



# Designing Your School Garden

To prepare for the design phase of your school garden, put on your creativity hat, adopt an adventurous attitude, and open your mind to all possibilities. Gather ideas from other schools, botanic gardens, magazines, garden shows, Web sites, and the imagination of your students and garden team. As you plan, remember to look at the future garden through the eyes of a child.

Your students and garden team need to be active participants during this phase. Throughout the process, they should feel like valuable contributors. A strong connection during the design process will ensure they become diligent caretakers once the garden is installed.

As you plan, there are two very important things to keep in mind:

**Your school garden should be both fun and functional.** Make sure your design will result in a garden that will fulfill your needs and help you accomplish your curricular goals.

**Keep it simple.** Dream big, but start with a plan that is manageable for your school. Consider developing a three- or five-year plan, adding a few components each year. Remember that it is the smiling children learning in the garden that makes it beautiful, not the fancy and complicated planting design.



Photos: Western Growers Charitable Foundation



Debbie Delatour

“Just by walking by and giving a curious glance, children can passively absorb the lessons of the garden: a pea vine sending tendrils up a pole, a new blossom about to burst open, a seedling pushing through the soil. Teachers walking by can point to pollinators, give an impromptu lesson in ecology, math, weather, botany. A garden in full view can become the heart of the school campus, a place of wonder, learning, transformation, and a place to observe the seasons and cycles of life.”

Marty Fujita  
Food For Thought  
Ojai Unified School District  
Ojai, CA

## How to Get Started

Begin designing by gathering ideas from existing school gardens either by visiting local schools or by browsing the Web (you can start your search at the California School Garden Network Web site at [www.csgn.org](http://www.csgn.org)). You may also want to visit a local botanic garden or arboretum. Although your group has different spaces and resources available to it, you will get a feel for characteristics that are appealing by visiting these sites. Do you like gardens with sitting areas? Do you like vegetable gardens? What type of paths do you prefer?

Next, give your students and garden team a chance to brainstorm. Asking them to draw their idea of the perfect garden is a good place to start. Give everyone a chance to share their drawings and make a list of all the elements included. See if you find common trends. For instance, do a lot of the gardens include birds or butterflies? If so, you might want to establish a garden supporting wildlife. Are there many fruits and vegetables? Maybe you want to focus on edible plantings. The class can choose the best – and most practical – elements of each to incorporate into a final design. As you review these ideas, remind everyone of your curricular goals. Are there any strong connections between the dream ideas and the goals you have adopted?

## Types of Gardens

Although no two gardens look exactly alike, there are some basic planting techniques used for constructing indoor school gardens and some different techniques used for those outdoors. Indoor garden options include windowsill gardens and stands with grow lights. Outdoor options include in-ground beds, raised beds, and container gardens.

## Indoor Gardens

The simplest form of indoor gardening is to grow plants in front of windows that receive a decent amount of sunlight. Windows that face south and west are best, and they usually receive enough light to grow leaf and root vegetables (beets, carrots, lettuce, onions, and radishes) and herbs. East-facing and north-facing windows do not receive as much light, so they will limit planting options mostly to houseplants. Spend a few days monitoring the light available through the window to determine whether there is a sufficient level for an indoor garden.

Grow lights (fluorescent tube lights designed to hang low over growing areas) are a more effective way to produce indoor crops. You can purchase prefabricated models or make your own. With grow lights, you control the amount of light your plants receive and can expand your crop options to include fruit crops such as tomatoes and strawberries.





# PROGRAM SPOTLIGHT

## Designing a Large School Garden

*Emerson Elementary School, Riverside, CA*

A joint project of the City of Riverside and the Riverside Unified School District, the Eastside Community Garden was developed as a resource for Emerson Elementary students and local residents. While many schools may struggle to find space for a garden, Emerson's garden was an already defined 1-acre plot in the back corner of the school. Possibly even more difficult than not having enough space is having too much.

In the initial stages of the garden planning, students were invited to submit artistic drawings for a garden theme poster. They were asked to visualize what the

**The raised beds have been extremely durable and did not shift even during an extremely rainy winter. The simple design allowed gardeners time to focus on growing vegetables rather than on building and maintaining garden beds.**

garden would look like and what students could do there. Two students' designs were chosen and their art was included on a T-shirt produced for the garden groundbreaking event.



John McCombs

Building on the students' ideas and working with a Master Gardener from the Cooperative Extension program, the Eastside Community Garden Committee made several design drafts and presented them to the community during the groundbreaking ceremony. A high school drafting student prepared a more formal design. Although several modifications were made, the time invested in the initial planning of the site was extremely valuable. Soliciting numerous ideas about the design of the garden helped people to visualize possibilities. The practical issues of the site grade, irrigation, fencing, shade, accessibility, and financial resources also played important roles in selecting the initial design.

An important initial design element was to determine which materials to use in building the garden beds. Although several materials were suggested, ultimately

the use of 8- by 8- by 16-inch cinder blocks was chosen. Benefits of using these blocks included:

- Cinder blocks can be used to construct garden beds of a variety of shapes and sizes.
- The garden design can be changed and the blocks can be reused.
- Minimal skill is required to build a garden bed out of cinder block.
- The open cells in the blocks can be used to plant invasive plants or flowers.

Whereas brainstorming many ideas for the garden design created interest, practicality triumphed when it came to the actual construction. The committee determined that building as many equal-sized beds as possible would help get more gardeners involved in the project. The design made the addition of water faucets and an automated watering system easier to install after the raised beds were constructed. During the course of one year, approximately 17 garden beds were built out of cinder blocks at the Eastside Community Garden. The raised beds have been extremely durable and did not shift even during an extremely rainy winter. The simple design allowed gardeners time to focus on growing vegetables rather than on building and maintaining garden beds.

“Because the gardens are directly outside the classrooms and on the side of the recess area, it is clear that the students visit the gardens frequently on their own time. Often when we go out to the garden during class, we notice lettuce that has been thinned slightly, empty peapods on the ground, or carrot tops in the compost pile. One of the most important aspects of the garden, in our opinion, is this close proximity to where the students hang out and spend time during the day, a visual reminder of the work being done during gardening time.”

Leah Smith

Marin Food Systems Project Coordinator

Bayside Elementary

Sausalito, CA

## Outdoor Gardens

The traditional outdoor garden is planted in the ground of a schoolyard. During the site analysis described below, you will evaluate your soil and determine whether this is a good option for your class. Unless the area has been cultivated before, you will often need to amend and till compacted soil before you begin planting.

Raised garden beds are another option commonly used by schools. Create a raised bed by shoveling soil from surrounding pathways or bringing in new soil or compost to create mounds that are 1 to 2 feet taller than the adjacent paths. The top of the mound should be flattened to decrease soil erosion. Raised beds look nice, support healthy plant growth, and keep people on paths. The loose soil encourages roots to grow strong and deep, and the garden soaks in moisture easily. In areas with cool, wet spring weather, soil in raised beds drains and warms more quickly so you can get started earlier.

To create more permanent, defined raised beds, make 1- to 2-foot-tall frames using materials like recycled plastic lumber, rot-resistant wood such as cedar or redwood, stones, or concrete blocks and then fill the frames with soil. Although rot-resistant pressure-treated wood is available for purchase, it should not be used in the garden because of the toxic chemicals on the treated wood. Framed raised beds can be built over soil or on top of concrete or asphalt surfaces. Although making framed raised beds is more expensive than planting directly in the ground, it does offer a number of benefits. Framed raised beds are more permanent and define the garden bed area. You can choose your own soil, making them easier to cultivate and eliminating worries about toxins such as lead. They usually have fewer problems with weeds and drainage. They may help with pest control by making it easier to scout for insects and install gopher wire barriers. Additionally, raised beds can be built high enough for wheelchair accessibility.

A third outdoor option is to plant in containers. Examples of common containers are clay and plastic pots, large wooden barrels, and buckets. However, you can use anything that holds soil and has drainage holes. You can even use an old bathtub. If you experience warm days but cold nights, or if you have concerns about vandalism, you can create an indoor/outdoor garden by growing plants in buckets with handles, or pots with wheels, and moving them indoors at night.

## Site Analysis

Once you decide what type of garden will best fit your needs and resources, you need to find a place to put it. It is best to locate your garden in a prominent area of the schoolyard to increase involvement and decrease the likelihood of vandalism. To determine the usefulness of a site, your garden team needs to complete a site analysis. A site analysis involves investigating and evaluating the growing and environmental conditions of potential garden areas. You may conduct several analyses before you find a site that is just right.

At some schools, only one site will be available. However, if that is the case, you should still perform the site analysis because it will help



Alicia Dickerson/Life Lab





you determine what you can plant. During the site analysis, you need to investigate:

**Size and Existing Features.** The available land at a site is important. Although you may start small, it is a good idea to have room to expand as your program grows. Ask your students to measure the parameters of the proposed site and make note of existing features like plant materials, pathways, fencing, water sources, shaded areas, etc. Using grid or graph paper and an appropriate scale, sketch a garden layout.

**Soil.** A nutrient-rich soil with good texture and plenty of organic matter will help your garden thrive. On the flip side, poor soil will frustrate even the most experienced gardener. Determine the texture of your soil (amount of sand, silt, and clay) and test for pH and nutrient content. Do-it-yourself soil kits are available from most garden centers, or contact your local Cooperative Extension Service office for information on soil testing labs.

You may also want to test for lead contamination. Find out as much as you can about the history of the potential garden site. If the site is located in an urban area, previously contained houses or other structures that were painted with lead paint, was once used for dumping, was exposed to lead-based pesticide treatments, or is close to a heavily traveled road, you should test for lead. Call your local public health department office to find out where soil lead testing is available. The presence of lead does not need to deter gardening efforts. If the schoolyard soil is not suitable for gardening, you can garden in raised beds or containers.

**Sunlight.** Most flower, vegetable, and herb gardens need to be exposed to full sunlight for at least six hours a day. Students can check the potential garden site at different times during the day and year to see how much sun it receives. Use a compass to identify which direction is north. Determine the path of the sun throughout the day to anticipate shadows. In wintertime, remember to factor in shade that will be cast by tree leaves in the warmer months. Use shade areas for gathering places or to plant shade-tolerant crops such as lettuce.

**Water Sources.** Access to water is essential for gardening, and the closer the water is to the garden, the better. If a water source is not conveniently located, the job of watering can become time-consuming and limit garden growth. There are various systems to consider: watering cans, garden hoses, drip irrigation, overhead watering. Drip irrigation and water-conserving sprinkler systems are often the most water- and time-efficient. Determine which water systems will be available to you at the potential location.

**Water Drainage.** How water moves through the site is also important. You don't want to plant a garden in a consistently wet low spot unless you are planting wetland or water plants. Visit the site after a rain. Does the water puddle or does it drain away? Both slope and soil type affect drainage. In addition to low spots, avoid steep slopes; if that's not possible, consider terracing or raised beds.



Jim Morris/California Farm Bureau Federation

“The gardener does not create the garden; the garden creates the gardener.”

Alan Chadwick

Organic Gardening Proponent  
and Founder of the  
UCSC Alan Chadwick Garden  
Santa Cruz, CA

**Accessibility.** It is important for your site to be easily accessible both during class time and outside class. If your garden is a short walk from the classroom, there will be more teacher involvement than if the site is a long trek across the school grounds. A garden close to the classroom is more convenient, more visible, and easier to incorporate into the curriculum on a regular basis.

The path to the garden should be level and handicapped accessible, a minimum of 4 feet, and preferably 6 feet, wide (check with your school district for specific accessibility regulations). Also, the garden should be accessible to students when they are not in class so they explore and enjoy it on their own. Finally, place the garden in a visible location so all students, teachers, parents, and community members can enjoy its beauty, thus adding to their support and enthusiasm for the garden.

**Security and Safety.** Do not choose a site near heavy road traffic or close to other potential hazards. If possible, locate your garden within sight of classrooms and neighbors so a close eye can be kept on it. You may want to use fences to help with protection on weekends and during extended breaks.

**Future Uses.** Check with your school principal and administrators about long-term plans for your site. Don't invest large amounts of energy and money in a site slated to become a new cafeteria or classroom wing.

After collecting all this information, decide whether or not the site will work for your school garden. If you have concerns, conduct additional site analyses to see if there are better options. If there are no other options, research plants that will grow in the existing conditions. For instance, if the available area is poorly drained, perhaps a habitat of water plants is the best selection. Although this may lead to a garden that differs from the original vision, it will still be a viable outdoor classroom and will provide an important lesson for the students about choosing sustainable and environmentally friendly landscape plans.



Alicia Dickerson/Life Lab

## Needs Inventory

Once you nail down a site, it is time to complete a needs inventory. Start by comparing your brainstorming ideas with the curricular goals. What garden components from the brainstorming list complement those goals?

To help you get started, here is a list of common school garden components:

**Garden Beds.** You can create garden beds in various shapes and sizes. If you keep the growing areas no more than 4 feet wide, everyone involved in the program should be able to reach all plants. Although it is common to align rectangular beds evenly in rows, some school gardeners avoid doing so, believing that it leaves little room for creative inspiration. Some try circular gardens, sliced, pie-fashion, by pathways. Others are inspired by the natural world. You might





# PROGRAM SPOTLIGHT

## A Garden Designed for Children, by Children

*Life Lab Garden Classroom, Santa Cruz, CA*

It's easy to tell when you walk through a garden that children helped make. There are colorful, hand-painted signs and flowers planted in random designs. Vegetables may be planted in old wheelbarrows, watering cans, or even shoes. Gardens that children help design feel child-centered, alive, and whimsical. When the Life Lab Science



John Fisher/Life Lab

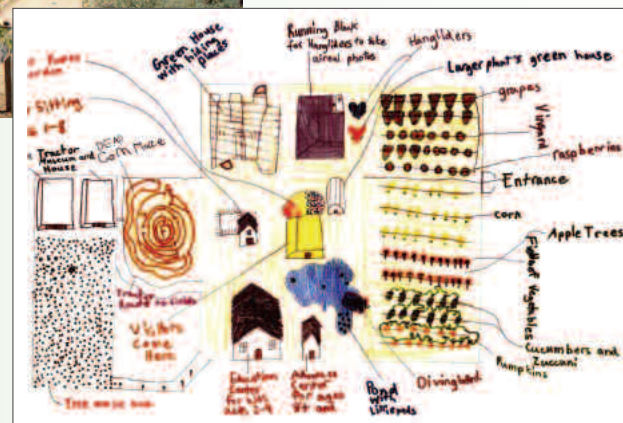
ideal gardens. The result was a fantastic collection of ideas for us to draw from. Children wanted the gardens to be full of edible fruits, so we made sure it would produce fruits nearly year-round. They wanted places to hide out, so we put in

“We wanted a place where children could feel comfortable, and interact with the garden in many ways.... We asked them to imagine all the components that they might include in a learning garden, and to draw maps of their ideal gardens. The result was a fantastic collection of ideas....”

Program began planning the Life Lab Garden Classroom, a model school garden in Santa Cruz, staff worked hard to include children's visions in the design process.

“We wanted a place

where children could feel comfortable, and interact with the garden in many ways,” said Life Lab's education director, Erika Perloff. “So we invited local elementary school students to participate in the design process. We asked them to imagine all the components that they might include in a learning garden, and to draw maps of their



a vine-covered crawl tunnel, a hidden bird blind, and a weeping tree. They suggested outdoor kitchens, spirals, music-making areas, ponds, animals, and of course lots of places to grow food. We put all these ideas into the garden. Other suggestions included an airstrip, hang gliders, and an underground gopher-viewing chamber. We're still working on those....”

Visit [www.lifelab.org/classroom](http://www.lifelab.org/classroom) for more information and a map of the Life Lab Garden Classroom.





Alicia Dickerson/Life Lab

arrange your planting beds in other geometric designs around a central meeting area, or scatter beds of different sizes and shapes throughout the garden site.

**Paths.** Paths reduce the risk that plants will get trampled, and they organize traffic flow. Make main pathways 4 to 6 feet wide to accommodate wheelchairs and wheelbarrows. Keep paths distinct and weed-free. If steady foot traffic doesn't do the trick, you can cover paths with mulch, such as shredded bark or wood chips. To help keep down weeds, lay down sheets of black-and-white newspaper, cardboard, or landscape fabric before mulching (cardboard is often the least expensive and most effective choice). Alternatively, you can plant pathways with grass and mow it, or, in permanent garden sites, you can use asphalt, bricks, pebbles, or crushed stone.

**Irrigation.** Although watering by hand using watering cans and/or hoses is an option, in most areas of California, this job becomes cumbersome and can detract from the garden experience. Drip irrigation and water-conserving sprinkler systems installed before planting will save time and often result in a healthier garden.

**Gathering Places.** In a shady part of the garden, a picnic table, bench, or group of hay bales or logs provides an ideal place for cleaning and sorting vegetables, conducting outdoor lessons, doing arts and crafts, writing in journals, or just getting relief from the sun.

**Toolshed or Storage Area.** A toolshed or storage area is a good central location for cleaning, organizing, and protecting tools and equipment.

**Compost Areas.** If you designate a place for a compost pile, students can convert garden and lunchroom waste into a rich, soil-building ingredient and witness the wonders of decomposition. You can create simple freestanding piles or make an enclosure from chicken wire, wooden pallets, concrete blocks, or lumber. Even an old garbage can with holes punched in it will suffice. Make sure the structure has openings for air circulation.

**Weather Station.** Consider cultivating keen weather watchers by incorporating a weather station into your garden. Students can monitor a variety of conditions and determine how different factors affect garden life.

These are just a few component ideas. As you continue the design process, you may add to your needs inventory.

## Putting Design on Paper

With the completed site analysis and needs inventory in hand, take a copy of the garden layout developed in the site analysis and work with the garden team and students to



Monrovia



create a landscape design. Landscape designers begin this process by drawing bubble diagrams. In a bubble diagram, you define uses for spaces rather than laying out detailed plans. Lay a piece of tracing paper over the map or copy it onto an overhead and use additional overheads for sketching. Draw a bubble representing each component of the garden (beds, sitting area, pathways, etc.). Bubbles can be drawn quickly and in different colors. The idea is to experiment by putting the bubbles in different configurations (e.g., placing the sitting area in the middle of the garden versus placing it on the side), shapes (e.g., circular beds versus rectangular beds), and sizes (e.g., a few large garden beds versus multiple small beds) until you develop a general idea of where to place the different components.

Once there is an idea of where to place things, create a more detailed design. Begin by defining beds and walkways. Be sure to draw the plan to scale so that you are accurate in the use of space. Also create a plan for irrigation. Although you will need to leave room to be flexible, careful planning is important to help determine supply and material needs.

The last step will be to select plants. You and your class should choose plants that can grow successfully in your region and that can be properly cared for and harvested when the students are around. When possible, incorporate drought-tolerant and native plantings; they will ease maintenance and serve as a tool for teaching sustainable landscape practices. Deciding where to place the plants in your garden takes some consideration. Plants have different space, light, and temperature requirements. Use books and Web sites to research potential plants. You may also want to seek advice from local garden center employees, other school garden coordinators, plant nursery workers, or your local Master Gardeners and Cooperative Extension office.

Although the designs do not need to be complex, if you have a large project, you may want to consider finding a local landscape designer who is willing to donate time. He or she can make sure you've considered all available options and potential problem areas and help you move the design forward. Try to find someone who will engage students and the garden team in the planning and design process.



Jim Morris/California Farm Bureau Federation

## FOCUSING THE DESIGN

There are such a wide variety of plants and activities you can incorporate in your school garden that the design process can sometimes feel overwhelming.

Your team may provide tons of great ideas and suggestions, and, in trying to incorporate them all, you may end up with a garden requiring extensive funding and maintenance. One method to help focus the garden design process is to decide on a central theme. Designing a garden around a theme allows the team to create a meaningful space using a slightly narrowed vision. Inspirations for themes can come from topics within the curriculum, the interests of the students, specific plant materials, or even a favorite book or movie. Some examples of popular theme gardens:

- Alphabet garden
- Butterfly garden
- Children's literature-based gardens (e.g., Peter Rabbit garden)
- Cut flower garden
- Edible garden (note: any garden on this list can include edible plants)
  - Herb garden
  - Pizza garden
  - Salad garden
- Salsa garden
- Soup garden
- Stir fry garden
- Historical garden (e.g., California Mission garden, Victory garden)
- Native American garden
- Native plant garden
- Multicultural garden
- Peace garden
- Rainbow garden
- Sunflower garden

In addition to helping with the design process, a theme may also provide you with creative press release ideas and fundraising connections. Involve your students and garden team to help choose your garden theme. Make sure the theme creates excitement and enthusiastic support to continue your school garden's momentum.