

HUDSON valley Farm TO SCHOOL

School Garden Toolkit

By Sandy McKelvey



Introduction

In the school garden, kids take center stage. They engage hands-on in the science and excitement of planting, caring for, and harvesting food directly from the earth. With so many children disconnected from their food sources today, a school garden gives them the opportunity to see the whole picture of how food is produced from seed to plate. School gardens offer opportunities to make learning fun and provide physical activity while also serving as an important educational tool to help students understand how healthful food is produced.

A school garden is an outdoor living laboratory that can enrich classroom lessons in science, math, language arts, social studies, and the fine arts. Many schools that have gardens are incorporating garden based lessons into their common core curriculum. Go to the Resources section of this guide to find links to full garden curriculum publications and lesson plans connected to common core standards.

If your school is interested in starting a school garden program and needs some assistance, Hudson Valley Farm to School can provide expert advice and assist in the planning, coordination, and fundraising for the construction of edible gardens in your school district culminating in a school-wide assembly and garden ribbon-cutting ceremony. We can also provide educational resources and technical assistance to help you build a sustainable garden-based learning curriculum for your school. Email Sandy McKelvey: sandy@hvfs.org for more information.

Benefits of a School Garden

- Connects kids to the food system and increases their understanding of plant life cycles and the food web.
- Increases kids' consumption of fresh fruits and vegetables¹
- Increases academic achievement²
- Fosters environmental awareness and stewardship³
- Builds community by encouraging families to participate after school, on weekends, and care for the garden in the summer.⁴

¹ "Children who grow their own food are more likely to eat fresh fruits and vegetables or express a preference for these foods. Garden programs often include lessons on nutrition, resulting in greater knowledge about healthy eating." From: *Benefits of Gardening for Children Fact Sheet* – a study conducted by Children, Youth, and Environments Center for Research and Design at the U. of Colorado at Denver and Health Sciences Center

² Fifth grade students who participated in school gardening activities scored significantly higher on science achievement tests than students who had a curriculum without garden experiences. Evaluations of the Junior Master Gardener program in Indiana and Louisiana also found greater science achievement gains among gardening students compared to control groups. From: *Benefits of Gardening for Children Fact Sheet*.

³ In a qualitative assessment of an intergenerational gardening project, students expressed an increased understanding of ecology, interconnections in nature, and responsibility to care for the environment. From: *Benefits of Gardening for Children Fact Sheet*.

⁴ Multicultural school gardens programs for recent immigrants provided a space where children could share their cultural heritages, feel a sense of belonging, and form connections to the local environment. From: *Benefits of Gardening for Children Fact Sheet*.

Examples of Garden Activities in Different Subject Areas

Math:

- Create a garden plan and construct raised beds: Measurement skills, and mapping skills.
- Measure seeds, stems, and flowers using inches and centimeters.
- Measure and graph growth rate of different plants.
- Calculate area and volume of soil in raised beds.
- Use square foot gardening to introduce the concept of the coordinate plane

Science:

- Using the 5 Senses
- Identifying Living/ Non-living
- Flower Dissection: Identifying reproductive plant parts
- Seed dispersal
- What is a bulb?
- Observe and hypothesize the function of different plant structures.
- Test the pH of different soils.
- Hydroponics
- Record temperature and rainfall.
- Solar energy and photosynthesis
- Erosion and the water cycle
- The four seasons: Observing changes in the garden

Language Arts

- Garden-inspired poetry and creative writing
- Make garden journals for recording observations
- Learn names of plants in Latin and other languages.
- Reading in the garden: Fiction and non-fiction related to the garden and the natural world
- Make connections with Greek mythology, world folktales and fairytales to the natural world

Health and Nutrition

- Explore edible plant parts and their nutritional value.
- Do taste tests of garden produce. Make simple recipes from plants harvested in the garden.
- Learn about the food web and how food gets to your plate.

History/Social Studies

- Learn about the significance of the Native American “Three Sisters” garden, the African American Freedom Garden and the Colonial Garden.
- Study the importance of specific plants in different cultures and countries around the world.
- Explore the cultural and ethnic differences in food consumption and gardening practices.
- Geography: Where do plants originate and how do they travel from one region to another?

Art

- Learn about and create natural dyes from different plants in the garden.
- Sketch and create drawings and paintings of plants in the garden.
- Make natural pigments and stamps from plant parts.
- Create pictures with dried seeds, leaves and flowers.

Building Your School Garden



Building a school garden can be as simple as buying a few raised bed kits for a few hundred dollars at a local garden center or as elaborate as hiring a professional garden company and spending thousands of dollars for a commercially-installed, ready to plant garden. Whatever you do, you need to start with a plan and a vision.⁵

⁵ The New Jersey Farm to School Network has a great resource called, "Checklist for Starting a School Garden." <http://www.njfarmtoschool.org/wp-content/uploads/2011/08/school%20garden%20checklist-1.pdf>

- Plan the location of the garden.
 - The ideal location should receive 6-8 hours of sunlight.
 - Make sure there are water sources available nearby.
 - Consider close proximity to buildings for easy student access. Too long of a walk to the garden may deter some teachers from utilizing it in their lessons.
 - Find a location that has enough space available to expand in future years. A small garden is a good way to start. It can be enlarged over time.
 - Test the soil before planting. You can send soil samples to Cornell University to receive a soil health assessment.
 - Use raised beds for growing vegetables to ensure the soil is free of toxins such as lead and arsenic.

- Determine who will be using the garden.
 - Elementary School
 - High School
 - After school enrichment programs
 - Summer programs
 - Cafeteria

- Determine whether the garden will be used primarily for teaching or if it will be a production garden for the cafeteria. A teaching garden is a great way to begin.
- Decide who will be in charge of maintaining the garden. It may be a teacher, librarian or school nurse, or you may want to create a school garden committee with parent volunteers maintaining it throughout the year. Who will care for it in the summer?
- Decide what funds will be used to pay for the garden. There are a number of garden grants you can apply for. (See resources.) The PTA may have funds or be interested in fundraising for it.

Key Stakeholders:

- Principal or Asst. Principal – non negotiable. His or her commitment to the garden is essential to authorize use of space and ensure teacher involvement.
- Teachers – a few committed, dedicated teachers are important to jump start the new garden, making sure students will go out there and encouraging other teachers and students to use it as well.
- The Coordinator – non negotiable. This may be a teacher or a parent who will deal with the life and death issues of the garden, making sure it is maintained throughout the year. Must be someone with garden or horticultural experience.
- Students– Younger students are assumed. Older students can be a valuable source of labor and mentorship. They also may want to start a garden club.
- Parents – Can be a valuable resource particularly in the summer when the garden requires the most maintenance. Parents may have carpentry skills and help build the garden beds. They can also work along side the teachers as “garden parents.”
- Community Volunteers – The Cornell Cooperative Extension, local garden clubs, and Master Gardeners can lend their expertise in planning where to place the garden, testing the soil, deciding what to grow and assist in building and maintaining the garden. They can conduct trainings for teachers and offer staff development workshops on how to incorporate garden-based learning into the curriculum.

- Food service director – If you intend to use some of the produce in the garden to serve to student in the cafeteria, the food service director must be involved to ensure proper handling for food safety. They can also help determine what to plant based on their meal planning in the cafeteria.

Getting Your Garden Growing

Once you have your plan and your materials to build your garden, set up a weekend Community Day to build the beds. Send notices home to parents, send PTA email blasts, and advertise in the local newspapers. Hang up posters around the town, in the library, the supermarkets and local restaurants. Turn it into a fun event with a family picnic and music to follow the hard work.

Basic supplies you will need

- Shovels
- Rakes
- Gloves
- Hand trowels
- Materials to build container gardens or raised beds
- Wooden/bamboo stakes and/or trellises
- Soil, free of toxins and pathogens
- Soil amendments: compost, cow manure, mulch, straw
- Watering cans, hoses, irrigation supplies
- Seeds, vegetable starts, fruit trees and bushes

Fun Garden Plans

- Butterfly and hummingbird garden
- Perennial flowers and plants bed
- Native habitat bed
- Useful plants bed
- Three Sisters bed
- African American Freedom bed
- Colonial bed
- Natural dye bed
- Tropical plants bed
- Herb garden
- Grains of the world Bed
- Salad bed
- Pizza bed
- International bed
- Edible landscaping with berry bushes and fruit trees

Garden Costs and Fundraising

- Calculate the costs for building raised beds and buying or building a tool shed. Purchasing tools, soil, amendments, and seeds.
- Set up a fundraiser: PTA apple sale, farm to table dinner, raffle
- Ask local garden shops and hardware stores for in-kind donations of materials.
- Look for available school garden grants:
 - NY Ag. in the Classroom grants: http://www.agclassroom.org/ny/programs/kids_growing.htm
 - Kids Gardening grants: <http://www.kidsgardening.org>
 - Whole Kids grants: <https://www.wholekidsfoundation.org/schools/programs/school-garden-grant-program>

Garden to Cafeteria

Before starting a Garden to Cafeteria program, it is important to check with your health department to learn about local policies regarding the use of school garden produce in school meals. There are potential food safety risks from fruits and vegetables grown in school gardens. Contaminated soils, roof run-off, improper hygiene during harvest, and improper handling and preparation of raw produce in the cafeteria, can result in food-borne illnesses. Ensure that appropriate precautions are taken so food can be safely served to students both in the cafeteria and in the classroom. (See Resources for USDA's Food Safety Tips for School Gardens)⁶

⁶ For more information on food safety for Garden to Cafeteria programs, see Life Lab's webpage: <http://www.lifelab.org/for-educators/gene/garden-to-cafeteria/#Policy>

School Gardens Resources:

Benefits of Gardening for Children

http://www.peecworks.org/PEEC/PEEC_Reports/01795CA8-001D0211.32/CYE_FactSheet3_Benefits%20of%20Gardening%20for%20Children_August%202020.pdf

School Garden grants

http://www.agclassroom.org/ny/programs/kids_growing.htm, <http://www.kidsgardening.org>

Growing Haldane Garden Curriculum

<http://www.growinghaldane.com/resources.html#>

FoodCorps <https://foodcorps.org/about>

Starting and Maintaining a School Garden – 2 page brochure

http://www.farmtoschool.org/files/publications_471.pdf

Start a School Garden: Here's How

<http://blogs.usda.gov/2013/08/13/start-a-school-garden-heres-how/>

Checklist for Starting a School Garden

<http://www.suppersforsobriety.org/Documents/Garden/SchoolGardenChecklist.pdf>

<http://www.njfarmtoschool.org/wp-content/uploads/2011/08/school%20garden%20checklist-1.pdf>

School Garden Wizard

<http://www.schoolgardenwizard.org>

School Garden Resources from the USDA

<http://healthymeals.nal.usda.gov/resource-library/school-and-preschool-gardens/school-garden-resources>

USDA Gardening Lesson Plans: Dig In

http://teamnutrition.usda.gov/Resources/dig_in.html#teachersguide

The Great Garden Detective

<http://teamnutrition.usda.gov/Resources/gardendetective.html>

The Bonnie Plants Cabbage Program for 3rd grade

<http://bonniecabbageprogram.com>

Edweb: Growing School Gardens, register:

<http://www.edweb.net/schoolgardens>

Welcome to Growing School Gardens Website

<http://www.edweb.net/Communities/Growing%20School%20Gardens/>

Garden Planning and Lesson Plans from Princeton School Gardens

<http://www.edweb.net/.59c65364>

Book Titles related to Veggies and Gardening

<http://www.greenmountainfarmtoschool.org/wp/wp-content/uploads/Gardening-Nutrition-Story-Books.pdf>

Origami Seed Packet instructions:

<http://www.petpitcher.com/wp-content/uploads/2010/01/folded-env-seed-pack1.gif>

Garden ABC's: Monthly Garden Activities

<http://www.gardenabcs.com/October.html>

Kids Gardening: Lesson and Activity Ideas

<http://www.kidsgardening.org/lesson-and-activity-ideas>

Kids Gardening: Classroom Projects

<http://www.kidsgardening.org/classroom-projects>

Growing Minds Farm to School Lesson Plans

<http://growing-minds.org/lesson-plans/>

Growing Minds Farm to School: Children's Literature

<http://growing-minds.org/childrens-literature/>

Growing Minds Farm to School: Teachers Resources

<http://growing-minds.org/teaching-resources/>

Lesson Plans aligned with the Common Core

<http://www.lifelab.org/2013/12/content-standards/>

USDA Food Safety Tips for School Gardens

<http://nfsmi.org/documentlibraryfiles/PDF/20110822025700.pdf>

USDA Gardening Lesson Plans: Dig In

http://teamnutrition.usda.gov/Resources/dig_in.html#teachersguide

The Great Garden Detective

<http://teamnutrition.usda.gov/Resources/gardendetector.html>

Garden to Cafeteria

<http://www.lifelab.org/for-educators/gene/garden-to-cafeteria/>

Granny's Garden School

<http://www.grannysgardenschool.org/01-100-1-about-us-overview.html>

Princeton School Gardens

<http://www.psgcoop.org>

A growing Relationship Curriculum Guide

<http://www.greenmountainfarmtoschool.org/wp/wp-content/uploads/Gardening-Nutrition-Story-Books.pdf>

Ag. and Garden Lesson Plans

<http://www.agclassroom.org/teacher/matrix/>

Island Grown Farm to School Garden Curriculum

<http://www.islandgrowschools.org/curriculum-toolkit>

Groundworks Center

<http://farmtoschool.tbaisd.org/lesson-plans/>

Edible Schoolyard Curriculum Resources

<http://edibleschoolyard.org/resources-tools>

Edible Schoolyard NYC Curriculum

<https://www.edibleschoolyardnyc.org/educators/curriculum/>