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Louisiana 4-H Seeds of Service School Gardens: A Descriptive View

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Abstract: *Louisiana 4-H Seeds of Service School Gardens, a K-12 Learn and Serve Grant program, provides a descriptive view of how school gardens along with classroom instruction link curriculum to outdoor classrooms. The purpose of the process evaluation was to describe curriculum implementation fidelity, reach of the gardening program to participants, use of garden product, program materials, and teacher characteristics, mediating intervention impact on study outcomes. Eighty-seven percent of classrooms planted vegetable gardens, with a focus on science and math, using the Junior Master Gardener™ curriculum. It was found that school gardens can be effective in supporting classroom curriculum.*

Introduction

Over the last 20 years, school gardening has become a national movement (Blair, 2009). Departments of education and university Extension programs have encouraged school gardening by providing curricula, program support, and evaluative research (Culin, 2002; Dirks & Orvis, 2005; Emekauwa, 2004; Ozer, 2007; Smith & Mostenbocker, 2005). School gardens provide a critical link between traditional forms of schooling and holistic multi-disciplinary, experiential learning approaches (Vallianatos, Gottlieb, & Haase, 2004 & Williams, 2008). Researchers have found that school gardening can improve students' achievement and school behavior (Banchero, 2011; Blair, 2009; Klemmer, Waliczek, & Zajicek, 2005) and can improve the ecological complexity of the schoolyard (Blair, 2009).

Program Description

The Louisiana 4-H Seeds for Service School Garden Program is an interdisciplinary approach to educate youth while they serve their community (Fox, 2009). In partnerships with the 4-H Youth Development and Master Gardener™ programs, 10 schools in high-poverty areas reached over 875 students through school gardens. Through a Learn and Serve Grant, each school received a curriculum kit with gardening resources to support their gardens. The Seeds of Service 4-H Program utilized the Junior Master Gardener® curriculum, which correlated with state learning standards (Welsh, Whittlesey, Seagraves, Hall, & Harlow, 1999). Teachers attended a workshop featuring lessons on gardening basics, educational gardening activities, and service learning.

Evaluation of Program Delivery Process

This evaluation described curriculum implementation, gardening program reach, garden product use, program materials, and teacher characteristics. At the program conclusion, all 26 participating teachers were sent a questionnaire administered via e-mail link to Zoomerang™. Completed questionnaires were obtained from 88% (n=23) of the teachers.

The majority (96%) of teachers were female. The largest percentage of teachers (43%) had zero to 5 years of experience, with 11 to 15 years being the next most frequent (26%). Seventeen percent of the teachers had six-10, while 13% of the teachers had 16-20 years of experience. Almost two-thirds (65%) of the participants have or had a home garden.

Findings

The evaluation described types of gardens grown through the gardening project, and it highlighted classroom subjects where the garden was integrated, concepts emphasized, and how produce was used.

Garden Types

Ninety-six percent of teachers indicated this was the first time they grew a school garden. The majority (87%) of classrooms planted a vegetable garden.

Classroom Integration

The majority of classrooms incorporated the school garden as an instructional tool in teaching science (83%) and math (61%). Teachers were least likely to incorporate social studies (8%) in gardening. Teachers spent 52% of their instructional time associated with the garden on science, 26% of their time on math, and only 4% of time on English Language Arts (Table 1).

Table 1.
Subjects Taught and Instructional Time Associated with the Garden

Subjects	School Garden Tool*	Instructional Time*
Science	83%	52%
Math	61%	26%
Reading	35%	0%
English Language Arts	17%	4%
Social Studies	8%	0%
Other (Nutrition, Art, etc.)	4%	0%
*Multiple Response Category		

Curriculum Usage

Seventy-four percent of teachers used lessons from the Junior Master Gardener Curriculum. Of the teachers using the curriculum, 74% percent taught plant growth and development in the classroom and garden. All topics, except nutrition, were taught with higher frequency in the garden (Table 2). Wildlife was least likely to be taught.

Table 2.
Setting for Junior Master Gardener Concepts Taught

*Concepts	Classroom	Garden
Plant Growth and Development	74%	74%
Gardening Knowledge (Basics, Fruits/Vegetables, Herbs)	61%	70%
Nutrition	57%	35%
Soils	39%	48%
Water	35%	39%
Life Skills and Career Exploration	22%	30%
Insects and Diseases	22%	26%
Wildlife	9%	13%
* Multiple Response Category		

Garden Product Use

Garden produce was sampled in 87% of classes. Surplus produce was donated to needy families (30%), sent home with students (26%), donated to food banks (17%), or sold (4%).

Lessons Learned

The teachers who were most likely to lead school gardens had prior gardening experience. These teachers were early career or mid-career professionals who provided instruction in hard sciences, like biology and agriculture. Extension professionals or school administrators recruiting school garden leaders might target early to mid-career

teachers who teach hard sciences and/or have gardening experience.

School gardens make an easy connection to math and science, as reflected in the instructional time teachers spent linking these subjects to school gardens. Students learned about seed germination, composting, the life cycle of plants, and pollination. The most frequently used JMG lessons included plant growth and development, and had direct connections to the garden. The outdoor learning environment provided a platform to learn about insects and soils, which were not frequently discussed in the classroom. Math was used to plot out and build the garden, track plant growth, and account for harvests.

Teachers spent less instructional time on ELA, and fewer classrooms linked social studies to gardens. Teachers might not see the connection between ELA and social studies to the garden. Social studies in the garden may be linked to cultures, food types, and plant origins, while the garden may provide writing and reading inspiration for ELA. Targeted teacher training is necessary to help teachers tie into subjects such as social studies, English, and physical education.

The majority of classrooms tasted the produce, which provided outstanding celebration and reflection of the service-learning aspects of the garden. Gardens provided an avenue to serve others with surplus produce given to needy families or food banks. Garden service-learning projects have great potential for addressing issues of hunger, healthy living, poverty, food security, and agriculture awareness. Only 4% of classrooms sold the vegetables. However, gardens can connect career development and entrepreneurship where students learn how to grow, market, and sell their product.

Future Programming Recommendations

Professional development programs are crucial for the continued success of school gardening programs. Careful thought must be given to developing training programs for social studies and language arts teachers so that true cross-curricular connections are achieved. For school garden teachers who do not have gardening experience, a gardening mentor such as an Extension Master Gardener could provide needed support.

While results of this evaluation point to a need to recruit teachers with fewer years of service, who teach hard sciences and who have gardening experience, consideration should also be given to marketing the program to teachers with more experience. Many of these educators have the years of experience needed to balance the demands of the classroom and the garden.

Gardening can help youth become more civically engaged through service learning and by learning how to set up and run a business. A curriculum is needed that integrates career development lessons in a school garden context. Service learning may be equally supported through use of existing curriculum and texts.

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