



A TOOLKIT

**how to
start a
school
garden**

HealthierGeneration.org

/gar·den/*

A cultivated child and/or a youth-oriented outdoor classroom where students are empowered and given tools to discover, make observations, participate in and develop conclusions about their surroundings through one or more styles of gardening, such as native habitat gardens, herb gardens and edible gardens.

**Definition within this toolkit discussion.*



TABLE OF CONTENTS

- 1** Introduction
- 7** Chapter One: Planning
- 15** Chapter Two: Healthy Eating Activities
- 27** Chapter Three: Physical Activities
- 33** Chapter Four: Community Garden and Stewardship Activities
- 39** Chapter Five: Environmental Education Activities
- 45** Chapter Six: Core Curriculum Activities



introduction

Even before the existence of formal education in the United States, educators recognized that a successful way to engage young minds and stimulate curiosity was through outdoor learning. Consequently, gardening has a long history of being integrated into schools and children's educational programs. Only in the past few generations has the popularity of gardening with children fallen so drastically that not only have young people lost a valuable method of learning, but they have also grown detached from their surrounding natural environments. Fortunately, gardening with children has risen into the spotlight again, this time as part of national initiatives to enhance education through hands-on, reality-based learning, strengthening environmental eco-literacy and scientific exploration and connecting youth to the origins and methods of healthier eating habits.

A major benefit of educational gardens is building higher-order thinking skills such as analysis and synthesis through experiential and project-based learning. Using these skills to explore healthier habits such as growing and eating fresh produce, introducing a variety of new foods to their diets, promoting local and organic produce over chemical or additive-enhanced foods and

maintaining an active and regular outdoor lifestyle, students can become strong advocates to promote what they learn to their families, friends and community. Gardens can inspire healthier changes in the entire school, from using fresh grown ingredients for after-school snacks to becoming a key part of a school-wide wellness initiative. Non-profit organizations and resources that emphasize nutritional education and healthy living skills are multiplying rapidly to provide information, lesson plans and ideas to support educational gardens across the nation. Most states have farm-to-school programs that have great resources for making connections between garden produce and school cafeterias. For more information on connecting school gardens to the Healthy Schools Program Framework, a set of best practice criteria, see page 5.

What makes educational gardens such fantastic yet functional additions to learning centers is that there is no such thing as a standard garden—each space can be unique, starting at any size to include a wide range of decorative flowers, herbs, vegetables and fruits. Ideally, the underlying purpose of these types of gardens, no matter style or size, is to become integrated into the school's or learning center's community and to be used as a tool to explore the greater world and its possibilities. As a cross-curricular tool, similar to a library or computer lab, a garden can be used to teach about healthy eating and physical activity, language arts, social studies, mathematics, sciences and the arts. The garden allows teachers to differentiate their instruction to serve hands-on, kinesthetic learners and produce in-depth unit plans that can span from days to years.

An educational garden can influence other areas of the school such as adding environmentally focused literature to classroom libraries, encouraging the recycling of organic waste in an outdoor compost or indoor worm bin, incorporating more scientific tools to use for investigating plants and animals up close and helping to fundraise for various events throughout the year (plant sales, farmer's markets, etc).

OUTCOMES OF WORKING IN AN EDUCATIONAL GARDEN

- ▶ Students explore and understand the origins of foods they eat regularly and experience opportunities to try new fruits, herbs and vegetables.
- ▶ In creating and maintaining an educational garden, participants engage in repetitive physical and aerobic activities such as stretching, lifting, bending and squatting, pulling and weight carrying.
- ▶ The educational garden becomes a service-learning project for students and a model for future community-based garden initiatives.
- ▶ Students become more “environmentally literate,” comfortable with spending time outdoors and exploring their surroundings.
- ▶ Gardens become places where family and neighbors can share knowledge and make valuable experiential contributions to a school or community center.
- ▶ Students strengthen observational skills by building and transforming a natural habitat for native plants, insects and other living things.
- ▶ Students reinforce interpersonal skills through project-based learning alongside their peers and community.
- ▶ Gardens are used for real-life applications of higher-order thinking skills and content learned through health education, language arts, mathematics, science, social studies, visual arts, physical education and performing arts.
- ▶ Students connect the present to the past by learning new and traditional recipes using the fresh produce grown in the garden.
- ▶ School and community cafeterias can use fresher, local produce grown by the students in regular meals and special events.
- ▶ Gardens become ever-changing demonstrations of learning and grow with the growth of the student and community interest and investment.

RESOURCES FOR INSPIRATION

Though many of these resources have various uses, they were specifically chosen because they provide fantastic information for implementing a garden program at a school or learning center.

National Garden Association's Kids Gardening kidsgardening.com

A comprehensive resource with articles and links for lesson ideas, how-to's, fundraising and connections to educators and families interested in gardening with children all over the United States. Also links to the Kids Gardening Store which offers fantastic materials, games and books to expand learning opportunities for children and adults in the garden.

Garden ABC'S: The School Garden Share Site gardenabcs.com

Updated with monthly success stories of children's gardens across the United States, this site provides a wealth of links on schoolyard gardening and resources on fundraising, expert advice and related organizations. This is a strong site to visit for inspiration and financial support for garden projects.

Garden Mosaics Cornell gardenmosaics.cornell.edu

A site created by Cornell University to emphasize the science connections that can be made alongside the community interactions that take place in educational gardens through bilingual publications.

The Edible Schoolyard edibleschoolyard.org

Created through Alice Water's Edible Schoolyard project, this site includes a journal with postings of lesson ideas for an edible garden and a store with resources on lesson planning for gardening and kitchen classrooms.

RESOURCES FOR INSPIRATION

California School Garden Network csgn.org

A collaborative website that unites educational institutions, non-profits, private companies and state agencies in providing information and training for creating and sustaining school gardens in California.

School Year Gardens: A Toolkit for High Schools to Grow Food from September to June

www.bitsandbytes.ca/resources/Schoolyear_Gardens_Toolkit.pdf

This how-to resource is specifically designed for high schools and the implementation of garden-based learning for young adults.

Junior Master Gardener jmgkids.us

A book series that provides garden-based curricula, books and project ideas for elementary and middle schools. Their materials can be ordered online through their website.

Common Ground Garden Program http://celosangeles.ucdavis.edu/Common_Ground_Garden_Program/

A site that provides a variety of articles related to building your own school garden, from creating compost systems to container gardening. Available in both English and Spanish.

Linking Schools Gardens to the Healthy Schools Program http://www.healthiergeneration.org/uploadedFiles/For_Schools/_New_Builder_Pages/Resources/SchoolGardensandHSP.pdf

This document provides information on how to connect school gardens to the Healthy Schools Program Framework.



1

before planting, planning

DESIGNING AND STARTING A SCHOOL GARDEN

At times, building a garden can be overwhelming because of all the choices available in regards to plants, styles and designs. The best way to manage all these possible choices is to create a solid garden plan that includes a clear theme, design, plant catalogue and task list. Once you are ready to start, begin with the question:

What kind of garden best suits the interests, culture and availability of my school's students, teachers, families, custodians and grounds crew?

To succeed, an educational garden must first be created to:

- ▶ Tie into children and youth's interests;
- ▶ Reflect the school's culture as shaped by administration, teachers, parents and neighbors;
- ▶ Take into consideration the availability for maintenance by grounds crew, families, neighbors and volunteers.

After having preliminary conversations with the various groups that will participate in the garden's development, care and maintenance, it is time to take all the collected ideas, recommendations, opinions and comments to create a draft design of the future garden.

Garden as an Outdoor Classroom

In an educational setting, a garden is most beneficial when thought of as an outdoor classroom where structured learning can be paired with experiential opportunities. The most successful outdoor classrooms tend to include:

PLANTS

It is recommended that any design for a children's garden should include a mix of three basic types of plants:

- › **Native Flowers:** Plants that are both native to the region and also attract/support local pollinators.
- › **Edibles:** Predominantly fruits and vegetables but can include other edible plants.
- › **Herbs:** Mainly leafy plants that are used for flavor, aroma and healing properties.

Note: Although other types of plants can also be incorporated into a design, a mix of the types of plants listed above creates a healthy, balanced garden that provides better organic pest management as well as a range of material for learning in various subjects.

ENTRANCE AND PATHWAYS

A fence may not be necessary but to make your space inviting to visitors of all ages it is important to create some sort of entrance and clearly outline borders and paths for people to walk and access plant beds safely and confidently.

SEATING

An educational garden should accommodate seating for a group of at least 10 students to work and explore together comfortably. Also, seating invites other visitors to enjoy the space and observe from a relaxed position.

THEMES

Organizing the design of your garden around a theme, or multiple themes, is a strong way of connecting to curricula, students' interests, etc. Some themes to consider:

- › **Historic/Cultural Garden:** Throughout the world and through history, various types of garden styles have been developed for aesthetic or functional purposes. An educational garden can incorporate these styles into a design making the garden a resource for social studies and other subject learning (examples: Colonial Heirloom Garden, Three Sisters Garden or French Potager Garden).
- › **Sensory Garden:** Especially good for younger children and as therapeutic tools, these gardens use plants and design elements to create opportunities for exploration using the five senses separately and/or combined.
- › **Container Garden:** Especially useful where space is limited, this method focuses on growing plants exclusively in containers. Containers can range from pots to specially built grow bags or recycled materials such as bathtubs and tires.
- › **Art/Sculpture Garden:** An art or sculpture garden in an educational setting is an outdoor gallery where students' work is incorporated and highlighted. Artwork can be inspirational, inviting and/or educational, heightening visitors' experiences.

Think of the Gardeners

Finally, when planning a new garden, keep in mind who will be the main cultivators and visitors. With different ages come different capabilities, interests and needs--therefore, a garden for young children may look very different from a garden for teenagers.

Preschool & Elementary School (approximately ages 4-12):

When planning for young children, it is very important to create a space that considers their line of sight. Although tall plants can be fun to get lost in, be sure to include plenty of low growing plants and surprises that are easy to investigate for the littlest of gardeners. Also, consider amusing shapes and paths that add more components for play and exploration.

Middle School & High School (approximately 13-18):

Because older children and youth make stronger and more capable gardeners, a garden needs to be designed to challenge and engage these students with more elaborately engineered designs based on mathematics and/or landscape design principles. Even a garden of primarily raised rectangular beds can become more challenging when a practice like the square-foot planting method is incorporated. Also, with older students who have not previously gardened, it can be very helpful to incorporate a theme or use that ties into pre-existing interests. An example of this technique is dedicating beds in the garden to growing plants to be used in an entrepreneurship project. Plants from the beds can be used by participants to make products that are branded, packaged and sold as a form of fundraising.

Keeping Curriculum in Mind: Although a garden is a multi-year project, it is helpful to keep in mind the curricula being used when developing and implementing the design. The focus of the curricula you plan to use as a guide may determine elements such as spacing, plant choice and maintenance planning (i.e. a garden that utilizes food-focused curricula will require certain plants and much more maintenance than a garden that utilizes native habitat curricula).

A Suggested Materials List

Once a garden design has been created with input from the school community, it is time to collect materials and plan how to build the garden. Because this is an educational garden, it is important to think of materials for the garden in the same way one thinks of materials for a classroom. It is important to have enough tools so that a group of students can work simultaneously in small groups or individually. The material list compiled below is a suggestion, as each garden will differ in needs depending on children's ages, garden size and planned usage. In regards to materials, most garden tools designed for children are not made for high volume usage; instead it is recommended to collect higher quality, but possibly slightly more expensive tools that can withstand several years of use.

MATERIALS TO START WITH

Basic garden tools (for groups of up to 15)

- › In-garden storage box or shed
- › Organic multi-purpose fertilizer (suggested brand: Espoma)
- › 15 hand trowels (preferably made with one-piece aluminum alloy to resist bending)
- › 10 cultivators (preferably made with one-piece aluminum alloy to resist bending)
- › 2 pruners (anvil style recommended)
- › 1 bow head rake
- › 1 garden hoe
- › 2 adult height shovels
- › 5 mini shovels or camping shovels (adult strength but still kid-friendly)
- › Hose (medium to heavy duty, length depending on garden's dimensions)
- › Multi-pattern hose nozzle
- › 8 watering cans (plastic, adult size)
- › 5 buckets
- › Garden twine
- › Bamboo, wood and/or metal supports

Basic workshop materials (for culinary and academic lessons):

- › 15 rulers
- › Easel with white board (recommended)
- › 8 magnifying glasses
- › 8 children's scissors
- › 15 clipboards
- › Writing materials (pencils, color pencils, markers, black permanent markers)
- › Hand sanitizer
- › Cutting board
- › Flatware including 2-3 cutting knives
- › 15 plates
- › 2-3 mixed size mixing bowls
- › Mortar and pestle

Build Day

Building a garden can require a lot of physical work! To avoid overwhelming a small group of volunteers, plan to host a Build Day that is not only productive but also a celebratory, community experience. A festive Build Day is an excellent opportunity to rally support for an educational garden by engaging students, teachers, parents and others.

The Build Day should be approximately a 2-4 hour event planned for spring or fall (depending on school schedule and geographic growing zone). For a successful Build Day, consider including:

- ▶ Garden map copies posted for visitors to view
- ▶ A task list that includes building and planting the main beds
- ▶ A planned art project for volunteers unable to do heavy work
- ▶ A photographer who will document the day including before and after images
- ▶ Plenty of water and snacks or a potluck meal

EXAMPLE OF BUILD DAY TASK LIST

Pre-Build:

- Order raised beds and needed containers/border materials
- Secure 10-15 volunteers capable of heavy physical labor
- Purchase or get donated shed and materials
- Collect day-of materials and tools
- Order compost, mulch, plants, etc.
- Plan beverages and food

Build Day Tasklist:

- Build 6 raised beds
- Fill beds with compost
- Place picnic tables and benches
- Plant seedlings and seeds (all ages)
- Mulch beds and path
- Set up shed and outdoor classroom tools and materials
- Paint stepping stones (all ages)
- Paint welcome sign (all ages)
- Water garden (all ages)

Day of Materials:

- Garden gloves
- Lumber
- Screws
- Hammers
- Drills
- Concrete stepping stones
- Borders

RESOURCES FOR DESIGN

These books are good sources of ideas for coming up with the plans for a perfect garden.

Schoolyard Mosaics: Designing Gardens and Habitats

by The National Gardening Association

This book offers advice on involving students in the planning and design process, building community support and integrating garden projects with curriculum and learning goals. It also includes 11 garden plans, from butterfly oases to history gardens, suggestions for implementing a variety of thematic gardens and an extensive resource section.

Steps to a Bountiful Kids' Garden

by The National Garden Association

This information-packed how-to guide contains all you need to know to launch and sustain a school or community kids' gardening program. Topics include rallying support, recruiting volunteers, developing the garden site, starting seeds indoors, transplanting, controlling pests, making curriculum connections and more.

Roots Shoots Buckets and Boots

By Sharon Lovejoy

Green thumbs and non-green thumbs alike will fall in love with Roots, Shoots, Buckets, & Boots, an informative introduction to gardening with children. Learn how to make everything from a pizza garden (pizza-pie-shaped, with herbs and vegetables for a fabulous pizza at harvest time), to a sunflower house, to a moon garden. Nine concepts for theme gardens are presented in a clearly defined yet non-rigid manner that is just right for encouraging young gardeners.

101 Kid-Friendly Plants

by Cindy Krezel

This book describes more than 100 plants that are safe to touch and eat as well as easy to grow. All entries include descriptions, plant care and suggested uses. Also included, more than 20 fun garden projects for kids.



2

healthy eating activities

USING THE GARDEN IN SCHOOL, AFTER SCHOOL AND THROUGHOUT THE SUMMER

One of the most popular reasons for beginning an educational garden is to teach children about healthier food options and the life cycles of the foods with which they are already familiar. Students relish the opportunity to be the first ones to try fruits and vegetables that they have been waiting for since they planted the seeds. By connecting the educational garden to healthy eating habits, students can learn to make positive choices about foods that they eat outside of school and with their families. Real-world applications of nutritional education are possible when students are involved with choosing, planting, harvesting and preparing recipes with the food grown in the garden, especially with varieties of fruits and vegetables that are unique or unusual. With older students, investigating the benefits fruits and vegetables have to offer such as vitamins, minerals, fiber and phytochemicals can help them inform their classmates and families about healthier eating.

Investigate seeds and sprouts as food by growing plants such as sunflowers, pumpkins, beans and peas.

EARLY CHILDHOOD & ELEMENTARY SCHOOL ACTIVITY IDEAS

- ▶ Plant vegetables, edible flowers and herbs in a variety of colors to create “Rainbow Salads” (i.e. Red= tomatoes and peppers; Orange= carrots; Yellow= squash and peppers; Green= lettuces and beans; Blue= blueberries and Borage Flowers; Purple= pansies and cabbage). For more information on how to plant and pick for Rainbow Salads visit Noisy Rainbow Salad—a lesson plan for 3rd-5th graders.
www.doe.mass.edu/21cclc/practices/garden2.pdf
- ▶ Investigate seeds and sprouts as food by growing plants such as sunflowers, pumpkins, beans and peas.
- ▶ Introduce children to variety within a species by planting several cultivars of salad greens in the spring and fall (arugula, butter, oak leaf, mizuna, watercress, mache, bibb and lolita rosa are just a few!)
- ▶ Include region of origin on plant labels, then when studying a country or region make recipes using appropriate produce from the garden. For example, create a bed of plants that originate in the Middle East (carrots, spinach, onions, melons) and then prepare produce in a style of that region.
- ▶ Hold a salad dressing competition where students are given basic ingredients (oil, lemon juice or vinegar, salt and pepper) and herbs from the garden to create their own signature salad dressings to serve with homegrown salad greens.
- ▶ Encourage children to interview their family members about ingredients in the garden they like to use in their own cooking and to provide a recipe or invite them to be “guest chefs” in the classroom.

Teach secondary students real job skills through a culinary arts class using produce and herbs from the garden.

SECONDARY SCHOOL ACTIVITY IDEAS

- ▶ Focus on one particular vegetable or herb and explore the botany of the plant and the history of its uses. Experiment with recipes that use part of the plant as an ingredient in different ways. For example, plant a variety of carrots (yellow, orange, pink, white and purple), identifying the life cycle of the plant and other plants that are related (i.e. dill, parsley, fennel, Queen Anne’s Lace); later make carrot salads, glazed carrots, carrot breads, carrot chips, etc.
- ▶ Invite chefs from local restaurants to demonstrate recipes using the produce in the garden or local produce.
- ▶ Empower older students as nutrition educators by teaching them to prepare nutritious snacks from the garden to share and serve to younger children in their own school or at a neighboring school.
- ▶ Teach secondary students real job skills through a culinary arts class using produce and herbs from the garden.
- ▶ As a seasonal or yearlong unit, create a school or community cookbook to document successful recipes from the garden using participants’ input, writing and art. Host a book release party in the garden to celebrate and share the cookbook with others.
- ▶ As a community service project, create a “Grow a Row” bed, where all of the produce grown is donated to local food pantries or food banks. For more information, go to <http://americagrowarow.com/>
- ▶ Students and families can work together with cafeteria staff to organize special events that focus on foods grown in the garden. For ideas, check out <http://dcfarmtoschool.org/> and their Strawberries to Salad Greens event.

★ SUCCESS STORY

Good Food a Community Organizer

LORING COMMUNITY SCHOOL | MINNEAPOLIS, MN

What began as a program to teach inner-city students about healthy cooking and gardening has blossomed into a community meeting place where students, staff and community members learn lessons about plant science and where healthy foods are woven into the school's language arts, science and math curricula.

Our students love roasted root vegetables such as beets and leeks. They have learned to season foods with fresh herbs and not to rely so heavily on salt.

"Math comes alive even when you are baking bread," said Starla Krause. Loring students plant the seeds and harvest many fruits and vegetables including strawberries, apples, rhubarb, corn, lettuce and broccoli. Teachers create lessons plans centered on reading recipes, composting, harvest timing and garden planning. Students also have a chance to move their bodies by planting, weeding, watering and harvesting the food.

The Kids Cook Classroom program, which is currently being piloted at the school with hopes for expansion, is based around the school garden and maintained with help from students, staff and community members. For Starla and Robin Krause, who grew up on a Kansas farm and now work in the food sciences field (Starla as a caterer and Robin as a food stylist), bringing their knowl-

edge and passion for fresh, healthy foods to their neighborhood school seemed like a natural progression. In 2003 they approached Loring Community Schools' Principal, Jane Thompson, and the afterschool program began.

According to Thompson, "Our students love roasted root vegetables such as beets and leeks. They have learned to season foods with fresh herbs and not to rely so heavily on salt. Students have had lessons about chickens which include a variety of live chickens. They learn about the preparation and nutritional value of eggs, and how to prepare a delicious roasted chicken dinner as a healthier alternative to frying."

The school garden has become more than an outside classroom; with help from students and staff, the school has played host to pancake breakfasts, volunteer luncheons and garden potluck dinners which often include music and a campfire. These events inspire community members to become more involved and engaged in the school and the neighborhood.



★ SUCCESS STORY

School-Community Partnerships Help Gardens Spring to Life

MORNINGSIDE ELEMENTARY SCHOOL | ATLANTA, GA

It began in the fall of 2007, when Morningside Elementary developed a pilot Farm to School program which encompasses garden related curriculum, nutrition education and provides for more freshly prepared and desirable foods to be served in the cafeteria. The school first started a garden program for their kindergarten students. The students worked in the garden and participated in a weekly garden-related lesson.

The intent of the garden curriculum is to supplement classroom teaching with an outdoor classroom where math, science and social studies can be studied in a real life environment.

Since that time, additional partnerships have been developed with various community organizations to enable Morningside to expand the program. The intent of the garden curriculum is to supplement classroom teaching with an outdoor classroom where math, science and social studies can be studied in a real life environment. The curriculum is also designed to support the wellness policy by teaching children about making healthy life choices for their bodies and the environment.



Key partnerships include the nutrition department at Georgia State University. Professors, undergraduate and graduate students are currently working to identify and apply for grants to support the school's programs. These students are also compiling garden related curriculum for each grade that will be tied to the Georgia Performance Standards and are helping to develop a strategic plan for evaluating the programs. They have also offered to help ensure that any changes made to the cafeteria menu will meet the minimum requirements of the USDA for the National School Lunch program.

Other partners include a local restaurant owner who is interested in helping to fund the garden project through dining events, an employee volunteer base and donations. Michael Thompson, a local gardener, is acting as a farm mentor, providing guidance and resources to help the school develop a successful garden.

★ SUCCESS STORY

Cultivating Healthy Eating Habits

SUNSET VIEW ELEMENTARY SCHOOL | SAN DIEGO, CA

The school garden at Sunset View Elementary School is cared for by all students at the school and used for class enrichment and snacks. This past fall, with funds from a 2008 PTA Healthy Lifestyles Award, the school PTA added fruit trees and berries to the vegetables and flowers already plotted, and celebrated with a Winter Harvest Festival. The festival brought all 20 classes into the garden to harvest fruits and vegetables and learn about growing food, organic gardening and making healthy choices. The classes then tried new foods and recipes.

"All students were excited to share and eat new tastes together," observed Carleen Berry, school site council chairperson. "The positive peer pressure to try new things was amazing. We received lots of good feedback from parents."

Further promoting healthy eating at the school is physical education teacher Corey Brucker. Brucker, known as Coach, praises students at snack time for bringing healthy foods. Students are very receptive to this positive reinforcement and parents have reported that their kids ask for healthier snacks that Coach will approve of. With a portion of the PTA Healthy Lifestyles Award funds, Sunset View PTA purchased a button maker so Coach could expand his encouragement of healthy choices by giving students buttons for their backpacks when he caught them being healthy. According to Berry, "It was fun to see how creative the students were in order to earn a button. The staff also commented on how they were also challenged to pack and eat healthier snacks. It proved to be a great program with full involvement."

RESOURCES FOR NUTRITION

Team Nutrition

teamnutrition.usda.gov/educators.html

This USDA initiative has printable resources for many age levels about connecting the garden with nutritional education. Printed copies can also be ordered online for free.

Food Fun from Apples to Zucchini

urbanext.illinois.edu/foodfun

The University of Illinois Urban Programs Resource Network hosts this site with lesson ideas and bilingual interactive games for kids (2nd grade and up) that explore vegetables, botany, worms and more.

The Links between Nutrition & Cognitive Development

www.eecom.net/mfsp/projects_school_links.pdf

This document by the Tufts University School of Nutrition Science and Policy is an important scientific resource to better understand the link between nutrition and cognitive development. Using this information, educators can relate the importance of healthy eating with improved performance in the classroom.

Nutrition to Grow On

www.cde.ca.gov/ls/nu/he/nrttogrow.asp

Nutrition to Grow On is an innovative curriculum developed by Dr. Sheri Zidenberg-Cherr and Jennifer Morris for grades 4 through 6 that provides teachers with a direct link between school gardens and nutritional education. In addition to nutrition education, this California standards-based curriculum also incorporates core curriculum standards (literacy, math, and science).

Nutrition in the Garden

<http://aggie-horticulture.tamu.edu/kindergarten/nutrition/index/>

This website provides quick, informative tips and academic articles related to nutrition and school garden programs. This website is ideal for educators looking for brief yet useful facts about eco-literacy.

RESOURCES FOR NUTRITION

Gardening Wizardry for Kids

By L. Patricia Kite

This is an activity guide that includes activities using fruits and vegetables (grown in a school garden or store-bought) to explore flavors, history, science and arts. These activities are appropriate for ages Pre-K to middle school.

Early Sprouts: Cultivate Healthy Food Choices in Young Children

By Dottie Bauer, Karrie Kalich and Deirdre McPartlin

A research-based early childhood curriculum, this seed-to-table approach encourages young children to eat more vegetables by planting, harvesting and preparing their own organically grown produce.

Nourishing Choices: Implementing Food Education in Classrooms, Cafeterias and Schoolyards

This is a guide from the National Gardening Association on creating a food education program at schools and promoting healthful choices.



3

physical activities

USING THE GARDEN IN SCHOOL, AFTER SCHOOL AND THROUGHOUT THE SUMMER

Anyone who has had to build and maintain a garden knows that it is a great physical activity that helps build endurance, flexibility and strength. Gardening regularly teaches students to enjoy and spend more time outside being active. Experts agree that 30-45 minutes of activity in the garden each day such as weeding, digging, pruning and mulching can provide fantastic health benefits. Children can build strength and endurance through digging, weight bearing (carrying tools and water) and weeding—all of which can burn up to 300 calories an hour. Consider using the garden as a part of a larger fitness regimen with students—it can be a “stop” on a circuit of other physical activities scheduled. Some activities to try are on the next page.

Increase flexibility for gardening chores by introducing and practicing classic yoga poses such as tree pose and sun salutations.

EARLY CHILDHOOD & ELEMENTARY SCHOOL ACTIVITY IDEAS

- ▶ Begin gardening classes with a garden-related warm-up to energize and focus the students: toe-touches and lunges to stretch the leg muscles used for weeding; arm stretches to prepare for carrying heavy watering cans.
- ▶ Teach young children the life cycles of plants and insects by acting out the various stages such as “Seed, Roots, Stem, Leaves, Flower” or “Egg, Caterpillar, Cocoon, Butterfly” and others.
- ▶ Play garden games – transform some old favorites like “Duck, Duck, Goose” into “Seed, Seed, Sprout,” Freeze Tag into Weed Tag (the child chosen as a “weed” has to run around to tag all of the flowers and turn them into weeds as well); these physical games will reinforce vocabulary and concepts through movement.
- ▶ Increase flexibility for gardening chores by introducing and practicing classic yoga poses such as tree pose and sun salutations.
- ▶ Make time regularly for watering the garden. Even if there is a watering system in place have participants use watering cans, carrying water to all parts of the garden.
- ▶ Practice fine motor skills with younger children by planting a variety of seeds and categorizing them according to color, shape, size, etc.
- ▶ Using the tools and elements of the garden, create a garden obstacle course or watering relays to add excitement to common garden chores.

Build compost areas and regularly mix piles of compost, creating opportunities to develop muscles and improve tool usage.

SECONDARY SCHOOL ACTIVITY IDEAS

- ▶ Make a commitment that youth gardeners will be involved with every aspect of garden maintenance including building the garden, annually adding compost to beds and mulching paths and beds.
- ▶ Build compost areas and regularly mix piles of compost, creating opportunities to develop muscles and improve tool usage.
- ▶ During colder seasons, start garden sessions with a warm-up exercise (i.e. jumping jacks, a race, a quick game requiring teamwork). These activities will warm students up and prepare them for outdoor physical work.
- ▶ Regularly take walks around your school’s neighborhood to document other nearby gardens or to take note of how gardens could help beautify the area.
- ▶ Take “meditation moments” where gardeners are required to sit in the garden together and participate in a short breathing exercise.

★ SUCCESS STORY

Moving, Shaking and Raking in a Pre-K Garden

CENTRONIA PRE-K INCENTIVE PROGRAM | WASHINGTON, D.C.

At the CentroNia Pre-K Incentive Program in Washington, D.C., a garden was created with the children and families during a 2005 Kaboom! Playground build day. The garden, which serves children from 3-5 years old, is open and within steps of the playground. When children are outside during recess or other outdoor activities, they are free to wander and explore the space at their leisure. The garden is designed with the children's size and interests in mind, with winding stepping stone pathways, raised beds with sense-stimulating herbs, and various "pick-able" plant species such as cosmos, cherry tomatoes, mint and beans. In this model, the garden is an extension of the playground, equating play time with physical activity and independent exploration.

Year-round workshops are held with the children and teachers, using the garden to understand concepts related to environmental education, healthy living skills, artistic expression and community outreach. To reinforce learning about life cycles and plant parts, the children "act out" the steps with their bodies. During a unit on growing indoor paperwhite bulbs and math, children demonstrate their knowledge by doing the "bulb dance"—swerving for the "bulb," stomping for the "roots," reaching high for the "leaves" and pantomiming the "flowers." Learning about butterflies includes stretching, rolling, curling and jumping to mimic the stages of egg, caterpillar, chrysalis and adult butterfly. To get young children especially active while learning new vocabulary words, games are played

at the end of classes such as Seed, Seed, Sprout!—a gardening version of Duck, Duck Goose. Parents get involved with the physical activity in the garden by participating in seasonal family volunteer days, when everyone works together to haul and spread compost and mulch, pull weeds, plant the beds and rotate the composting system. Additionally, family cooking nights are scheduled to harvest and prepare healthy recipes from the gardens.



RESOURCES FOR PHYSICAL ACTIVITY

National Gardening Exercise Day

ritecode.com/aerobicgardening/exerday.html

Information about a fun day you can celebrate with your students. This can be used as a celebratory event for the whole school community to get engaged with the garden.

Garden Fitness

gardenfitness.com

This site can be used by older students who want to create personal fitness plans using the garden. A six-week fitness plan is outlined and includes aerobic and flexibility activities.

Yoga Poses for Kids

anmolmehta.com/blog/2009/02/13/yoga-for-kids-children-yoga-poses/

Although this site features younger children in yoga poses, the information here can be used by students of any age. This site also includes information about creating lessons connected with yoga and guidelines for healthy and safe physical movement.



4

community and garden stewardship activities

USING THE GARDEN IN SCHOOL, AFTER SCHOOL
AND THROUGHOUT THE SUMMER

The garden is an excellent tool to teach children and youth about empowerment, community responsibility and how to connect positively with neighbors. Some activities to give students the power to share and explore their own roles in the community are on the next page.

Design a map of the garden with students to be laminated and displayed for visitors to explore.

EARLY CHILDHOOD & ELEMENTARY SCHOOL ACTIVITY IDEAS

- ▶ Create signs for the garden that tell more than the names of plants; signs can be inviting and inspiring as well, especially when children compose messages based on word play or poetry.
- ▶ Stepping stones can be decorated with stencils and paint in a variety of themes: welcoming words, names of plants, names of friends of the garden, insects, colors in the garden, letters of the alphabet, etc.
- ▶ Design a map of the garden with students to be laminated and displayed for visitors to explore.
- ▶ Plan events that celebrate the efforts put forth by everyone in the garden, such as volunteer picnics, harvest days and garden tea parties.

SECONDARY SCHOOL ACTIVITY IDEAS

- ▶ Create signs for the garden that tell more than the names of plants; signs can be inviting and inspiring as well, especially when children compose messages based on word play or poetry.
- ▶ Turn the garden into an outdoor gallery, displaying artwork made by participants or other students.
- ▶ Adopt a sister garden. Once students have developed their gardening skills, partner with a local nursing home, church or community center to landscape or build a new garden onsite.
- ▶ Create a workshop series for other students, families and neighbors, giving youth gardeners the opportunity to share their greening knowledge with others. Encourage participants to be creative with their workshop themes to develop unique experiences for all.

★ SUCCESS STORY

School-Community Partnerships Help Gardens Spring to Life

NEW SWEDEN CONSOLIDATED SCHOOL | NEW SWEDEN, ME

The Farm to School Project at the New Sweden Consolidated School began in the fall of 2005. Meetings with farmers, cooperative extension agricultural aides, school food service personnel and school administrators were held throughout the school year. Meetings succeeded in laying the groundwork to move forward with increasing foods purchased locally. Slowly, and when available, farmers would provide school food service personnel information about their crops and/or available products for purchase.

During the spring of 2006, in addition to local potatoes and beef, school food service personnel began adding other locally grown produce to the school meal menus. They also started discussing with farmers the possibility

As fall weather was moving in quickly, they planted a small apple orchard with the kindergarten students.

of starting a small apple orchard. In September 2007, a garden plot location for the community-school garden was designated and named “The Carrotsmatic Stock Plot.” As fall weather was moving in quickly, they planted a small apple orchard with the kindergarten students. These students and their families were designated caretakers to watch the trees grow as the students grow and learn with them.

SUCCESS STORY CONTINUED

That fall, the school also partnered with Cooperative Extension to utilize the Maine Apprentice Gardeners' Curriculum with New Sweden School's 3rd and 4th grades. The school health coordinator also printed the first edition of the school's Community Garden Project newsletter called "Get the Dirt," with the intent that the 5th and 6th graders will eventually become the writers and editors of the newsletter.

As winter closed in, a fundraising project was implemented for the Community School Garden called "Rolls for Rows." The goal was not only to raise money but also to educate students and families about the importance of eating quality whole grain products. The school's 1st and 2nd grade students have become the official photojournalists for the project, frequently taking pictures of the garden in order to document the growth and progress.



RESOURCES FOR COMMUNITY AND ARTS

American Community Gardening Association Tools

communitygarden.org/learn/tools.php

This site gives templates for organizing community members around common gardening goals such as how-to guides, samples of rules and ideas for evaluation.

Creating Deerfield High School's Outdoor Classroom

www.dist113media.org/dhs/Miscellaneous/APES_GRANT_VIDEO.wmv

This school-produced video shows how high school students in Deerfield, Illinois took the initiative to start their own garden classroom. Creating a video can be an excellent follow-up activity that involves the school and local community.

Sustainable Landscaping

<http://sustainable-landscaping.net>

This California-based community garden group runs an informative blog detailing their garden-related activities in the community. Their School and Community Garden Project filmed a short video depicting their construction of a school garden in one day.

House Logic: Start a Community Garden

www.houselogic.com/articles/start-a-community-garden-find-and-design-a-site

This homeowner resource guide provides a quick, straightforward guide to getting the community involved in building a community garden. Related links also provide guides to finding and developing garden sites, as well as how to build a rooftop garden.

How Does Our Garden Grow? A Guide to Community Garden Success

By Laura Berman

"The manual addresses various aspects of community organizing including fundraising, organizational structure, leadership, suggested rules and regulations for peaceful co-existence among gardeners, site acquisition and site selection, as well as site design, maintenance guidelines, tools and equipment, gardening with children and for people with disabilities." (Food Share Learning Centre Publications)



5

environmental education activities

USING THE GARDEN IN SCHOOL, AFTER SCHOOL AND THROUGHOUT THE SUMMER

No matter what size or style of educational garden one chooses to create, environmental education activities can take place. Because of an increased focus in schools on databased testing and technological education, many experts are predicting that current students are becoming “environmentally illiterate.” The good news is that increasing environmental literacy begins with stepping outside. Becoming aware of and observing the natural environment, whether urban or rural, large or small, begins to create context for many of the skills learned through language arts, mathematics and science. Additionally, the students can use their observations and gained knowledge to create solutions towards increasing biodiversity, reducing pollution and maintaining lifelong relationships with green spaces. Some activities are on the next page.



Collect and save seeds from the garden and start a seed bank. Distribute and use seeds the following season.

EARLY CHILDHOOD & ELEMENTARY SCHOOL ACTIVITY IDEAS

- ▶ Introduce the concept of biodiversity by planting several different native species in a space and documenting which insects and wildlife come to visit.
- ▶ Collect and save seeds from the garden and start a seed bank. Distribute and use seeds the following season.
- ▶ Keep a log of the animals that come and visit the garden such as birds, butterflies, beetles and beneficial insects. Each year, compare and contrast the number of sightings of specific species and research which plants attract the insects you wish to return frequently.
- ▶ Create a simple composting system and use it to explore decomposition. Students of all ages can categorize which species exist in the compost by using hand lenses and other magnification tools.
- ▶ Measure and conserve water by introducing rain gauges and rain barrels; in a particularly wet region or poorly draining garden you can design a rain bed with native species.

SECONDARY SCHOOL ACTIVITY IDEAS

- ▶ Learn about your area's watershed and investigate the route water takes from your neighborhood to larger bodies of water and then implement ways the garden can collect water and reduce pollution.
- ▶ Start a worm composting business. Maintain worm bins, collect and distribute casting for home garden usage.
- ▶ Conduct long-term experiments in the garden as forms of scientific exploration (i.e. testing various forms of organic and natural fertilizers on plants, recording data and analyzing findings).
- ▶ Hold challenges where participants must design functional garden structures to support and aid a plant's growth. Evaluate the success of the structures through the plant's life cycle.
- ▶ Based on techniques learned in the garden, design a new outdoor space that meets various criteria including the creation of natural habitats for local wildlife, the organic production of food, responsible water use and increased environmental awareness in visitors.



Start a worm composting business. Maintain worm bins, collect and distribute casting for home garden usage.

★ SUCCESS STORY

Growing Food, Inside and Out

COOK-WISSAHICKON ELEMENTARY SCHOOL
PHILADELPHIA, PA

At Cook-Wissahickon, wellness and sustainability go hand in hand! The school wellness council and the sustainability council have teamed up to turn the school into an eco-friendly garden oasis, both indoors and out. The project started when science teacher Abby Pelcyger attended a few trainings with the local horticulture society and learned of a grant opportunity to help them build indoor gardens.

They received the grant and have built three large indoor gardens where students are now growing romaine and green leaf lettuce, sweet potatoes and more. They are now working on their outside gardens. They have two large boxes filled with flowers and garlic. The kindergarten classes are working on growing trees using expired seeds donated by Home Depot.

The school sent a letter to residents in the neighborhood surrounding the school to let people know they were planning on making some changes outdoors, including replacing asphalt with gardens. To their surprise, several community members stepped up to lend a hand.

Pelcyger said that once the initiative started and people started hearing about it, it “started a snowball.” They received additional donations from neighbors such as a hose and a wheel barrel. Another neighbor is a landscape architect who has volunteered time to the effort.



RESOURCES FOR ENVIRONMENTAL EDUCATION

The Adventures of Herman

urbanext.illinois.edu/worms/

As part of the Urban Programs Resource Network this website about Herman, a worm, is an interactive educational tool for teaching elementary age children about worms and composting.

Nature's Partners—a Pollinator Curriculum

kidsgardening.org/pollinator/curriculum/intro.php

This curriculum is an excellent educational unit for students in grades 3-6 who are learning about species of pollinators and wish to identify and create pollinator-friendly habitats.

The Growing Classroom

By the Life Lab Science Program

This award-winning second edition has been revised to meet current science standards. A wonderful collection of classic garden activities, *The Growing Classroom* is a teacher's manual featuring step-by-step instructions and strategies for setting up a garden-based science program and outdoor classroom activities.



6

core curriculum* activities

USING THE GARDEN IN SCHOOL, AFTER SCHOOL AND THROUGHOUT THE SUMMER

Educational gardens are excellent learning labs that provide context for many of the national standards for language arts, reading, mathematics, social studies and science. Students can apply and showcase many of the skills that they master in class through hands-on projects outside in the garden. Teachers often find that students who may not be able to demonstrate their knowledge on paper are able to excel in the experiential learning when asked to transform concrete materials into something new using math and science skills. The gardens can use social studies to make connections with family and local histories that are not often recounted in textbooks. There is a large and growing amount of fiction and non-fiction garden-related literature for all levels that can be used to lead into lessons or give students research tools to expand upon discoveries in the garden. Some ideas are on the next page.

* Literacy, Science, Math, Social Studies



Inspire youth to creatively express their impressions of the garden.

EARLY CHILDHOOD & ELEMENTARY SCHOOL ACTIVITY IDEAS

- ▶ Younger children can learn how to use measuring tools such as rulers, scales and measuring vessels by recording the heights, sizes and weights of plants, seeds and soil.
- ▶ Apply measurement and ratio skills to the garden by using the square-foot gardening method to plant vegetables and herbs.
- ▶ Inspire youth to creatively express their impressions of the garden using different poetic language conventions such as alliteration, metaphors and similes. Publish the poems in a garden publication or perform them for families and community in the garden space itself.
- ▶ Collect garden-related picture and chapter books for children to respond to through read-alouds and to use as a resource for investigating the answers to more complicated questions.

SECONDARY SCHOOL ACTIVITY IDEAS

- ▶ Study gardening styles and techniques throughout history and implement aspects into the youth garden (i.e. as a component of U.S. history studies, research Victory Gardens and implement some techniques into a garden bed).
- ▶ Create and maintain a gardening blog where participants can post writing and photographs recording their experiences, achievements, recipes, etc.
- ▶ Research modern food policy and create a report about food accessibility in your neighborhood and what roles school, community and home gardens can play in improving your communities.



Create and maintain a gardening blog where participants can post writing and photographs recording their experiences, achievements, recipes, etc.

★ SUCCESS STORY

Getting into the Garden Business

GARRISON PUBLIC MIDDLE SCHOOL | BALTIMORE, MD

In 2006 a private/public middle school partnership was created between Garrison Public Middle School and Roland Park Country Day School to co-host a summer program for pre-teen girls attending both schools. It was planned that workshops and activities would take place at Roland Park and that a garden would be built and maintained at Garrison MS. The garden was built with help from several Master Gardeners, teachers and families and proved to be a successful summer project. However, it soon became clear that the garden also needed a school-year program. In response, an afterschool garden club was created and became not only a way to ensure the plot's maintenance, but also provided an opportunity to further support in-school learning.

Students researched the herbs they were growing including historic and cultural connections.

That fall, garden coordinator Rebecca Lemos introduced a project to the garden club that was designed to integrate core curricular standards with real-life garden-based learning. Lemos challenged participants to create a collaborative business, later named Nature's Beauty, that made products using herbs from the garden to be sold in school and at local farmer's markets. Students researched the herbs they were growing including historic and cultural connections. Herbs were then harvested and

dried in the classroom, renamed the Garden Studio. Students were given a small loan to cover start-up expenses and had to work in groups to calculate the cost of materials, product unit prices and estimated profits. A task list and calendar were constructed as students used lavender, rosemary, chamomile and lemon verbena to make herb-infused products including soaps, lotion bars and salt scrubs.



Besides making their products, students researched branding by visiting local farmers markets and looking at examples to analyze packaging and advertising. After completing this research, custom labels and flyers were designed. On the day of the sale, the students managed their table with little assistance, engaged potential buyers, maintained the presentation of their table and conducted the financial exchanges. The sale was a huge success and they almost sold out of the products. Profits from the sales were divided and used to pay back the original loan, contribute towards the maintenance of the garden, purchase materials to build a garden bench as a legacy project and pay for a celebration. The project engaged students and required that they use math, science, research and literacy skills. Students also participated in project-based learning that required high levels of teamwork, time management and professional etiquette. Since its inception, the project has continued to develop, becoming one of the focal points of the program's garden curriculum.

RESOURCES FOR CORE CURRICULUM

Square Foot Gardening

squarefootgardening.com

This is Mel Bartolemew's site on the technique of square foot gardening to maximize planting in smaller spaces using math.

Math in the Garden

Published by University of California Botanical Garden and Lawrence Hall of Science in Berkeley, California, this is a curricular resource that includes lessons which ties National Mathematic Standards to activities in the garden for grades pre-K through seven.

Victory Gardens: Handbook of the Victory Garden Committee War Services, Pennsylvania State Council of Defense

earthlypursuits.com/VictoryGardHandbook/VGHtitle.htm
This historical school garden guide was published in 1944, and could be used to identify history standards for middle school and high school. Students could use this document to identify the history of school gardens and their importance during times of war.

Princeton School Gardens: Garden Planning & Lesson Plans

www.prs.k12.nj.us/GardenCoop/GardenCoopGuideNov07.pdf
This document provides some great resources about how to start your own school garden as well as lesson plans and activities tied directly to core curriculum standards (linked to the New Jersey State Standards for K-5). The index for curricular standards could easily be adapted for use with other states' standards.

Green Teacher Magazine

greenteacher.com

Green Teacher is a non-profit organization that publishes resources to help educators promote eco-literacy in children and young adults. Teacher guides targeting elementary, middle and high school standards and curricula are available for order on their website.

ACKNOWLEDGEMENTS

City Blossoms

City Blossoms is a non-profit organization working out of the Washington, D.C. and Baltimore area to create urban gardening experiences and enrich the lives of children and their communities. City Blossoms began nine years ago as a volunteer project and has since evolved into a year-round program that includes consulting, curriculum development (with consideration for learning standards), and regular on-site workshops. To date, City Blossoms has worked with over 1,000 children and youth in various gardening projects.

City Blossoms has designed a unique method of developing and managing robust green spaces where children and youth are engaged as the main cultivators. The instructors offer consulting for schools and community organizations who want to start or maintain educational gardens as well as leading workshops with children and youth year-round. Workshops use an art-based, hands-on approach that emphasizes the strengths and unique qualities of each learning center. All City Blossoms projects are organic and designed to work with the local environment and community needs. Currently, City Blossoms is completing bilingual curricula for Early Childhood, Elementary and Afterschool programs to be used with educational gardens across the nation.

cityblossoms.org



Working to eliminate childhood obesity and inspire all young people in the United States to develop lifelong, healthy habits.

Founded in 2005 by the American Heart Association and William J. Clinton Foundation, the Alliance for a Healthier Generation is leading the charge against the childhood obesity epidemic by engaging directly with industry leaders, educators, parents, healthcare professionals and—most importantly—kids. The goal of the Alliance is to reduce the nationwide prevalence of childhood obesity by 2015 and to inspire young people to develop lifelong, healthy habits.

Generous support
provided by



Robert Wood Johnson Foundation
Supporting healthy schools nationwide

Founded by

