

GARDEN-BASED LEARNING WORKING GROUP - RESEARCH “BRIEFS”

ACADEMICS — For Teachers and Administrators

“Learning comes alive in a school garden! All subjects can be taught in this dynamic hands-on environment. From reading to science, math to nutrition, it’s all possible. With bales of straw as chairs, clipboards as desks, and the garden as their classroom, students’ textbook lessons come to life as butterflies metamorphose, works decompose, plant growth is recorded, fresh corn is eaten, and sensory poetry is created.

California Academic Content Standards are growing, too! Everything we know about good teaching is magnified in a school garden: student engagement, meaningful, relevant lessons, use of manipulative, cooperative learning, and exploration and discovery. There is no better environment than the garden in which to plant the seeds of knowledge, experience the joy of learning, and harvest a bountiful crop of lifelong learners.”

--- Martha Deichler, former School Principal, Borrego Springs Elementary

“We don’t have time to garden. We need to use every available minute of class time to focus on meeting the standards.” What’s often overlooked in our concern as educators in meeting the standards and facilitating a positive student performance on standardized tests is that garden-based education provides a superb vehicle to help us accomplish our vital work in these areas.

Numerous studies have proven that garden-based education improves academic performance and may lead to higher test scores in student populations. Some of the strongest academic gains appear to be in the areas of math and science, and overall improvement on standardized achievement tests has been well documented. Particularly important is the research that indicates that experiential (i.e., hands on) learning may lead to significantly higher gains in science achievement than classroom learning alone. Research also confirms that garden-based educational programs can positively impact the learning environment and student attitudes toward learning, resulting in increased attention and enthusiasm for the educational process. Equally important is the research that supports that garden-based education is vital to the psychosocial development of youth, and as a valuable tool in educational engagement.

Increased Academic Performance/Higher Test Scores

Research strongly supports 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 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 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)

Learning Environment/Attitudes Toward Learning

Improved academic performance and higher test results aren't the only benefits of garden-based education. Research and anecdotal reports from teachers strongly support 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).

Importance Perceived by Teachers

Gardens aren't only valued by students, but by teachers as well. Research strongly supports the notion 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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For more garden-based learning research visit www.csgn.org/research.php
For information on assessment of garden-based learning programs visit
www.hort.cornell.edu/gbl/reaping/index.html and <http://datadorksunite.ning.com>