

Student Garden Boosts Math and Science Scores

By Ann Nunan, Blanche McElfresh, and Jerry Johnson

In 1997, the Griffin-Spalding County School System Science Center and other cooperators initiated a scientifically designed service learning project directed toward urban, seventh-grade students. The students from Kelsey Avenue Middle School in Griffin, Georgia, are involved in the planning, planting, care, and harvesting of a vegetable garden with the produce directed to a local food bank. Crops grown in the garden include summer squash, cucumbers, corn, peppers, tomatoes, and sweet potatoes. The garden is located inside the University of Georgia Experiment Station Research and Education Garden at Griffin.

Objectives of the project go much further than simply teaching students the art of gardening, however. They include determining how this type of hands-on learning might impact student math and science skills. Pre- and post-tests of a class of seventh graders compared the learning of students directly involved in the project with a control group.

Post-test results have shown that students participating in the project gained significantly more knowledge than students not partici-

pating. For example, in the 1998-1999 school year, students participating in the project averaged about 15 points higher in science and more than 10 points higher in math than the control group (**Table 1**).

One of the participating students said, "It's amazing. Before (the project), I wasn't getting it. But now, I'm learning a lot." Another classmate agrees. "This class made it seem easy. They gave us a test before we started, and we all failed. At the end, we all made A's, and it was a difficult test," he said.

The garden serves as an instrument for teaching.

First, the students plan out a grid on paper for

Agriculture and gardening can be great teaching tools for making math and science more understandable to students. That fact has been demonstrated by a collaborative effort involving the Spalding County, Georgia, school system and several partners.

TABLE 1. Descriptive statistics for grade 7.

Subject	Group	Number of students	Pre-test mean	Post-test mean	Mean gain
Science	Project	22	3.50	20.61	17.11
	Control	70	3.37	5.76	3.39
Math	Project	22	21.91	30.41	8.50
	Control	70	18.76	19.87	1.11



Transferring their plans to the actual garden space, students gain experience with a range of measurement situations and geometry principles.

the garden's design. Then they use a string to lay out the grid on the garden site. This shows them where to plant seeds and young plants. But it also provides real-world application for using math skills such as geometry and measurement.

The seventh-grade students involved in the project continue to visit the garden during the summer months to harvest the vegetables and deliver the produce to the food pantry. The project also has the added advantage of helping urban youth appreciate how...and where...their food is grown. One student said that, before the class, he didn't know sweet potatoes grew under ground. Others made similar comments...most did not have previous experience working with growing plants.

The project also helped improve the students' work ethic. They learned that growing the garden was tough work, but were willing to do it because of the end result – sharing their bounty with needy people. Perhaps their increased awareness of helping to meet the needs of others, though not measured in the study, was as valuable as were improvements in their learning skills. **BC**

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Students at the garden project learn from a variety of information sources and activities as they plan the plots.

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Editor's Note: Dr. Noble R. Usherwood, PPI Southeast Director, and Katherine Griffin of the PPI communications staff have been involved in support of the "Learn and Serve Garden" since its beginning. They agree that the project has been effective in achieving unique educational experiences for students while also providing them a new perspective on agriculture and food production. Leaders of the project have presented reports on progress at the annual meetings of the American Society of Agronomy.

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