

# From Their Home to Ours: Establishing Environmental and Health Literacy via Urban Gardening for At-Risk Youth

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## Background

A kindergarten program regarding gardening and environmental literacy in Baqa-El-Gharbiya, Israel was the inspiration for a similar program in urban, southwestern Ohio (Figures 1 & 2\*).

Obesity is an important public health issue as it affects nearly one-fourth of Americans and the highest rates are found in African Americans (47.8)<sup>1</sup>. Education and socioeconomic status are important determinants of obesity among African Americans.



Figure 1. Children at the kindergarten in Baqa-El-Gharbiya.



Figure 2. External view of the kindergarten in Baqa-El-Gharbiya.

This research project took place in collaboration with Foodbank, Inc. in Dayton, Ohio. Funding was secured through a \$3,000 grant from Community Engaged Scholarship and Teaching (CEST) Mentored Grant Program at Wright State University.

\*Note: Verbal consent was given for all photographs taken.

## Aim

Develop and pilot a curriculum to promote food literacy and sustainable food gardening in young African-American children.

## Methods

### Participants & Assessment

A pilot eight-week lesson plan was developed from City Beets<sup>2</sup> and Growing Minds<sup>3</sup>. The curriculum discussed pollinator gardens and the benefits of pollinators, which included making herb bags, conducting honey tastings, and a tour of the Foodbank's pollinator garden.

A pilot study was conducted on the pollinator lesson on July 12, 2015. Participants were recruited from the Wesley Community Center, an establishment which caters to low-income families (predominantly Black or African descent) within the West Dayton area.

A pre-test was distributed to the participants, followed by the workshop, and concluded with an exit group interview (Part II) over the same topics discussed in the pre-test.

### Data Analysis

SPSS software was used for descriptive analysis. Responses to open ended questions were analyzed qualitatively.

## Results

### Study Participants

The mean age of the study participants (n = 16) was approximately seven years (M = 7.12) and a majority will enter the second grade the following school year (Table 1).

Table 1. Descriptive Statistics for the Study Participants

Characteristic (n = 16)	Distribution
Age (years), mean ± SD	7.12 ± 1.02
Upcoming grade (mode), n (%)	2 <sup>nd</sup> grade, 5 (31.30%)
Sex, n (% male)	8 (50.00%)
Race, n (% African American)	16 (100.00%)

## Results (continued)

The participants included eight males and eight females; all 16 participants were African American or Black (Figure 3).

### Table 2 shows responses to questions assessing food related behavior:

- For *Favorite Foods*, most participants reported very poor or poor quality of favorite foods (score of 2).
- Most participants reported eating *Fast Foods* once or twice per week.
- Most participants indicated their mother or their grandmother as the primary cook in their home.



Figure 3. Study participants from July 12, 2015 workshop.

Table 2. Frequency Distribution of Food-Related Behavior and Environmental Literacy Responses by Study Participants

Characteristic (n = 16)	Median	Mode
Favorite foods (Quality of food choices) 1 = very poor, 2 = poor, 3 = neither poor nor good, 4 = good	2.00	1.00
Fast food consumption (How frequently/week) 0 = never, 1 = 1-2 times/week, 2 = 3-4 times/week, 3 = 5 or more times/week	1.00	1.00
Who cooks your meals at home? (First response) 1 = mother 2 = father, 3 = grandmother, 4 = grandfather, 5 = aunt, 6 = uncle or 7 = someone else	1.00	1.00
Who cooks your meals at home? (First response) 1 = mother 2 = father, 3 = grandmother, 4 = grandfather, 5 = aunt, 6 = uncle or 7 = someone else	3.00	3.00
Environmental literacy (Open-ended questions, cumulative) (Range = 0 - 25)	1.50	0.00

- The pre-test open-ended questions presented in Part II of the condensed test for pollinator gardens demonstrated very low environmental literacy scores (1.50 out of 25.0 [0.06%]).

### The exit group interview was administered orally and repeated the open-ended questions from Part II to evaluate learning comprehension during the workshop.

- Noticeable changes were observed in all content questions in Part II during the exit group interview.
- Participants demonstrated a substantial increase in knowledge compared to their pre-test scores when related to bees. Answers included, "Bees are important to the environment because they make honey."
- Regarding recycling, most participants indicated that recycling is important because it "helps our community" and "littering is bad." Likewise, all of the participants indicated that it was bad to throw garbage on the ground because "you don't want to dirty the earth."

## Discussion and Conclusion

- Results from the pilot study indicated that the participants' eating habits and their environmental literacy scores are quite low and there is room for improvement. Such an educational plan could also be utilized during the school year.
- The current educational curriculum incorporates materials from two successful gardening educational programs,<sup>2,3</sup> which increases our confidence of the current intervention to improve health literacy in children.
- An eight-week summer curriculum for use with underserved African-American youth now exists and is available to local organizations.
- Research has demonstrated that eating patterns developed during childhood can be traced to adulthood,<sup>4</sup> so incorporating this kind of program into urban youths' summer programs may offset some of the nutrition and obesity trends among minorities in the future.
- Research demonstrates that utilizing garden space during the school year improves performance on standardized tests and enhances attention and enthusiasm for learning.<sup>5</sup>
- One of the strengths of this study is that in previous studies, older children (10+ years old) were the participants, whereas we were able to apply this curriculum to much younger children.
- By allowing the participants to explore the Foodbank's gardens and to learn about recycling, the participants were able to make connections between their life and the life of the planet.
- In regards to environmental literacy, research has demonstrated that urban gardens encourage children to socialize, build a relationship with their environment, and develop problem-solving skills.<sup>6</sup>
- An educational intervention for such a young age group should focus on oral interviews instead of a written test. An appropriate method for this needs to be designed for future implementation.

### Bi-directionality of Health

- Public health professionals from the United States can consider adopting health intervention programs from other countries, including non-Western cultures, for strategies that may prove cost-effective and generalizable.

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