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Piloting an observation tool for the Garden to Table Program to assess education of underserved youth in Omaha, Nebraska.

Anthony D. Gargano

University of Nebraska Medical Center

Project Title

Piloting evaluation tools for the Garden to Table Program to educate underserved youth in Omaha, Nebraska.

Student and Committee Information

Concentration Chair: Dr. Courtney Parks, PhD

Credentials Faculty: Dr. Jennie Hill, PhD

Credentials Preceptor: Nathan Morgan, M.S., Executive Director

Placement Site

Name of the Organization: The Big Garden

The Big Garden's Mission is to cultivate food security by developing community gardens, creating opportunities to serve, and providing education on issues related to hunger.

Service learning activities to be performed:

During the fall/spring school semester I will be observing the Garden to Table program conducted at RM Marrs middle school. The purpose of the program is to improve students understanding of where food comes from, and improve access to fruits and vegetables.

Abstract

The Big Garden is a private 501-c3 organization, which utilizes multiple programs to grow healthy food, healthy kids, and healthy communities. The "Garden to Table"

program helps students learn how to grow vegetables and herbs in their school garden as well as how to properly harvest, cook, and preserve these crops through various methods. This program specifically highlights STEAM education through plant science and organic gardening techniques, nutrition, and healthy lifestyles. In 2017, the “Garden to Table” program was taught after school at 5 middle schools in Omaha Public Schools: Marrs, McMillan, Monroe, Lewis and Clark, and King Science Center. The goal of this project is to assess the effectiveness of the Big Garden’s “Garden to Table” program through direct observation of children’s understanding of weekly topics, levels of physical activity involved, and engagement in weekly activities in a newly developed observation tool. One site was chosen for this pilot study and the evaluator was on site directly observing the lessons each week during the program. A direct observation tool was created to record attitudes, knowledge, and behavior of the children during the lessons towards fruits and vegetables and piloted during the site visits. A quantitative analysis of the Big Garden’s “Garden to Table” program can provide evidence of the effectiveness of the curriculum in increasing positive outcomes and can also be used to identify any gaps in the curriculum and strengthen future lessons. Evidence of effective programming can lead to more funding opportunities and expansion for The Big Garden, thus reaching more children in need.

Introduction

In Nebraska, nearly 1 in 6 children are considered food insecure, according to the report on Household Food Security in the United States by USDA. Among low-

income families, access to more healthful food options are limited (Walker, Keane, & Burke, 2010), contributing to diets that are energy dense, and nutrient poor (Drenowski & Specter, 2004). Youth gardens have shown to have a positive effect on children's dietary behaviors, agriculture knowledge, and even leadership skills. The "Garden to Table" program helps students learn how to grow vegetables and herbs in their school garden as well as how to properly harvest, cook, and preserve these crops through various methods. A quantitative analysis of the Big Garden's "Garden to Table" program can provide evidence of the effectiveness of the curriculum in increasing positive outcomes and can also be used to identify any gaps in the curriculum and strengthen future lessons.

Problem Statement

The United States Department of Agriculture defines food insecure families as uncertain of having, or unable to acquire, enough food to meet the needs of all their members because they had insufficient money or other resources for food. 13 percent of U.S. households were food insecure at some point during 2016, similarly, 1 in 6 families locally in Nebraska are considered food insecure (Coleman-Jensen, Nord, Andrews, & Carlson, 2017).

Importance of Proposed Project

Nationwide, 13 percent of U.S. households were food insecure during 2016 and this equates to 16.3 million households going hungry at some point during the year. In Nebraska, the food insecurity problem mirrors the national picture. Nearly 1 in 6

families are considered food insecure, according to the report on Household Food Security in the United States by USDA (Household food security in the United States in 2014, 2014). In addition, fruit and vegetable consumption by children in the United States is low. According to the latest Vital Signs report from Centers for Disease Control and Prevention the amount of fruit consumed by children increased by 67 percent between the years 2003 and 2010 while vegetable consumption remained the same over the same time period. Despite an increase in consumption, children are still failing to meet the daily requirements for fruits and vegetables.

A diet containing adequate fruit and vegetable consumption can decrease the risk of obesity, cardiovascular disease, and cancer. Dietary habits are formed during childhood so it is important to introduce fruits and vegetables to children at a very young age (Christian, Evans, Nykjaer, Hancock & Case, 2014). Studies have shown that having a direct experience with growing food and acquiring access to fruits and vegetables leads to higher fruit and vegetable consumption for children (Gatto, Ventura, Cook, Gyllenhammer, & Davis, 2012). Youth gardens have shown to have a positive effect on children's dietary behaviors, agriculture knowledge, and even leadership skills. In a case study on the Roots & Wings urban youth gardening program in Rockford, Illinois it was found that 75% of youth participating in the program perceived themselves as having improved dietary behaviors, 87% perceived themselves as having an increased knowledge of agriculture, and 91% perceived themselves as having increased possession of leadership skills post-intervention (Pierce, 2012).

In a pilot study of the Latino Youth “LA Sprouts” youth garden program on the effectiveness of a garden-based approach to nutrition education in improving nutritional habits in adolescents found that participants in the intervention had an increased preference for vegetables and increased preference for three target fruits and vegetables. The results from the intervention suggest a garden-based setting for education on healthy nutrition and cooking can improve attitudes and preferences for fruits and vegetables overall (Gatto et al. 2012).

Levels of food insecurity during the summer months increases for children who qualify for the National School Lunch Program (Huang, Barnidge, & Kim 2015). Food insecurity is a significant factor in children’s health status, including both mental and physical health. Policy for underserved populations should include access to healthy foods during the summer months to prevent mental and physical health problems for children who have low SES (Huang, et al., 2015). Although the observations for the “Garden to Table” program were conducted during the school year, the Big Garden also offers summer programming, which may help address this nutrition gap.

A community-based research project provided Hispanic farmworker families education on planting and maintaining organic gardens in an attempt to increase food security, safety, and family relationships. At post-intervention, the project discovered that a community garden program could reduce food insecurity and

increase vegetable consumption. Adult vegetable consumption increased from 18.2% to 84.8% and children's vegetable intake increased from 24.0% to 64.0%. Frequency of worrying that food would run out before money was available to buy more decreased from 31.2% to 3.1% (Carney, Hamada, Rdesinski et al. 2012).

Research Methods

Research Question

Does the Garden to Table curriculum effectively enhance knowledge and attitudes of children participating in an after-school garden program?

Application of theories/theoretical models (Bandura, 1977)

The theory applied to this study is Bandura's Social Learning Theory, which states that people learn from each other through observation, imitation, and modeling. Bandura states "Most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action." Conditions for effective modeling will include observations on attention, retention, reproduction, and motivation.

Attention — Various factors increase or decrease the amount of attention paid. Includes distinctiveness, affective valence, prevalence, complexity, and functional value. One's characteristics (e.g. sensory capacities, arousal level, perceptual set, past reinforcement) affect attention.

Retention — Remembering what you paid attention to. Includes symbolic coding, mental images, cognitive organization, symbolic rehearsal, motor

rehearsal

Reproduction — Reproducing the image. Including physical capabilities, and self-observation of reproduction.

Motivation — Having a good reason to imitate. Includes motives such as past (i.e. traditional behaviorism), promised (imagined incentives) and vicarious (seeing and recalling the reinforced model)

Study Design

Cross-sectional observational study.

Study Population/study sample

The participants are 6th, 7th, and 8th graders; primarily aged 12-14.

Data source(s)

The program is at 5 middle schools that participate in Collective for Youth after school programming that requested the “Garden to Table” program. To pilot our process and measures, we collected data at one of the participating schools. This provided an opportunity to develop a good working relationship with site leaders and pilot measures for consistent data collection.

Data collection methods

We conducted observations at the program site over the course of a six-week period, once per week. These observations included fidelity checks and student learning observations.

Over the course of the six weeks of data collection, the PI completed an observation form. These observations included checkpoints on program implementation (e.g., topics and lessons that are introduced), student knowledge and attitude

observations, activity performed, and teacher interactions with the children. The observation form was designed to make observations of four randomly selected students (2 boys and 2 girls if possible) at regular intervals.

Big Garden After School Program Topics for Coding:

Session one:

0. INTRODUCTION (nothing lesson related).
1. Discussion/Ideas of different cultures, holiday celebrations observed.
2. Discussion/Ideas on plants as food eaten during celebrations.
3. Discussion/Ideas on plants as decoration during celebrations.
4. Working on handmade items (active).

Session two:

1. Discussion/Ideas of different cultures, holiday celebrations observed.
2. Discussion/Ideas on plants as food eaten during celebrations.
3. Discussion/Ideas on plants as decoration during celebrations.
4. Working on handmade items (active).

Session three:

1. Identifying new plants and making dream gardens (this is an art project, drawing what they want to grow or cutting out pictures from magazines and gluing them on).
2. Creating a planting calendar (Have them figure out what they want to grow, when they need to plant the seed, and when it's safe to plant the seedling outdoors).
3. Making beet hummus (cooking).

Session Four:

1. In this lesson participants will start to plan their garden beds by learning about square foot gardening spacing using garden maps.
2. Start microgreens by seed for eating in next class.
3. Making mason jar salads.

Session Five:

1. How to harvest seeds.
2. Education on soil, how to start seeds.
3. Propagation and cutting.
4. Making healthy snacks.

Session Six:

1. How does chocolate grow?
2. What chocolate is made into.
3. Making chocolate dipped strawberries and fruit skewers.

Observation and Coding Procedure:

The PI randomly selected 4 students and marked their id characteristics (e.g., striped shirt). Once the four students were selected, the PI observed 1 student for 15 seconds, then coded activity of that student for 15 seconds and repeated for a total of 6 minutes. Then cycle through students twice for 48 minutes. The possible

activity and task codes are listed below.

Activity Level

1. Idle (lying/sitting/kneeling)
2. Standing
3. Walking
4. Moderate (e.g., Garden Tasks, Hands-on Activities)
5. Vigorous (e.g., running)

*Only mark *Moderate* if student is actually performing a hands-on activity. Some students may be spectators of a hands-on activity and can be marked as *idle*, *standing*, or *walking*.

**Highest ranked activity level takes precedence in coding. (E.g., if the student is sitting for part of the 15 second observation period but then starts a hands-on activity during the same period it will be marked as *moderate* by the coder).

Tasks

- E. Eating (Trying healthy foods)
- Ca. Carrying/Collecting/Setting Up or Putting Away
- G. Gardening Tasks (Digging/Harvesting/Weeding/Planting/Watering)
- H. Hands-on Crafting (*Ca., G., and H. = moderate PA*)
- R. Resting/Observing
- O. Other

Spectrum of Knowledge

Dis. Child is disengaged, not paying attention, talking to other students about non-topic related items

Obs. Observing (include listening to instructor, watching demonstration, watching other students perform hands-on or gardening tasks)

Qu. Asking questions about the topic

Ver. Demonstrate knowledge verbally (e.g., answer a question correctly)

Phy. Demonstrate knowledge physically (i.e., hands-on tasks)

Lesson Context (What is the instructor doing)

M = Management and other: Use this code anytime the instructor is trying to manage or organize the students such as getting them lined up or having them split up into groups. You can also use this as a default code for any time the other codes are not happening.

K = Knowledge: Use this code anytime the instructor is imparting knowledge about the topic. In other words, use this code when the students are not really moving or engaged with hands-on activities, but are being taught something and are largely stationary. This can also be used if the instructor is engaging students by asking topic-related questions or imparting topic-related facts during hands-on activities.

H = Hands-on Activities: Use this code anytime the instructors are engaging students in activity which might be playing a game, practicing a skill they were taught, or could be focused on hands-on activities in the garden (e.g., watering, weeding, planting).

*Knowledge takes precedence in the coding. If students are working on a hands-on activity and the instructor asks a question to stimulate thinking that is topic-related or provides topic-related facts it will be marked as *Knowledge* by the coder.

Statistical and/or analytical methods

Data from observation forms were entered into excel and imported into SPSS (IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.) for analysis.

Descriptive statistics (e.g., means, standard deviations, frequencies) were conducted for all variables and some comparisons were made using Chi Square test of independence with post-hoc z-scores as needed.

Limitations

Common limitations in observational research include potentially limited external validity and precision. Due to the small sample size and single location of the study it will be difficult to draw conclusions about a cause and effect relationship.

Similarly, given a small sample size and lack of a control group the study is also less precise (Carlson & Morrison, 2009). Since part of the purpose of this study was to pilot a newly developed observation tool, there is not supporting validity and reliability for this measurement.

Administrative Resources

Resources needed would include a computer and printer with paper to print out the observational tool. Clipboard and a pen will be needed for the observation. A vehicle will be needed for travel to the site weekly. A computer will also be used to gather, summarize, and enter data.

Ethics

Parents provided passive informed consent when their child signs up for the

afterschool program. By receiving the letter home explaining the purpose and methods for this pilot, parents have the opportunity to opt their child out from potential observations and interviews.

Participants will include those present in the afterschool program and will not be identified by name. Depending on the number of children present during the session, a subsample will be included in the observation (N=4) through random number generation.

Subjects may benefit long term from program improvements identified during this pilot data collection through increased gardening knowledge and access to fruits and vegetables.

Data collected during this pilot may enhance this and other garden afterschool programs, enhancing children's knowledge, awareness, and preference for fruits and vegetables, ultimately improving health and reducing childhood obesity.

Results

Observational Study

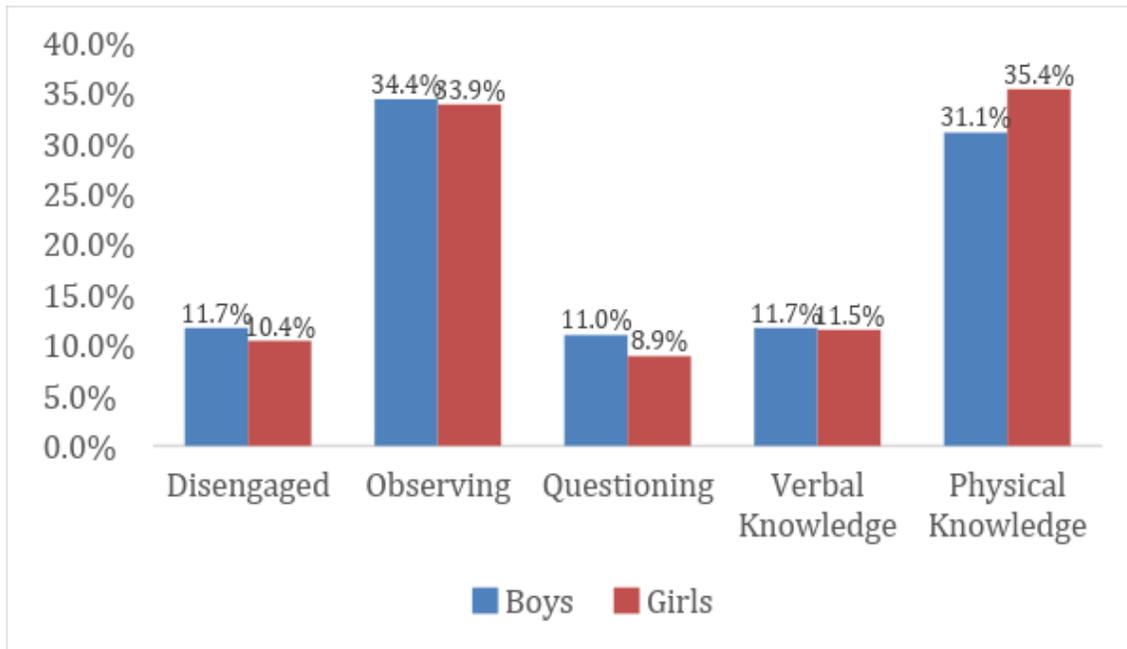
One-session data collection trips were conducted weekly for six weeks assessing each learning session in the Big Garden's Garden to Table after school program. The program is conducted at six schools in the city of Omaha. For this pilot study, data collection took place at RM Marrs Elementary School.

For the pilot assessment of the Garden to Table program, each session included observations of four randomly selected students (two male, two female) for 8 six-minute sampling periods for a total of 48 minutes per session. Each student would be observed twice in the 48-minute session, once in the first half of the session and another in the second half of the session. Attendance per session for all sessions were greater than or equal to or more than four students. Students were not tracked, the data collector recalled who was selected in previous sessions and removed them from random selection for future observations. If there were not enough unique students for observation, students previously selected were eligible to be observed again. Precedence was given if possible to observe two boys and two girls in each class. This was possible in every session except the last in which no girls attended. In total, over the six-session observation, 24 students were randomly selected to be observed, 14 boys and 10 girls.

We found that boys were on average more active than girls (Girls: $M=2.18$, $SD=1.38$; Boys: $M=2.47$, $SD=1.41$), which was statistically significant ($t=-2.19$, $p=0.29$). This is not surprising, as boys tend to be more physically active as demonstrated by surveillance data (Troiano, Berrigan, Dodd, Masse, Tilert, & McDowell, 2008). The Garden to Table program may consider targeting girls to become more active in the lessons in order to increase physical activity. It was noted that the girls tended to be engaged in the lesson, yet the boys demonstrated higher levels of activity. When spectrum of knowledge was compared between boys and girls, the percentage of

knowledge types were similar. Figure 1 below shows the percentage that boys and girls displayed for different types of knowledge demonstrated.

Figure 1. Spectrum of Knowledge for Boys and Girls

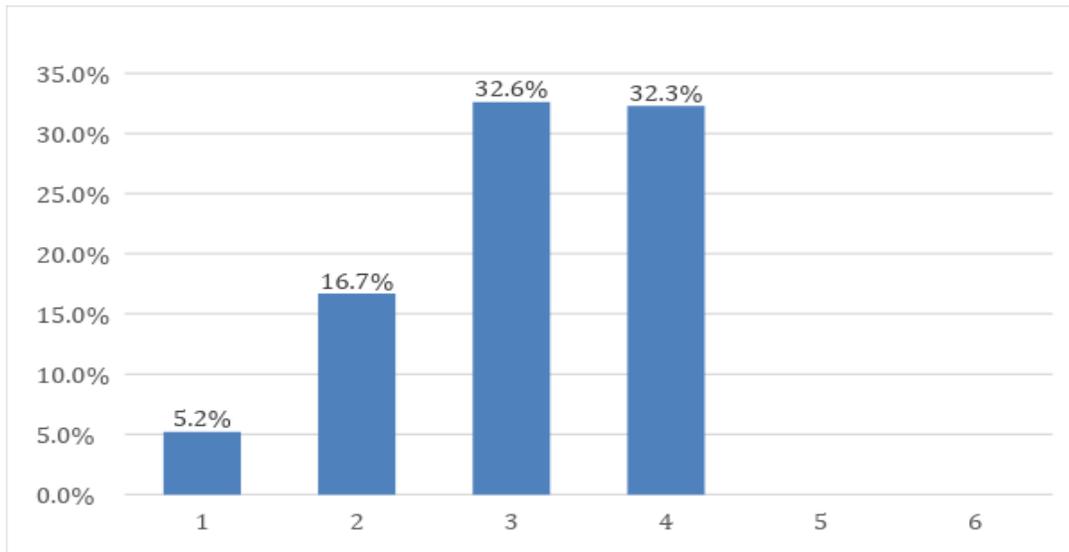


When activity levels were compared across the sessions, session 4 resulted in the least amount of physical activity ($M=2.01$; $SD=1.39$), while session 6 resulted in the highest level of physical activity ($M=2.75$, $SD=1.47$). It should be noted, that although the physical activity levels were not measured on a continuous scale, these means and standard deviations allow for some simple comparison of activity level between boys and girls. As described above, the physical activity levels include: 1= Idle (lying/sitting/kneeling/), 2 = Standing, 3= Walking, 4= Moderate (e.g., Garden Tasks, Hands-on Activities), 5=Vigorous (e.g., running). Session 6 was also all boys, perhaps influencing this higher level of physical activity. Session 4 had a high frequency of idle time (63.5%), while the lesson topics included many hands-on

activities (starting microgreens and making mason jar salads) it could be beneficial for instructors to encourage more students to be involved in the activities or adjust activities so that more students can participate at one time.

When follow-up chi-square tests were run for session 3 and 4, it was found that during session 4 when lesson topic 2 (Start microgreens by seed for eating in next class) was being conducted, students tended to be more disengaged. During this time it is recommended that instructors find ways to keep more students engaged with the activity. This could be through change in logistics or curriculum to get more children involved. Figure 2 shows the percentage of disengaged through the six learning sessions.

Figure 2. Percent Disengaged for Each Session



Spectrum of knowledge compared across all sessions (Figure 3) highlights the frequency and percentage of types of engagement students were having during the lessons. Physical knowledge (typically displayed during hands-on activities) and observing were most frequent observed at 32.1% and 31.6% respectively. Disengaged was the third most frequent observation at 14.8% while verbal knowledge (12.1%) and questioning (9.3%) were the least observed.

Figure 3. Spectrum of Knowledge Across All Sessions

		Frequency	Percent	Percent
	Disengaged	83	14.8	14.8
	Observing	177	31.6	31.6
	Questioning	52	9.3	9.3
	Verbal knowledge	68	12.1	12.1
	Physical knowledge	180	32.1	32.1
	Total	560	99.8	100.0
Missing	System	1	.2	
Total		561	100.0	

Instructors were considered the “primary” instructor when the child being observed was being led by said instructor. Typically instructor 2 is a helper and will assist instructor 1 in the lessons. Sometimes the students will be divided and instructor 2 will take over half of the class and teach a lesson on their own. This is when instructor 2 would be considered a primary instructor if the student being observed was with them.

Knowledge took precedence in the coding. If students were working on a hands-on activity and the instructor asks a question to stimulate thinking that is topic-related or provides topic-related facts it will be marked as “Knowledge” by the coder. For the sake of this project, Knowledge encompasses the tenets of Bandura’s Social Learning theory: attention, retention, reproduction, and motivation. While hands-on activities relate to other tenets (e.g., reproduction) of the theory, we are interested in seeing if instructors continue to engage the students in learning during hands-on tasks.

Figure 4. Instructor 1 Activity Across All Sessions

	Frequency	Percent
Management and Other	54	16.3
Knowledge	176	53
Hands on Activities	101	30.4

Total	331	100
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When instructor 1 was the primary instructor for the observed child, they tended to be engaged with knowledge translation (53.2%), followed by hands on activities (30.5%) and management of the class (16.3%).

Figure 5. Instructor 2 Activity Across All Sessions

	Frequency	Valid Percent
Management and Other	55	25.7
Knowledge	79	36.9
Hands on Activities	80	37.4
Total	214	100

Instructor two had a balance across all engagement levels with hands on activities (37.4%) being most frequent, followed by knowledge translation (36.9%) and management activities (25.7%).

Tasks performed (Figure 6.) throughout all sessions evolved from weeks 1 to 3, until finally becoming a complete list starting in week 4. Starting in week 1 there were more 'gardening tasks' listed: Digging, harvesting, watering, planting, and weeding.

These tasks were combined into 1 task called 'gardening' starting in week 2. After week 3 it was deemed important to track 'eating' as one of the Big Garden's main outcomes is having kids try new fruits and vegetables. The 'cleaning' tasks was then removed and placed by 'eating'. No further changes were made after week 4. Overall the sessions the 'Hands on' and the 'Resting/Observing' tasks were most frequently performed with 39.4% and 41.3% respectively. This is not surprising, as ideally the students will be either listening to instructors or performing hands on activities in these sessions. The Big Garden could use these numbers to assess if they want students to be more active during specific sessions.

Figure 6. Tasks Performed Over All Sessions

Tasks	Frequency	Percent
Eating	43	7.7
Carrying	30	5.4
Gardening tasks	31	5.5
Hands on	220	39.4
Resting/Observing	231	41.3
Other	4	.7
Total	559	100.0
Missing	2	
Total Observation	561	

Discussion/Recommendations

The Big Garden's Garden to Table after school program provides students the opportunity to participate in their school gardens. The program's focus is to have

students learn how to grow vegetables and herbs as well as properly harvest, cook, and preserve their crops. Garden to Table provides higher learning opportunities through STEAM education on plant science, growing techniques, healthy lifestyles, and nutrition.

Part of the rationale for developing an observation tool for the Big Garden's child programming was limitations experienced with child-reported surveys. This limitation is experienced widely in research that involves younger children, and often observations are recommended. The piloted observation tool can be useful for the Big Garden in multiple ways. The tool addresses multiple domains such as physical activity, student engagement, topic interest, and instructor activity. These domains can be utilized to make adjustments to the curriculum, educate instructors on potential weak areas, provide lesson fidelity checks, and highlight to potential funders successes of the program. The tool can be used across all Big Garden programs. Once lesson topics are identified, the tool can plug and play into whatever curriculum the Big Garden wants to evaluate. As the Big Garden grows it will be helpful to have a tool that can easily track multiple domains in their programming.

Results for this pilot study are less reliable as there was only one coder each session so there is no way to check for accuracy. If the Big Garden plans to utilize this tool in the future they will potentially need more than one coder to display more accurate results. This may not be possible budget-wise.

Coding took place during the winter session for this program. There were no feasible opportunities to take the students outdoors, as the weather was extremely cold. It would be intriguing to see how results compare to warmer weather times when the students are allowed to be outside.

The observation tool was based off of the validated SOPLAY (System for Observing Play and Leisure Activity in Youth) tool (McKenzie, Marshall, Sallis, & Conway, 2000). This tool was selected as a template for this capstone project observation tool and adjustments were made by the student and the committee chair to make it more applicable to outcomes the Big Garden wanted to track.

Conclusions

This student capstone project was a pilot study for an observational evaluation tool. Through use of the tool over the course of six education sessions for the Big Garden's "Garden to Table" after school program multiple domains were analyzed. Boys were on average more active than girls and it was noted that the girls tended to be engaged in the lessons, yet the boys demonstrated higher levels of activity. When activity levels were compared across the sessions, session 4 resulted in the least amount of physical activity, while session 6 resulted in the highest level of physical activity. When follow-up chi-square tests were run for session 3 and 4, it was found that during session 4 when lesson topic 2 (Start microgreens by seed for eating in next class) was being conducted, students tended to be more disengaged. Physical knowledge (typically displayed during hands-on activities) and observing

were most frequently observed. Disengaged was the third most frequent observation. Over all the sessions, the 'Hands on' and the 'Resting/Observing' tasks were most frequently performed. The Big Garden can use these results to assess instructor ability, physical activity, and engagement in their program. They can drill deeper and look at individual lessons and even timeframes where potential changes could be made to better the curriculum.

Service Learning/Capstone Experience Reflection

My experience at the Big Garden was extremely rewarding. I appreciated the fact that they granted me freedom to run my evaluation plan as I saw fit. I discussed some ideas with Nathan and there was mutual interest in running some sort of observation evaluation of the Garden to Table program. In the past, The Big Garden has done pre/post surveys with children and I wanted to try something a little more unique that didn't rely on surveys from the children as an indicator of the program's success. I wanted to see if there was some other way to evaluate the outcomes Nathan wanted to track and was happy he let me try this observation method. I have also done plenty of work with pre/post surveys at my place of employment and wanted to think outside the box to benefit my own learning experience but also benefit the Big Garden.

Another positive experience I have with the Big Garden was their flexibility with me regarding my hours. I work full-time and carry additional part-time jobs, in addition to completing my Master's coursework, all while working on my capstone/service learning project. Nathan and Cait at the Big Garden were very helpful in finding me things I can do on my own time; such as data entry, to help me fulfill my hour requirement. They also kept me up-to-date on any opportunities to help out onsite whenever possible.

I have learned a lot about the Big Garden and their work throughout the state and beyond. I appreciate their work with underserved populations and providing opportunities for children to live healthy lives. One reason I chose to do my service learning/capstone project at the Big Garden is that in the future I want to run an after school physical activity program for underserved children in the Omaha area. Working with the Big Garden has shown me what after school programs look like, how they're run, and how they're implemented. I've also learned the planning needed to run the program and also how trial and error can help a program evolve for the better.

When I started I thought I was going to have to be onsite more often. I was panicked in thinking how I was going to fit all of this into my schedule and thinking I would never get this project completed. Luckily, as mentioned previously, there were plenty of tasks that could be performed at my own time. Looking back, I wish I could've spent more time on-site and gotten more absorbed into the Big Garden but unfortunately there are only so many hours in the day to make that happen.

Most of my SL/CE activities performed were for developing data entry protocols and then entering the data for previous programs/learning sessions. I also spent some hours on-site helping harvest vegetables and clean planters. I did appreciate the on-site work as I got to talk and share experiences with other staff at the Big Garden. This helped me learn about how the Big Garden works and simple gardening facts. Self-admittedly, I am not very savvy on gardening or fruits and vegetables.

Essentially, activities on my own time were spent doing something I am already pretty skilled at in developing data entry protocols and entering data accurately. Time spent on-site was meant for me to ask questions and develop relationships with staff.

For my evaluation I spent my time conducting the observations myself in-person for six sessions at RM Marrs Elementary. I had never done observations before and it was a great experience, especially designing and evolving the protocol as sessions went on. It was nice to have ownership over all of my work. The observations served many positive purposes for me, experience in the data collection, seeing how the Big Garden performs classes, and developing relationships with the students and Big Garden staff.

I have been working in public health practice for years now and have experience with non-profits from the evaluation side; this was my first time working mostly on the implementation side. It opens your eyes to the barriers programs have to go through to have a successful program. It's easy to say on paper, "this is what needs to be done", it's a different side of the coin to actually make it happen. I would've liked to have seen the process of designing the program curriculum and how the Big Garden has used past evaluations to evolve their programming.

Acknowledgements

Committee Chair: Dr. Courtney Parks, PhD

Committee Member: Dr. Jennie Hill, PhD

Site Preceptor and Director: Nathan Morgan, M.S., B.S.

Education Director and secondary site preceptor: Cait Caughey

Competencies

Core/Cross-Cutting Domains		
Competency, Activity/Application ^{1, 2}	Reflection of Competency Strength/ Professional Growth ³	Committee Assessment ⁴
<p>Competency 5.A: Identify social and behavioral theories, concepts, and models used in public health research and practice</p> <p>Activity/Application: Preparation of proposal, using theory to drive evaluation</p>	<p>Reflection: Preparing and writing the proposal helped me identify which theory to drive my evaluation with which was Bandura's Social Learning Theory, specifically on modeling. In the class I was taking at the time, Intervention in Public Health I learned the correct use of utilizing theory and that was extremely helpful in steering me in the right direction for my capstone project.</p>	<p>Not Competent</p> <p>Somewhat Competent</p> <p>Competent</p> <p>Highly Competent</p> <p>Uncertain</p>
<p>Competency 5.C: Describe the planning, implementation, and evaluation of public health programs, policies, and interventions.</p> <p>Activity/Application: Preparation of proposal, helping Big Garden with various tasks regarding their programming</p>	<p>Reflection: The proposal and subsequent work with the Big Garden in their Garden to Table program helped me get experience firsthand with what goes into preparing for a public health program. Personally, I wish I could've gotten more involved with the implementation side of the programming but my schedule would not allow. The Big Garden offered opportunities but their wasn't much that fit into my schedule. I still got experience with the ins-and-outs of their programming but I would've liked to know a little bit more of the "why are we teaching this?"</p>	<p>Not Competent</p> <p>Somewhat Competent</p> <p>Competent</p> <p>Highly Competent</p> <p>Uncertain</p> <p><i>I think Tony showed strength in this area, being able to jump in with a new evaluation at an ongoing program and adapt as appropriate</i></p>
<p>Competency 6.C: Communicate accurate public health information with professional and lay audiences.</p> <p>Activity/Application: Communicating with Big Garden on findings. Presentation of Capstone/SL project</p>	<p>Reflection: I mostly utilized this skill with writing my final paper and then eventually doing my presentation. I sought ways of making the presentation scientific but also at a health literacy level that most people could understand.</p>	<p>Not Competent</p> <p>Somewhat Competent</p> <p>Competent</p> <p>Highly Competent</p> <p>Uncertain</p>
<p>Competency 7.A: Identify and apply fundamental research skills in public health.</p> <p>Activity/Application: Preparing proposal, writing final paper</p>	<p>Reflection: During my evaluation I learned quite a bit about observational evaluation data tools. I learned how to do so randomly, writing protocols that can be followed exactly, and then making necessary adjustments to the protocols since it was a pilot so that this tool can be used in the future if the Big Garden chooses to do so.</p>	<p>Not Competent</p> <p>Somewhat Competent</p> <p>Competent</p> <p>Highly Competent</p> <p>Uncertain</p>
<p>Competency 10.A: Apply ethical principles to the collection, maintenance, use, and dissemination of public health information.</p> <p>Activity/Application: Preparing IRB application and discuss anonymity of participants</p>	<p>Reflection: Work with the IRB application caused me to really think about the ethical standards since I was working with children. It turns out that I didn't need IRB approval for this project (UNMC IRB determined it does not constitute human subject research as defined at 45CFR46.102. Therefore, it is not subject to the federal regulations) but it was good as a student to go through the process and reflect on anonymity being essential for my evaluation.</p>	<p>Not Competent</p> <p>Somewhat Competent</p> <p>Competent</p> <p>Highly Competent</p> <p>Uncertain</p>
<p>Overall Assessment of Core/Cross-Cutting Domains (completed by Committee Chair with input from Committee Members)⁴</p>		

Comments regarding student's progress and professional growth in the above core competency areas, including current strengths/weaknesses:

Concentration Domains		
Competency, Activity/Application ^{1, 2}	Reflection of Competency Strength/ Professional Growth ³	Committee Assessment ⁴
Competency 2.B: Utilize appropriate qualitative and quantitative evaluation methods	Reflection: Quantitative research through observation was a new experience for me and I was unsure how it would turn out as the weeks went on. I was pleasantly surprised when we ran the data through SPSS and found significant results. I liked doing the observation evaluation because it was something I haven't done before, I didn't want to do the typical pre/post survey, especially with children when results may not be reliable. I stumbled on this when I was initially going to do interviews after the classes and realized I wasn't getting very good data out of the interviews so I quickly nixed that idea.	Not Competent
Activity/Application: Using quantitative research through observations to evaluate Garden to Table Program, using qualitative research through interviews. Performing data entry for The Big Garden.		Somewhat Competent
		Competent
		Highly Competent
		Uncertain
Competency 2.C: Apply evaluation findings to programs and policies.	Reflection: As mentioned above, SPSS found significant results when we ran the data. This can strengthen the teaching for the Big Garden, not only for Garden to Table but for any other programs they run. The tool is versatile and can be plugged into most teaching settings.	Not Competent
Activity/Application: Utilize findings from observation to strengthen Garden to Table program		Somewhat Competent
		Competent
		Highly Competent
		Uncertain

Assessment of Concentration Competencies (completed by Committee Chair with input from Committee Members)⁴

Comments regarding student's progress and professional growth in the above concentration competency areas, including current strengths/weaknesses:

Appendices

Data observation tool:

Date: _____
 Start time: _____
 End time: _____

	Interval	Activity Level	Tasks	Spectrum Of Knowledge	Lesson Topics (Garden Planning)			Instructor 1	Instructor 2
					1	2	3		
One M/F D characteristic	1	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	2	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	3	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	4	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	5	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	6	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	7	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	8	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	9	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	10	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	11	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	12	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
Two M/F D characteristic	13	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	14	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	15	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	16	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	17	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	18	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	19	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	20	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	21	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	22	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	23	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	24	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H

Three M/F D characteristic	25	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	26	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	27	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	28	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	29	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	30	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	31	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	32	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	33	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	34	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	35	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	36	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
Four M/F D characteristic	37	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	38	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	39	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	40	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	41	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	42	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	43	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	44	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	45	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	46	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	47	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H
	48	1 2 3 4 5	E Ca G H R O	Dis Obs Qu Ver Phy	1	2	3	M K H	M K H

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