What is a school garden? A school garden is an innovative teaching tool and strategy that lets educators incorporate hands-on activities in a diversity of interdisciplinary, standards-based lessons. The garden engages students by providing a dynamic environment in which to observe, discover, experiment, nurture, and learn. It is a living laboratory where lessons are drawn from real-life experiences rather than textbook examples, allowing students to become active participants in the learning process. Through the garden, students gain an understanding of ecosystems, an appreciation for food origins and nutrition, and knowledge of plant and animal life cycles. At the same time, they learn practical horticultural skills that last a lifetime.

Where did school gardens come from? The school garden movement originated in Europe and arrived in the United States in the 1890s. Gardens sprang up at schools all over the country during the early 20th century, with particular booms as Victory Gardens intended to increase the food supply during World War I and World War II. During the 1950s, the number of gardens decreased as schools placed more emphasis on technology. However, the environmental movement of the 1970s renewed educators’ interest. More recently, the popularity of school gardens as an educational tool has steadily grown as a way to teach healthy eating behaviors and a way to incorporate and increase hands-on learning experiences in interdisciplinary lessons.

What does a school garden look like? School gardens come in all shapes and sizes, with a common focus on growing plants. A school garden may be as small as a few pots of herbs growing on a windowsill or as large as a half-acre plot of vegetables in a schoolyard. Gardening programs are flexible enough to fit the needs and resources of every school.

Why garden with kids? Educational philosophers going back to the 17th century have promoted the use of gardening to achieve learning objectives and support the mental, emotional, and social development of youth. Students enjoy gardening activities, and teachers and parents say that gardening programs:

- Address multiple learning styles
- Provide opportunities for interdisciplinary lessons
- Improve environmental attitudes
- Promote good nutrition and exercise
- Teach patience and responsibility
- Instill a positive work ethic
- Increase students’ self-esteem
- Build classroom relationships, improve teamwork, and strengthen school spirit
- Beautify the environment

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, worms 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 and relevant lessons, use of manipulatives, 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, Principal
Vista Square Elementary School,
Chula Vista, CA
In addition to anecdotal evidence, a growing body of research-based literature supports the use of youth gardens as a beneficial teaching tool. Research has found that participation in youth gardening programs can have the following impacts on students:

- Improve self-esteem and attitudes toward school\(^1\)
- Improve social skills and behavior\(^2\)
- Improve environmental attitudes, especially in younger students\(^3\)
- Increase group cohesion\(^4\)
- Improve interpersonal relationships\(^5,6\)
- Increase interest in eating fruits and vegetables and improve attitude toward fruits and vegetables\(^7\); improve attitude toward vegetables and toward fruit and vegetable snacks\(^8\)
- Significantly increase science achievement scores\(^9,10\)
- Increase self-esteem, help develop a sense of ownership and responsibility, help foster family relationships and increase parental involvement\(^11\)
- Improve life skills, including working with groups and self-understanding\(^12\)

When investigating the benefits of school gardens, it is helpful to divide them into four categories: academic achievement, a healthy lifestyle, environmental stewardship, and community and social development.

### Academic Achievement

Academic achievement is the primary focus of educators throughout the country. Their aim is to ensure that students perform at satisfactory levels defined by
local, state, and national academic standards. All lessons and activities must complement mandatory standards to merit the use of valuable classroom time.

A school garden is a perfect tool to provide hands-on learning experiences for any academic subject. Science is the most common subject linked to gardens. Many teachers use the garden as a laboratory to introduce students to scientific methods through plant-related experiments. Additionally, a garden provides a place to study weather, insects, soil, and other environmental matters. It’s the ideal habitat model for studying ecosystems. Real-life garden experiences contribute greatly to students’ comprehension and retention of new science knowledge; in fact, participation in a gardening program increases science achievement scores, as noted above.

In addition to science, the garden provides opportunities to teach mathematics, history-social science, English-language arts, and visual and performing arts. Concepts that seem abstract in the classroom come alive in a garden setting. For instance, students find taking daily measurements of garden bean plants and then charting the growth rate to determine the fastest-growing plant in the garden much more exciting than charting numbers provided by a textbook. Chapter 3, Linking Gardens to School Curriculum, provides additional details and specific examples of how to integrate gardening activities into the classroom.

A Healthy Lifestyle

Beyond academics, the garden provides broader life lessons, including contributing to students’ knowledge of how to maintain a healthy lifestyle. California is

"You are what you eat.

Anonymous"
opportunities in the food industry. Through repeated experiences, students gain confidence in their abilities; through job assignments, they gain leadership skills. Beyond that, since the other students and teachers rely on them for their meal, they are given a unique opportunity of responsibility and ownership.

Food Lab Nutrition Coordinator Stephanie Raugust says that two of the most important aspects of the programs are ties to the curriculum and the opportunity for students to practice important life skills. Through the garden, students gain an understanding of and appreciation for the cultivation of food crops, along with a respect for local farmers. They also learn valuable science concepts through observation and experimentation. By learning to prepare nutritious meals, the students are armed with the knowledge and skills to maintain a healthy lifestyle.

The school is solidly invested in both programs. Hands-on, curriculum-based, comprehensive education programs like this one are important for changing the eating behaviors of our society both now and in the future.
experiencing a major health crisis as the number of overweight and unfit youth
grows at an epidemic rate. Approximately one in three children is overweight
or at risk of becoming overweight, and almost 40 percent of school-age
children are considered unfit. The increase in number of weight-related
chronic diseases such as diabetes is of great concern, and the need for
prevention education is critical.

Garden programs work to combat the epidemic by teaching youth
about healthy lifestyles that include proper nutrition and physical
activity. Through a gardening program, students gain first-hand
experience with fresh fruits and vegetables. They discover that pro-
duce does not magically appear on the grocery store shelves, and they
learn the important role of agriculture in our society. The pride and curios-
ity sparked by growing fruits and vegetables along with the knowledge of
where they come from motivates students to try eating them, oftentimes leading to
more positive attitudes and eating behaviors. Fruits and vegetables are an impor-
tant part of the diet not only because they provide essential vitamins, but also
because they are linked to prevention of such health problems as cancer and heart
disease. Studies show that a majority of children do not eat the recommended
amount of fresh fruits and vegetables each day, so they are missing out on these
benefits. A garden program increases produce availability and creates opportunities
to teach students what they should eat for good health through fun, hands-on
experiences. This information can also be shared with students’ families.

A healthy lifestyle is more than just eating right, though. Students also need
to adopt good exercise habits. The garden provides a wide range of physical
activity through digging, planting, and weeding. The garden activities are often so
captivating that students do not even realize they are exercising. And unlike some
other activities they participate in during their school years, gardening is an activ-
ity they can participate in for the rest of their lives.

Environmental Stewardship

A school garden is a powerful environmental
education tool. Through gardening, students
become responsible caretakers. They have an
opportunity to engage in agricultural practices
on a small scale, learning about the responsibil-
ities and impacts of land cultivation. They
explore the web of interactions among living
and nonliving components of life. By doing so,
they develop a greater understanding of the
natural world.

Students also learn the importance of caring
for natural resources. A garden of native plants or
drought-tolerant plants, for example, provides an
excellent opportunity to teach students about water
conservation. They will observe that choosing the right
plants and irrigation for the garden results in a beautiful

Incorporating agriculture into the
classroom helps students under-
stand how humans interact with
the environment and how food is
grown. Further, agriculture and
school gardening promotes aware-
ess of healthy eating, helps
students master science concepts,
and exposes students to agricultural
job opportunities. By designing,
cultivating, and harvesting school
gardens, students experience
deeper understanding of natural
systems and become better
stewards of the earth.

Lance Omeje, Teacher
Yokomi Elementary School
Fresno, CA
landscape that is also environmentally friendly. Additionally, gardens teach about waste reduction through composting. Students who learn sustainable garden practices can more readily consider conservation issues from a local and global perspective.

For many children, a garden offers the only chance to get close to nature. Some lack access to gardening spaces because of their living situations; others have limited exploratory free time outdoors. School garden educators in urban environments frequently find their programs provide students their first opportunity to dig into the soil and watch a plant grow.

Establishing a connection with nature at an early age is extremely important. Researchers have discovered that childhood experiences with nature are strongly linked to adult attitudes toward plants. Participation in gardening during childhood is the most important influence on adult environmental attitudes and actions, and even in urban areas where green spaces are limited, gardening programs for children can provide a strong enough connection to instill appreciation and respect for nature in adulthood.15

Community and Social Development

Community and social development lessons do not receive the attention that academic achievement does, but they are as crucial to the survival of our country as reading and writing. Children must learn how to take responsibility for their environment and develop a strong sense of community to ensure the continuation of our society.

Gardens create opportunities for students to work cooperatively and to develop responsibility. They will quickly learn the negative consequences associated with forgetting to water their plants on a hot day and will work hard to make sure it does not happen again. Plants will also provide positive reinforcement in response to proper care by growing or producing fruits. On a personal level, gardening builds confidence, self-esteem, and pride as students watch their efforts...
I have never seen children work as collaboratively as they do when they are in the garden. As they face the multitude of problems associated with growing flowers and vegetables, they all work, share ideas, and solve problems together as they strive to reach a common goal. It never ceases to fill me with joy as I watch true learning at its best just happen.

Cathey Anderson, Teacher
Valley Center Elementary School
Valley Center, CA

turn into beautiful and productive gardens. It also teaches them patience as they wait for a seedling to sprout or a tomato to ripen.

Gardens provide unique opportunities for cross-generational connections. While gardening, children interact with teachers, parents, and community volunteers, providing opportunities for social interaction that are often lacking in our society. The garden allows children to ask questions, share thoughts, and work cooperatively toward a common goal. In addition, school gardens give children the opportunity to showcase their products at local fairs. For information on how to submit entries, see Resources (page 93) for Web links to California’s fairs and expositions.

Through gardening, students help to beautify the school grounds. Some will find it their only chance to contribute positively to their environment. The praise they receive from other students, parents, teachers, and community members will create a sense of community spirit and introduce them to the benefits of volunteering.

Above all, gardening is fun, and once the skills are acquired it can become a lifelong hobby. Exploring the outdoors, planting in the soil, watching seeds grow, and harvesting the bounty are enjoyable and memorable ways for students to spend their time.