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**

   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**

   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**

   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**

   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**

   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.
Large-Scale Gardens

Large-scale gardens can offer an array of different spaces for children to explore, experiment, and transform. If developed wisely and managed properly, large-scale gardens also have the potential to become thriving ecosystems and to produce significant amounts of food.

Given that a large-scale garden is really a mini-farm, kids have the opportunity to learn about a revitalized career option. The need for farmers is growing tremendously, and this offers the opportunity to transform our food system from one that is highly dependent on fossil fuels for pesticides, transportation, etc., to one that mimics nature by including diverse kinds of vegetation, avoiding pesticides, and completing the food cycle through composting.

What Are Large-Scale Gardens?

By definition, large-scale gardens encompass more physical space than the other four gardens in this guide. Although large-scale gardens can contain vertical gardens, containers and raised beds, cold frames, low and high tunnels, and/or greenhouses, they do not have to include any of these features. In addition, while the specific attributes of large-scale gardens will vary from site to site, the most important feature of these gardens is that they are usually created upon existing soil. The preservation and development of soil is the foundation of any large-scale garden’s development, productivity, and overall success.
5. Large-Scale Gardens

Advantages

Harvest Potential
Large-scale gardens have the potential to grow an enormous amount of food.

Range of Teaching Tools
Large-scale gardens often provide natural resources useful for a learning garden (like natural shade for a meeting area, dried leaves for making compost, or perhaps a stream or pond that children will enjoy).

Encourages Plant, Animal, and Insect Diversity
Large-scale gardens offer space for a wide diversity of plant, animal, and insect communities.

Nobody Sits on the Bench
Large-scale gardens usually have plenty of tasks for a group of children, so no one is left standing around.

Immersive Environment
Large-scale gardens in urban areas offer kids the rare experience of being fully immersed in the natural (albeit cultivated) world.

Disadvantages

Plenty of Work
Due to their size, large-scale gardens are more challenging to manage. Irrigating, weeding, and harvesting large gardens is a lot of work.

At least one full-time gardener is usually necessary to run a large-scale garden effectively. This is a cost that is often the biggest stumbling block for schools.

Can Be Expensive
Large-scale gardens can be costly to create and maintain. They usually require more tools and they lend themselves to creating garden structures, which can add wonderful features but also add expenses. In addition, they require an ongoing supply of plants, seeds, water, and human labor.
Designing the Garden

1. Choosing a Location

- Before you settle on a place to develop your garden, take the students to visit potential sites at different times of day. Have them keep a record of their observations.
- The area will need at least 4–6 hours of sunlight on most days.
- Notice if there are windy areas within the garden and, if so, the direction the wind tends to blow.
- Check whether buildings or trees shade some of the space. If part of the garden is next to a building, note the direction it is facing.
- Ask kids to observe the animals that visit the space and determine if any are residents that stay all year.
- Make sure that there are sources of water nearby that can reach the entire garden.
- Identify what will have to be removed if you convert the space to a garden.
- Brainstorm other elements you would like to include in the garden, such as a toolshed, a compost bin, a propagation area, or chickens or other farm animals.
- Will there be walking paths?
- Is the area fenced in? Does it need to be fenced to prevent pest damage (from deer, gophers, and so on) or vandalism?
- How much of the maintenance labor will be performed by the students?
- Are there community volunteers willing to help with garden maintenance and garden development workdays?
- Are people around in the summertime to water the garden?
- Is there a central meeting place where classes can be conducted?
- Is the garden accessible to people with physical disabilities?
- Is this a learning garden, a production garden, or both?
- Will your community be able to help build it without much technical knowledge?

2. Selecting Materials

- You may include elements from other gardens described in this guide, such as raised beds, cold frames, and greenhouses. In addition, consider where you will store tools, wheelbarrows, and other equipment necessary for maintaining a large-scale garden.
- You may also want to consider constructing a propagation area where you can sow seedlings and plant cuttings, both of which will save you the cost of continually purchasing seedlings from a nursery.
3. Building Soil

- In large-scale gardens, building soil is the highest priority. In nature, it can take hundreds of years for an inch of topsoil to form. When cultivating the soil in a garden, we need it to happen a little faster than that. Here are a few tips for building good soil without spending much money:

1. Clear the area of weeds and debris.

2. If you have a way to chip the woodier materials uprooted from the garden space, compost them or set them aside for using as mulch in the future.

3. If there are a lot of noxious weeds in the area, do your best to pull them all out by hand without dropping seeds on the ground. Dispose of weed seeds off-site and do not add them to a compost pile. If they are impossible to eradicate, consider “sheet mulching” for a few months before continuing with the following steps. (See the “Maintaining Fertility” sidebar in this chapter.) Break up the soil by hand with digging forks, a rototiller, or with a tractor disc or spade implement when the soil is moist but not wet. After a second good rainfall is usually an opportune time.

4. Spread organic compost liberally to cover the soil. Spread decomposed animal manure (e.g., horse, cow, pig, or chicken) sparingly, adding a light sprinkle over the entire garden area.

5. Select a cover crop to plant that will add nutrients to the soil. You can ask a local farmer or a plant nursery about an optimal mix for your climate and season, but most will include nitrogen-fixing vegetation such as legumes. (See the “Maintaining Fertility” sidebar in this chapter for more information on growing cover crops.)

6. Broadcast the cover crop mix over the entire field. Then lightly turn the seeds into the soil using digging forks and rakes, so that the seeds end up covered by about ½ inch of soil. If you are using a tractor for the job, turn the seeds into the soil using a harrow.

7. Unless rain is on its way, water the garden every day or two until the seeds germinate, then water less frequently and more deeply. (See the “Irrigating Your Garden” sidebar in Chapter 2.)

8. Allow the cover crop to grow for a few months or until the majority of the legumes are 50 percent in flower.

9. Cut down the cover crop material and turn it into the soil by hand or with a tractor.

10. Leave the cover crop material to decompose for about a month.

11. Prepare planting beds by digging small furrows with shovels and piling the soil into mounded rows of raised beds.
5. Large-Scale Gardens

Maintaining Fertility

Maintaining fertility is crucial in any garden that produces food. Anytime food is harvested or weeds are pulled, nutrients are removed from the soil. As long as an active composting program is part of maintaining the garden, nutrients will not be depleted too quickly. Additionally, fertility can be maintained in the garden through the following techniques:

Cover Cropping
Grow nitrogen-fixing crops such as fava beans, clover, vetch, and alfalfa in combination with grasses such as rye, oats, wheat, and barley. Turn them into the soil when they are 50 percent in flower. The plant material is left to decompose and then turned in once more before planting. This practice provides the soil with additional nitrogen — the most important element in plant growth — increasing organic matter, which all soil organisms feed upon. Cover cropping and turning the soil also aerates the soil and increases drainage for water.

Tip: If seeds are difficult to find, consider buying raw seeds from the bulk section in a natural foods store or from a feed store. Make sure they are untreated. They can also be purchased online.

Mulching
Apply organic matter such as straw, leaves, woodchips, or garden waste to the garden, either in pathways or around the plants in the garden. In general, a more carbon-rich mulch, such as woodchips, is best for perennial areas. Mulch that decomposes faster, such as straw and leaves, is better for annual vegetable areas. Mulch feeds the microorganisms in the soil, which in turn feed the plants. It also keeps the weeds from having access to sunlight and helps retain moisture in the soil.

Sheet Mulching
If weeds are a severe problem, consider “sheet mulching” that area. Sheet mulching refers to covering the ground with cardboard, then adding a thick layer (4 inches to 1 foot) of manure, compost and straw/woodchips over the entire area. Let the mulch decompose for a few months and pull out any weeds that grow through. Continue this process as many times as necessary until the weeds are no longer a problem. Then the area can be used for gardening.

Fallowing
Let the garden rest. This is an ancient practice used to let gardens regenerate. In general, fallowing is not an option in a raised bed or container garden because we want them to be beautiful and full of plants all the time. It is, however, a time-tested method of retaining fertility in the soil.

4. Choosing Plants

- Nearly any kind of plant that thrives in your geographic area can be grown in large-scale gardens. When considering what kinds of fruit trees, perennial flowers, herbs, and vegetables to grow, consult with local farmers and nurseries before choosing varieties, so you know the specific requirements of each species.
- When planting the garden, plant fertility-building cover crops first, then plants that take the most space (trees and large perennial shrubs), and then the smaller annual plants that will be planted in rotations throughout the growing seasons to come. Here is an easy-to-remember planting sequence:
  1. Cover crops
  2. Fruit trees and woody perennials
  3. Perennial herbs and flowering shrubs
  4. Annual vegetables, herbs, and flowers
5. Large-Scale Gardens

5. Maintaining a Large-Scale Garden

When maintaining large-scale gardens with children, consider dividing the kids into small groups in order to address the many needs of the garden. For ideas of what kind of work to do, refer to the sidebars “Harvesting” in the Introduction, “Irrigating Your Garden” in Chapter 2, “Children and Tools” and “Composting” in Chapter 3, “Weeding” and “Controlling Pests” in Chapter 4, and “Maintaining Fertility” in this chapter.

Start a “Family Farmer” program that allows families to harvest food while maintaining the garden over holidays and the summer. For summer garden maintenance, start recruiting families in early spring by sending out an announcement inviting families to volunteer to care for the garden for one week over the summer. Spell out the expectations and the benefits. In late spring, hold a short training for families, demonstrating how and when to water, weed, and harvest. Create and distribute a calendar that identifies who is responsible for caring for the garden each week. If possible, arrange a phone tree to remind families just prior to their week.

Checklist of Materials

When building a large-scale garden you will need:

Tools:
- Flat shovels
- Round shovels
- Digging forks
- Rakes
- Hoes
- Wheelbarrows
- Sledgehammer
- Posthole digger
- Pickax
- Pry bar
- Harvest buckets/baskets
- Handheld weeding tools
- Hand trowels
- Hand shears
- Loppers (heavy duty)
- Socket wrench set
- Battery-operated screwdriver/drill set
- Handsaw
- Pruning saw
- Watering cans (metal is best)
- Pliers
- Gloves
- Wire
- Hoses
- Watering wand
- Oscillating sprinklers

☐ A toolshed or some other way of storing tools safely and out of the elements

☐ Organic compost (roughly 3 cubic yards per 500 square feet)

☐ Decomposed animal manure (roughly 3 cubic yards per 1,000 square feet)

☐ Cover-crop seed

☐ Fruit trees (appropriate for your climate)

☐ Perennial shrubs, herbs, and flowers (appropriate for your climate)

☐ Annual vegetable, herb, and flower seeds

☐ A greenhouse (if funding allows)
References

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- The Growing Classroom, by Life Lab
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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.