

Utilizing the School Garden

Benefits & ideas for incorporating horticulture into the lives of youth

I ILLINOIS EXTENSION
COLLEGE OF AGRICULTURAL, CONSUMER & ENVIRONMENTAL SCIENCES

Dear Educators and Administrators,

School gardens offer so much more than beautifying school grounds. Research shows that school garden programs offer students hands-on, experiential learning, benefiting youth and their communities in many different ways: academics, social and emotional health, healthy lifestyles and nutrition, and environmental stewardship.

Please use this guide to be inspired to incorporate nature and the garden into your classroom curriculum.

Imagine: students digging into soil to explore its make-up instead of looking at pictures, making firsthand observations on the act of pollination or the life cycle of plants, or simply taking inspiration from the garden while writing an essay or painting a picture.

School gardens can be an asset to every learner and teacher, Pre-K through grade 12. School curriculum can be connected to the garden through math, science, language arts, health, fine arts, social studies, music, and physical education.

If your school is interested in starting a school garden, reviving a current one, or connecting the curriculum to the garden, please contact me!

Sincerely,

Brittnay Haag

Horticulture Educator, University of Illinois Extension
Serving Livingston, McLean & Woodford Counties





Table of Contents

Benefits of School Gardens

- Academic Achievement
- Social & Emotional Health
- Healthy Lifestyle & Nutrition
- Environmental Stewardship & Connection with Nature

Using the Garden in the Classroom (by subject area)

Garden-Based Curriculum Resources

University of Illinois Extension Resources & Contact Information



Academic Achievement

Students gain practical, hands-on learning opportunities through gardening activities incorporated in a wide variety of disciplines, including science, social studies, math, language arts, fine arts, and nutrition.

Students that participated in school gardening activities scored significantly higher on fifth-grade standardized science tests compared to the students who had no garden activities incorporated into the curriculum. (Klemmer, et al. 2005)

Social & Emotional Health

Experimenting in the garden can offer students a place to experience delayed gratification, independence, and motivation to succeed.

In a study conducted on the effects of a school garden program offered to third, fourth, and fifth-grade students in Texas, the students increased their overall life skills (teamwork, self-understanding, leadership, decision-making skills, communication skills, and volunteerism) after one year in the program. (Robinson & Zajicek, 2005)





Healthy Lifestyle & Nutrition

By growing fruits and vegetables, children's food attitudes and habits can change positively. They are more likely to eat vegetables they have grown themselves and share those preferences with others. While weeding, digging, and doing other manual labor projects in the school garden, students are getting exercise while learning a useful skill.

(Morris & Zidenberg-Cherr 2002)

Environmental Stewardship & Connection with Nature

Building a connection with nature and promoting environmental stewardship in youth is crucial for the future of our world.

Through garden curriculum, students had an increased understanding of ecology, interconnectedness with nature, and responsibility to care for the environment. (Mayer-Smith, Bartosh, & Peterat, 2007) These hands-on activities gave the students an opportunity to actively learn and experiment.





Using the Garden in the Classroom

Math

- Analyze and describe shapes of plants, leaves, and produce.
- Measure plants and produce (with standard or non-standard tools).
- Cut up a vegetable to practice fraction.
- Use various seeds for addition and subtraction.
- Race beans up a trellis. Plant beans at the base of a trellis and track their growth on a chart.
- Predict dates of germination and maturity by using information from seed sources.
- Determine when each crop should be planted by counting backwards from the harvest date.
- Measure the garden perimeter and calculate the area.
- Create a map of the garden to scale using graph paper.

Social Studies

- Plant a Three Sisters Native American garden.
- Research the history of a garden plant.
- Draw a garden map to scale.
- Study all the ways people use different plants.

Language Arts

- Read books and stories about plants and gardens.
- Write and illustrate a collection of garden stories and poems.
- Use the garden as a space to journal.
- Brainstorm different adjectives to describe each plant in your garden.
- Study new vocabulary that relates to plants and gardens.
- Write step-by-step instructions for common garden activities
- Follow written instructions to perform a garden task like planting seeds.
- Write a research paper on a favorite plant.
- Learn about the origins of scientific plant names.
- Act out a story in the garden (Check out the Junior Master Gardener Program & American Horticultural Society lists of plant, garden and ecology fiction books for children.
- Design your own story garden.
- Design a garden around the theme of a book.
- Relax and read in the garden!



Science

- Answer questions about the garden by investigating with their senses, reasoning, and communication skills.
- Key science concepts by exploring the gardens
 - organisms
 - cycles
 - requirements for life
 - plant and insect anatomy
 - adaptations
 - food webs
 - soil structure & decomposition
 - interdependence
 - pollination
 - weather and climate monitoring
 - biodiversity
- Practice experimental design skills by observing, classifying, concluding, measuring, predicting, organizing and interpreting data, forming hypotheses, and identifying variables.

Art

- Create paintings and drawings of garden plants.
- Create dyes and water colors from plants and flowers.
- Make a seed mosaic.
- Create a color wheel collage using nature items or pictures from old seed catalogs.
- Stamp with various plant parts.
- Use leaves to make crayon rubbings or fossils in clay.

Health & Nutrition

- Study the nutritional value of the crops in your garden.
- Identify the parts of the plant with common fruits and vegetables.
- Taste test different fruits and vegetables.
- Grow a salad garden and give students a chance to sample the harvest.

Your garden, no matter the size, is an outdoor classroom waiting to be explored.

Garden-Based Curriculum Resources

Cornell Garden-Based Learning (Grades: 2-8)

<https://gardening.cals.cornell.edu/lessons/activities>

- Short, stand-alone lessons and activities, plus curricula designed to be taught in multiple sessions.
- All are adaptable and vary in length.

Growing Gardens (Grades: K-5)

<https://www.growing-gardens.org/wp-content/uploads/2013/03/Growing-Gardens-Youth-Grow-Lesson-Plan-Manual-Jan-2016.pdf>

- In-depth information on how to engage with students in the garden.
- Eight lesson plans, varying in length.
- Intro to the garden, parts of the plant, seed & seed dispersal, flowers & pollinators, bugs & insects, soil & compost, wondrous worms, garden celebration.

Kids Gardening (Grades: PreK-12)

<https://kidsgardening.org/lesson-plans>

- Lesson plans that utilize the garden as an outdoor classroom.
 - Nutrition, pollinators & wildlife, soils & environment, plant science, and arts & culture.

Life Lab (Grades: K-4)

<https://www.lifelab.org/store/free-downloads>

- Science exploration units with 6 lessons each:
 - Pondering Plants Science Exploration Unit – 1st Grade
 - Soil Stories Science Exploration Unit – 2nd Grade
 - Garden Pollinators Science Exploration Unit – 3rd Grade
 - Garden Habitats Science Exploration Unit – 4th Grade

School Garden Project (Grades: 1-8)

<https://www.schoolgardenproject.org/resources/curriculum>

- Science in the Garden: 10 lessons (grades 2-5)
 - Plant parts and functions, garden habitat, and soil composition.
- STEM in the garden: a series of subjects (grades 1-8)
 - Soil
 - Plant parts

University Of Georgia Extension (Grades: K-8)

<https://extension.uga.edu/programs-services/school-garden-resources/curriculum.html>

- Lessons in multiple subject areas, arranged by grade level:
 - Earth science, life science, physical science, English and Language Arts, math, social studies.
- Includes a bilingual Spanish-English/English-Spanish garden dictionary for elementary students.

Whole Kids Foundation And American Heart Association (Grades: PreK-5)

http://www.heart.org/idc/groups/heart-public/@wcm/@fc/documents/downloadable/ucm_478049.pdf

- Indoor and outdoor lesson plans with description, background, materials, preparation, activity
 - gardening and botany, nutrition, consumer education, and agriculture.

Books

Books in Bloom: Discovering the Plant Biology in Great Children's Literature

Botany on Your Plate: Investigate the Plants We Eat

GrowLab®: A Complete Guide to Gardening in the Classroom

Junior Master Gardener Program

JMG Learn, Grow, Eat & Go

JMG Level 1 – Teacher Guide and Student Handbook

JMG Golden Ray Series – Wildlife Gardener

JMG Golden Ray Series – Literature in the Garden

JMG Health & Nutrition from the Garden

JMG Level 2 – Operation Thistle (Middle School)

JMG Level 2 – Operation Water (Middle School)

Math in the Garden: Hands-on Activities that Bring Math to Life

The Growing Classroom: Garden-Based Science & Nutrition Activity Guide

**URLs of sites, and garden curricula not affiliated with University of Illinois Extension are provided as a sampling solely for the convenience of our clients. Reference to specific external websites, companies, or trade names does not imply endorsement by University of Illinois Extension, nor is discrimination intended against any that are not listed.*

***Their minds were not made to sit and be taught.
They were built to explore, play, and learn.***

-How Wee Learn

University of Illinois Extension Resources



4-H Youth Development

Contact the office to learn more about the services and resources provided on positive youth development, poverty simulations, 4-H after school clubs, and more!

Family and Consumer Sciences

Contact the office to learn more about the services and resources provided for content areas such as nutrition and wellness, financial literacy, budgeting, college scholarships, and more!

SNAP-Education

Contact the office to learn more about the services and resources provided through the Illinois Nutrition Education Programs, which provides nutrition education to individuals and families in communities around the State of Illinois.

STEAM in the Classroom

Contact the office to learn more about the services and resources provided to educate youth on concepts within Science, Technology, Engineering, Art and Agriculture, and Math. Check out the Resource Catalog with educational kits and supplies available to educators in Livingston, McLean & Woodford Counties at go.illinois.edu/LMW_STEAM.

Unit Collaboration

Collaboration is the key to success. We want you, as an educator, and our community's youth to succeed. If you have an idea but need resources to make it possible, or if you are stumped and need help coming up with a kit, lesson plan or extensive unit, reach out to us. Our team will develop a resource that supports your learning objectives. We, at the University of Illinois Extension are here to help.

Visit our website at go.illinois.edu/LMW

Livingston County

1412 S. Locust Street
Pontiac, IL 61764
Phone: 815-842-1776
Hours: Monday-Friday
8 a.m. to 4:30 p.m.
(Closed Noon-1 p.m.)

McLean County

1615 Commerce Parkway
Bloomington, IL 61704
Phone: 309-663-8306
Hours: Monday-Friday
8 a.m. to 4:30 p.m.
(Closed 11:30 a.m.- 12:30 p.m.)

Woodford County

109 E. Eureka Avenue
Eureka, IL 61530
Phone: 309-467-3789
Hours: Monday-Friday
8 a.m. to 4:30 p.m.
(Closed Noon-1 p.m.)

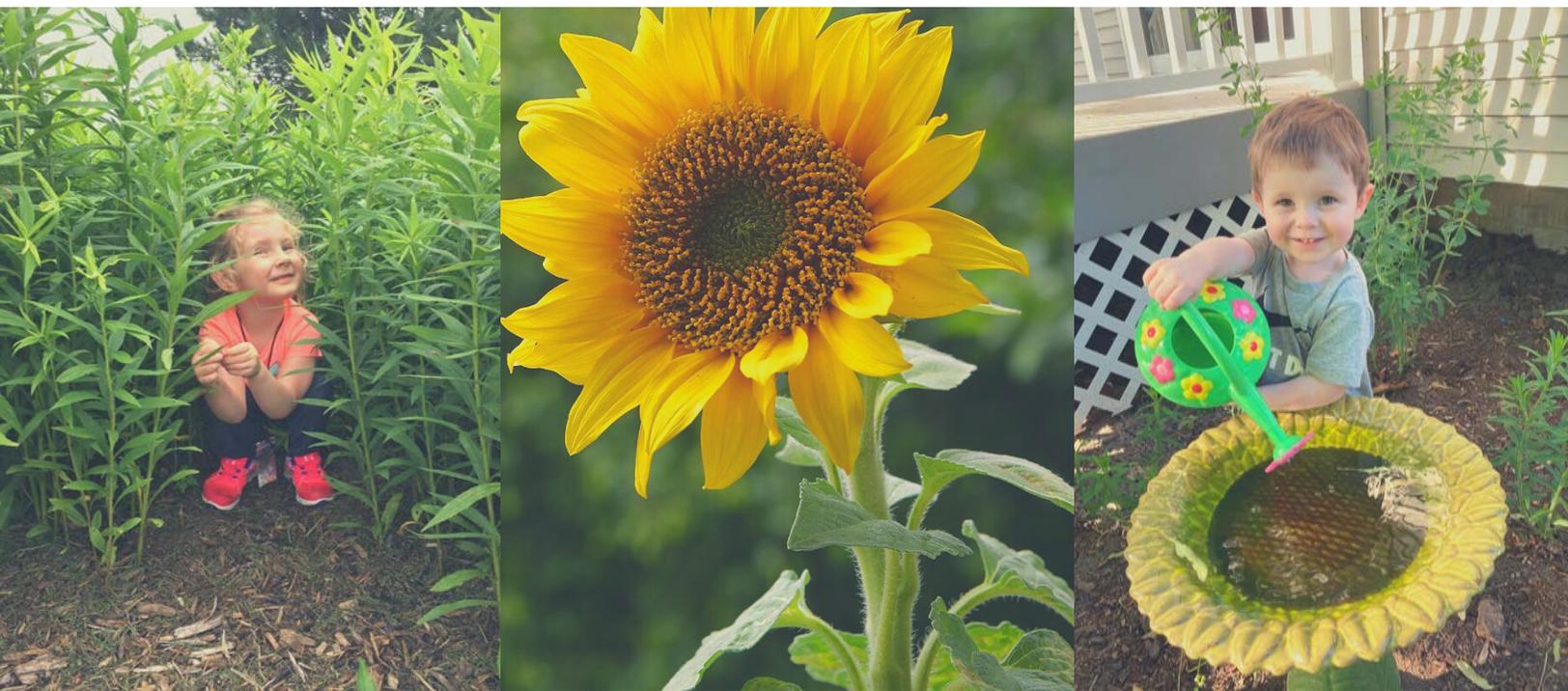
UNITY Community Center

632 Orlando Avenue
Normal, IL 61761
Phone: 309-862-4041
Hours: Monday-Friday
11 a.m. to 7 p.m.

Need school garden support? Need ideas for connecting the garden to curriculum? Want to start a school garden club? Looking for resources or grants?

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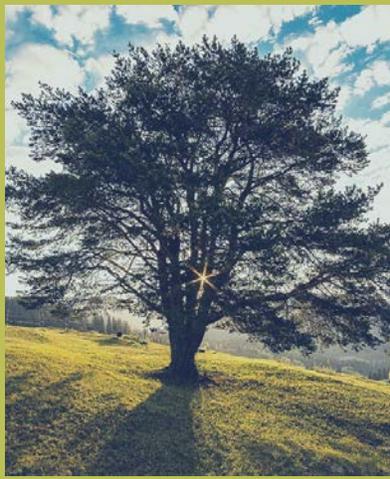
Sources

Klemmer, C.D., Waliczek, T.M., & Kajicek, J.M. 2005. Growing minds: The Effect of a school gardening program on the science achievement of elementary students. *HortTechnology* 15(3):448-452.

Mayer-Smith, J., Bartosh, O., & Peterat, L. (2007). Teaming children and elders to grow food and environmental consciousness. *Applied Environmental Education & Communication*, 6(1), 77-85.

Morris, J. & Zinderberg-Cherr, S. 2002. Garden-enhanced nutrition curriculum improved fourth-grade school children's knowledge of nutrition and preference of vegetables. *Journal of the American Diabetic Association*, 102(1), 91-93.

Robinson, C. W., & Zajicek, J. M. 2005. Growing minds: The effect of a one-year school garden program on six constructs of life skills of elementary school children. *HortTechnology* 15(3): 453-457.



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