

## Research Support for Kids' Gardening

The staff at NGA hears from educators and community organizers every day, and many of them are searching for funding for their garden programs. In the last year, we have received hundreds of requests for research that supports youth gardening. Leaders of youth gardening programs have little doubt about the benefits kids reap from living garden laboratories. Children's comments, behaviors, and portfolios; educators' observations; and parent reports also speak volumes about how kids are growing. Nevertheless, for many funders, policymakers, and others, "hard" data often carries more weight. We have scoured the country in search of results of kids' gardening research studies that might help justify your proposals.

We have identified the key areas that can be enhanced by garden-based learning. Quotes from Youth Garden Grant winners define the concerns, and we've cited research results to substantiate the benefits.

### Self-Esteem and School Attitudes

*"Our community was changing from a rural agricultural community to an urban environment, and we didn't want that history to be completely lost. Also, in the last four to five years the average student's profile has changed. They are not so excited about learning, and they have very poor study/work skills. Their attention span is very short, and they have difficulty sitting still for long periods. A garden program will provide opportunities for kids to learn new life skills, and thereby increase*



*their self-esteem and improve their attitudes toward school."*

**Increases in self-esteem and improvements in school attitude have been reported by researchers investigating garden-based learning.** In 1992 the University of South Carolina launched a third- and fourth-grade summer school project that used a whole language approach with gardening as the central theme. Results of formal pre- and post-tests of achievement (Peabody Individual Achievement Test), self-esteem (Coopersmith Self-Esteem Inventory), and attitudes toward school (School Attitude Measure) indicated greater gains in all three areas than control classes made. The most significant student gains were in self-esteem and achievement in reading, reading comprehension, spelling, and written expression.

Researchers at Our Lady of the Lake University conducted a three-year school garden study (1995 to 1997) of 12 third-grade classrooms. They found that self-esteem in gar-

dening classrooms increased in year one and remained high during the next two years.

### At-Risk Kids and Behavior

*"Our program works with high school students who are at risk of failing or dropping out of school, or becoming involved in gangs. Their home life is extremely challenging, and their school performance suffers. The garden program gives them an outlet for classroom and home frustrations. These kids need things that working in the garden provides: (1) social skills, (2) teamwork and collaboration, and (3) leadership skills."*

**Improved social skills and behavior are the most prominent benefits to kids reported by gardening teachers nationwide.** In 1997 Virginia Tech conducted a study of teachers who had integrated gardening into the curriculum. Seventy-five percent reported that student behavior often or always improves when the garden is a learning context. Additionally, researchers

at Our Lady of the Lake University in San Antonio, TX conducted a three-year school garden study (1995 to 1997) of 12 third-grade classrooms. Students in gardening classrooms exhibited improved classroom behavior and relationships with other students and parents compared with students in control classrooms.

### Science Learning

*“Our students are challenged with a range of learning disabilities. The classroom is not always perceived as a friendly environment for these children, nor is it one in which they have experienced much success, particularly in science. A garden program will provide an alternative environment for scientific exploration. The garden will be used as a laboratory for the scientific process where the children will formulate hypotheses, test them, and note results.”*

Research has shown the positive impact garden-based learning has on children’s understanding of key life science concepts and their investigative skills. The National Gardening Association conducted a 1992 study of third- and fifth-grade classrooms using GrowLab® Indoor Gardens and the accompanying curriculum. GrowLab® classrooms scored significantly higher than control classrooms in students’ understanding of key life science concepts and science inquiry skills. Students in fifth-grade classrooms in the same study scored significantly higher than control classes on attitude scales measuring “concern for the environment” and “confidence in ability to do science.”

### Nutrition Attitudes

*“While preparing the salad for our garden party, a first grader asked, ‘Are we supposed to eat this when it came*

*from the dirt?’ We realized then and there how few greens and vegetables the children in our garden program ate. Although we live in a rural area, most of our students’ families do not have vegetable gardens at home, and many live below the poverty level (85 percent receive free or reduced lunches). We created our garden program to specifically address hunger issues and nutrition attitudes.”*

Research has demonstrated that when kids garden, their attitude toward vegetables improves, as does their preference for fruit and vegetable snacks. A study conducted at Texas A&M University examined how a 16-month gardening program affected third and fourth graders’ nutritional attitudes and behaviors. The researcher used a fruit and vegetable preference questionnaire and a 24-hour food recall journal to measure students’ attitudes and behaviors at the beginning and end of the gardening program. Results indicated that student attitudes significantly improved toward vegetables, as did their preferences for fruit and vegetable snacks.

### Environmental Attitudes

*“The goal for the garden project is to instill in the child a basic understanding of and respect for the environment. Unfortunately, the community that is served by the Center is urban and lacks any considerable natural areas. Consequently, the children who attend the school are largely unfamiliar with gardening and natural resources. The community is plagued by high unemployment, crime, and substantial neglect from developers. Aside from its educational values, a garden benefits the children as a safe, relaxed setting apart from the classroom, in a neighborhood*

*where children cannot play alone outdoors. One day the earth will be in these kids’ hands, and we wanted to help them reconnect with it.”*

Research at Texas A&M, College Station, TX has demonstrated a significant improvement in children’s environmental attitudes when they are engaged in gardening. In this research study second- and fourth-grade teachers used a cross-disciplinary gardening curriculum for one semester in which environmental education was integrated with gardening. The Children’s Environment Response Inventory was used as a pre- and post-test to assess the environmental attitudes of 237 kids. Students in gardening classrooms scored significantly better than those in control classrooms on measures of appreciation for the environment and concern about human impact. ■

### Bibliography

- Alexander, J. and Hendren, D. (1997). *Bexar County Master Gardener Classroom Garden Research Project*. Our Lady of the Lake University and Southwest Texas State University.
- DeMarco, L. (1999). *The Factors Affecting Elementary School Teachers’ Integration of School Gardening Into the Curriculum*. Unpublished doctoral dissertation, Virginia Tech University, Blacksburg.
- Linberger, S.E. and Zajicek, J.M. (2000). *Can a Hands-On Teaching Tool Affect Students’ Attitudes and Behavior Regarding Fruit and Vegetables?* Hort Technology, Vol. 10, No. 3, p. 593-596.
- Pranis, E. (1992). *GrowLab Curriculum Study*. National Gardening Association, South Burlington, VT.
- Sheffield, B.K. (1992). *The Affective and Cognitive Effects of an Interdisciplinary Garden-Based Curriculum on Underachieving Elementary Students*. Unpublished doctoral dissertation, University of South Carolina, Columbia.
- Skelly, S.M. (1997). *The Effect of Project GREEN, an Interdisciplinary Garden Program, on the Environmental Attitudes of Elementary School Students*. Master Thesis, Texas A&M University, College Station.

