

Growing Seeds, Minds, and Community: A Case Study Evaluation of The Green Heart Project's Youth Internship Program

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Abstract:

Community gardens are home to a variety of place-based environmental education programs. Situated Learning Theory and its relation to place-based environmental education provides the theoretical context for this study. Situated Learning Theory postulates that learning occurs through social processes when presented in authentic contexts. This research study will evaluate a Youth Internship Program, developed by The Green Heart Project, which aims to teach youth about the program's 3 pillars of Career Preparedness, Healthy Living, and Citizenship. Additionally, this study will evaluate how participants identify with and learn through a community. The program's immediate outcomes will be evaluated through mixed methods evaluation techniques. Through analyzing and triangulating the data, this study will explore the immediate outcomes of the program to determine if trends exist regarding change in participants' Career Preparedness skills, Healthy Living attitudes, Citizenship content knowledge, and learning through community practices.

Statement of Interest

Since the first grade, I knew I wanted to be an educator. I loved learning and was lucky to have teachers that supported me throughout my early academic career. From a young age, I regularly found myself helping other students and enjoyed watching my peers succeed. However, as I grew up, my interests broadened. Growing up in a small midwestern town surrounded by rivers, I witnessed devastating floods that became more frequent throughout the years. I viewed first-hand how environmental issues intersected human life and I began to develop feelings of love and connection to the land. As my passion for sustainability and the environment grew, so did my knowledge. I was fortunate to have opportunities to study in places such as the Florida Keys, Bahamas, Hong Kong, and Bali where I learned how climate change, pollution, resource use, and governmental regulations affected terrestrial and aquatic ecosystems. Through my travels, I was able to compare how different cultural beliefs affect the Earth in various ways. Even though each place I visited was diverse, the common theme I saw was that everything is interconnected. From the smallest forms of life to the atoms in the atmosphere, one thing affects another; this idea of interconnectedness is what sparked my interest in environmental and sustainability studies. However, as I continued to learn about the environment, my love for education never wavered. Combining my passions for the environment and education is how I came to my current career goal of being an environmental educator.

To pursue my goal, I obtained two Bachelor of Science degrees in Biology and Secondary Education at the College of Charleston. During my time as an undergraduate student, I gained proficiency in teaching science curricula in a high school setting. Through my undergraduate coursework and semester of student teaching, I acquired the necessary pedagogical skills that allowed me to create, modify, and teach science content to diverse groups of adolescents. During my semester of student teaching, I taught two sections of marine biology which solidified my passion for environmental education. I sought to find ways to empower my students to become stewards of the Earth while effectively communicating the science curriculum to adolescents. Upon completion of my undergraduate degrees, I obtained a valid teaching license which qualifies me to teach science curricula to high school aged youth. After graduation, choosing a graduate school was easy because the College of Charleston's EVSS graduate program incorporates a broad spectrum of classes which supports and allows me to pursue my commitment to both the environment and education.

Educating youth and adults is of utmost importance when it comes to environmental and sustainability studies. Individuals and communities can benefit from environmental education by learning about how human actions have an effect on the land, and vice versa. One noticeable intersection between the land and humans is farming and access to food. Many underprivileged communities are experiencing the negative effects of climate change at expedited rates, contributing to limited food access in these communities. Through teaching environmental and sustainability concepts, individuals and communities can be empowered to make changes which will increase food security and equitable access to food. I have become passionate about these environmental and social justice issues through working with the Green Heart Project, a local non-profit organization. The Green Heart Project aims to use place-based environmental education to help the local community achieve food security and learn about the interconnectedness of the environment, community, food, body, and mind. Over the past year, I

have been working closely with the Green Heart Project as a volunteer to facilitate environmental education programs for school aged children. Primarily, I helped deliver lessons to 6th grade students in the Green Heart Project's urban farm where they learned about food systems and sustainable agriculture. Through my time volunteering, I recognized the importance of the Green Heart Project's mission and vision statements and started to embody their goals and beliefs.

In the summer of 2020, The Green Heart Project's Youth Internship Program was born, after five years of development. The internship program was modeled after The Food Project in Boston, MA, with the purpose of hiring and educating urban youth about career preparedness skills, healthy living attitudes, and citizenship content knowledge. The goals of the program are carried out through an 8-week paid internship program which encompasses formal and informal educational lessons centered in an urban community garden. Since the Green Heart Project is a 501c3 non-profit organization, the agency is largely dependent on donations and volunteers. My proposed research aims to support the Green Heart Project while simultaneously advancing my own educational and career goals. My research project will gather quantitative and qualitative data using a mixed methods approach to obtain a holistic view of the effectiveness of the Youth Internship Program. This research will be beneficial to the Green Heart Project as the organization continues to grow, improve, and implement educational programs. Furthermore, the proposed research will help fill a gap in the existing literature as currently there is very limited research about the outcomes of urban agriculture programs for adolescents. The results of the research will provide the Green Heart Project with valuable data which can be used for grant applications and future research publications. However, not only will the proposed research be valuable to the Green Heart Project and my career goal, but it also furthers my personal passion for environmental education. I strongly believe that environmental education is what sparks environmental change, and my passion for providing such knowledge to adolescents is deeply part of who I am.

Upon graduation, I hope to continue to work in the field of environmental education with a non-profit organization to create and deliver science materials to youth. The proposed research directly aligns with my interests and the Green Heart Project's goals and needs. Through implementing the research and working alongside the Green Heart Project and faculty members in the EVSS program, I will strengthen my skills and gain experience as an environmental educator. I believe this research opportunity will provide me with the necessary background to attain my current career goal of becoming an environmental educator while also allowing me to pursue and share my passion with other members of the community.

Proposal

I. Introduction

Sites of urban agriculture have proven to be at the intersection of environmental health, personal-wellbeing, and food justice (Alaimo, Bevers, Crawford, Snyder, & Litt, 2016; Browning & Rigolon, 2019; Horst, McClintock, & Hoey, 2017). Urban agriculture is defined as a place where food cultivation occurs in metropolitan areas (Hung, 2004). With such a broad definition, the scope of urban agricultural spaces ranges from a few plants on private apartment balconies for personal use to multiacre public community plots with the goal of addressing food security and social justice (Horst et al., 2017). Although goals of urban agricultural spaces may vary, those utilized at the community level often aim to promote food justice, lessen food insecurity in communities with low access to fresh and nutritious foods, and promote physical health. A community garden is one type of urban agriculture practice and is defined as a garden "that is in some sense a public garden in terms of ownership, access, and degree of democratic control" (Draper & Freedman, 2010). Community gardens are usually plots of urban land that help "provide opportunities for social interaction, education, play, and access to nature" (Hung, 2004). The main purpose of a community garden is to connect people through meaningful agricultural work, social activities, and immersive hands-on learning experiences. Producing much more than food, community gardens have the ability to be a tool for community organization, development, and change (Draper & Freedman, 2010). Community gardens have personal and community wide impacts that lead to increased health and improved sense of self. When evaluating the effects of community garden programs, immediate, intermediate, and long-term outcomes can be assessed. Community gardens provide numerous outcomes but when assessing skills, attitudes, and knowledge it is best to focus on the immediate effects which can be evaluated directly following individuals' participation in a program (Diaz, Warner, & Webb, 2018).

1. Community Gardens' Effects on Career Preparedness, Healthy Living, and Citizenship

Community garden programs have been found to be a path for positive leadership skill development in youth. For example, Schusler and Krasny (2010) found a strong link between community garden participation and leadership growth in youth. Community gardens with internship programs have found that participants experienced increased concepts of self by having responsibilities, feeling mature, recognizing the significance of having a job, and developing interpersonal and leadership skills (Hung, 2004). There are also many health benefits associated with all types of community gardens, such as improving healthy living attitudes related to physical and mental health (Alaimo et al., 2016; Diaz et al., 2018). People who participate in community gardens experience increased produce consumption which is linked to a variety of health benefits such as obtaining necessary nutrients, improved digestive health, and decreased risk of obesity and disease (Hambright-Belue & Holland, 2016; Horst et al., 2017). Gardening is also a form of physical exercise, which helps people live more active lifestyles. Furthermore, participating in community gardens provides a space for individuals to work on mental health goals in a non "illness or deficit oriented" space (Alaimo et al., 2016). When gardens are used as a place to focus on enhancing mental health, the garden becomes a dynamic and safe space characterized by social acceptance, attitude changes, interpersonal connections, and feelings of relaxation (Alaimo et al., 2016). Sense of self and feelings of self-

improvement are also often associated with community gardens. Community gardening allows individuals to demonstrate internal processes of self-efficacy, attitudes, and autonomous motivation which influence pro-health and environmental behaviors (Alaimo et al., 2016; Bradley et al., 1999; Cooke, Fielding, & Louis, 2016; Dettmann-Easler & Pease, 1999; Gibbs et al., 2013).

Community gardens can contribute to citizenship by enabling individuals to gain content knowledge about the natural environment, sustainable agriculture, food systems, and food security (Bradley, Waliczek, & Zajieck, 1999; Dutta & Chandrasekharan, 2017; Horst et al., 2017). Connecting students to the land through community gardening increases their appreciation for care of the environment and improves their content knowledge about the importance of food systems and the role sustainable agriculture plays in food security. Participating in community gardens allows community members to gain content knowledge in environmental science, food systems, and environmental civic responsibilities (Bradley et al., 1999; Diaz et al., 2018; Horst et al., 2017). Community gardens enhance a community's civic engagement, trust in community members, and overall mood of community residents (Alaimo et al., 2016; Delia & Krasny, 2018; Horst et al., 2017). Those involved in community gardening often experience a change in perspective of the local neighborhood. Hung (2004) showed how participants started to view the neighborhood as a safe and calming space and felt a sense of placemaking. Placemaking has been defined as "the intentional process by which youth and adults seek to transform their neighborhoods" (Hung, 2004). When the community uses a garden as a source of placemaking, the overall sense of community and peoples' individual roles in the community are positively altered.

2. Food Insecurity, Justice, and Deserts

In 2015, approximately 13% of U.S. households experienced food insecurity, which is defined as "lack of access to food needed for an active healthy lifestyle" (Horst et al., 2017). Communities that frequently experience food insecurity often are located in areas described as food deserts (Blanchard & Matthews, 2007; Hambright-Belue & Holland, 2016). Food deserts are defined as areas with low access to food sources, such as grocery stores, and "may compound ongoing and severe nutritional problems and further exacerbate the socioeconomic gradient in health status" (Blanchard & Matthews, 2007). In the United States, food deserts highlight the "great divide" between those with and without access to low-cost and high-quality food (Blanchard & Matthews, 2007). People living in food deserts pay higher prices and travel farther for food, consume less fruits and vegetables, and are at risk for experiencing more health impacts (Blanchard & Matthews, 2007). Urban agriculture can contribute to community development and food security by promoting green spaces, increasing access to fresh and nutritious foods, combating environmental impacts of food production, and boosting the local economy by supporting local food systems (Blanchard & Matthews, 2007; Broaddus et al., 2015; Hambright-Belue & Holland, 2016; Hung, 2004).

3. Theoretical Framework - Situated Learning Theory and Place Based Education

Situated Learning Theory (SLT) was developed by Jean Lave and Etienne Wenger in the early 1990s and builds upon the theoretical concepts of two earlier theories, Sociocultural Theory and Constructivist Theory. Situated Learning Theory advances the theoretical ideation of Sociocultural and Constructivist viewpoints by considering learning to occur as a personal process that takes place in environmental, social, and collaborative contexts (French, 2020;

Matusov, Bell, & Rogoff, 1994). Lave and Wegner (1991) believe that every idea and human action is a generalization, adapted to the environment. Situated Learning Theory emphasizes the importance of social interaction, authentic context, and community of practice. Community of practice refers to the place where learning occurs (UNESCO, 2016). Within SLT, the focus is not on learning as an individual process, but instead learning is viewed as naturally acquired through social processes, sometimes unintentionally, and through situated practices of communities (French, 2020; Lave & Wegner, 1991; Matusov et al., 1994), such as lessons presented in a community garden.

Situated Learning Theory focuses on the “novice learner”, who is viewed as a newcomer within a specific community of practice (Lave & Wegner, 1991; Matusov et al., 1994). Through community interactions and collaboration, a novice learner moves from the periphery of a community to the center of community practice, where community beliefs, behavior, and culture are at its core (French, 2020; Matusov et al., 1994; Lave & Wegner, 1991). As the novice learner moves from the periphery to the center of community practice, they gain new skills and knowledge through the social process of learning alongside the community. Skills are acquired as a learner participates in the actual practice with a community expert, but with a limited degree of responsibility for the resulting product (Lave & Wagner, 1991). Lave and Wagner have demonstrated this concept by applying it to several situations, such as in the workplace. Lave and Wagner (1991) found that an employee who becomes manager has gained many skills, such as problem solving, that were learned through participating in the community of the workplace. Furthermore, the novice learner gains knowledge as their general decontextualized knowledge transforms into contextualized knowledge through reconstructing meaning of the current setting (Lave & Wagner, 1991). Acquisition of knowledge occurs community wide as members co-participate in community practices, although the novice learner will experience the most dramatic transformation as their participation continually increases (Lave & Wagner, 1991). Learners inevitably participate through community practices when learning is a social process, which translates into the mastery of skills and knowledge as novices begin to fully participate in the sociocultural practices of a community (Lave & Wagner, 1991).

Situated Learning Theory has been utilized as the theoretical framework in the study of several community garden urban youth programs. One study has shown how the SLT framework applied in a community garden setting can transform participants’ attitudes. Dutta and Chandrasekharan (2017) examined how situated learning led to development of values and attitudes in the garden setting. They found that the farming experience caused changes in cognition as the result of participating in communities of practice which contributed to a positive change in values and attitudes about the environment. Participants did not join the community garden because they cared for the environment, but participants continued to work in the garden due to the attitude shifts they experienced through gaining new skills and knowledge in a community setting (Dutta & Chandrasekharan, 2017). Dutta and Chandrasekharan (2017) found that to be effective in changing individual attitudes, environmental education (EE) needs to go beyond the information-based model and include place-based education (PBE) suitable for developing a community of practice. A PBE approach to EE connects learning and communities by creating inquiry experiences in the place in which students’ learning is focused. (Cruz, Selby, & Durham, 2018; Powers, 2004). Place-based education is learner-centered and connects the local to global context by implementing inquiry-based strategies, systems thinking, and using the community as a classroom (Cruz, et al., 2018; Powers, 2004).

Place-based education is fertile ground for SLT practices as PBE inherently allows social learning to occur within a community of practice, in an authentic context. Situated Learning Theory coupled with PBE helps students develop a sense of trust in themselves and in the community because learning becomes a social process occurring in an authentic context which allows the learner to develop new skills, attitudes, and knowledge. (Cruz, et al., 2018). Situated Learning Theory and PBE can provide students with powerful tools to become active agents of change within communities by developing career preparedness skills, adopting healthy living attitudes, and gaining an in-depth understanding of citizenship behaviors and local food systems (Dutta & Chandrasekhara, 2017).

4. Research Context

a. Study Demographics

The geographical area on which this study focuses is a prime example of a food desert. This region in the community is characterized by low access to fresh and nutritious foods, as well as high poverty rates (*State Department of Health and Environmental Control*, n.d.; U.S. Census Bureau, 2016; USDA, 2020). With the area being the 14th fastest growing metropolitan area in the state, experiencing a growth rate three times the national average, problems related to food deserts may be exacerbated in the future (*City Regional Development Alliance*, 2018). This will put residents, specifically youth, at higher risk for experiencing food insecurity, becoming disconnected from food production, and facing challenges related to diet (*Environmental Protection Agency*, 2016; U.S. Census Bureau, 2016). The zip code in which the study will occur has a population of about 20,800 people (*United States Zip Codes*, 2021). The residents of this zip code are 53% female, 47% male, 53.3% Black or African American, and 43.4% Caucasian (*United States Zip Codes*, 2021). Over 4,000 households had an annual income of less than \$25,000 and 21.1% of families in the zip code live in or below the poverty line (*State Demographics*, 2021; *United States Zip Codes*, 2021).

b. The Green Heart Project and the Youth Internship Program

Founded in 2009, the Green Heart Project (GHP), a 501c3 non-profit organization located in the demographic zip code addressed above, began with the initial intent to fill the need for food security through community gardening. The GHP's urban farm is hub for many EE and PBE programs, the pay-what-you-can farm stand, culinary workshops, and the Youth Internship Program (YIP), which is the focus of this study. The GHP's mission statement is to "build garden-based, experiential learning projects to educate students, connect people, and cultivate community" and their vision statement is "to cultivate a community of engaged citizens that value and respect their health, neighbors, and the environment, through growing, eating, and celebrating food." (The Green Heart Project, 2021).

In the summer of 2020, GHP offered their inaugural Youth Internship Program (YIP) for high school students. With summer of 2021 being the second year of the YIP, there is currently little data on the effectiveness of the program. The GHP YIP's mission is to empower young people to become active leaders who are connected to the land and their community by cultivating literacy in three pillars: Career Preparedness, Healthy Living, and Citizenship. This YIP includes paid employment, workforce training, skill-building for high school students, and place-based environmental educational lessons. The YIP aims to create a thoughtful and productive community of youth, from diverse backgrounds, who work together to build a sustainable food system and develop character through activism and self and environmental

awareness. The purpose of the YIP, as described on the Green Heart Project's website, aligns with the main concepts of SLT by emphasizing the relationship between learning and community practice. The YIP aims to cultivate individuals, connect communities, and celebrate citizens through empowering young people to be active leaders who are connected to the land, create opportunities for young people to connect and serve the local community, and create positive change through growing, eating, and celebrating food. This research project aims to evaluate the GHP YIP paid summer interns' changes in Career Preparedness skills, Healthy Living attitudes, and Citizenship content knowledge, which aligns with the 3 Pillars of the program.

II. Research Questions

1. How effective is the Green Heart Project's Youth Internship Program in changing participants' Career Preparedness skills?
2. How effective is the Green Heart Project's Youth Internship Program in changing participants' attitudes about Healthy Living?
3. How effective is the Green Heart Project's Youth Internship Program in changing participants' content knowledge about Citizenship?
4. How do internship participants interact with each other and community members while learning in the urban community garden?

III. Methodology

This study will use a mixed methods research approach where quantitative and qualitative data will be collected. A mixed methods approach will allow for a more comprehensive case study evaluation of GHP's YIP in order to answer the research questions (Creswell, 2009). Evaluation instruments have construct validity based on experts' opinions in the field who have reviewed the proposed survey statements and interview questions. All data collection methods outlined below are appropriate for testing the immediate outcomes of the YIP and have been used in existing literature (Broaddus et al., 2015; Browning & Rigolon, 2019; Delia & Krasny, 2019; Dettmann-Easler & Pease, 1999; Gibbs et al., 2013; Hung, 2004; Madrigal, Claustro, Wong, Bejarano, Olmedo, & English, 2020). Due to time limitations, only immediate outcomes of the YIP can be evaluated. Immediate outcomes are those that can be measured directly following the completion of the program (Diaz et al., 2018). According to Diaz et al. (2018), only knowledge, attitudes, skills, and aspirations can be measured as immediate outcomes. All 12 high-school aged participants, referred to as crew members, will be participating in the study with parent or guardian permission if the individual is under 18 years old. Crew members will be paid for their time during all surveys and interviews, as the evaluation methods will be implemented during internship hours. The 12 crew members will be local youth who attend a high school in the greater metropolitan area. Due to the number of youth internship participants, this study uses a case study approach as not enough people will be surveyed to make generalizations about other places.

1. Data Collection

All data collection will occur during the 8-week period of the internship program. Pre-surveys will be administered throughout the first day of the internship. The 4 sections of the pre-

survey will be administered 1 hour apart to avoid survey fatigue. Post interviews will occur during the last week of the internship and two interns will be interviewed per day. Interviews will last approximately 45 minutes. Post-surveys will be administered on the last day of the internship, with each section administered 1 hour apart. Journal responses will be collected weekly on Fridays. Participant observation will happen continuously throughout the 8 weeks. Since this project is working with human subjects between ages 15-18, to ensure appropriateness of the research design the evaluation instruments and methods will be submitted to the College of Charleston's Internal Review Board (IRB). Data collection will begin only after IRB approval. Furthermore, crew members will be given consent forms which will provide the researcher with participants' approval, and parent or guardian approval if the crew member is under the age of 18, to partake in the research project.

2. Survey Design and Instrument

Surveys are appropriate tools for collecting information about individuals' attitudes and opinions and can also provide researchers with valuable information about complex behaviors and interactions (McLafferty, 2010). A survey will be administered before the start of the program and at the end of the 8-weeks to collect quantitative data to answer the research questions. The survey will consist of 5-point Likert-scale statements. Fixed responses on a 5-point Likert-scale have been chosen to make it easier for the participants to respond and provide a neutral option in case participants do not have strong opinions about a particular statement. The fixed response statements will be organized by sections that focus on participant skills, attitudes, content knowledge, and community practices. Skills statements will be geared towards evaluating the Career Preparedness pillar of the YIP, attitude statements will be geared towards evaluating the Healthy Living pillar, content knowledge statements will be geared towards evaluating the Citizenship pillar, and a final section will be geared towards participants' community practice and learning in a community. The survey will be administered on the first and last days of the YIP, with online and paper formats available to participants. The survey will be administered in four sections, each section administered one hour apart to prevent survey fatigue. Participants will be given 45 minutes to answer each section of the survey.

The survey contains 58 statements. There are 16 statements in section 1, 2, and 3, and 10 statements in section 4. Each survey statement was created to evaluate a specific learning outcome. There are two statements for each learning outcome. The learning outcomes being evaluated in section 1 are skills related to: problem-solving techniques/critical thinking which can be considered work-based problem solving, conflict resolution, accepting constructive feedback, active listening, life planning, goal setting, pricing and selling products, and providing customer service. The learning outcomes being evaluated in section 2 are attitudes about: building healthy relationships and positive attitudes with food, components of a balanced meal, self-efficacy to advocate for and prepare healthy meals, social-emotional learning, relationship between food and mood, vision and goal setting to advance personal development, mindfulness, and balance in living a healthy lifestyle. The learning outcomes being evaluated in section 3 are content knowledge about: food transport, food waste, biodiversity and the role it plays in cultivating a healthy farm, soil management techniques, the importance of timing, seasons, climate, weather patterns, and location when planting crops, stages of a plant's lifecycle, science of climate change and how it affects food systems and agriculture, and styles of farming. The learning outcomes being evaluated in section 4 are about participants' community of practice

participation. Community participation is evaluated through participants displaying the “Five C’s” of competence, confidence, connection, character, and caring within community practices.

All of the aforementioned learning outcomes will be evaluated, however not all survey statements will be represented in this proposal due to the page limitations. Table 1 shows some sample statements for various outcomes. Participants will respond to each statement by choosing their level of agreement. The Likert-scale which interns will use to respond to each statement will read: strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree.

Statement	What the Statement is Evaluating
Section 1: Career Preparedness Skills	
I am able to stay engaged while others are talking.	Active listening
I am able to make a list of what I want to accomplish in my life.	Life planning
Section 2: Healthy Living Attitudes	
I believe the foods I eat affect my body.	Social emotional learning
I feel good when I eat fresh produce (ex: un-canned and non-frozen fruits and vegetables, ex: bananas and lettuce).	Relationship between food and mood
Section 3: Citizenship Content Knowledge	
I know how food is distributed from a farm to a grocery store.	Food transport
I can list all of the stages of a plant’s lifecycle.	Identifying stages of a plant’s lifecycle
Section 4: Community Practices and Community Learning	
I know how to build relationships with members of my community.	Connection
I know how to take personal responsibility for my actions.	Character

Table 1. Examples of pre and post Likert-scale survey statements that will be asked during the 2021 Youth Internship Program.

3. Interview Design and Protocol

Interviews are an effective method for collecting information about a participant’s assumptions and personal experiences (Berg, 1995). Post-program participation semi-structured interviews will be conducted at the end of the 8-week internship. The interview questions will build on the survey statements to gain more in-depth information about participants’ skills, attitudes, content knowledge, and experiences. The format of the interview will be semi-standardized, as several questions and probes will be predetermined, but the interview will be flexible so an in-depth understanding of each participant’s unique experiences can be documented (Berg, 1995). The interview schedule will include essential questions, probing-questions, and throw-away questions. All interviews will be recorded and later transcribed. All participants will be aware that the interview is being recorded.

Interviews will begin with throw-away questions of natural conversation starters, so the interviewee can become comfortable and dialogue can begin to flow. There will be a total of 11 essential questions to cover the topics of Career Preparedness skills, Healthy Living attitudes, Citizenship content knowledge, interns’ thoughts about how they view themselves as part of a community and learn from the community, placemaking, and social justice. Each question has

been created to evaluate a specific learning outcome. There are 1-3 questions per learning outcome or a priori theme. Essential questions are meant to build on the survey questions, as not all learning outcomes and themes are able to be accurately tested by Likert-scale survey. Examples of essential questions can be found below in Table 2. Learning outcomes used to evaluate Career Preparedness skills include constructive feedback, problem solving, and conflict resolution skills. Learning outcomes used to evaluate Healthy Living attitudes include self-efficacy in relation to healthy living and the role balance and mindfulness plays in healthy living. Learning outcomes used to evaluate Citizenship content knowledge include food waste, farming, farm management, and the science of gardening. Interns' sense of placemaking is evaluated through asking questions related to the learning outcomes and themes of the relationship between the local land and community and how interns view themselves as agents of change. How interns learned through the lens of SLT will be evaluated by asking questions about how interns view themselves as part of a community and how interns think they learn from their community. Lastly, how interns view the social justice issue of food deserts will be evaluated by asking a question about how providing increased access to food affects the health of the community and the environment. All interviews will occur during the last week of the program and the duration of each interview will be approximately 45 minutes.

Question	What the Question is Evaluating
What kinds of problems arise during Farm Stand and how do you solve those problems?	Career Preparedness Skills - problem solving and conflict resolution
How do you advocate for yourself so you can live a healthy lifestyle?	Healthy Living Attitudes - self-efficacy
If you had your own garden bed within the urban farm, what are the steps you would take to make sure your crops were successful?	Citizenship Content Knowledge - farm management practice, science of gardening, farming
Over the course of the internship, how did you learn from your community?	Community Practice and Learning - competence and connection

Table 2. Examples of essential interview questions that all 12 participants will be asked during the last week of the Youth Internship Program.

4. Participant Observation

While crew members go through the 8-week internship program, the researcher will conduct participant observations. The researcher will focus on participants' actions and behaviors by monitoring the development of skills, attitudes, and knowledge over the course of the program. The researcher will also take note of how participants learn by interacting with each other and community members while working in the garden. The researcher will keep a behavior log where field notes relating to the purpose of the study will be recorded. Outcomes will be used to guide the participant observations recorded in the behavior log. Outcomes used to guide participant observations will be the same ones used for the interviews. A code book has been created to organize and define all outcomes. The code book provides the researcher with defined observable behaviors that are related to outcomes under each pillar of Career Preparedness skills, Healthy Living attitudes, and Citizenship content knowledge, as well as outcomes related to community practices and learning through a community. Outcomes for Career Preparedness skills include problem solving, life planning and goal setting, conflict resolution, constructive feedback, and active listening. Outcomes under attitudes about Healthy Living include relationship between food and mood, self-efficacy skills, and mindfulness and balance.

Outcomes under Citizenship content knowledge include food pollution and waste, farm management practices, science of gardening, and farming. Outcomes under community practices and learning through a community include competence, confidence, connection, character, and caring. The researcher will write in the behavior log multiple times throughout the day to make sure all field notes are an accurate representation of what happened. Some experts believe that participant observation practices are enhanced by the researcher becoming involved in what they are observing (Laurier, 2009). Therefore, during the 8-week program the researcher will be heavily involved in: delivering educational lessons, urban farm workdays, field trips, farm stand, and other activities that participants engage in. Through engaging with the crew members during participant observations, the researcher will get to know each individual on a personal level which will help the researcher interpret the meaning behind observed actions, interactions, and verbal expressions.

5. Journaling

Participants will write weekly journal responses. Journaling prompts will be predetermined by GHP staff in conjunction with the researcher. Weekly journal prompts will be aligned with the word of the week and content from educational sessions. Every Monday morning, crew members will be provided with the journal prompt and journal entries are due on Friday afternoon. Participants will have time throughout the week to brainstorm and draft their journal responses. All journal entries will be digitally submitted by email. Participants have the option to take multiple approaches to journaling. Participants may respond to journal prompts using bullet points, drawing pictures, free writing techniques, sensory descriptions, writing letters to someone, creating poems, storytelling, sketching comic strips, or developing songs. Crew members will be encouraged to journal in a variety of formats.

6. Data Analysis

Quantitative data will be entered into statistical program R for data analysis while qualitative data will be done in NVivo for analysis. Quantitative data collected from pre and post surveys will be analyzed in statistical program R using descriptive statistics and a chi-squared test. A chi-square test is appropriate for the categorical data due to the small sample size ($n=12$). The sample size meets Cochran's rule of 5, making a chi-square test statistically appropriate (Morgan, 2017). The quantitative data will come from the fixed response 5-point Likert-scale statements. Comparisons will be made between the pre survey responses and post survey responses to determine if there is a statistically significant change in Career Preparedness skills, and attitudes toward Healthy Living, content knowledge on Citizenship, and learning in a community. Comparisons will be made by looking for statistically significant changes in the mean responses for outcomes related to Career Preparedness skills, Healthy Living attitudes, Citizenship content knowledge, and learning in a community.

Qualitative data from this study will include transcribed interviews, participant observation log, and journal responses. Qualitative data transcripts will be analyzed using the program NVivo. All qualitative data will be coded in NVivo using open coding techniques. Coding allows the researcher to organize and categorize data, understand meaning in text, and make connections (Cope, 2009). To begin the coding process, the researcher will read the qualitative text multiple times and come up with a temporary set of codes that are meant to evolve throughout the process. This process is called open coding, as it does not restrict what the data can reveal to the researcher (Cope, 2009). In vivo, analytic, and thematic codes will be produced.

In vivo codes are descriptive and can be thought of as the first level of codes (Cope, 2009). Analytic codes emerge from the descriptive codes and relative literature, creating a second level of coding (Cope, 2009). Finally, as the descriptive and analytic codes are solidified, they will be connected back to the theoretical framework of SLT and its relation to PBE to develop themes (Cope, 2009). Theme building is essential in qualitative data analysis because it allows for the researcher to organize information to reveal trends and categories that are central to the theoretical framework. A code book will be developed and used across each qualitative data source. The code book, as well as all coding, will be member checked to avoid ambiguity (Cope, 2009). The code book created for all qualitative data sources will include no more than 3 levels of code and 50 codes total to ensure the codes contain minimal errors and remain theory driven (Wutich & Gravlee, 2010). Member checking is a practice to ensure the codes and code book are clear and accurate which helps enhance the validity of the results (Cope, 2009). All data, quantitative and qualitative, will then be triangulated to confirm that the data obtained from multiple sources are viable and showing similar results. Triangulation ensures reliability and validity of the results (Cope, 2009). Data analysis will be ongoing throughout the Summer of 2021 and Fall of 2022.

IV. Project Timeline

This research project began in Fall of 2020. The researcher volunteered with the GHP and worked in conjunction with the organization to solidify a research project. The proposal will be defended on June 1, 2021 and data collection will begin on June 21, 2021. Data analysis will begin in Summer of 2021 and manuscript writing will occur during Fall and Spring of 2022. Thesis defense will occur in April of 2022.

V. Expected Results

After completion of the 8-week YIP, it is expected that crew members will have increased skills in Career Preparedness, positive attitudes toward Healthy Living, and improved content knowledge about Citizenship. The expected increase in skills, attitudes, and knowledge should be achieved through the SLT and PBE concepts which indicate that learning will occur in a properly situated, place-based setting through social processes of the YIP curriculum, in the authentic context of the community garden. Hopefully the results of this research can provide the GHP with significant data to be used as evidence of individual and community improvement. Such results may be helpful for yearly reports and future grant applications. Furthermore, the results of this study may help influence current and future programming at the GHP as the organization grows.

VI. Works Cited

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COLLEGE of
CHARLESTON

DEPARTMENT OF
TEACHER EDUCATION

Environmental & Sustainability Studies Award Committee
Merit Research Assistantship

Dear Committee,

I would like to recommend the Merit Research Assistantship to Carly Burner. I have known Carly since January 2019 when she was my student intern. As a student intern, Carly was finishing her undergraduate degrees in Biology and Secondary Education. I was able to observe Carly weekly in a high school setting interacting and teaching adolescents. She was an outstanding intern for her ability to work with other teachers, explain science content, and develop creative instructional methods for learning to occur. These are all applicable attributes needed to successfully complete her proposed study.

In Carly's proposal, she has successfully outlined how she will properly evaluate an environmentally sustainable program working with a diverse group of adolescents. Her experience teaching biology at the high school level has afforded her the pedagogical skills, temperament, and communication skills necessary to carryout this project. These are the exact skills needed to lead the project, teach science concepts, interact with adolescents, and record and evaluate learning.

Carly is an extremely motivated individual as can be assessed by how detailed her proposal is. She is ready to implement and complete all data collection this summer. The amount of data will necessitate a long-term analysis over the fall and winter semesters. Having seen her prepare her proposal, I have no doubt that she will finish all data collection and analyses by March of 2022.

The broader impacts of Carly's project extend beyond the Green Heart Project. The essence of community involvement and scientific literacy in impoverished urban areas is at the heart of this project. Her methods and instruments are exact and complete. I believe that the depth of her literature review and the appropriateness of her methods will allow her study to be an exemplifier for all educational evaluation studies in the future of the EVSS program.

I strongly recommend Carly Burner to receive the Research Assistantship so that she will be able to complete her project. Her anticipated results that are based upon the pillars of the Green Heart Project will advance and improve this experiential learning experience for adolescents. As her faculty advisor, I will be supervising her data collection this summer and her data analysis next year. I do not require or need any monetary assistance to help her in this endeavor.

Sincerely,

William R. Veal

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Project Budget Description

The estimated budget for the proposed research project is detailed in the table below. Funding will be used for travel expenses and evaluation materials while Carly participates in and assesses the Green Heart Project's Youth Internship Program. Carly will need to travel to and from the Youth Internship Program 5 days a week for 8 weeks. Furthermore, Carly will need to pay for printed copies of the pre and post survey for the 12 participants and a notebook to record the participant observations.

Table for research project budget

Item	Cost
80 trips to/from the Youth Internship Program ~640 miles at \$0.58/mile	\$371.20
Printed copies of the pre-survey (n=12)	\$60.00
Printed copies of the post survey (n=12)	\$60.00
Participant observation notebook	\$10.00
TOTAL	\$501.20