

# Creating a School

# Garden



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# Why create a school garden?

## Academic Benefits

- Students participating in school garden programs show higher science achievement test scores than those participating in only classroom-based traditional learning (Klemmer, Waliczek, & Zajicek, 2005; Smith & Motsenbocker, 2005).
- Principals and teachers respond positively to the academic benefits of school gardens (Waliczek, Bradley, Lineberger, & Zajicek, 2000; DeMarco, Relf, & McDaniel, 1999; Graham, Beall, Lussier, McLaughlin, & Zidenberg-Cherr, 2005).
- Students show increased knowledge about nutrition after participating in garden programs. (Zidenberg-Cherr & Morris, 2002).

## Health Benefits

- After participating in a garden program, students report liking vegetables more and were more likely to choose a fruit or vegetable as a snack (Lineberger & Zajicek, 2000).
- Students may increase their consumption of fruits and vegetables after participating in a garden program, compared to their consumption before the program began (McAleese & Rankin, 2007; Zidenberg-Cherr & Morris, 2002).
- Students are more willing to taste vegetables grown in their garden in comparison to students who do not garden (Morris, Neustadter, & Zidenberg-Cherr, 2001).

## Environmental Awareness Benefits

- Students who participate in a school garden project show increased respect for landscape planting, increased awareness of environmental issues, and increased interest in the health and care of plants and gardening (Hilgers, Haynes, & Olson, 2008).

## Personal Development Benefits

- Students show a decrease in stress and increase in self-esteem after participating in gardening programs (Waliczek et al., 2000).
- Students enjoy participating in gardening programs and share what they learn with others (Dirks and Orvis, 2005).
- Children with attention deficit disorder have improved functioning after spending time outdoors, particularly in natural settings (Faber Taylor, Kuo, & Sullivan, 2001).

# Getting started

Creating a garden requires the concerted effort of a number of different people: parents, teachers, administrators, and community members, all of whom have the common goal of creating an educational, beautiful, and meaningful space for the students of that school. A garden requires money, labor, and time, but if you have a committed team, the benefits will outweigh the costs.

## Do your research

Creating a garden is a major undertaking and researching should be your first step in your project. This guide is a start, but it is only cursory in comparison to the wealth of resources that exist online, in print, and in your community. I have included a list of resources at the end of this guide as a starting off point for you. There are many websites about school gardens that can aid you in every step of your project, from the planning stages to lesson plans and recipes. More general websites about gardening will also be useful when you are planting, harvesting, and maintaining your garden. In addition, there are many examples of school garden projects online that can inspire your design for your garden. There are also several published books about school gardens and gardening in general that will be invaluable guides for you. Scour your local library for anything that could be useful.

Also remember to look to your community. Visit other schools that have started gardens and find out what worked and did not work for them to learn from their mistakes and successes. There may be local, state, or national organizations that can help you with your project. Many cities and states have school garden organizations, such as Boston's Schoolyard Initiative ([www.schoolyards.org](http://www.schoolyards.org)) or California's School Garden Network ([www.csgn.org](http://www.csgn.org)) (Boston Schoolyard Funders Collaborative, 2011; California School Garden Network, 2007). Local gardening organizations may be able to help you design your garden and give you advice on planting.

Once you have researched online, read books, and talked to local organizations you can assess whether you are ready, able, and willing to complete a school garden project and you will have an idea of the steps necessary to complete the project.

### Master Gardener Program

A useful resource is the Master Gardener program, which consists of trained volunteers dedicated to helping people in the community understand gardening. The program is active in every state in the U.S. and four Canadian provinces

(University of Wisconsin-Extension Master Gardener Program, 2010; Hazzard, Moreno, Beall, & Zidenberg-Cherr, 2011; American Horticultural Society, 2011).

## Putting together a preliminary plan

Before you present your project to others, including decision makers, it is important to lay out a preliminary plan of what your garden project will entail. Outline where the garden will be located, design ideas, estimates of construction time and costs, how the garden will be used as a teaching tool, and how it will be maintained.

## Getting others onboard

Once you have done your research and decided that you are going to work towards creating a school garden, you will need to enlist the help of others. Make sure that the principal of the school approves the project, without his or her approval, the project can

In a study of exemplary school garden programs in California, the majority of the schools had people involved in the project from three out of four groups: administrators, teachers, parents and community volunteers, and garden coordinators

(Hazzard et al., 2011).

not be implemented. Present the principal with your preliminary plan. It is helpful to have several teachers onboard already, to demonstrate to the principal that the staff are enthusiastic about the project. Discuss with the teachers how they would like to use the garden. After securing the principal's support, you will also need to present your plan to the governing body of the school, whether this is a parent association, school board, or site council (Bucklin-Sporer & Pringle, 2010).

You will also need parent involvement in your project. Talk to parents at the school about the benefits of a school garden and whether they will be interested in helping you. Create a committee with several parent and teacher members. Remember that although parents with gardening experience will be useful, parents with other

experiences and skills may be useful also, such as parents with carpentry or fundraising skills (Bucklin-Sporer & Pringle, 2010). It is important that you have a variety of people and groups who will be committed to sustaining the garden.

In addition, ensure that you have input from the students on your project. Find out what the children want to learn and what they already know. This garden is for the children, so it is important that you keep their suggestions in mind and get their input (Starbuck, Olthof, & Midden, 2002).



# Designing your garden

## Selecting the site

The first consideration in designing your garden, is where will it go? Conduct a site inventory of the school to discover what areas are not being used and what areas will be suitable for a garden. A good site has adequate sunlight (6-8 hours a day), good drainage, and preferably good soil, although poor soil can be improved with additives such as topsoil and compost (Starbuck et al., 2002). In addition, consider whether you want the garden to be accessible to the students during recess. If so, it should be within the schoolyard, although it may need to be supervised by an adult. If you want the garden to only be used for formal class time, then the garden should be located outside of the recess play area.

## Necessary components of the garden

A good school garden contains several components that create an inviting atmosphere, suitable for education and enjoyment, and enabling efficient maintenance of the garden.

- Outdoor classroom space – if the garden is to be used as an outdoor classroom, which this guide assumes, it is important that there is an area in which a class can gather.
- Seating for the children – preferably arranged in a semicircle, this could be in the form of bales of straw, tree stumps, benches, plastic stools, and so on.
- An outdoor chalkboard or dry erase board.
- An outdoor table.
- Pathways – it is important that the children, especially young children, know where they can and cannot walk. Some of these pathways should be wheelchair accessible.
- An area for storing tools – this could be a tool box or a shed. If you will have a garden coordinator, a large enough tool shed can also be used for office space.
- Access to outdoor faucets in order to water the plants.
- Fencing.
- Optional items – there are some items that are not necessary for a school garden, but make useful additions. These include a sink and a solar oven for cooking.



Outdoor classroom space  
(Boston Schoolyard Funders  
Collaborative, 2011)

- And, of course, soil and plants are needed.

(Bucklin-Sporer & Pringle, 2010)

### **Design considerations**

Consider whether your garden will be in the ground or in raised beds. There are advantages and disadvantages to both. Raised beds are useful for young children in that they clearly mark what is garden space and what is not, this means that plants do not get trodden on. However, raised beds are more expensive than in-ground gardens as they require creating the beds. The beds can be created using untreated wood, wattle, urbanite, or bender board, all of which have their advantages and disadvantages. A subset of raised beds are container gardens which are smaller-scale garden projects. In-ground gardens have the advantage of a more natural appearance and are cheaper and easier to construct. However, children will walk through the plants and there are more problems with weeds, preparing the soil, and drainage (Bucklin-Sporer & Pringle, 2010).

Also decide how large you want your garden to be. It is best to start out small and extend.

An important consideration in designing your garden, whether it is in raised beds or in the ground, is that everything should be scaled to the size of the students. Children need to be able to reach into the center of the bed or the plot easily, to minimize frustration and crushed plants (Bucklin-Sporer & Pringle, 2010).



Raised bed garden (Knights Plant and Life, 2010)      Container garden (Knights Plant and Life, 2011)

### **Themes**

Theme gardens are a good way to divide up a garden plot and interest the students. There are practically an infinite number of themes that could be used, but below is an overview of some of the more popular ones.



- Bird and butterfly garden – contains plants that attract birds and butterflies, as well as butterfly houses, birdhouses, and feeders.
- Native plants garden – contains plants native to your area in pre-Columbus times.
- Kitchen garden – contains fruits, vegetables, and herbs.
- Sensory garden – contains plants that are bright (sight), highly fragrant (smell), interesting to feel (touch), edible (taste), and that create noise either when they are planted or when they are harvested and dried out (sound).
- Alphabet garden – contains plants whose names begin with each letter of the alphabet.
- Culture-based garden – contains plants from other cultures.
- Rainbow garden – plants of the same color are arranged into separate areas to create a rainbow.
- Children’s stories garden – the garden is designed to represent a children’s story, for instance Peter Rabbit or The Secret Garden.

(Starbuck et al., 2002)

### Plant selection

Once you have decided on the theme and layout of the garden, you can select your plants. The first decision to make is whether you will use annual flowers or perennials or a combination of the two (Bucklin-Sporer & Pringle, 2010).

Seek out help from gardening experts in the community. Local experts will know the local climate and temperature and be able to help you select appropriate plants. The Master Gardener program mentioned earlier is a good resource for this (American Horticultural Society, 2011).

In addition to selecting annuals and/or perennials, there are several other considerations that you need to make when selecting plants. Select plants that are hardy and relatively low maintenance. Consider whether to avoid plants that are toxic or have thorns or include them in the garden in safe locations and warn the students that they are toxic. Also consider whether you wish to plant

#### Annuals or Perennials?

Feature	Annuals	Perennials
Lifecycle	Grow for only one season	Return year after year
Blooming season	Longer	Shorter
Cost	Plants cost less, but need to be replaced every year	Cost more initially, but do not need replacing
Examples	Petunias, marigolds, zinnias, okra, basil, corn	Daylilies, peonies, apple trees, strawberries, rosemary, potato, rhubarb,

(Lener, 2002)

seeds or transplants. One option is to grow seeds in a classroom during late winter so that they are ready for planting in the spring (Starbuck et al., 2002; Bucklin-Sporer & Pringle, 2010).

Remember to discuss with the students about what they want in their garden. Ask them to draw or write about their ideal garden. Research has shown that children prefer bright and varied colors, water elements, and animal habitats and enjoy spaces where they can hide (Ohio State University Extension, 2000).

### **Creating a garden drawing**

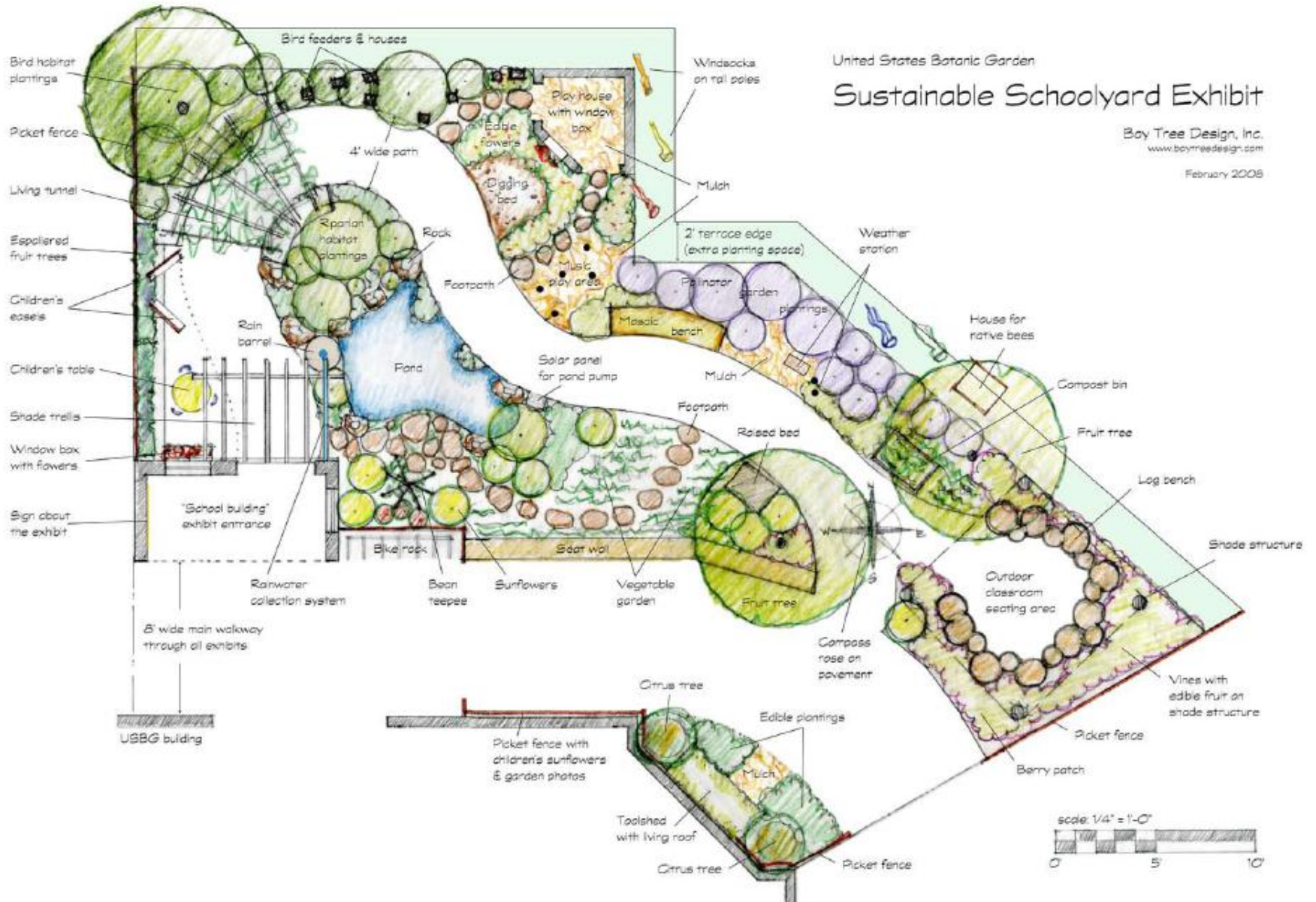
The next step in your project is creating a drawing of your garden design. Using graph paper, draw the perimeter of your plot to scale. Everything should be drawn in from a birds-eye-view (Editors of Publications International, Ltd., 2011). Consult with a landscape architect or garden designer to get expert advice on your design. Many experts may be willing to donate their time or consult at reduced cost (Bucklin-Sporer & Pringle, 2010). Below is an example of a garden design, from an exhibit at the United States Botanical Garden (Sustainable Schoolyards, 2011).

United States Botanic Garden

# Sustainable Schoolyard Exhibit

Boy Tree Design, Inc.  
www.boytreedesign.com

February 2008



# Costs and funding the project

## Estimating Costs

The most important piece of information that you will need to estimate costs is the square footage of your garden. Garden materials such as plants and soil will cost approximately \$1.30 to \$2.00 per square foot (United States Botanic Garden and Chicago Botanic Garden). Factor in the prices of pathways, plant beds, tools, outdoor classroom furniture such as seating for the students, and any garden extras such as water features or birdhouses. If professional services are not being donated, then you will also need to factor in those costs. Securing as many donations of materials as possible will help you to cut costs (Bucklin-Sporer & Pringle, 2010).

You will also need to lay out an annual budget. During the first year of using the garden, take thorough notes on costs that arise. Annual costs will include the wage for a garden coordinator if you have one, supplies such as pencils, paper and cooking supplies, and plant, soil, and water costs. Costs that may come up less often are for curriculum materials and library books, professional development courses, upgrades and expansions, and repairs and tool replacement (Bucklin-Sporer & Pringle, 2010).

## Fundraising

There are many different ways to raise money for your project. Take advantage of school district funds, principal discretionary funds, or Parent Teacher Association funds if they are available to you. Talk to local groups and businesses in attempts to secure monetary donations or in-kind donations. Visit hardware stores and gardening stores or nurseries for supplies such as tools, soil, plants, and mulch. Local businesses may also be able to provide services for free or at reduced cost. National businesses can also be resources. Look for donations from seed companies and donations of damaged or unwanted goods from national corporations. Also look into participating in seed swapping programs with other local gardening programs (Hazzard et al., 2011).

Also seek out donations from parents and neighbors. Host events such as silent auctions, raffles, or bake sales. Once the garden is up and running, host events in the garden such as harvest parties and sell seeds and plants (Bucklin-Sporer & Pringle, 2010, United States Botanic Garden and Chicago Botanic Garden).

## Grants

Grants can be very useful for funding your project. Research grants online, but do not limit yourself to only school garden grants. Grants such as social science and math grants may be available to you if you can prove that you will use the garden for teaching

lessons in those subjects (Hazzard et al., 2011). When applying for grants you will need to be able to clarify your purpose and goals for the garden and show that the project is led by capable leadership (Bucklin-Sporer & Pringle, 2010). Grants are available from many sources and in many different amounts, so take advantage of their variety by applying to several.



# Constructing the garden

You have your design and supplies, now is the time to construct the garden. Do any labor involving heavy machinery ahead of the groundbreaking. Recruit volunteers, including students, to help construct the garden. To help with cutting down on the amount of supplies needed, ask the volunteers to bring their own tools. Divide the project into smaller tasks that can be done by teams and assign team leaders who know what to do with their part of the construction. Create labels for where the plants will go, perhaps get students to make them and lay out the materials where they will go (Starbuck et al., 2002). Make sure that there are tasks that children can be involved in, for instance they could transport soil in child-sized wheelbarrows. Construction will take hours, so make sure that there are food and drinks for the volunteers (Bucklin-Sporer & Pringle, 2010).



(Ellis, 2010)

# Teaching in the garden

Now that your garden is up and running, it is time to teach in it. There are two main things to think about when it comes to using a garden for teaching: who will teach and what will they teach?

## Garden Coordinator

A garden coordinator is in charge of the garden. He or she may be a teacher, parent, or community volunteer or a paid staff member working part or full time as a garden coordinator. A garden coordinator maintains the garden and facilitates its use, including planning lessons, activities, and projects. The amount of teacher and garden coordinator interaction varies. At some schools, the teachers will do all the teaching, while the garden coordinator maintains the garden and maybe runs a student gardening clubs. Other schools may have the teacher and garden coordinator work together to create and execute lessons. The remaining schools may have the garden coordinator teach all outdoor lessons while the teacher either assists or is not there. However they interact, it is important that teacher and the garden coordinator can work together. A study assessing school garden programs in California found that nine out of ten of the exemplary programs they evaluated had a part or full-time garden coordinator (Hazzard et al., 2011). Even if your school will not have a garden coordinator, it is important that there are people committed to using and maintaining the garden and enthusiastic teachers willing to teach in it.

## Curriculums

There are several garden curriculums available to you. Lesson plans and curriculums can be found online, including in some of the websites listed in the references in this guide. However it is not necessary to buy expensive curriculums. In the study of exemplary California school gardens mentioned before, the majority of schools did not use a specific standards-based garden curriculum, but instead developed lessons themselves using standards-based textbooks (Hazzard et al., 2011). If the garden coordinator or teachers wish to develop lessons themselves, it is important to remember that the lessons should link to educational standards. It is also useful to link the outdoor lessons to other lessons taught during the school year, this requires cooperation and communication between teachers and the individual creating the outdoor lesson plans.

### Invite Guest Speakers

There are many guest speakers that could come to you garden to speak to your students, here are some examples:

- Farmer
- Beekeeper
- Nutritionist
- Landscape architect

(Bucklin-Sporer & Pringle, 2010)

## **Journaling**

Journaling can be a rewarding way for students to keep track of their activities in the garden. There are a multitude of ways that the journal can be used. The journal could contain:

- Pictures and graphs
- Stories
- Photographs
- Experiment predictions and outcomes
- Observations
- Vocabulary words

(Starbuck et al., 2002)

Specific garden-based lessons are not the only lessons that can be taught in the garden, other subjects can be taught there also. For instance, an art lesson could involve painting the plants or students could read outdoors during an English lesson (Bucklin-Sporer & Pringle, 2010).

An important thing to bear in mind when teaching in an outdoor classroom is that not everything will go according to plan. The children may pull up flowers while weeding or stomp over plants in their enthusiasm. Supervision can help avoid too many mishaps, and recruiting volunteers to help increase the child to teacher ratio may be useful. In addition, things such as weather and predators may interfere with you using the garden as you planned. Flexibility is important here. If insects are destroying a plant, you can use it as a learning experience with the children, teaching them about garden pests and ways to get rid of them (Starbuck et al., 2002).

In the end, if you put the necessary time and effort into your garden, it will provide the students of your school a wonderful place in which to learn.

# Resources

## Books

Bucklin-Sporer, Arden, and Rachel Kathleen Pringle. *How to Grow a School Garden: A Complete Guide for Parents and Teachers*. Portland, Oregon: Timber Press, 2010

A guide to creating a school garden, from planning, fundraising, and designing to planting, harvesting, teaching, and cooking. Contains lesson plans, to-do lists, recipes, and examples of projects.

Starbuck, Sara, Marla Olthof, and Karen Midden. *Hollyhocks and Honeybees: Garden Projects for Young Children*. St. Paul, Minnesota: Redleaf Press, 2002

Explains the reasons behind school gardens, how to engage children in gardening, and how to plan, build, and work in the garden. Contains lessons plan, recipes, frequently asked questions, and examples of projects.

Waters, Alice. *Edible Schoolyard: A Universal Idea*. San Francisco: Chronicle Books, 2008

Description of a school garden project in Berkeley, California. Contains recipes.

## Websites

Website	Organization	School garden guides	Lesson plans	Links to other resources	Professional development	Consultation	Grants
<a href="http://www.troygardens.org/">www.troygardens.org/</a>	Community Ground Works						
<a href="http://www.uwarboretum.org/eps/">www.uwarboretum.org/eps/</a>	University of Wisconsin-Madison Arboretum: Earth Partnership for Schools						
<a href="http://www.chicagobotanic.org/schoolgarden/">www.chicagobotanic.org/schoolgarden/</a>	Chicago Botanic Garden						
<a href="http://www.schoolgardenwizard.org/">www.schoolgardenwizard.org/</a>	Partnership between United State Botanic Garden and Chicago Botanic Garden						
<a href="http://www4.uwsp.edu/cnr/">www4.uwsp.edu/cnr/</a>	Wisconsin Center for Environmental Education						
<a href="http://www.kidsgardening.org/">www.kidsgardening.org/</a>	Kids Gardening: A Resource of the National Gardening Association						



<b>Website</b>	<b>Organization</b>	<b>School garden guides</b>	<b>Lesson plans</b>	<b>Links to other resources</b>	<b>Professional development</b>	<b>Consultation</b>	<b>Grants</b>
<a href="http://www.csgn.org/">www.csgn.org/</a>	California School Garden Network						
<a href="http://www.eeweek.org/">www.eeweek.org/</a>	National Environmental Education Week						
<a href="http://www.agclassroom.org/">www.agclassroom.org/</a>	USDA Agriculture in the Classroom						
<a href="http://www.jmgkids.us/">www.jmgkids.us/</a>	Junior Master Gardener						
<a href="http://www.growinginthegarden.org/curricula.html">www.growinginthegarden.org/curricula.html</a>	Growing in the Garden Curriculum						

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