. Can you tell me what that is like?
   - Junior Instructor
   - Instructor/Intern

2) Describe a typical day for you at Brooklyn Botanic.

3) Tell me about your favorite things that you get to do here in the gardens?

4) Out of all the activities you’ve gotten to be involved in at BBG, which ones did you not enjoy the most?
   - Junior Instructor
   - Instructor/Intern

5) I would like for you to think of your favorite lesson you’ve given in the garden. Would you tell me about it?
   Why did you enjoy it?

6) Can you tell me about lessons that you didn’t think were well received by the children?

7) Would you tell me some thing that you’ve learned in the gardens that you didn’t know before you started at BBG?

8) What do you think the Children’s Garden’s goals are?

9) How do you think they achieve these goals?
10) If you could offer suggestions for a children’s garden program, what would they be?

11) How do you think the gardening program affects its participants?

12) What are your gardening experiences prior to BBG?

13) What kind of job would you like to have when you are older?

14) Can you describe any ways that being involved in the gardens has affected who you are?

15) How has BBG’s program affected your life?
APPENDIX I

SAMPLE TRANSCRIPT

6-year-old Interview

June 22, 2002

Interviewer: (Reads the consent form)

I: So, we want to talk about the Brooklyn Botanic Children’s Garden, since that is what I am here studying. So, can you describe it to me?

Respondent: Um, it’s…a…garden for children in the Brooklyn Botanic Garden and there are different instructors, and what we do is we plant things, we harvest things, and we do arts and crafts and we eat lunch.

I: And how long have you been in the program?

R: (asks her mother) Since I was 6.

I: So, what kinds of arts and crafts do you do?

R: We make friendship bracelets like the one right here.

I: Did you make that today?

R: Yeah. We, make, we draw, that’s mostly what we do. We use stencils, we…we also cook.

I: You cook? What kinds of things do you cook?

R: Like, well, last time I was in here, we used spinach and like that kind of stuff and we made, a like, pasta with no pasta in it. (We all laugh) Like the sauce, pasta sauce with no pasta. And this time, we made cupcakes.

I: Cupcakes, you made cupcakes today?

R: Not today, we made cupcakes like a two weeks ago.

I: Oh, so can you tell me some of your favorite things that you get to do when you’re in the garden?

R: I …love weeding.
I: You do! What do you like about it?

R: I like getting dirty.

I: You do? Can you think of some other things, your favorite things that you get to do in the gardens?

R: I like… I like planting.

I: What do you like about it?

R: I like, digging the holes… and I like… I like… watching things grow. Like once I had a like bare plot and a few like little weed things around it. And… I like lunch.

I: I like lunch too. So, of all the activities that you get to do at BBG, which ones did you not like to do?

R: Well, I didn’t like marching up and down like… I didn’t like, hmm. Can I speak about it?

(Her mother tells her she can say it)

R: I don’t like marching up and down, and I don’t like listening to instruction.

I: Instruction?

(Her mother says something)

R: I like to plant, I just don’t like, like when Candace (an instructor) says go get me a tissue.

I: Oh, and you have to march up to the building and back again. Is that what you mean?

R: yeah.

I: And you don’t like getting instruction? What do you not like about that?

R: I like doing things my own way.

I: Your own way, like by yourself?

R: yeah.
I: Me too. What do you think you would get to do differently than when you get instruction?

R: Like sometimes, I would like to go over to the discovery garden and do and with everybody else.

I: Your group doesn’t do that?

R: No.

I: Ok. Now I want you to think of your favorite instructor that you’ve ever had. Tell me about that person.

R: Candace.

I: I don’t know her, so you’re going to have to tell me about her.

R: All right, she’s… I like that she’s really nice and she made cupcakes with us. And she… is…

I: You can tell me anything. Anything at all. Like think about her compared to other instructors that you’ve had.

R: Well, like when I, well, for one, she doesn’t yell at me.

I: She doesn’t yell at you, she lets you?

R: Well, she just says, “Please stop that” and my other instructors sometimes yell at me.

R: Well, she just doesn’t like… (She turns to her mom and asks how she should explain it)

I: So, I want you to think of something, you’ve learned in the garden that you didn’t know before. Now, I know you were real young, in kindergarten, when you started.

R: Well, I learned that um… if you have a vegetable garden and you don’t like the rabbits eating your carrots and lettuce, then you can put marigolds around them.

I: Marigolds around them…and that keeps them away?

R: They just don’t like the smell.

I: So then they stay away?
R: They just don’t go into your garden.

I: Can you think of anything else? That was a good one! That was a good example. Can you think of anything else like that?

R: I learned that ladybugs eat other bugs. And then my two friends, they found a worm and they named the worm after the um…um… the person…what’s it called again, the person… manager of children’s gardens and exhibits.

I: You named an earthworm after Ted? Why’d you name it that?

R: And she said, please don’t talk. 'Cuz she named him after Ted, and she’s going to tell her mom, “Please don’t talk”.

I: So, can you think of else that you’ve learned since you came to BBG that you didn’t know before?

R: I have learned that it doesn’t take carrots that long to grow.

I: That it doesn’t take carrots that long to grow. Anything else?

R: It takes peas a long time to grow.

I: It takes peas a long time to grow. It does, but they’re good when they get there. Out of all the plants that you get to grow in the gardens, which ones do you like to grow the most?

R: Carrots.

I: That’s your all time favorite?

R: Well, yes but I also like… (Pauses and her mom tells her not to put her dirty fingers in her mouth) Well, what I did today that was really funny is we made a grave for an immature carrot that we pulled up, and we buried it in straw, and then we lost it when we were looking for grave stones.

I: It just wasn’t ready to come out of the ground? Let’s see, where am I?

R: (She reminds me) You just did what’s your favorite vegetable. I also like nasturtiums.

I: You do, why do you like them? Do you eat them? (I ask her mother the same question; they have a nasturtium plant in the room) They are spicy, they taste like pepper.
R: You’ve tried them?

I: I’ve put them in salad. Yeah, they’re real spicy.

R: (She has one and is thinking of trying it. She makes a face) It does taste like pepper. I also like mint.

I: Can you tell me what you like most about being at BBG, like when you’re there what do you like?

R: I like the squirrels.

I: You like the squirrels, there’s a lot of squirrels down there.

R: I like listening to the birds. I like smelling the roses in the rose garden. And, I like going through the corn maze in the summer. I like, sometimes, if we pull something up, like if we are weeding and we pull up a vegetable, like me and (her gardening partner in her plot) we sometimes take a piece of lettuce or a carrot or something and then start munching on it, even if we don’t wash it. (Her mother laughs)

I: You just eat it right out of the ground? That’s fun.

R: But we wipe it like this (shows me on her shirt) (her mother continues to get on her about her dirty hands)

I: So, can you think of why you wanted to come back after you’re first summer?

R: It was really fun. I wanted to see some new instructors. And I just really like being here.

I: What about being here?

R: I like… doing arts and crafts, that’s really fun. I like cooking that’s fun. I like harvesting, that’s REALLY fun!

I: Is that your favorite?

R: That’s my second favorite.

I: What’s the first one?

R: I like… arts and crafts.
I: What would you say is your third favorite?
R: Probably planting.
I: Do you have a garden at school?
R: Well, sort of. We have finished it yet.
I: Is it like this garden?
R: No.
I: What is different about it?
R: It is pretty much like only trees or something, there’s like shrubs and bushes. There’s not much there.
I: So, no vegetables?
R: No.
I: So, do you have a garden at home?
R: Yeah.
I: What’s it like?
R: It is really small. It is really pretty.
I: Is it different than here too?
R: Yeah.
I: What’s different about it?
R: There are no vegetables. Well, we have a little pot of like herbs. We have thyme, mint, (turns to mother) what else do we have? Basil.
I: Let’s see I think I just have one more question. Just one more, ok?
R: Yeah.
I: Out of everything that you could be when you grow up, what would you want to be?
R: A gardener.

I: A gardener. What else would you be?

R: A vet.

I: You like animals?

R: yeah.

I: Can you think of anything else you want to tell me, something you would want other people to know who want to do this?

R: The only problem about the children’s garden is there are too many rabbits. They eat up our plants. Well, I always put the seeds deep down, well not too deep, but not too like, not like an inch down but not like 10 inches down. I put them like three inches down, so I can, so the robins won’t be able to get them. And also, I want them to be big.

I: What the plants?

R: yeah.

I: You know those sunflowers out there? They are going to be really big at the end of the summer.

R: Yeah I know.

I: Like how big do you think they’ll get? Taller than me?

R: Much. Well, maybe if I were to maybe stand on your head, that’s how tall they’ll get.

I: (Laugh) Yeah, I saw a picture and that’s about how tall they look. So, I think that’s it, so thank you very much.
VITA

Melanie R. Blandford was born in Jackson, Mississippi on May 19, 1977. Her family moved several times during her childhood, but she graduated from Cave Spring High School in Roanoke, Virginia in 1995. She then moved to Harrisonburg, Virginia and received her B.A. from James Madison University in May of 1999.

In 2000, Melanie moved to Knoxville, Tennessee and began taking undergraduate courses at the University of Tennessee to fulfill the requirements for a Master’s of Science. In January 2001, she entered the graduate program in the Ornamental Horticulture and Landscape Design Department in the College of Agriculture on an assistantship. She worked in the University of Tennessee Gardens as the Volunteer Coordinator while attaining her degree. She currently lives in Knoxville, Tennessee with her dog, Sadie, and her cat, Miss. After graduation, she hopes to gain full-time employment where she can use her Volunteer management experience, youth gardening knowledge, and horticulture skills in a public horticulture setting.