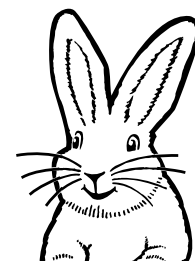




Creating Gardens of Goodness

Annie's How-to Guide for
Five Kinds of Children's Gardens

◆ Written for Annie's by the Center for Ecoliteracy





Creating Gardens of Goodness

Cultivating a garden with children offers a life-affirming context for strengthening child-to-child, child-to-adult, and human-to-nature relationships. When working or playing in a garden, we all learn to slow down and connect with each other and our surroundings.

Whether your garden is a seed in a cup or an acre of fruit trees, gardening includes us in the cyclical rhythms of nature. Nature becomes our teacher as it continually demonstrates complex, subtle, and elegant life-sustaining practices.

Through gardening, we link the uncultivated world to our human place and absorb the evergreen lesson that we cannot control nature. By forming relationships with our uncultivated and cultivated places based upon a spirit of cooperation and reverence, our garden will do what nature does best: provide sustenance for all living beings.

We offer five examples of different gardens—from simple to complex—that can flourish at schools and other learning environments. It is our hope that at least one of these examples will fuel your motivation to garden with kids.

1. Windowsill Gardens..... 9

The simplicity of a seed in a cup sitting on a windowsill belies its capacity to elicit wonder and delight. A seed, a cup, soil, water, and sun are all that is required to start.

2. Vertical Gardens..... 17

In tight spaces, gardens can be structured to grow up and out. Vertical gardens teach that gardening is possible in very limited spaces and encourage thinking about growing food as infill even where space is at a premium.

3. Raised Beds and Container Gardens..... 27

When space is available but healthy soil is not—such as in rocky soils or locations where asphalt or concrete covers a schoolyard—intensive gardening can occur in generous amounts of soil in raised beds and containers.

4. Cold Frames, Tunnels, and Greenhouses..... 39

Each of these structures is designed to provide weather protection, extend the growing season, and maximize solar efficiency. Students are exposed to the notion that plants can grow all year in most locations across the country, even in northern and snowy climates.

5. Large-Scale Gardens..... 49

When there is sufficient commitment, land, and funding, a large-scale garden offers opportunities to grow a wide diversity of plants, introduce farm animals into the mix, and produce enough food to help nourish students or even the wider community.

Getting Started

For creating most gardens, you will have better success if you engage the community from the beginning. Consider holding a gathering to generate design ideas and build commitment from students, parents, teachers, and community members as well as gardening experts. We suggest that you start small, keep the kids at the center of the process, and seek out parents and other community members who can help locate materials and construct the garden.

Becoming an Urban Farmer

Even if you start with an old garbage can as your garden container, you are beginning down the path of urban farming. We hope these garden ideas will help fuel your enthusiasm for gardening with children. Once you and the kids harvest your first crop—which may be no more than a handful of strawberries—and realize that you can grow some of your own food, you will join the ranks of those who are yearning to increase their self-sufficiency, and find joy and satisfaction in the simple act of feeding themselves and their community.

Harvesting

Harvest time is when you will reap the satisfaction of all your hard work and deep attention to the garden. If plants are harvested properly, they will continue to produce delicious fruits and vegetables over a longer period of time. Each time you gather your bounty, wash, weigh, and store it, so you can enjoy it later. Harvesting the garden sounds simple — and it is — but it also requires some familiarity with how to harvest each plant. These steps can help you with your harvest:

- When harvesting, clean up the plants in the ground as you go. For instance, remove any dead, damaged, or decomposed parts of the plant to allow for successful regeneration of the plant.

- Root vegetables are probably the easiest to harvest. Look at the bottom of the stem and make sure that a healthy-sized carrot, beet, radish, or turnip has developed, and then pull the entire plant out of the ground. If they are not going to be eaten right away, cut off the greens and place the plant in a refrigerator or root cellar.
- Herbs are also easy to harvest. They all have different harvesting requirements, but in general they are vigorous, can be harvested frequently, and will regenerate quickly.
- Arugula and mesclun mixes of salad greens can be cut to about one inch above the soil and they will regenerate. Farmers refer to these as “cut and come again” crops because they will produce up to three different harvests before becoming less palatable.
- Lettuce is a different story. If you want lettuce to keep producing, harvest leaves starting with the outside leaves. Of course, you can harvest the whole head by cutting the main stem below the point where all the leaves join.
- Other greens such as kale, chard, and collard can also be harvested from the outermost leaves inward. The leaves should be snapped off at the stem and pulled straight downward for a clean cut. The leaves should not be cut or broken, as a short stem that is easy prey for mold and disease will remain. Make sure to leave at least four or five leaves in the middle, for the plant to regenerate.
- Fruit is easy to harvest when ripe. For instance, a ripe apple should come off in your hand with a quarter turn of the stem. A ripe peach should almost fall off in your hand. A ripe raspberry or strawberry is easy to identify as well.

Chapter 2

Vertical Gardens

Kids love to climb and watch others — both people and animals — climb. They are often thrilled to realize that they can train plants to climb too. Vertical gardens provide a venue for them to experiment with an infinite number of strategies for encouraging plants to go up.

Soil is optional in some vertical gardens, and it is an exciting lesson in botany to learn how to grow plants without it. Most kids have seen plants forcing their way through a crack in the sidewalk or floating on the surface of a lake, but they may not realize that some plants can flourish in mediums other than soil.



What are Vertical Gardens?

A vertical garden is a garden that grows up rather than out. Usually, people install vertical gardens to save space, but they also can offer fascinating aesthetics. They work well in small areas and urban environments with little outside space for a garden. These gardens can be very productive, considering the minimal space they require to thrive.

Plants in a vertical garden can grow up a trellis, arbor, or pergola, or even up a wall, fence, light pole, or drainpipe. Sometimes containers such as garden pots hooked on a trellis or fence are attached to the vertical structure. There are also commercial vertical gardens that include planter pockets and hydroponic systems.

Advantages

Small Space, Big Results

They take up very little space and can be quite productive.

Great for Climbing Plants

They are ideal for growing plants that climb naturally, like runner beans, peas, gourds, chayote, passion fruit, kiwi, grapes, and flowering vines.

Visually Stimulating

They add height to horizontal gardens, making them more visually thought-provoking.

Covers Unsightly Walls and Fences

Hanging wall gardens can beautify unattractive walls and fences.

Cozy, Shady Spaces

They can create intimate space in larger gardens and provide shade on hot, sunny days.

Disadvantages

Limited Growing Options

Not all plants do well in vertical gardens. For example, plants that do not climb tend to struggle in a vertical garden, and large plants such as corn, squash, and tomatoes need wider spaces for their roots to spread.

Tall for Kids

Vertical gardens are often difficult for children to access.

Space Is Limited

They are not ideal for working with large groups of students.

Can Be an Incomplete Teaching Tool

Hydroponic hanging wall gardens are very productive, but they also leave out a very important piece of the biological puzzle in a garden: soil.

Can Be Expensive

Vertical gardens can be expensive when purchased as a kit or a custom-made design.

Designing the Garden

1. Choosing a Location

- Before you begin to develop your vertical garden, observe how the sunlight moves through the space.
- Vines that grow on trellises, arbors, or pergolas will need at least 6–8 hours of direct sunlight per day.
- In general, east-, west-, and south-facing walls will be the best for growing vegetables, herbs, and flowers in the Northern Hemisphere, but hanging gardens can grow well with different orientations as long as you make sure that you choose a more shade-tolerant type of planting for north-facing walls.
- Consider other activities that may impact the garden, such as sports or other play, as well as the configuration of the space. For example, narrow corridors with heavy traffic may not work for a hanging wall or fence garden.
- Think about the average height of your students. Will they be able to reach the garden without a ladder?
- Will they be able to help build it without much technical knowledge?
- How many kids will be able to engage with the vertical garden at one time?

2. Selecting Materials

- Trellises can be built out of many different materials such as wood, bamboo, iron, and reinforcement steel. They can be purchased or made by hand.

- Hanging wall gardens can also be purchased or built by hand. If you want to build a wall garden, consider making hanging containers out of wood, recycled plastic, repurposed lightweight containers such as watering cans, or breathable felt cloth like the material used to make “Woolly Pockets.”
- Whatever you use, make sure the containers are securely fastened to the wall or fence.

3. Selecting Soil

- For trellised gardens, it is easiest to use an organic soil mix from a nursery, local topsoil straight out of the ground, or a combination of the two. Regardless of the source, apply a fertilizer, such as organic compost or decomposed animal manure, that is appropriate for the types of plants you will grow.
- For most hanging wall gardens, you’ll need to use a growing medium such as soil. Choosing which type to use will depend on the type of garden you are building. A hanging container or pocket garden should have organic soil mix, similar to that in raised beds or container gardens.
- A hydroponic hanging wall does not need soil. It does, however, need a system for adding nutrients to the water and cycling water from the bottom of the wall garden to the top after it percolates down. It needs a water reservoir, pump, and a nearby power source to plug in the pump. Unless you have carpentry skills, purchasing this equipment is advisable. Many hanging hydroponic garden kits have solar panels connected to them so that when the sun shines, the solar energy pumps water from the reservoir back up to the top of the garden.

4. Choosing Plants

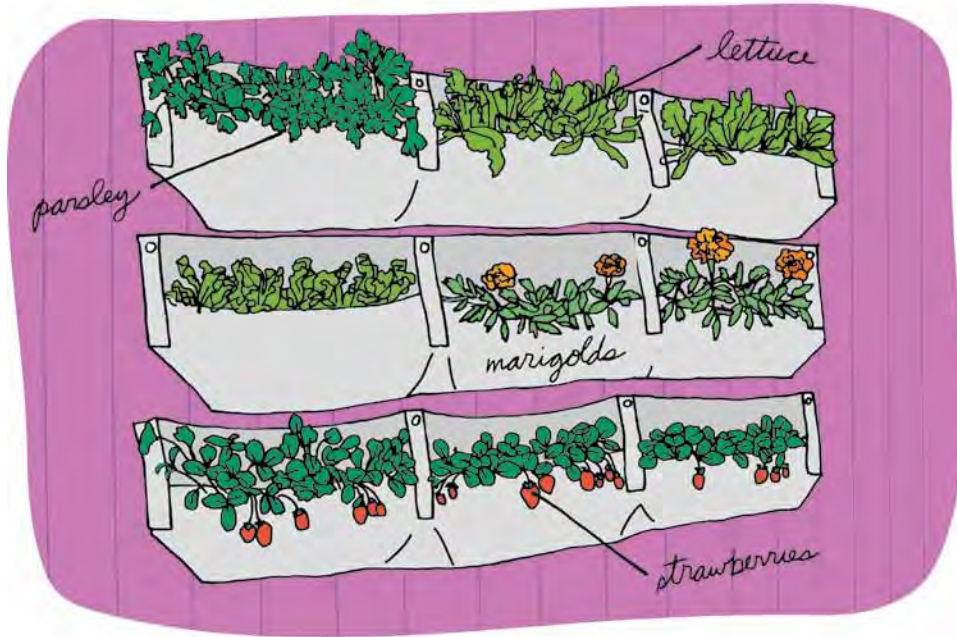
- Climbing plants such as runner beans, peas, gourds, chayote, passion fruit, kiwi, grapes, and flowering vines are best for trellis gardens.
- Smaller plants such as herbs, lettuces, and leafy greens grow well in hanging wall gardens, whether in a container with soil or grown hydroponically.

Irrigating Your Garden

All types of gardens — windowsill, vertical, in containers, or in the ground — will require irrigating. It's a good idea to develop a way to irrigate your garden before you plant anything. You may start by hand-watering with a hose and later install a drip irrigation system, but your plants will be happiest if you have some method of providing them with water from the minute you put them in the soil. Below are basic irrigation tips:

- Watering is fun for kids but can lead to clothes getting soaked and children either laughing hysterically or in tears. If you want to avoid this kind of chaos, have one or two children water at a time and show them where to water and how much water the plants need.
- In general, germinating seeds and small transplants need soaking every day or every other day for just a few minutes. At this stage, kids are so excited about the potential of raising a plant that they tend to overwater. More mature plants with deeper roots and perennials of all kinds need less frequent, deeper irrigation depending on the season and climate.

- Read the back of the seed packet or the directions that accompany a nursery seedling to find out its watering needs. If you get seeds from other gardeners, be sure to ask them about the necessary growing conditions.
- Group plants with similar watering needs together. Some plants require soil that is always moist, while others prefer that soil dry out before the next deep watering.
- Many plants vary in their needs for watering throughout their life cycles. For example, beans and peas are particularly susceptible if insufficiently watered when flowering, while root crops are susceptible when establishing their root systems. Talk to other gardeners about the idiosyncrasies of various plans.
- Water by hand when you are watering seeds and smaller plants, and remember always to water them immediately after transplanting. Many gardeners prefer to hand-water all the time because it allows time to pay more attention to the particular needs of the plants.
- If you lack time and want to save water, think about installing a drip irrigation system, especially for deeper-rooted, longer-season plants such as tomatoes, squash, flowers, and perennials. As you lay out the drip emitters (small tubes that carry water throughout the garden), put them near the plants but not right next their main stems. Making plants reach for water helps them develop more vigorous root systems.
- Sprinklers can also be useful as they can reach a large area using minimal water. Unfortunately, much of the water is often lost to evaporation. Sprinklers are ideal for larger perennial beds that don't need frequent watering. And, they are fun to run through!



5. Maintaining a Vertical Garden

Maintaining a vertical garden is similar to maintaining any garden.

For information on maintenance, see the sidebars "Harvesting" in the Introduction, "Irrigating Your Garden" in this chapter, "Composting" in Chapter 3, and "Weeding" and "Controlling Pests" in Chapter 4.

Maintaining hydroponic vertical gardens is different, however. They must be checked regularly and the water level in the reservoir must be closely monitored, since water is lost to the plants and evaporation. Since they use an electrical power pump, remember to clean it on a regular basis and to replenish the nutrients in the water regularly. Plants often grow very quickly in hydroponic agricultural systems, so frequent harvesting and replanting is also necessary.

Checklist of Materials

Vertical Gardens

When building a trellis garden you will need:

- A premade trellis, arbor, pergola, or the building materials to make one (bamboo, wood, reinforcement steel); a light pole or vertical drainpipe
- Tools to work with the building materials (saws, drills, hammers, nails/screws, level, welding tools, etc.)
- Soil
- Plants that like to climb

When building a hanging wall garden you will need:

- Containers to attach to the wall or fence (either wooden, plastic, burlap, or woven recycled plastic such as "Woolly Pockets")
- Brackets and screws/bolts to attach containers to the wall or fence
- Plants that will thrive in a small container (see illustration, previous page)

When building a hydroponic hanging wall garden you will need:

- A premade hydroponic hanging wall kit or the materials to make one
- Plants that will thrive in a hydroponic garden

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Credits

Growing Goodness

At Annie's our mission is to cultivate a healthier and happier world by spreading goodness through nourishing foods, honest words and conduct that is considerate and forever kind to the planet.

About Annie's

Annie's is a natural and organic food company that offers great-tasting products in large packaged food categories. Annie's products are made without artificial flavors and synthetic colors and preservatives regularly used in many conventional packaged foods. Today, Annie's offers over 125 products which are present in over 25,000 retail locations in the United States and Canada. Founded in 1989, Annie's is committed to operating in a socially responsible and environmentally sustainable manner.

www.annies.com

About the Center for Ecoliteracy

The Center for Ecoliteracy supports and advances education for sustainable living. Best known for its work in school food reform and integrating sustainability into K–12 curricula, the Center has engaged since 1995 with thousands of educators from across the United States and six continents.

The Center's food-related Rethinking School Lunch suite of projects includes an extensive online Rethinking School Lunch Guide, workshops and professional development seminars, and consulting with schools and districts.

Among our other Rethinking School Lunch publications are a cookbook and professional development guide (*Cooking with California Food in K–12 Schools*); a conceptual framework for integrating learning in K–12 classrooms (*Big Ideas: Linking Food, Culture, Health, and the Environment*); discussion guides for films such as *Food, Inc.* and *Nourish: Food + Community*; and essays on the Center for Ecoliteracy website.

The Center authored or co-authored the books *Ecoliterate: How Educators Are Cultivating Emotional, Social, and Ecological Intelligence*; *Smart by Nature: Schooling for Sustainability*; and *Ecological Literacy: Educating Our Children for a Sustainable World*. The Center provides seminars, academic program audits, coaching for teaching and learning, in-depth curriculum development, keynote presentations, technical assistance, and a leadership training academy.

www.ecoliteracy.org

About the Authors

Creating Gardens of Goodness was co-authored by Carolie Sly, education program director at the Center for Ecoliteracy, and Benjamin Eichorn founder of Grow Your Lunch. Carolie has coauthored several books, including the award-winning *California State Environmental Education Guide* and the Center's *Big Ideas: Linking Food, Culture, Health, and the Environment*. She also coauthored the Center's discussion guide for the Oscar-nominated film, *Food, Inc.* Ben assists schools and other youth-based organizations to develop successful educational gardening programs throughout California.