



Alicia Dickerson/Life Lab

Promoting Healthy Living

“Nutrition is an essential building block for student success. Healthy, active, and well-nourished children are more likely to attend school and are more prepared and motivated to learn. While the primary responsibility of schools is to foster academic achievement, schools have an exceptional opportunity to guide children toward healthier lifestyles by creating a healthy nutrition environment.”

Deborah Tamannaie, Nutrition Services Division
California Department of Education

A child’s mental and physical development is closely tied to good nutrition and healthy eating habits. Health habits also affect children’s behavior and social growth. As an educator, you may use numerous teaching strategies to engage students, but you will quickly learn your efforts are ineffective if a child’s diet has not met his or her basic nutritional needs. It is important for a child to consume a well-balanced diet and participate in regular physical activity if he or she is to experience success in school. In addition, developing positive eating habits during childhood contributes to optimal health, boosts self-esteem, and decreases the risk of immediate and long-term health problems.

“By attracting students to eating vegetables and salads at an early age, we can help nutritious eating be part of their diets as they continue into their teen and adult years.”

Colleen Underwood, Principal
Brightwood Elementary School
Alhambra Unified School District, CA

My students clearly have an increased knowledge of where their food comes from and how it is grown. They now have the ability to grow some of the food at their own homes. The garden-based nutrition program has greatly increased their knowledge and desire to eat healthy food and to be physically active every day.

Mary Pat Horn, Teacher
Bayside Elementary
Sausalito, CA



Western Growers Charitable Foundation

Because children spend much of their time at school, educators like you play a powerful role in influencing students' physical activity and the food choices they make both at school and at home. You can incorporate nutrition education and physical activity throughout the curriculum and reinforce these subjects through hands-on activities that allow students to practice smart decision-making skills. A growing number of children are overweight, unfit, or both, and shortfalls in recommended nutrients and regular physical activity are contributing factors. Thus, it is important for schools to establish an environment that fosters the development of healthy lifestyles.

A healthy school environment provides students with opportunities to gain knowledge of and practice positive eating and exercise behaviors. Schools can use multiple strategies to create this environment, but the school garden has proven to be a very useful tool. It is a fun and effective way to introduce nutrition basics and provide opportunities for physical activity. Research on the health benefits resulting from school garden programs has found:

- Students who plant and harvest their own fruits and vegetables are more likely to eat them.¹
- Students with garden experience who participated in a nutrition education program not only ate more fruits and vegetables to begin with, but also demonstrated greater increases in consumption by the conclusion of the program.²
- Students who participated in classroom nutrition education programs in conjunction with growing vegetables in outdoor gardens demonstrated an increase in nutrition knowledge and improved preference for vegetables.^{3,4}
- Students participating in a full food system program ("seed-to-table") who made the greatest gains in overall understanding of ecological principles also made significantly greater gains in the number of fruit and vegetable servings they reported eating.⁵

PROGRAM SPOTLIGHT

Nutrition in the Community Garden

Baldwin Park, CA

Baldwin Park Unified School District is involving its *whole* community in educating students about good nutrition. Through a partnership with the City of Baldwin Park, Kaiser Permanente Baldwin Park Medical Center, and Moveable Feast Program, an innovative curriculum titled “Nutrition in the Community Garden” was developed that combined horticulture and nutrition lessons in an outdoor classroom at Baldwin Park Community Garden. Through the program, students visit the garden monthly and learn the ins and outs of growing fruits and vegetables through hands-on activities. Their garden time is followed by a cooking demonstration with an educator using a portable kitchen cart to prepare special fruit- or vegetable-based recipes and teach students about basic kitchen skills. The program encourages physical activity through gardening and promotes healthy eating through the preparation of easy, low-calorie, lowfat recipes that children can make on their own. The ultimate goals of the program are to work toward combating the rising trend of childhood obesity, to provide students with the necessary skills to increase their consumption of fruits and vegetables, and to create healthy snacks and meals. In addition to the programming in the garden, teachers are provided with additional curricula to continue the gardening-nutrition link in the classroom, further reinforcing better eating habits among their students.



Bonnie Estrada

The program began in the fall of 2003 with two classes, and since then, it has grown to accommodate six classes of fourth graders. To increase community involvement, in 2005 the program also incorporated an exciting “Guest Chef” component. Community representatives came to the garden to serve as positive role models by demonstrating for the children how to make delicious, healthy recipes. Guests included nutrition and health-care professionals, newspaper and television reporters, school administrators, agricultural crop council representatives, city council members, California state assembly members, and even a U.S. Congress representative. A unique aspect of the “Guest Chef” component is that guests also briefly describe their jobs, thus introducing students to possible future career paths.

On a post-test given at the end of the school year, 91 percent of students reported an increase in fruit and vegetable consumption by at least one serving when compared with their responses at the beginning of the

“Nutrition and gardening are a perfect marriage to promote good health.”

program, indicating an important influence on eating behaviors. Additionally, students received a cookbook of healthy recipes, and 58 percent of students reported duplicating at least one of these recipes at home. Through the cookbook, the education extends beyond the students to affect their families too.

Program Director Linda Hahn credits the program’s success to the strong community-wide investment in the program. She

notes that “this is truly a collaborative effort, requiring a huge investment of support from many entities within Baldwin Park.” She’s found that “nutrition and gardening are a perfect marriage to promote good health. Children are physically active when they garden, and they learn the relationship between agriculture and food on the table when they harvest the produce and make it on the spot in my nutrition program. The garden setting, coupled with the nutrition program, provides a learning lab that takes children from the beginning of a process to the end — from planting seeds to sampling healthy food grown from those seeds. Lifelong skills that will sustain these children — how to grow their own food; how to prepare their own food; how to have fun doing both — are a hallmark of this program. The fact that children expend energy while gardening is another plus in the fight against childhood obesity. The program encourages them to be physically active in a lifelong activity they can enjoy.”



Western Growers Charitable Foundation

“In the garden, nutrition learning just happens. Unlike the food in the supermarket that is largely uniform, odorless, and often unhealthy, nature’s foods are variable, full of life, and almost always nutritious. So developing a taste for really fresh fruits and vegetables is the best insurance against a bad diet; what matters most, as a wise nutritionist once said, is what you don’t eat. So take them to the garden and let them graze.”

Joan Dye Gussow

Mary Swartz Rose Professor Emerita
of Nutrition and Education
Teachers College, Columbia University
New York, NY

Because of scientific research results like these as well as copious anecdotal evidence, the use of gardens in teaching nutrition has become a more frequent practice. Some of the nutritional concepts introduced and reinforced by the garden are below.

The Importance of Fruits and Vegetables

Fruits and vegetables are a vital part of a healthy diet, providing many of the nutrients children need for growth, development, and prevention of chronic diseases later in life. These include essential vitamins and minerals, dietary fiber, water, and phytonutrients. Unfortunately, most children are not eating enough fruits and vegetables to meet the recommendations of the most recent Dietary Guidelines for Americans because they lack access to a variety of fresh produce and because their existing food preferences do not include fruits and vegetables. School gardens help promote fruit and vegetable consumption as a means of shaping food preferences early in children’s lives and can serve as a source of fresh fruits and vegetables in children’s diets. Students will try foods they would normally turn away because of the additional motivation and excitement of eating something they grew. They also learn the skills to grow their own food, offering a lifetime of potential fresh foods.

The Origins of Foods

Through the garden, children gain an appreciation for the origin of their food. By participating in food production, they discover that food does not magically appear on the table or at the grocery store, but rather is produced on a farm. Because of this experience, they are better able to grasp concepts related to agriculture and its importance to the social and economic makeup of California. This experience also leads to students’ appreciation of the work that goes into the food they eat and respect for the environment that allows it to grow.

The garden provides opportunities to teach students about the importance of the soil in the production of food, increasing their esteem for this vital natural resource. They learn how the soil provides important nutrients to ensure that the plants are healthy and productive. Fertilizing your garden replenishes the nutrient content of the soil. Increasing nutrient availability to the plants to help them grow is an essential step in raising healthy, nutritious foods.

Healthy Food Choices

An important part of gardening is learning to meet plants’ basic needs for good growth and production. Nourishing your garden replenishes the nutrient content of the soil to grow strong plants just as eating healthy foods helps children grow up healthy and strong. If your students neglect their plants by forgetting to water them or by not providing proper fertilizer, they will immediately see the signs of stress. Compare the basic needs of plants to the basic needs of people. Teach students how important it is for them to nurture their own bodies just as they care for the plants in their garden.



PROGRAM SPOTLIGHT

The Nutrition Network

Los Angeles Unified School District

The Nutrition Network in the Los Angeles Unified School District actively promotes the use of school gardens as a tool for nutrition education. More than 140 schools included school gardening as a nutrition education strategy in their action plans in the 2004-2005 school year. Nutrition Network Teacher Advisor Tonya Mandl writes this about her experience with garden-based nutrition programs: "I'll never forget the excitement of my fourth graders when they discovered that they could actually 'just pick the broccoli flowers and eat them!' And when another class exclaimed that the salad they had just prepared from their harvest was 'the best' they'd ever eaten. One group of students learned that onions were sweet, and another that raw bell peppers taste delicious. Even preparing the garden for planting can be an outlet for children; one fifth grader, who often ran into trouble with classmates and found it challenging to focus in the classroom, looked up at me after shoveling soil, a big smile on his sweaty face, exclaiming, 'This is fun!'"

"In my after-school nutrition gardening club, a group of approximately 30 students, ages 6 to 11, tended a patch of collard greens. Each day they would ask, 'Are they ready to pick yet?' Finally, our garden club turned into a cooking club when we harvested and prepared the greens together, with the help of a grandmother from the South who shared her



Tonya Mandl

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own family recipe. The children enjoyed their greens so much that several of them asked if there were enough to take home to their moms! The garden is a place for students to be caretakers for other growing things, and then experience the 'fruits' of their labor first-hand.

"The essential components of garden-based nutrition education are cultivation, caretaking, harvesting, preparation, and eating," shares Tonya. "By actively participating in planting and caring for vegetables, students gain an understanding of

agriculture and an appreciation for fresh food. By harvesting, preparing, and eating the vegetables that they have grown themselves, students experience a tasty thrill they would not have otherwise. This formula instills a love of fresh produce that children want to share with their families."

Tonya has found that "when students not only learn the process of getting food to the table, but actively participate in it, they are much more eager to try a wider range of foods. As our founder, Nonnie Korten, once said, 'We have seen children who balk at eating vegetables eat them with great relish when they grow them and nurture them themselves. When

they grow it, they eat it.' A key component to nutrition gardening is the harvest. It is recommended that traditional calendar schools plant fruits and vegetables that ripen early, such as radishes, green beans, and strawberries, so that students can experience harvesting, preparing, and eating their plants. Without this, students will not make the connection between what they grow and what they eat."

In addition to nutrition education, the Nutrition Network has identified other benefits to school gardening, including the outdoor physical activity involved in cultivating, planting, and weeding. The network has led workshops on "Getting Physical in the Garden" where students do exercises like "Climbing the beanstalk," "Stomping the mulch," and "Growing like a plant."

Food Preparation

Students can grow fruits and vegetables in their garden, and after harvest, they can learn and practice proper food handling techniques, food preparation, and cooking skills. Although the garden will focus on fruits and vegetables, you can use recipes that teach students how to incorporate other healthy foods like whole-grain carbohydrates and low-fat dairy and protein products to achieve a balanced diet. Cooking demonstrations and hands-on cooking activities help students gain experience and confidence in their food preparation skills.



Jim Morris/California Farm Bureau Federation

Physical Activity

In addition to encouraging good eating behaviors, gardening is enjoyable, relaxing, and a great form of physical activity. A benefit of adding gardening to a regular exercise program is that it is an activity that can be enjoyed for a lifetime. Go for Green (www.goforgreen.ca) provides the following examples of physical benefits of garden activities:

- Digging involves weight lifting, abdominal stressing, and partial squatting.
- Pruning makes you hold your arms up while stretching.
- Weeding involves squats and forearm stretches.
- Planting requires many muscles to be used, as you dig, mix soil, lift, carry, and backfill, often in a squatting position.

Other sources of physical activity in the garden include turning compost heaps, clearing out beds for a new planting, mixing potting soils, lifting planters, raking leaves, hoeing, digging fence post holes, moving soil between beds, and spreading mulch.

Resources for Educators

A number of educational programs exist to support you in teaching and encouraging healthy eating and exercise behaviors using garden programs. Although it would be impossible to list them all in this book, below are a few examples to help begin your search.

California Department of Education: “A Garden in Every School” Initiative. Recognizing the educational and health benefits of school gardens, the California Department of Education (CDE) launched the “Garden in Every School” initiative in 1995, which continues today with support for the expansion of school garden programs throughout the state. The Nutrition Services Division leads the “Garden in Every School” program and collaborates with individuals and organizations that support school gardens, including public and private agricultural agencies, waste management agencies, health agencies, and others.

The CDE provides technical assistance and educational resources to public schools interested in using school gardens as outdoor classrooms for nutrition and core subject area education. It published the Health Framework for California Public Schools and developed a set of nutrition competencies to guide curriculum implementation for students in pre-kindergarten through grade 12 to promote effective, sequential, and comprehensive nutrition education. For more information about the “Garden in Every School” program, contact the Nutrition Services Division, California Department of Education, at 800-952-5609 or 916-445-0850.

California Healthy Kids Resource Center.

Sponsored by the California Department of Education and Department of Health Services, the California Healthy Kids Resource Center maintains a comprehensive collection of high-quality health education materials for use by teachers, administrators, university faculty, LEA (local education agency) staff, and other professionals who work with pre-school through 12th grade students in school settings and after-school programs. The materials include curricula, video-tapes, teacher reference materials, and research materials, along with models and other displays. The materials are free to use; schools are responsible only for return shipping charges.

For more information and a listing of materials available, visit the center’s Web site at www.hkresources.org/.

Farm to School Program. The concept of linking schools with local farmers to provide fresher, tastier, healthier school meals is known as “Farm to School” and is considered part of a healthy school environment. The objectives of the program are to serve fresh and healthy meals in school cafeterias, improve student nutrition, provide health and nutrition education opportunities, teach agricultural literacy, and support local small farmers.

Schools buy and feature farm-fresh foods such as fruits and vegetables, eggs, honey, meat, and beans on their menus; incorporate nutrition-based curriculum in the classroom; and provide students experiential learning opportunities through farm visits, gardening activities, and recycling programs. Farmers gain access to a new market through schools and are able to connect to their community through programs designed to educate kids about local food and sustainable agriculture.

When fresh, farm-direct, seasonal food is included in school lunch programs, both children and farmers benefit. Combining healthy school lunch choices with nutrition education, farm visits, school gardens, and cooking projects in the classroom gives children a better opportunity to develop healthy eating habits that last a lifetime.

For more information about California’s Farm to School program, visit www.farmtoschool.org/ca/.

Fruits and Vegetables for Health. *Fruits and Vegetables for Health* is a free curriculum guide available from the California Foundation for Agriculture in the



Debbie Delatour

“School health programs can help children and adolescents attain full educational potential and good health by providing them with the skills, social support, and environmental reinforcement they need to adopt long-term, healthy eating behaviors.”

The Centers for Disease Control
and Prevention

“More children need to understand what they're eating. Children's education is vital, and knowing where a product comes from is fundamental to life.”

Margaret D'Arrigo-Martin
Executive Vice President
D'Arrigo Brothers, Salinas, CA

Classroom. The comprehensive unit teaches students about the production, distribution, and nutritional value of California fresh produce. Geography, English-language arts, mathematics, science, health, and nutrition concepts are incorporated. It is aligned to the content standards for California public schools. To download, visit www.cfaitc.org/LessonPlans/LessonPlans.php.

Rethinking School Lunch. The Rethinking School Lunch (RSL) program uses a systems approach to address the crisis in childhood obesity, provide nutrition education, and teach ecology. It builds on the premise that hands-on experience in growing and preparing food is a powerful way for children to discover that healthy food tastes good, and to learn about life cycles, seasons, other processes of nature, and the relationship between the health of natural and social systems. The program includes an online 175-page guide, ongoing essay series, “Thinking Outside the Lunchbox,” a downloadable Model Wellness Policy Guide, and outreach efforts, including presentations to professional organizations and NGOs, technical assistance, and workshops for educators. For more information, visit www.ecoliteracy.org/programs/index.html.

The California Nutrition Network for Healthy, Active Families (Network). This statewide initiative is led by the California Department of Health Services. Its purpose is to encourage Californians to consume the recommended amount of fruits and vegetables and to be physically active. The Network works with more than 300 different public, nonprofit, and business partners throughout the state to empower low-income Californians to consume fruits and

vegetables and enjoy physical activity every day. For more information, visit the Network Web site at www.ca5aday.com.

Two specific Network programs:

– *California Children's 5 a Day–Power Play! Campaign (Power Play!)* Power Play! is a statewide campaign led by the California Department of Health Services designed to motivate and empower low-income 9- to 11-year-old children to eat the recommended amount of fruits and vegetables and get at least 60 minutes of physical activity every day. Power Play! provides free nutrition and physical activity educational materials, available in English and Spanish, to fourth and fifth grade teachers with students from low-income families. Activities can be incorporated into subjects across the curriculum and are linked to the California content standards in mathematics and English-language arts. To request materials or for more information, contact your region's 5 a Day–Power Play! lead agency. Contact information is available at www.dhs.ca.gov/ps/cdic/cpns/powerplay/.



Judy Hufaker

PROGRAM SPOTLIGHT

Edible Schoolyard

Martin Luther King, Jr. Middle School, Berkeley, CA

The Edible Schoolyard sprouted out of the shared vision of community members and school personnel. They envisioned a garden and kitchen classroom that would transform the learning environment and enrich the lives of the students at Martin Luther King, Jr. Middle School. The first seed was planted in 1994 through a conversation between chef Alice Waters and then King Middle School Principal Neil Smith, with additional seeds sown and nurtured through the planning and hard work of hundreds of students, teachers, staff, and volunteers. Over time, an abandoned, asphalt-covered lot became a thriving classroom. Today, it not only enriches the local community, but also serves as a model for school gardening programs around the world.

More than 900 students participate in the Edible Schoolyard program each year. The program uses food as a unifying concept to introduce students to the larger principles of ecology. Students learn how to grow, harvest, and prepare nutritious seasonal produce through direct experiences in the garden and kitchen classroom. The lessons and activities tie into required curricula for each grade level. They are designed to foster a better understanding of how the natural world sustains us, and promote the environmental and social well-being of the school community.



Thomas Heinzer

When the hearts and minds of our children are captured by a school lunch curriculum and enriched with experience in the garden, sustainability will become the lens through which they see the world.

Program Coordinator Chelsea Chapman notes that the program serves as a “big school community builder” linking students from diverse social, economic, and cultural backgrounds together “through a shared experience.” Garden Manager Kelsey Siegel has also witnessed

the magic of the growing environment. “One of my continuing observations is that the garden provides a place that helps level the educational playing field. It helps to subvert some of the disparities that occur within the classroom or even on the playground. By working collectively with each other, teachers, staff, and volunteers, the students at MLK feel safe in a natural space that they have helped create and care for.”

The impact of the Edible Schoolyard extends beyond the school’s boundaries. Chelsea explains that one of the most rewarding aspects of the program is to “[watch the] lessons from garden and kitchen going home with the kids.” In addition to recipes, a farm stand is set up after school, allowing students to take extra produce home with them. The students return to school with stories of their cooking adventures and their family’s reactions.

As former students return as volunteers, the Edible Schoolyard is progressing toward its larger goal of revolutionizing the way individuals view food, agriculture, and their environment. As founder Alice Waters suggests, “When the hearts and minds of our children are captured by a school lunch curriculum and enriched with experience in the garden, sustainability will become the lens through which they see the world.”



California Department of Education

“I saw all the people hustling early in the morning to go into the factories and the stores and the office buildings, to do their job, to get their check. But ultimately it’s not office buildings or jobs that give us our checks. It’s the soil. The soil is what gives us the real income that supports us all.”

Ed Begley, Jr., Actor

– *Harvest of the Month Program*. The Harvest of the Month program provides the tools and resources to give students hands-on opportunities to explore, taste, and learn about the importance of eating fruits and vegetables. Each month the program spotlights a different California-grown fruit or vegetable harvested in that month and provides instructional materials to encourage students to increase their access to fruits and vegetables, boost their preference for produce, increase their participation in daily physical activity, and strengthen their knowledge of fruits and vegetables. Developed by the California Department of Health Services’ Cancer Prevention and Nutrition Section, this program also received support and guidance from the California Department of Education, as well as other educators, curriculum specialists, child nutrition staff, and agricultural groups and organizations. The program toolkit includes educator newsletters with background information, lesson and activity ideas, family newsletters to send home with students, menu slicks, and press release templates. For more information or to download toolkit components, visit www.harvestofthemonth.com.

United States Department of Agriculture MyPyramid. The United States Department of Agriculture (USDA) has created many resources to help educators introduce basic nutrition education into the classroom, including the MyPyramid.gov tool. Visit www.mypyramid.gov/kids/index.html to download nutrition education classroom activities to supplement activities in the garden.

Summary

Through garden programs, students learn skills they can use throughout their lifetime to engage in physical activity and increase their consumption of fruits and vegetables. Teaching students how to incorporate hobbies like gardening into their lives will help fight food-related health problems through adoption of activities supporting better nutritional choices. Use of the garden as a health education tool will have an impact on students’ choices today and well into the future. Check out the California School Garden Network Web site at www.csgn.org and the Resources section of this book (page 93) for additional ideas for using the garden to grow healthy kids.

¹Morris, J., K. Koumjian, M. Briggs, and S. Zidenberg-Cherr. *Nutrition to Grow On: A garden-enhanced nutrition education curriculum for upper-elementary school children*. *Journal of Nutrition Education and Behavior* 34(5):175-176.

²Foerster, S., J. Gregson, D.L. Beall, M. Hudes, H. Magnuson, S. Livingston, M.A. Davis, A.B. Joy, and T. Garbolino. 1998. *The California Children’s 5 a Day Power Play! Campaign: Evaluation of a large-scale social marketing initiative*. *Family and Community Health* 21(1):46-64.

³Morris, J., A. Neustadter, and S. Zidenberg-Cherr. 2001. *First-grade gardeners more likely to taste vegetables*. *California Agriculture* 55(1):43-46.

⁴Morris, J., and S. Zidenberg-Cherr. 2002. *Garden-enhanced nutrition curriculum improves fourth-grade school children’s knowledge of nutrition and preferences for some vegetables*. *Journal of the American Dietetic Association* 102(1):91-93.

⁵Murphy, J.M. 2003. *Findings from the Evaluation Study of the Edible Schoolyard*. Center for Ecoliteracy, Berkeley, CA, www.ecoliteracy.org/publications/pdf/ESYFindings-DrMurphy.pdf