

## *Case Study: garden education programming in public schools*

### **Beverly Public Schools**

Beverly, MA

400 Third Grade Students

Elementary Education

### **ABSTRACT**

This study describes the effects of garden based education on children's vegetable consumption and academic achievement. Not only does hands on garden programming increase the amounts and variety of produce consumed by children, it also increases their attentiveness and grades in the classroom. Past research provides statistics about engagement in the classroom setting in conjunction with garden programming and the positive impact on test scores. Results from our own research indicate a positive correlation between our garden education program and students' familiarity with different types of produce, willingness to consume them, and understanding of sustainable food systems and their benefits.

**Key words:** hands on learning, experiential education, outdoor education, cross curricular education, nutrition program, engagement, garden education, school vegetable gardens

### **INTRODUCTION**

Garden based education programs are an excellent way to engage students in the natural world and with each other. The combination of hands on learning and team building exercises is a unique opportunity for experiential education beyond the classroom that promotes a healthy lifestyle, an understanding of our interconnectedness and sustainable food systems, and a sense of competency and self-sufficiency that transfers back into a more traditional learning environment. Students and teachers report being happier and more engaged in academia after going through school garden programming, and it follows that there is a positive correlation between these types of programs and performance in school.

The vast majority of Americans are disconnected from their food systems. This is a combination of our increasingly urban landscape, the appeal of "one stop" shopping, and the ease of prepackaged food awaiting us on shelves and in freezers of supermarkets. Our food travels hundreds, sometimes thousands, of miles to reach us and is often under ripe and covered in pesticides and preservatives. This disconnect between where our food originates and our plates is a significant contributing factor in the childhood obesity epidemic. Traditional learning environments also promote a sedentary lifestyle and kids don't get as much outside stimulation as they should. Garden education aims to remedy this as well as contributing to community, social, and personal development. It supports core academic training through real world experience, adds a sense of excitement and impact to learning, improves nutrition, diet and health, provides vocational skills, and engages children in problem solving, leadership, and decision making.

Adult eating habits are developed at a young age, but the majority of children under the age of 18 are ignorant about where their food comes from and how it is grown; this directly impacts the meal choices that they make for a lifetime. In a nationwide study, only 26% of children aged 6-11 met the recommendation for fruit intake and only 16% met recommendations for daily vegetable intake (King & Oxenham). Garden based learning actively engages the students with their food and encourages them to make conscious and more informed meal choices. A number of schools are adopting new cafeteria initiatives that include fresh, local produce in their offerings, but these programs are much more effective when implemented in conjunction with a school garden. There is a direct correlation between school gardening and students' vegetable consumption as well as their attitudes towards, preferences for, and willingness to consume them (Ratcliffe et al.). Additionally, these gardens offer a cross curricular option for teachers to engage their students with hands on outdoor activities that promote team building, feelings of competency, and academic achievement. They are settings which not only promote a healthy lifestyle but also integrate every school subject including math, science, art, social sciences, and language arts (Edible Schoolyard).

## **CASE PRESENTATION**

Garden based learning is a form of cross curricular and experiential education that supports and enriches traditional classroom learning as well as promoting healthy eating habits in youth. It contributes to all aspects of traditional academics as well as promoting personal and social development, nurturing community spirit, and the students' pride and interest in the work they are doing. Results from an early study, conducted by Gerald A. Lieberman and Linda L. Hooley, suggest that students who have gone through an outdoor curriculum in conjunction with their usual courses of study showed a higher level of interest, enthusiasm, and engagement in learning activities, were better behaved, had higher attendance rates, and higher standardized test scores and overall GPAs. The students' excitement about working in the garden was transferable to their performance and interest in the classroom and they were much more confident in their academic competence and ability (Skinner et al.).

REAL School Gardens, a company based out of Fort Worth, Texas, provides us with concrete statistics on the benefits of gardening on an academic level. Schools that have partnered with them and implemented their garden education programming saw a 12-15% increase in standardized test score pass rates and 94% of teachers reported increased student engagement both in the garden and in the classroom. Students, as well as teachers, were more satisfied with their day-to-day work and reported reduced stress levels, an increase in self-esteem, problem solving skills, and motivation to learn, as well as an increased investment in a healthy and sustainable environment (REAL School Gardens). Additionally, the researchers at Bethel Learning Institute found that hands on learning produces a 75% retention rate and a staggering 90% retention rate when the student is teaching another as opposed to an 11% rate for lecture based learning (Desmond, Grieshop, & Subramaniam).

The implementation of school gardens is also a great way to steer students onto a path of healthy meal choices. A study conducted by the American Dietetic Association studied the effects of garden-based nutrition education on the eating habits of sixth graders. They had one control group and two treatment groups. Both of the latter groups participated in a 12 week nutrition program but only one of those two participated in accompanying hands on activities in the garden. The students who went through the garden education increased their fruit intake by 1.13 servings and their vegetable intake by 1.44 servings per day. Additionally, their vitamin A, vitamin C, and fiber intakes significantly increased and they started making better meal decisions both at school and at home. There was no change in the control group or the treatment group that did not participate in garden activities (McAleese & Rankin).

## **WHAT WE DO**

Green City Growers has implemented Garden Education Programming in a number of schools, including every elementary school (5 schools) in the city of Beverly, Massachusetts. Every current and incoming 3rd grade class in the Beverly School District will go through our weekly curriculum and get the chance to engage with our living classroom. Students are engaged in the food growing process from basic maintenance and upkeep to discussions about food systems and nutrition. We cover a myriad of topics that can be related to multiple subjects and include several key concepts: science and ecosystems, health and nutrition, culinary programs, food access, and the economics of food production. Our goal is to connect our students to the food that they eat, understand the ecological, economic and health impact of different food systems, and encourage them to make knowledgeable decisions about what they choose to eat. At the beginning of the fall semester (2013) we administered a ten question quiz to all Beverly School students entering the Garden Education Program and retested the students in December, after they had completed the first semester of our course on agriculture and organic farming, and will now present our findings.

After completing the first semester of the course, the Beverly students had a 43% score improvement and a much stronger grasp of the concepts of organic farming and sustainability as well as why these are important current issues. One of the questions we asked called upon the students to correctly identify six pictures of vegetables: eggplants, radishes, peppers, cucumbers, kale, and beets. 1 student out of 5 (22%)

was unable to identify a single vegetable before the program compared to only 1 out of 20 (5%) at the conclusion of the semester. While only 33% of students could identify 3 or more vegetables before the program, by the end of the semester, this number jumped to an impressive 86%. This was a net increase of 53%. In fact, while 0 students were able to identify all 6 vegetables before the program, 1 out of 5 students (22%) correctly identified all 6 vegetables after the program.

Before the program only 1 out of 5 students (20%) recognized a benefit of organic farming. Upon completion this number increased 200%, as 3 out of 5 students (61%) provided us with a correct response. A sampling of responses:

- “It is important to use [organic] methods so you don’t get sick when you eat”
- “It will not kill the good bug and you do not want to be eating [pesticides]”
- “So we can eat [healthy] food and be [strong]”
- “It is important because it gives you fresh food that is good for you”
- “To have oxygen”

This was a significant increase in correct answers to this question, and students provided thoughtful and knowledgeable answers to all the questions. They understood the numerous benefits of growing your own food as well as the detrimental effects of conventional farming to individual and environmental health. This was our main goal when we created the program and our numbers indicate that we have been successful in achieving it.

## **DISCUSSION**

The organizers of the Edible Schoolyard project sum it up quite succinctly: a school garden “fosters a deeper appreciation of how the natural world sustains us and promotes the environmental and social well-being of the school community” (Edible Schoolyard). Gardening education programs provide numerous benefits to both the students and the school community as a whole. They provide a vehicle for learning that creates an environment in which students are excited to learn, which in turn promotes their attentiveness and interest in academic pursuits. School gardens provide a unique opportunity to develop problem solving, leadership, and decision making skills at an early age. After completing this type of programming students are much more prone to making healthy eating choices in the long run and have a greater understanding about the impact their choices can make not only on themselves, but in a wider sense. Ultimately, students are more self-confident in making healthy choices, their academic studies, and themselves.

## RESOURCES

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