The Impact of Garden-Based Learning on Academic Achievement

Introduction by Whitney Cohen - Education Director, Life Lab Science Program

In today's educational climate, it is not uncommon to hear educators and administrators alike lament: "A school garden sounds great, but we don't have time to garden. We need to use every available minute of class time to focus on meeting the standards." Under intense pressure to meet state content standards and facilitate positive student performance on standardized tests, a simple truth is often overlooked: Garden-based learning is not separate from classroom curriculum and content standards. Gardens have proven, in fact, to be superb instructional tools for improving student learning and academic achievement in core content areas, as measured by standardized tests. In addition, garden-based educational programs positively impact student attitudes toward learning, resulting in increased attention and enthusiasm from students for the educational process. In the words of Delaine Eastin, a former California State Superintendent of Public Instruction:

> *A garden in every school is … essential to make our standards come alive. We must not lose the creativity, problem solving, and sheer love of learning that comes from hands-on, experiential learning. Gardens should not compete with our standards; gardens should be an avenue to high standards.*

The following is a compilation of research demonstrating the impact of garden-based learning on students' academic achievement and attitudes toward learning. These articles were reviewed and catalogued by the University of California's Garden-Based Learning Workgroup along with members of the California School Garden Network. These articles, along with information on assessment of garden-based learning programs, are available at www.csgn.org/research.php

Research strongly suggests that garden-based education increases academic achievement and often results in higher test scores.

- Science achievement of students who participated in a hands-on (i.e., experiential) gardening program was higher than that of students who only engaged in classroom curriculum. (Klemmer et al. 2005)
- Participants in a school garden program in California experienced significant gains in overall GPA in math and science, and improvement on a standardized psychosocial questionnaire. (Murphy 2003)
- Garden-based learning was associated with increased scores in science achievement tests in a controlled study. (Smith and Motsenbocke 2005)
- A broad study of 40 schools from across the U.S. shows that environment-based education curriculum results in better performance on standardized achievement tests. (Lieberman & Hoody 1998)
- Involvement with school nature areas has a direct relationship with improved academic performance. (Bell 2001)
- Involvement with Junior Master Gardeners results in gains in academic knowledge in science, horticulture, and environment. (Dirks & Orvis 2005)

Research and anecdotal reports from teachers demonstrate the value of gardens in creating a positive learning environment.

- School programs based on environmental education and hands-on learning resulted in reduced classroom management and discipline problems. (Lieberman & Hoody 1998)
- Teachers stated that gardening programs led to more conducive learning environments. (Murphy 2003)
- Environment-based education, of which school gardens were a part, increased attention and enthusiasm for learning. (Lieberman and Hoody 1998)
- Curriculum based on hands-on, problem solving environmental education leads to greater pride and ownership of accomplishments. (Lieberman & Hoody 1998).
- Impact of outdoor education provides positive attitudes towards science. (Waliczek et al. 2003).

Gardens aren't only valued by students, but by teachers as well. Research shows that teachers who are trained in the use of garden-based learning strategies think that gardens help student learning.

- 84.3% of teachers exposed to school gardens think gardens help students learn more effectively. (Skelly and Bradley 2000)
- 73% of teachers surveyed think experiential learning in gardens is effective. (Skelly and Bradley 2000)

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