

IMPLEMENTATION AND BEYOND: A GUIDE TO CULTIVATING A THRIVING SCHOOL GARDEN

This section serves as an addendum to the Educational Toolkit and may be used as a resource on its own.

INTRODUCTION

While this Educational Toolkit is specifically written for the close to 60 schools taking part in the **Healthy Gardens, Healthy Youth (HGHY)** pilot program, the content and curriculum within are intended to be applicable to and eventually made available to any school and any garden seeking to incorporate youth into gardening programs.

There are thousands of excellent resources and garden-based learning curricula available from many organizations. Rather than write new material, a main purpose of this project was to bundle some of the best garden-based learning curricula into one user-friendly toolkit. Similarly, to create the ***Implementation and Beyond*** guide, we reviewed already written resources, slightly adapted them when necessary, and compiled them into one comprehensive document. In reality each section could go on for dozens of pages, in the interest of efficiency, we sought to pull out and provide you the most up-to-date, applicable and critical information for each topic. We hope *Implementation and Beyond* is simple, yet thorough.

As part of the **HGHY** pilot program, you will find that some of the steps outlined in the *Implementation and Beyond* guide will not apply to your garden project at the moment because you have already completed them in order to be part of the grant. As an example, perhaps you have already received administrative approval and chosen your garden's size. That being said these sections might be useful if (and hopefully when) you decide to expand the garden.

Lastly, should you find you want to read more on one particular topic, within each section you will find resources and/or footnotes for additional information.



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I. YOU CAN!¹

We often hear teachers say: “This sounds like a terrific plan—but we just don’t have enough room at our school.” Our response: “Do you have a vacant 10' x 15' space? Or a courtyard? Or a patio? Or could you fit planter boxes on a classroom windowsill or just outside the classroom?” Many school gardens start with just a few container plants in the classroom window or grown under grow lights if there is no natural light. An outdoor garden bed as small as 10' x 10' can produce enough fresh food to provide snack for a whole classroom of 30 students. Plus, growing plants is just one of the many educational and fun activities that a school garden can provide. Students can also participate in thousands of activities that associate with the garden yet do not require them to be physically in the garden.

Having the physical space to garden is just one obstacle cited by teachers. We often hear concern about managing a group of students outdoors. As educators you know how to work effectively with students in the classroom; we encourage you to apply those same skills outdoors. Identify the essential elements of effective classroom instruction, and then directly transfer them to the garden as an outdoor classroom. Think about how you coordinate hands-on activities in the classroom, and then apply those techniques outside.

One of the great things about a school garden is that teachers don’t have to be experienced in gardening to start one. Hundreds of teachers with little gardening experience have quickly come to value their garden as an outdoor classroom for ongoing exploration. *Implementation and Beyond: Cultivating a Thriving School Garden* will guide you through many recommended steps to organizing a school garden. Be sure to always remember that **every school and community is unique** so think of this booklet as a guide and always be open to adapting it to best suit your garden project’s needs best.

You may try to spend a little time online and looking in the local paper for nearby gardening classes, community groups with a nutrition or gardening focus, or not-for-profits doing urban agriculture or food security work. You will likely be pleasantly surprised to know you’re not alone. And of course, don’t forget your local Cooperative Extension office where thousands of research based resources are available, classes are offered to the public and you may find knowledgeable Master Gardener Volunteers may be found.

Lastly, you will find many additional references throughout the entire Educational Toolkit and in the Appendix section to help you continue reading and learning specific subjects as they relate to your garden project or perhaps when you’re in need of some inspiration. If you don’t find something you’re looking for, don’t be afraid to do a general search online too. There are thousands of great resources available, often at no charge, and you will surely be able to find something to suit your needs.

¹ Adapted from *Getting Started*, 2007, Life Lab Science Program. Center for Ecoliteracy, pp 9-14.

II. INTRODUCTION TO SCHOOL GARDENS²

What is a school garden? A school garden is an innovative teaching tool and strategy that lets educators incorporate hands-on activities in a diversity of interdisciplinary, standards-based lessons. The garden engages students by providing a dynamic environment in which to observe, discover, experiment, nurture, and learn. It is a living laboratory where lessons are drawn from real-life experiences rather than textbook examples, allowing students to become active participants in the learning process. Through the garden, students gain an understanding of ecosystems, an appreciation for food origins and nutrition, and knowledge of the life cycles of nature, plant and animals. At the same time, they learn practical skills in things such as horticulture, soils, observation, and demonstrating patience that last a lifetime.

Where did school gardens come from? The school garden movement originated in Europe and arrived in the United States in the 1890s. Gardens sprang up at schools all over the country during the early 20th century, with particular booms as Victory Gardens intended to increase the domestic food supply during World War I and World War II. During the 1950s, the number of gardens decreased as schools placed more emphasis on technology. However, the environmental movement of the 1970s renewed educators' interest. More recently, the popularity of school gardens as an educational tool has steadily grown as a way to teach healthy eating behaviors and a way to incorporate and increase interdisciplinary hands-on learning experiences.

What does a school garden look like? School gardens come in all shapes and sizes, with a common focus on growing plants. A school garden may be as small as a few pots of herbs growing on a windowsill or as large as a half acre plot of vegetables in a schoolyard. Gardening programs are flexible enough to fit the wants, needs and resources of every school. Even the smallest of gardens can be an effective and interactive learning tool!

Why garden with kids? Educational philosophers going back to the 17th century have promoted the use of gardening to achieve learning objectives and support the mental, emotional, and social development of youth. Students enjoy gardening activities, and teachers and parents say that gardening programs:

- Address multiple learning styles
- Provide opportunities for interdisciplinary lessons
- Improve environmental attitudes
- Promote good nutrition and exercise
- Teach patience and responsibility
- Instill a positive work ethic
- Increase students' self-esteem
- Build classroom relationships, improve teamwork, and strengthen school spirit
- Beautify the environment

In addition to anecdotal evidence, a growing body of research-based literature supports the use of youth gardens as a beneficial teaching tool. Research³ has found that participation in youth gardening programs can have the following impacts on students:

² Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA. pp. 7-12.

- Improve self-esteem and attitudes toward school
- Improve social skills and behavior
- Improve environmental attitudes, especially in younger students
- Increase group cohesion
- Improve interpersonal relationships
- Increase interest in eating fruits and vegetables and improve attitude toward fruits and vegetables
- Significantly increase science achievement scores
- Increase self-esteem, help develop a sense of ownership and responsibility, help foster family relationships and increase parental involvement
- Improve life skills, including working with groups and self-understanding

When investigating the benefits of school gardens, it is helpful to divide them into **four categories: academic achievement, a healthy lifestyle, environmental stewardship, and community and social development.**

ACADEMIC ACHIEVEMENT

Academic achievement is the primary focus of educators throughout the country. Their aim is to ensure that students perform at satisfactory levels defined by local, state, and national academic standards. All lessons and activities must complement mandatory standards to merit the use of valuable classroom time.

A school garden is a perfect tool to provide hands-on learning experiences for any academic subject, the most common being science. Many teachers use the garden as a laboratory to introduce students to scientific methods through plant-related experiments. Additionally, a garden provides a place to study weather, insects, soil, and other environmental matters, as it is an ideal habitat model for studying ecosystems. Real-life garden experiences contribute greatly to students' comprehension and retention of new science knowledge; in fact, participation in a gardening program increases science achievement scores, as noted above.

In addition to science, the garden provides opportunities to teach mathematics, history, social science, language arts, and visual and performing arts. Concepts that seem abstract in the classroom come alive in a garden setting. For instance, students find taking daily measurements of garden bean plants and then charting the growth rate to determine the fastest-growing plant in the garden much more exciting than charting numbers provided by a textbook.

A HEALTHY LIFESTYLE

Beyond academics, the garden provides broader life lessons, including contributing to students' knowledge of how to maintain a healthy lifestyle. The United States is experiencing a major health crisis as the number of overweight and unfit youth grows at an epidemic rate. Approximately one in three children are overweight or at risk of becoming overweight, and almost 40 percent of school-age children

³ For specific research on topics including learning achievement, health and wellness, life skills, and environmental awareness, please visit the Cornell Garden-Based Learning web site, <http://blogs.cornell.edu/garden/grow-your-program/research-that-supports-our-work>

are considered unfit. The increase in number of weight related chronic diseases such as diabetes is of great concern, and the need for prevention education is critical.

Garden programs work to combat the epidemic by teaching youth about healthy lifestyles that include proper nutrition and physical activity. Through a gardening program, students gain first-hand experience with fresh fruits and vegetables. They discover that produce does not magically appear on the grocery store shelves, and they learn the important role of agriculture in our society. The pride and curiosity sparked by growing fruits and vegetables along with the knowledge of where they come from motivates students to try eating them, oftentimes leading to more positive attitudes and eating behaviors. Fruits and vegetables are an important part of the diet not only because they provide essential vitamins, but also because they are linked to prevention of such health problems as cancer and heart disease. Studies show that a majority of children do not eat the recommended amount of fresh fruits and vegetables each day, so they are missing out on these benefits. A garden program increases produce availability and creates opportunities to teach students what they should eat for good health through fun, hands-on experiences. This information can also be shared with students' families.

A healthy lifestyle involved more than just eating right. Students also need to adopt good exercise habits. The garden provides a wide range of physical activity through digging, planting, and weeding. The garden activities are often so captivating that students do not even realize they are exercising. And unlike some other activities they participate in during their school years, gardening is an activity they can participate in for the rest of their lives.

ENVIRONMENTAL STEWARDSHIP

A school garden is a powerful environmental education tool. Through gardening, students become responsible caretakers. They have an opportunity to engage in agricultural practices on a small scale, learning about the responsibilities and impacts of land cultivation and explore the web of interactions among living and nonliving components of life. By doing so, they develop a greater understanding of the natural world. Students also learn the importance of caring for natural resources. A specialized garden of native plants or drought-tolerant plants, for example, provides an excellent opportunity to teach students about local flora or water conservation. They will observe that choosing the right plants for the garden results in a beautiful landscape that is also environmentally friendly. (*More on Designing with Nature on page 19*). Additionally, gardens teach about waste reduction through composting (*More on composting on page 28*). Students who learn sustainable garden practices can more readily consider conservation issues from a local and global perspective.

Establishing a connection with nature at an early age is extremely important. For many children, a garden offers the only chance to get close to nature. Some lack access to gardening spaces because of their living situations; others have limited exploratory free time outdoors. School garden educators in urban environments frequently find their programs provide students their first opportunity to dig into the soil and watch a plant grow. Researchers have discovered that childhood experiences with nature are strongly linked to adult attitudes toward plants. Participation in gardening during childhood is the most important influence on adult environmental attitudes and actions, and even in urban areas where green spaces are limited, gardening programs for children can provide a strong enough connection to instill appreciation and respect for nature in adulthood. For more on environmental stewardship, please see "*Understanding Nature's Cycles*" in the Appendix on page 59.

COMMUNITY AND SOCIAL DEVELOPMENT

Community and social development lessons do not receive the attention that academic achievement does, but many educators feel they are just as crucial to the survival of our country and to the strength of our communities as the fundamental skills of reading, writing and arithmetic. It is important for children to hear about diverse cultures so they learn to respect peers and neighbors and honor traditions. This awareness can lead to a feeling of “I matter” for children who are from another country or culture and also can affect the establishment of strong relationships and a sense of community.

Gardens create opportunities for students to work cooperatively and to develop responsibility. They will quickly learn the negative consequences associated with forgetting to water their plants on a hot day and will work hard to make sure it does not happen again. Plants will also provide positive reinforcement in response to proper care by growing or producing fruits. On a personal level, gardening builds confidence, self-esteem, and pride as students watch their efforts turn into beautiful and productive gardens. It also teaches them patience as they wait for a seedling to sprout or a tomato to ripen.

Gardens provide unique opportunities for cross-generational connections and more importantly, opportunity to build meaningful relationships. While gardening, children interact with teachers, parents, and community volunteers, providing opportunities for social interaction around a common goal. In addition, school gardens give children the opportunity to showcase their products at local fairs. Some will find it their only chance to contribute positively to their environment. The praise they receive from other students, parents, teachers, and community members creates a sense of community spirit and introduce them to the benefits of volunteering.

Much of history and the basis of many cultural traditions are rooted in the availability of natural resources including food and fibers. Previous generations are known for their strong environmental literacy and a dedicated environmental ethic. Recipes, stories and life lessons have been passed from generation to generation over thousands of years. In our fast paced, technologically inclined, fast food dependant society, these stories are being lost. Often, children (and adults) no longer know the roots of their lineage or traditional foods of their family or the health benefits of a native plant. A garden provides a venue for enabling these recipes, stories and lessons to continue being told – for cultural traditions to continue being shared, passed along and kept alive. Gardens can link wild places and urban centers, history and present day, farms and the grocery store. The examples are nearly endless.

The relationship is described best by author and activist Michael Pollen in *A Patch of Eden*⁴, “gardens, with their middle ground between the wilderness and the lawn, may suggest the lineaments of a new environmental ethic... and help us out in all those situations where the wilderness ethic is silent or unhelpful, or where the experience of wilderness is unaffordable and inaccessible.” While we may not be able to or want to live exactly the way our ancestors did, gardens present an opportunity for us and for youth to develop an environmental ethic and a relationship with the earth just as they did. Gardens enable us to find a place for mutuality between humans and nature.

⁴ Hynes, Patricia H. *A Patch of Eden*. 1996. Chelsea Green Publishing. P. ix.

Above all, gardening is fun, and once the skills are acquired it can become a lifelong hobby. Exploring the outdoors, planting in the soil, watching seeds grow, and harvesting the bounty are enjoyable and memorable ways for students to spend their time.

III. POSITIVE YOUTH DEVELOPMENT

Positive youth development (PYD) is a practice that intentionally engages and promotes the natural process of youth development. PYD is more than youth passively participating in a program; instead it involves youth in **responsible, challenging action** that provides opportunities for **planning and decision-making** that impacts others and the earth in real and tangible ways. It lays the foundation for an environment where **mutuality** in teaching and learning (between youth and adults) can take place.

A key feature of **positive** youth development, rather than traditional youth development is that this approach encourages people who work with youth to focus on traits and characteristics of youth as positive rather than negative or difficult. It requires a paradigm shift for youth workers to ask ourselves questions as to how we can cultivate positive and nourishing experiences for youth that enhance their natural personalities rather than being reactionary. Here are some examples:

Traditional Youth Services

- Fixing Problems
- Reactive
- Troubled Youth
- Youth as Recipients
- Program
- Professional work

Positive Youth Development

- Building on Strength
- Pro-active
- All Youth
- Youth as participants/resources
- Relationships
- Everyone’s Work

MEETING THE NEEDS OF YOUTH THROUGH GARDEN-BASED LEARNING EXPERIENCES⁵

The past several years have seen some dramatic changes in the way that we approach garden-based learning. True, we still get really excited about a child’s opportunity to witness a marigold growing from a seed they’ve planted, or hearing from a young person who planted a sunflower house, but at Cornell Garden-Based Learning we have expanded our notion of what constitutes an ideal experience for young people, and have looked increasingly toward **four key themes of positive youth development**, provided several years ago to the Cornell Cooperative Extension (CCE) system by Dr. Cathann Kress. According to the Search Institute, there are more than 40 positive experiences and qualities that can influence “choices young people make and help them become caring, responsible, successful adults”.⁶ However, since 40 are a lot to consider, we prefer to focus on just the four main qualities explained below. These four have become the basis for how we talk about garden-based learning, how we conduct our workshops, and ultimately, how we view our successes.

Mastery: Learning by doing “I can.”

⁵ Cornell Garden-Based Learning, <http://www.gardening.cornell.edu>.

⁶ What Kids Need: The Building Blocks for Children and Youth, the Search Institute, 2011, <http://www.search-institute.org/developmental-assets>



It isn't difficult to create a long list of all the ways in which a child or youth can gain skills by interacting with the plant world. Hands-on activity, experiential learning, group investigation, and discovery are the very backbone of gardening. We also try to encourage educators working with young gardeners to focus on the long-term goals of learning and to provide prompt feedback.

Several years ago we brought in a panel of 4-H youth to answer questions posed by educators and volunteers interested in garden-based learning. When asked what drives them crazy about the adults in their lives, one teen unexpectedly responded, "You're all so terrified to see us fail. We can handle it! Let us work it out!" It's one of the hardest lessons in life, but in gardening as with everything else, our goals sometimes aren't realized. Plants may die or be eaten by pests, the weather may not cooperate with our needs, and the beautiful gardens of our dreams occasionally sport nothing but weeds. We try very hard to model and teach that failure and frustration are learning experiences, too.

Belonging: Cultivate relationships *"I belong."*

In this busy culture of scheduled children, youth and families, it's easy to forget that more than ever, spending time with each other has tremendous value. Rainy days and other occasions can be a wonderful chance for unstructured leisure "hang out" time. Older adults often have tremendous knowledge about gardening; talking with them can be a way to promote relationships outside the usual scope of young people's affiliations. And it's not difficult to promote ties with family and community, since gardening is our nation's favorite hobby.

Because of all the activity that revolves around the garden, it also isn't hard to build in small group time to allow for the development of close relationships. Many of the crops we grow have come from all over the world; exploring where our food comes from, and celebrating different ways of sharing and preparing food from the garden, can be an exciting way to show respect for the value of diverse cultures. Perhaps most importantly, although plants need to be watered and the weeds are ever present, the most critical aspect of our program is remembering to have fun, and to enjoy each other.

Generosity: Gestures of thoughtfulness & shared responsibility *"I can make a difference."*

When we say the word generosity, frequently what comes to mind is the giving away of "things." There is often a lot of produce or flowers to be shared when you're in the thick of a terrific gardening experience, and many people in our communities can benefit from shared food and beauty. But generosity can include much more. A skilled garden-based learning educator reinforces gestures of thoughtfulness, and asks young people to take responsibility for others. Critical reflection, as a part of a service-learning experience, can be an important pursuit that leads to compassion, a broader scope, and life-long interest in the community.

Power: Authentic youth engagement & decision-making *"I matter."*

The area that we believe we most need to address in the garden-based learning arena is power and independence. Often, the people who are the most enthusiastic about gardens and gardening are adults. Nation-wide, these adults are calling the shots, designing gardens for children, developing educational programs for children, instead of thinking in terms of partnering with. A major thrust of our recent research-extension focus has been identifying children's level of genuine participation in community garden-based projects, and exploring ways to better engage children and youth in decision-making aspects of projects.

When it comes to gardening, there are myriad decisions to make, and before making any, we should consider whether children could or should make the decision. We should include children in discussions, encourage their input, and give them responsibility. There are many obstacles in gardening, from deer and other pests, to weather and site concerns; however, we shouldn't deprive children of the thrill of overcoming a challenge. Their ideas are often more creative and less burdened with "shoulds" and "the way things are" than ours. The challenging thing can be sharing our power with young people. Perhaps there is a way to give youth the opportunity for self-governance with respect to garden planning, design, implementation and maintenance in the garden? This might mean revising our notion of committees, meeting structures, timing, and our whole approach to how our project is organized.

All of these themes – mastery, belonging, power, and generosity – are relatively easy to work into any garden-based learning effort. It just requires us to see the forest for the trees, and remember that **the ultimate goal** isn't just raising crops; it's **growing competent, committed, reflective, and caring young people**. Instead of thinking solely of our subject matter expertise, and the important content to be gained from learning about horticulture, it is equally important to consider program factors such as non-scheduled time, sharing of stories, opportunities for friends to join in, chances to make a difference in the community, and avenues through which our young participants can voice an opinion.

Your Program

To develop more opportunities for **mastery, belonging, generosity, and power** in your garden-based learning efforts, try using the tool [Planning for Positive Youth Development](#) and the helpful chart you can download here: <http://blogs.cornell.edu/garden/files/2009/03/Learning-Dev-Walkaround1.pdf>.

Start simple: Consider an activity: planting pumpkins, planning a new garden, or hosting a harvest festival. How might you expand it? Use the planning sheet to dig deeper and get the most out of meeting the needs of children and youth in the process.

IV. GETTING STARTED & PLANNING⁷

YOUR GARDEN'S PURPOSE

One of the first things you should do is ask yourself a few questions: Why am I interested in gardening with my students? Why does my school have a garden? Or, why is my school considering having a garden? How can I use a garden as an outdoor classroom? How can I involve my students in the garden so they feel a sense of ownership and pride towards it? Who else might want to be involved with a school garden?

As you ponder these questions, be sure to consider both the teachers' and students' roles, physical structures that may be needed and any necessary procedures you may need to follow before starting a garden.

After identifying the need for a garden at your school and recognizing the benefits a gardening program will provide, it is time to begin to make your vision a reality. This section will guide you through the basic steps of creating and maintaining a school garden and even give you some ideas for thinking beyond the garden including:

- Seeking administrative approval
- Creating a support network

⁷ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., pp 7-12.

- Identifying goals and linking the garden to your curriculum
- Designing the garden
- Identifying supply needs and funding needs
- Obtaining supplies and funds
- Planting the garden
- Maintaining the garden
- Sustaining the garden
- Beyond the garden

STEP 1: SEEKING ADMINISTRATIVE APPROVAL⁸

Your first step is to gain the support of your school's administrators. Who you need to speak with and get approval from will vary from school to school. Before setting up a meeting, take time to develop an outline of your vision. Begin your outline with ideas for how you can incorporate the garden into the standards based curriculum as a hands-on interdisciplinary teaching tool, which is a make-or-break element in receiving approval. Also include the ways you think the garden will benefit your students and the community, a list of potential supporters, and a tentative plan of action, including the steps you will take to create a school garden. Think about bringing some examples of other school gardens that have been successful either in your local area or nation-wide. Developing a thoughtful and professional outline will indicate your level of commitment to the project and will inspire confidence in your proposal.

DOING TO, DOING FOR, DOING WITH

There are **three** approaches to implementing a community project. Here is one tactic: an agency feels that a gardening program is needed by the community, and goes ahead and implements it without community support. Essentially they "do the gardening project **to**" the community. This approach often has a "top-down" flavor. Other well-meaning agencies may sense that there is a demonstrated need, so they do the gardening project **for** the community. But, without a broad base of involvement, these projects may fail by the wayside for lack of long-term support. The best approach is to collaborate in each phase of the project – to do it **with** the participants.

By Cornell Garden-Based Learning, Sowing Seeds for Success.

For most educators, the principal's office will be the first stop. An enthusiastic and supportive principal is key to the development of your school garden, whether approving and arranging teacher time for workshops, or finding and tapping funding sources. Your principal can also be an important promoter of the garden project to your school district and community. It is essential that the principal be an active participant in the process.

Other school administrators can also play an important role. Seek your principal's guidance on additional contacts, which may include your superintendent, school board members or other local government officials, and even state and federal legislators. It's worth your while to gain their support and approval from the start. They love to be involved and associated with innovative programs, and their support can translate into tangible and intangible contributions.

STEP 2: CREATING A SUPPORT NETWORK⁹

⁸ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA.

⁹ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., pp 13-19.



Once you have a green light from your administrators, it is time to develop your support network. You will quickly find that garden programs are more work than one person can sustain. To ensure success enlist other teachers, school staff, students, parents, and community volunteers to serve on a garden planning and advisory team (which we will refer to as the “garden team”). Members of this team can help you set goals and can provide ideas for ways to integrate the garden into the curriculum. They may promote the program to other parents and community members, secure necessary supplies, provide horticultural expertise, assist with classroom lessons (it is often helpful to have an extra set of hands during classroom gardening projects), or aid in maintenance of the garden. By gathering input and help from a diverse group, you will strengthen the creativity and ingenuity of your program. Their involvement will multiply your resources and create active supporters for your efforts.

THE PARTNERSHIP APPROACH

- Clearly identify obvious partners, working with others strengthens your project
- Draw from a broad base! A diverse team makes the project strong and more sustainable

A gardening project is your golden opportunity to get to know others in the community. Consider the following scenarios. In each case, the individual is aware of existing weaknesses, but turns these into strengths by rallying others in the community. The program often has many more interesting “layers” and is much more solid as a result.

- You are a schoolteacher with a full agenda and limited time. After you interest other teachers and the principal in the gardening project, you approach the PTA and the local Historical Society for their support. The Historical Society will help you, if you are willing to plant heirloom flowers and vegetables. The PTA is pleased, because the city’s bicentennial is quickly approaching, and they have been looking for a topic in which to delve, so they chose the theme of horticulture, and will gladly help out if they can use the garden as the focus of their bicentennial activities. You will tie the heirloom connection back to a social studies unit, so this works well for you, too.

The example displays just one of many possibilities of how partnerships serve as synergistic relationships for both/all groups involved. Partnerships can take on many forms. They can happen within an organization or between an organization and a completely different one. Within your school a 2nd and 5th grade class could partner to establish a Big Brother, Big Sister program centered on the garden. The 5th graders can tour the 2nd graders around the garden, sharing what they know, their favorite and least favorite foods, etc. Or a partnership might be with a nearby community center that has summer programming. In exchange for helping maintain the garden during the summer, when school is out of session, they also enjoy the bountiful harvest.

(From Sowing the Seeds of Success, a Cornell Garden-Based Learning publication.)

Before asking people to be a part of the garden team, envision how you would like them to participate and what their responsibilities will be. How often and when would you like to meet? Do you want them to help in planning, implementing, or maintaining the garden, or help in all stages? Even though roles may shift during the life of the garden, always try to communicate needs and expectations clearly.

Not all members of this team need to contribute in the same way. Although it is easier on you to find individuals willing to help with all aspects, you will probably find more people willing to take on responsibilities that build on their individual strengths and fit their available time. An important volunteer to look for is someone willing to serve as a garden coordinator to help organize communication, scheduling, and other details. Because of the demands of this position, you may want to recruit two or three people to share this job. Your garden coordinators will help support you as the garden program grows in size and scope. Look for individuals who are good at delegating responsibilities and following up to make sure jobs are completed. It is best not to have coordinators who want to control all the work because they will deter other volunteers and are likely to burn out. Many successful school gardens are fortunate enough to find funding to pay a garden coordinator.

Begin building your network by conducting a brainstorming session with potential supporters. Spread the word by presenting the project idea at a faculty, school board, or PTO meeting and inviting people to join the brainstorming session. Send an e-mail invitation to the entire school community. Notify other community members of the upcoming session by hanging posters, sending out a newsletter, or placing announcements through local newspapers, radio, or television. Promote the meeting on the school Web site.

At this first meeting, present your initial vision for the school garden and the role the garden support team will play, and then develop a list of people interested in serving on the garden team. Many times people are hesitant to sign up through large meetings, so you will want to follow up with personal invitations to individuals you feel would make valuable members of the team.

Get as many people involved in the project as you can. The larger the project, the larger the support network you need. The more people involved, the more likely it is that your program will be successful because the weight of the project will not rest on one individual. Make sure to involve anyone who may have a direct stake in your program such as neighbors whose property will abut the garden, local garden club members, and green industry employees. It is important to contact these key players early in the planning stages to establish a feeling of “ownership.” When people are involved in the decision-making and active in the upkeep, they are usually more supportive and less likely to get bored and quit.

Create a group of people who will work well together and invest the time, energy, and patience to accomplish their goals. The committee should be composed of focused individuals who are willing to meet regularly and share in the responsibility of actually getting the garden started.

Potential team members include:

- **Teachers.** Involving other teachers in garden efforts is very important. Teachers are valuable contributors because they have a firm understanding of curricular goals, know your students well, and have access to school facilities and supplies. Additionally, it’s more fun to approach the garden as a teaching team, and it takes the burden off one educator to keep the program alive.
- **Maintenance Staff.** Many teachers have noted that a good relationship with the custodian is critical to a successful garden program. The custodian can help you find valuable resources like storage closets and water sources. Also, because the maintenance staff frequently works year-round, they can help keep an eye on gardens during breaks and vacations. Include your maintenance staff in early planning discussions, especially those related to garden location. If these staff members are

involved in the planning process, they will feel ownership of the program and will be less likely to view it as an inconvenience or an unnecessary addition to their workload.

- **Food Service Staff.** Food service staff may be able to provide resources to aid in food preparation for nutrition lessons. Also, lunchroom scraps can provide excellent materials for your compost pile.
- **Students.** Teachers across the country have discovered that when students are involved in all stages of the process, they are more invested in the project's success and inspired to care for and respect their schoolyard oases. By valuing students' opinions and encouraging them to make decisions, educators cultivate motivated, confident, and collaborative learners. Teachers say that although relinquishing some control and inviting students into the decision-making process isn't necessarily easier or more efficient, it is always rewarding.
- **Parents.** Parents will be enthusiastic about any program designed to provide additional learning experiences for their children and will have a strong stake in the success of your program. You may

find a parent with a horticultural background who can provide expertise, or a parent with excellent organizational skills willing to serve as a volunteer coordinator. Parents often have connections to funding and supplies, as well.

- **Community Volunteers.** Additional community members add depth to your program and open up new opportunities for resources. Don't only look for volunteers with garden experience and ties to the horticulture industry. Though this knowledge can help to provide connections to necessary supplies, they may be willing to provide technical advice, for example, diagnosing problems and leading special garden activities or workshops.
- **Local Farmers.** Contact local farmers along with public and private organizations related to the agriculture industry. Gardens are like small farms, and agriculture professionals have a lot of knowledge and materials to share.
- **Community volunteers** might include garden club members, college students enrolled in plant sciences or education programs, botanic garden staff or volunteers, plant nursery staff, landscape designers or architects.
- Cooperative Extension **Master**

ESTABLISHING AN IDENTITY

- *What is your project called?*

- *Creative names can go a long way in capturing community spirit and creating excitement*

- *A name can completely change aspects of a project*

It would be a pity to work so hard and only end up referring to your project as the "Youth Garden" or "Veggie Garden".

Names can spark zest and even impart meaning to a project.

A name tells the story of the project and may hint at the projects' goals, for whom the garden is for, or even reveal community history. A great way to generate excitement and involve the entire school and neighbors is to hold a "garden-naming" contest. Tell contestants of the gardens' goals and any specifics you already know you want the name to include. Short, easy-to-pronounce names are generally more memorable but the flavor of your projects name depends on your participants and stakeholders. 7th graders involved in a school garden in Ithaca, NY renamed the garden "Super Duper Awesome Skillage Veggie Garden of Doom and Broccoli" after deciding Dewitt School Garden was too boring!

Telling Your Story!

One of the most important things you can do as you develop a garden project is to be transparent about it right from the beginning and be sure your garden's story. Think about how you can let the school and neighborhood community know.

(Adapted from Sowing the Seeds of Success, Cornell Garden-Based Learning.)



Gardeners Volunteers (MGV) receive at least 45 hours of training in basic horticulture, soil science, composting, botany, insect biology, plant diseases, Integrated Pest Management (IPM), wildlife management as well as best practices in cultivating vegetables, fruits, herbs, houseplants, trees and shrubs. MGV are required to volunteer a certain number of hours with a community project and helping with the school garden might just be a perfect fit. For more information on the MGV program, visit <http://www.gardening.cornell.edu/education/mgprogram>.

- **Neighbors.** Don't forget your school's neighbors! Your garden is more than an addition to your school; it also affects the neighborhood. The neighbors can help keep an eye on it when school is not in session. They might also be willing to help with summer maintenance and weekend watering.

It takes time and energy to develop your support network, but it is worth the effort. Involving the school and the local community in a schoolyard project:

- Promotes project sustainability because responsibilities don't fall entirely on the shoulders of one champion
- Decreases the likelihood of vandalism because more people have a stake in the success of the program
- Provides connections to potential volunteers and donors of labor, plants, money, and supplies
- Encourages cross-generational mentoring and friendships among students, teachers, and a diversity of community members
- Brings needed expertise and fresh ideas to the project

STEP 3: IDENTIFYING GOALS AND LINKING THE GARDEN TO YOUR CURRICULUM¹⁰

The first job of your garden team is to identify goals for the school garden. Your goals must tie in with your current curriculum – the garden is a tool to help you accomplish your learning objectives, not an added task for your workload.

Begin your team's goal-setting meeting by sharing information about required academic standards, then brainstorm ways to accomplish these learning objectives through garden lessons.

Use these questions as a guide:

- What topics do you want to teach through the garden?
- What plants do you want to grow?
- Do you want to use the garden once a year for an in-depth special study or incorporate it into a yearlong interdisciplinary curriculum?
- Do you want to develop the garden around a central theme or create small garden areas with multiple themes?
- Which classes will be involved in the garden? Do they want their own gardening space?

When setting goals, remember to start small and leave room to dream. You can accomplish this by setting both short-term and long-term goals. For instance, you may want to create a butterfly garden in a half-acre courtyard at the school. Make it a multiyear project and break it into stages to keep the work at a manageable level, so that you don't exhaust the enthusiasm of your students and volunteers early on by preparing soil and removing weeds on a large area. In addition, this method allows for project

¹⁰ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA.13-15.

growth each year, adding momentum to your efforts and creating feelings of ownership from new participants.

After your brainstorming sessions, make sure to get your goals into writing. Create a summary document and distribute it to all the participants. Also share your plans with other teachers, administrators, and community members. This document will help to raise awareness of your new project, spreading excitement and anticipation.

STEP 4: RESOURCE INVENTORY AND NEEDS ASSESSMENT¹¹

With your goals in hand, you're almost ready to design. This last step before diving into designing will save your team a lot of time and most likely, money. Doing a Resource Inventory will help you and your team from feeling overwhelmed by all that you will put on the Needs Assessment.

Resource Inventory

Doing a resource inventory is a rather enjoyable process and a great opportunity to get to know your garden team better. It's simply a list of all of the resources you already have at hand, both physical and otherwise. Think big. The list should include the obvious like money, water, tools, supplies, and land. Also, and almost more importantly, it should include the less obvious resources including but not limited to:

- Knowledge/experience of team members beyond horticulture. Perhaps somebody on your team has served on a board of directors before and can help with the organization and facilitation of the garden team meetings. Maybe somebody is an avid birder or knows about wild edible plants and is willing to create a lesson or fieldtrip for a group of students.
- Skills such as woodworking and photography are undoubtedly helpful. Maybe a team member is an artist and can work with the youth to design a garden-based mural or to make small placards that can be sold as a fundraiser. Or maybe a team member loves to cook and is willing to teach the children or make a recipe book based on seasonal produce.
- Connections and relationships are important. Have each team member think about the connections/relationships they have with community stakeholders. Are they a member of a church or community group? Do their children attend an after-school or summer program that may have an interest in the garden? Do they know people who have tools or a truck that can be borrowed if needed?

The possibility for what goes on this resource list is only limited by your creativity and ability to take advantage of all that is available to you!

Needs Assessment

The next step is to create a Needs Assessment. Start by looking at your list of goals and think about what garden components you need to complement those goals. It will be helpful to sort "needs" (e.g. water source) from "wants" (e.g. covered outdoor classroom) either as you generate the list, or you can go back and review the list.

¹¹ Falk, Liz. Cornell Garden-Based Learning. <http://www.gardening.cornell.edu>

The needs of each garden will vary on the basis of location (indoor versus outdoor), size, number of students participating, and plantings. To help you get started, here is a list of common school garden components:¹²

- **Soil and/or Compost.** Whether you are gardening in the ground or in containers, you will need rich, high-quality soil and compost for your plants. Eventually you may create your own compost, but to get started you will need to find a local source. Many municipalities where green waste is collected give compost and mulch to residents.
- **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 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.
- **Plants.** It is not a garden without plants. Plants may be started from seed, grown from cuttings, or purchased as mature plants. Most classrooms begin their gardens by planting seeds because they are relatively inexpensive, and their growth helps students to visualize the full life cycle of a plant. It is also easy to find donations of seeds from local garden centers or seed companies near the end of the summer because many companies want to get rid of their excess stock. Seed packages are dated, and even though most garden centers and seed companies will not sell seed with older dates, packets kept in a cool and dry location will have high germination rates for many years.
- **Garden Stakes and Row Markers.** Label your plants to keep track of what, where, and when you plant. Although at the time of planting, you may think you will remember this without writing it down, once you expand your garden and begin different classroom experiments, it is easy to forget.
- **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, non-glossy cardboard, or landscape fabric before mulching (cardboard is often the least expensive and most effective choice)¹³. Alternatively, you can plant pathways with grass and mow it, or plant low-growing clover, which brings Nitrogen to the soil and doesn't need to be mowed, or in permanent garden sites, you can use bricks, pebbles, or crushed stone.
- **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.
- **Fertilizer.** Even with the most fertile soil, your plants will probably need additional fertilizer for healthy growth. Let the soil test results from your site analysis and the plants' needs be your guide. Nutrients may be added by applications of all-natural fertilizers such as compost, organic fertilizers like fish emulsion, kelp, or compost tea. Synthetic fertilizers are available, however we do not recommend using anything in the garden that contains a warning label and thus, may be harmful to

¹² Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA.13-15

¹³ SOURCE on Soy ink

- children or the earth. Always read and follow any warning labels and should you choose to use synthetic fertilizers, these should be handled by adults or under close adult supervision.
- **Mulch.** Outdoor gardens benefit from the addition of 2 to 3 inches of mulch added to the soil. (*Visit page 29 for more mulch details.*)
 - **Irrigation.** Although watering by hand using watering cans and/or hoses is an option (one that children love to do on a hot day and can easily engage many people in work), this job can become quite cumbersome and detract from the garden experience. Also, plants grow better with a steady supply of water in the very early morning. Drip irrigation and water-conserving sprinkler systems installed before planting will save time and often result in a healthier garden.
 - **Irrigation Supplies.** Plants need water. Irrigation supplies include watering cans, hoses, and sprinklers. Experienced gardeners know that automatic irrigation – for instance, drip irrigation systems or sprinklers – is an important asset for school gardens. If you plan to water with watering cans, make sure they are small enough for students to carry when full.
 - **Tool shed or Storage Area.** A tool shed or storage area is a good central location for cleaning, organizing, and protecting tools and equipment.
 - **Child-Sized Garden Tools.** It is important to use the right tools for the job. Although you may want a few adult-sized tools for parents and volunteers, smaller and more lightweight tools are safer for children to use. When selecting tools, look for durable, well-made, properly sized products. Watch out for donations of poorly maintained or unsafe garden tools. Examples of tools you may need: hoes, rakes, digging forks, digging spades, shovels, hand trowels, hand cultivators, buckets, and a wheelbarrow or garden cart.
 - **Child-Sized Gloves.** Soil is teeming with life, which is important for the health of your plants. However, it may also include organisms or trash items that are not beneficial for your students. Gloves help protect students from sharp rocks or trash buried in the soil and prevent undesirable organisms from getting under fingernails or into cuts.
 - **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.
 - **Weather Station.** Consider cultivating keen weather watchers by incorporating a weather

STOCKING YOUR TOOL SHED FOR 20-30 STUDENTS:

Tools

Hand cultivators (15)
Trowels (15)
Spades (2 or 3)
Rakes (2 or 3)
Large bush broom
Handsaw
Pruning Saw
Lopper
Hoes (3)
Wheelbarrows (2)
Hoses (2 or 3)
Digging forks (2)
Watering cans or buckets (5)
Plant labels/popsicle sticks
Tarp
Harvest baskets
Stakes (12+)
Sharp knife

Supplies

Clipboards (30)
Journals (30)
Pencils/Colored
Markers (Sharpies™)
Paper
Glue
Yarn/String
Tape
Scissors
Rulers
First Aid Kit

The **quantity** of the tools you buy will depend on your budget, but buying **quality** tools is worth the extra expense because they last significantly longer.

****Take time to learn and teach the correct names of each tool and its intended use before working with a class in the garden and prior to a workday. Gardening tools can be dangerous if not used properly****

(Adapted from How to Grow a School Garden, by Sporer-Bucklin, Arden and Rachel Kathleen Pringle, 2010, p.70)

station into your garden. Students can monitor a variety of conditions and determine how different factors affect garden life.

- **Curriculum Books and Resources.** There are a lot of excellent resources available to aid you in this process both online and in books. In fact, there are so many garden-related curricula that most likely you will not need to write new lessons for yourself. The Educational Toolkit designed for this Healthy Gardens, Healthy Youth project, is a compilation of the best curriculum available for starting and maintaining a school garden that is part of the school's academic program. Additional resources can be found in the Appendix and throughout this document. A detailed, prewritten curriculum is especially valuable if you are using volunteers to aid in the teaching process. Also visit the [California School Garden Network](#) Web site at and [Cornell Garden-Based Learning](#) for online links.
- **Money.** Sometimes there are items or services you will need funds for, such as renting a tiller or paying a water bill. Also, you may run into miscellaneous expenses that you did not originally anticipate. It helps to have a small amount of cash available to your garden project to accommodate fees and surprise expenses.

These are just a few ideas. As you continue the design process, you may add to your needs assessment. Be sure to see the *Stocking your Tool Shed* box on the previous page.

STEP 5: DESIGNING THE GARDEN

DESIGNING with NATURE (& for Doing Less Work!)

When approaching garden design, try to think how you might design the garden to work with, rather than against, nature's natural patterns and systems. This system of designing is called "Permaculture". Permaculture aims to create stable, productive systems (e.g. the school garden) where each element supports and feeds other elements, ultimately creating a self-sustaining system (e.g. school, community, and town)¹⁴.

The concept of living in harmony with nature is certainly not new. People for thousands of years, all around the world, have respected and tried to conserve nature. However, since the industrialization era, the general approach to development and design has been more one of control over (and many times even destruction of) nature. In hopes to preserve nature's ecosystems and reduce the negative impacts of development and industrialization, the environmental movement developed and took root. Permaculture includes many similar environmental ethics and takes into account social welfare, incorporates practical strategies for applying these ethics to a landscape, and designs so these strategies are relatively simple and long-term.¹⁵

Working with nature requires looking at what nature is already doing successfully and planning accordingly. This requires **careful observation**, as nature's ways are often subtle, **and patience**. For example, rather than choosing plants you want to grow and then constantly trying to alter conditions so they thrive, in a Permaculture garden, the environmental conditions of the site determine plant selection. If the site is particularly wet, plants are chosen that thrive in moisture; if the soil is naturally acidic, berries and other species that tolerate acidic soils are planted, rather than trying to amend the soil to work for annual vegetables (vegetables prefer soils with a more neutral pH.)

¹⁴ Mollison, Bill. *Permaculture, A Designer's Manual*.

¹⁵ The three Permaculture Ethics are Earth Care – Care of the earth, People Care – *Look after self, kin and community*, and Fair Share – *Limit consumption, reproduction, and redistribute surplus* (www.permacultureprinciples.com)

WE ARE ALL DESIGNERS!

Too often project leaders do not take the time to design before implementing a garden because most of us think we don't have the skill or knowledge to design. Many people are instantly scared by the word "design" or thought of trying to design something. Before you delve into this section, (or even consider skipping it!), let us remind you that we design things everyday as part of our daily routines; we arrange the furniture in our homes, you have a morning and evening routine that became that way because you "designed it" to work for you, we run errands in order of proximity stores are to each other and your final destination. You are a designer by nature. A simple design activity great for an individual or group is called *Random Assembly*. Start with a base map of the garden including permanent existing features (e.g. trees, structures, entrances, water sources, etc.) On another piece of paper write down all your "needs" and "wants" for the garden, leaving a bit of space around each word. Write as many as you like, as you can always choose not to use them all. Cut out each word into individual pieces so each piece says one component. (If you're working with a younger crowd or want to get more creative, you can find pictures for each need/want or try using Lego's™). Begin placing the individual components on the base map where you think they should go. You will easily be able to move them around, experiment with different arrangements, remove or add certain components until you feel the design is ready. Remember, a design may never be "done", as you may learn about something new and want to add it later, or perhaps you realize a certain area of the garden floods after a big rainfall so water loving plants should be there instead of veggies. Designing is an ongoing process and an activity like this will give you enough of a framework to get started.

PERMACULTURE PRINCIPLES

Permaculture design is rooted in principles that help simplify its ethics and guide the design process. If we begin to incorporate some of these principles and ethics into our school gardens we will find that the garden can teach and instill life lessons in youth, that gardens can be designed to be interactive and give feedback, that gardens are easier to maintain, better for the earth, and are high yielding in perennial foods, medicine and more.

There are over 50 Permaculture principles. Let's start with **three** that children connect with easily.¹⁶



Waste = Food

By valuing and making use of *all* the resources that are available to us, nothing goes to waste.

The icon of the worm represents one of the most effective recyclers of organic materials, consuming plant and animal 'waste' into valuable plant food. In nature, we see this happen all the time; think of the water cycle – simply speaking, evaporation feeds back to the cycle as precipitation. Or think of a forest – all the leaves and twigs that drop to the forest floor are used to regenerate soil and new forest growth. Reusing plastic bottles for irrigation (page33) or mini-greenhouses is *waste = food* in action. Oftentimes one person trash is another person's treasure. Common examples that can be incorporated into a school garden might include rainwater catchment from a nearby roof or compost bins. Can you think of others?



Maximize Diversity

Diversity reduces vulnerability to a variety of threats and takes advantage of the unique nature of the environment in which it resides. The more diverse an ecosystem or a community, the more resilient and knowledgeable it often is. Let's use a farm as an example. In a mono-

¹⁶ www.permacultureprinciples.com

crop (i.e. one crop) it's possible each plant will flourish if the conditions are just right. Conversely, the field is highly susceptible to diseases or weather extremes because each plant will respond in the same way to stress. Alternatively, a polyculture, (i.e. planting multiple species) will almost guarantee a harvest of at least one species. Even if the field is swept over with a disease or insects like the common aphid, each species is tolerant of different stresses and not all of the plants are likely to die. Also, it makes for a much more interesting meal if you grow multiple crops, doesn't it?

We can also think about this principle socially. If communities are comprised of people of varying ages, races, sexes, cultures, knowledge base and expertise, they are likely to be able to deal with challenges better than if we are all the same. Additionally, a diverse community tends to be creative, interesting and offer an array of activity for people to enjoy.

The proverb "don't put all your eggs in one basket" reminds us that diversity offers insurance against the variations of our environment. The icon of the spinebill and hummingbird represents the remarkable adaptation to hover and sip nectar from long, narrow flowers with their spine-like beak symbolizes the specialization of form and function in nature.



Use Small & Slow Solutions¹⁷

Small and slow system are easier to maintain than bigger ones, they make better use of local resources and produce more sustainable outcomes. The snail icon represents "slow and steady wins the race". Oftentimes the bigger the system, person or regime, the harder it falls if it fails. Small scale activities can adapt to local and environmental needs as it develops and additionally, by going slowly we can continue to observe and are able to see any consequences (positive and negative) of our work. In Permaculture the "Golden Rule" of this concept is "start small, get it under control and then slowly expand". This rule is something not to forget. You will see it woven throughout this guide and when the garden project overwhelms you, try to take a step back and reconsider your starting point.

ZONES¹⁸

A third way Permaculture helps the design process is by splitting it up into smaller pieces called "Zones". Zones are different areas on the land that can be used as guidelines to help plan where to place different things in a landscape or in a garden. We can visualize zones as a series of 5 concentric circles. The innermost circle (Zone 0) is the area we visit most frequently; it requires the most specific conditions to thrive (e.g. water, feeding, protection), and thus we manage it most intensively. We save energy and effort by putting the things that need regular work in the zones close to the school buildings. As you move from the inner circle, or zone, to the outer zones, each zone requires less and less attention and intervention. Things that need less work should be put into zones further away so you naturally interact with them less.

The typical school garden project will likely only have enough space to design for Zone 0, 1 and perhaps 2. And this is a great place to start as you grow slowly. However, as you build relationships with neighbors and the community you may obtain more land or perhaps think of creative ways to develop a larger project in yards, parks, or community centers that might be a good fit for zones 3, 4 or 5.

¹⁷ The Permaculture Association, www.permaculture.org.uk

¹⁸ Hemenway, Toby. *Gaia's Garden*. 2000. Chelsea Green Publishing.

Zone 0: The things that need the most work go into this zone. At a school this would be *in* the school buildings and may include seed starts or a worm compost bin.

Zone 1: This zone needs observation, daily visits and work input. This includes needy and regularly harvested vegetables (e.g. greens, quick growing roots), herbs, a place for hand tools, compost system, water storage, washing areas, etc. Small animals may be in this zone and/or Zone 2.

Zone 2: This zone requires less work than Zone 1, but still requires frequent observation and maintenance. It might include less needy vegetables (e.g. tomatoes, winter squash, potatoes), bees, bird and bee-attracting plants, cultivated medicinal plants, some berries and shrubs.

Zone 3: This is 'food forest zone' – Includes dense plantings of mixed orchard trees, shrubs, berries, soil building plants. On some sites this may also be the 'farm zone' – commercial crops, pastures for animals, green manure, aquaculture, low maintenance trees. Storage for tools used occasionally may be in this zone. This zone may house mid-size grazing animals that rotate through to help maintain and build soil (e.g. goats, sheep). *Most city schools do not go beyond Zone 2.*

Zone 4: This is the 'harvest forest' zone: semi-managed /semi-wild area for gathering firewood, mushroom cultivation, trees that do not need pruning, grazing, etc.

Zone 5: This zone is unmanaged or a barely managed wilderness or natural wild system. This is a place for learning and observing, a place where we are 'visitors not managers'. This zone is a teaching tool and meant for preservation. This zone, one of the most critical, is often left out of planned landscapes.

SITE ANALYSIS¹⁹

Once you decide what your needs and resources are, 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. Even if this is the case, you should still perform the site analysis because it will help you determine what you can plant. During the site analysis, you need to investigate:

- **Your USDA Hardiness Zone.** It is important to know your Hardiness Zone because many seed packets and plants you purchase will list a Zone number on them. This number will enable you to determine if the plant is viable to grow in your area. The USDA divided the US and Mexico into 11 Zones based on "average annual minimum temperatures and on the lowest temperatures recorded for each year."²⁰ In other words, the coldest day of the year was repeatedly recorded and this coldest temperature determines what plants will tolerate the climate where you live. For example, if you determine you live in Zone 6 (e.g. New York City) and want to plant an avocado tree, which is "hardy" to Zone 9, this plant will not survive the winter. Visit the online [USDA Hardiness Zone map](#) to find your Zone – or better yet, have your web savvy students do the research! Perhaps the students could even research the hardiness Zone of their favorite fruits and determine where these species are able to grow.
- **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

¹⁹ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA, pp 42-44

²⁰ United States Arboretum, USDA Plant Hardiness Zone Map. <http://www.usna.usda.gov/Hardzone/index.html#howuse>

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.
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 could have been 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 in the soil. Call your local public health department office to find out where soil lead testing is available. The presence of lead should not deter your gardening efforts. If the schoolyard soil is not suitable for gardening, you can garden in raised beds or containers. *See page 29 for more information on Soil Contamination.*
- **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.
- **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 it can be easily monitored. 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.

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 | - Edible garden (note: any garden on this can include edible plants) |
| - Butterfly Garden | - salsa garden |
| - Children's literature-based garden (e.g. Peter Rabbit garden) | - herb garden |
| - Cut flower garden | - pizza garden |
| - Native American | - salad garden |
| - Historical garden | - soup garden |
| - Native plant garden | - stir-fry garden |
| - Multicultural garden | - Rainbow garden |
| - Peace garden | |
| - Sunflower garden | |

A theme can provide you with creative press release ideas and fundraising connections. Involve your students and garden team to help choose your theme. Make sure the theme creates excitement and enthusiastic support to continue your school garden's momentum.

Source: Adapted with permission from Gardens for Learning, California School Garden Network, p.47.

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. Think about “working with nature” as you read on page 19. 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.

With the completed inventory of needs and resources and your site analysis, you can begin working on the landscape design. Start simple by drawing bubble diagrams rather than trying to draw detailed images. You can use multiple pieces of tracing paper to experiment with different shapes, sizes and configurations. As ideas develop that students and the garden team agree upon, you can begin to glue or tape them to a master sheet of paper. A fun way that can involve a lot of people is to have students and the garden team make five “master designs” to post in a main hallway or the cafeteria at the school. Set-up a voting system for a few weeks so parents, teachers, the PTA and other students can tell which design they like the best. At the end of the voting period, choose the winning design. You will be surprised by how creative people can be and perhaps you'll want to incorporate pieces of several designs into the final one. The most important thing in this stage of the project is to be open to people's ideas and input and encourage their participation. In the end, the garden team will decide on the final design (based on resources and needs), but incorporating input from the whole community can ensure tremendous garden success in the long-term.

Here are some simple tips to keep in mind: The garden design should be **practical** – keep in mind those short-term and long-term goals and make sure you have the resources to pay for and implement what you want; **functional** – make it interesting, yet organized so it's easy to direct students and volunteers to tasks. Also, think outside the box, not all the paths need to be the same size. Make main paths wider to

accommodate bigger groups, and make some paths smaller where only one or two people may be at one time; and **fun** – think of a design that is intriguing or might make your garden unique. Sometimes patterning something in nature like a spiral, a snowflake or a flower can be a good start. Be sure to involve your students and the garden team in the process.²¹

STEP 6: GARDEN PREPARATION²²

Building your Garden Soil

Organic gardening is all about feeding the soil. In turn, the soil will return the favor by supporting your plants and making them happy and healthy. Good garden soil is the foundation upon which everything in a garden depends. You will know your soil is healthy when it smells good, holds a bit of moisture, and the plants you put in it are growing and producing healthy looking stems, leaves, flowers, and roots. In our experience, regular additions of high quality compost and a covering of mulch are convenient and easy ways to nurture the microorganisms that are largely responsible for good garden soil. These are ongoing garden jobs that students can be entirely responsible for.

Garden soil is made up mostly of minerals, broken-down rock and organic matter. Organic matter is anything that was once alive: leaves, branches, animals, you name it. The organic matter is what feeds the inconceivable numerous tiny organisms, insects, and earthworms that live in good garden soil. You may not want to admit it, but these little critters are a gardener's best friend. They are neither beautiful nor charismatic, but they are incredibly useful and do us the wonderful favor of eating, digesting, and eliminating (decomposing) just about everything we put in the soil (except plastic perhaps).

Our job as organic gardeners is to feed these little critters and make sure they are doing their jobs to the best of their ability. That means doing everything possible to make sure they are eating, pooping, making babies, and making little tiny tunnels through the soil. All this activity makes good soil structure, which refers to the way soil clumps together. Soil with good structure is crumbly and if you were to examine it very closely, it would have very tiny tunnels running through it (made by our critter friends). It holds water briefly, but drains it, and it is an ideal place for the roots of, say, your tomato plant to live.

Did you know?

In some states there are laws that bans the use of chemicals and pesticides from being used on school playing fields or lawns? New York State is one of them.

Pesticides, weed killer, fungicides and insecticides can be toxic to adults and especially to children whose organs are still in development. Keep chemicals out of the school garden and only implement safe practices such as composting, mulching, physically picking off pests, use of biodegradable soaps and all-natural methods of pest control.

More info. on NY State's law:
<http://www.safelawns.org/blog/index.php/2010/05/new-york-school-pesticide-bill-becomes-law/>

To find out about laws in your state visit
www.epa.gov/epahome/school.htm

²¹ Falk, Elizabeth. Cornell Garden-Based Learning 2012.

²² Adapted from Sporer-Bucklin, Arden and Rachel Kathleen Pringle. *How to Grow a School Garden*, 2010, pp. 105-111

Here are a few cardinal rules to keep your soil healthy:

1. Never dig the soil when it is wet
2. Find a good source of organic matter to add to the soil a couple times a year such as compost.
3. Do everything you can do to nurture the micro- and macro organisms in your soil. You can do this by making sure the soil never completely dries out, or has too much direct sun exposure. Several applications of mulch every year will help.
4. Once you have built up decent soil, try not to dig it or turn it over. Layering compost, mulch and other amendments is less work, and nicer to the critters working so hard to make your soil the best it can be.

Sheet Mulching ²³

Sheet mulching is a way to remedy lifeless soil, build new nutrient-rich soil, inhibit weed growth, and mulch all at the same time. Not surprisingly, this is a commonly used technique in Permaculture²⁴ (see page 20) because it is easy, quick and effective. Whether you want to start a new garden, fill a raised bed with soil or expand an existing garden, sheet mulching is one of the easiest techniques. It's the simple process of layering carbon ("browns") and nitrogen ("greens") on top of dirt, weeds, grass, or an existing garden much like making lasagna (sheet mulching is also known as "lasagna gardening").

Materials you will need:

- Weed barrier such as **non-glossy** cardboard, newspaper, phone books, or scrap paper
 - Compost
 - Mulch such as fallen leaves, straw, or wood chips
1. Mow or cut your lawn, weeds, or other vegetation right down to the ground. Leave this material right there where you cut it (it will breakdown into new soil).
 2. Plant any crops that will require a large planting hole (including woody plants, perennials in large pots, and large transplants).
 3. Add soil amendments if needed (as determined by your soil test).
 4. If you have compost materials that may contain weed seeds (like leaves, or hay), spread them in layers on the ground. Put a dry, carbonaceous layer of hay or shredded leaves below or above this compost layer. Avoid thick layers, and make sure to get a good carbon-to-nitrogen ratio just as if you were building a compost pile (see *Start with the Soil* or other gardening books for details). Water this layer well if possible.
 5. Lay down a weed barrier. Use large sheets of cardboard from appliance stores if possible, because these last longer and are quicker to put down. You can use layers of non-glossy newspaper too. Make sure to have a 4- to 6-inch overlap where sheets meet so buried weeds can't find a route to the surface. If you have already planted crops, or have other preexisting

²³ Falk, Elizabeth. Cornell Garden-Based Learning

²⁴ Permaculture is a design technique for landscapes including gardens, farms, homesteads, and urban sites. Permaculture uses ecological principles based on patterns found in nature. These ecological principles combined with a design method helps to create sustainable, healthy and abundant landscapes while also meeting basic human needs. Source:

www.fingerlakespermaculture.org

plants, don't put this barrier over them. Rather, cut holes in the cardboard/paper to make some breathing space for each plant.

6. Now you can add weed-free organic materials. Keep it simple and add a nice layer of compost. Or you can do some sheet composting here; alternating layers of nitrogen-rich materials (e.g. fresh grass clippings, kitchen scraps) with carbonaceous materials (e.g. straw, leaves).
7. Add your final top mulch layer, at least 3 inches thick. Water the whole bed thoroughly once again. Your sheet mulch bed is complete.
8. You can plant right into the bed you made if you like. To plant a large transplant, just pull back the top layers until you get to the weed barrier (cardboard or newspaper). Cut an X into it, peel back the corners of the X and dig a hole. Throw a double handful of compost in the planting hole and then put in the plant. Pull the layers and top mulch back around the plant, water well, and you're all set. Planting seeds is easy too. Just pull back the top mulch to the compost layer and plant your seeds. You may want to cut through the weed barrier below first, depending on how thick it is and weed pressure below the barrier. If you are planting seeds, be sure to water enough to keep them moist (could once a day in hot weather), as compost on top of cardboard can dry out quickly.

Sheet mulching can be done at any time of the year, but it best done 6-12 months before you want to garden in the space to give all the layers time to breakdown. Then the process can be repeated every year after your garden season is over.

Cover Crops²⁵

If you have some time and would like to develop great soil, planting a cover crop such as bell beans, field peas, vetch, clover, winter wheat or rye grass will do wonders for your soil fertility and tilth. Any cover crop of the legume (pea or bean) family is a nitrogen fixer, which means that it takes naturally occurring nitrogen out of the air and fixes it into tiny nodules on its roots. When the plant dies or is dug back into the soil, the nitrogen is released. Nitrogen is a critical element for plant growth, and almost always needed in vegetable beds.

To plant cover crop, students may seed the area by broadcasting seeds by hand and watering them occasionally. When the plants are mature and before they go to seed, they should be shredded and lightly dug back into the soil (unless you want them to re-grow). Students can shred the plants by hand or cut them up with a scissors. We like to describe the process to the students as a crop that will feed the soil rather than us.

There are different types of cover crops for each season. Ask a local nursery or knowledgeable farmer about what to plant and when. In most temperate climates, teaching the use of cover crops are a great to involve the students in the garden at the end of the school year or before a harsh winter sets in. In June, we sever the plant at the level of the soil, shred the rest of the plant and lay it over the soil like mulch. During the summer the plant material dries and decomposes, the roots die and decompose and release nitrogen into the soil. When we return in September, the soil appears rested and ready to go to work. It is full of bugs and worms and our fall crops germinate and grow vigorously.

²⁵ Adapted from Sporer-Bucklin, Arden and Rachel Kathleen Pringle. How to Grow a School Garden, 2010, pp 105-109

Compost²⁶

Compost, a dark, crumbly, and earthy smelling form of decomposing organic matter, is the magical secret ingredient that makes all garden soil hum with life and vigor. It is breakfast, lunch and dinner for soil critters and plants in the garden because it contains important nutrients that plants need to grow. Compost also improves soil structure and tilth, making it a more hospitable and even nurturing place for plants and organisms to live.

To students we like to describe the process of composting as similar to what happens in a deciduous forest each year. Leaves drop to the ground and pile on top of other green and brown plants, twigs, nuts, and soil. Throughout the fall and winter these piles of organic matter get rained and snowed on while also air blows through the forest. Come springtime this pile has decomposed leaving a new layer of soil and nutrients on top of the forest floor. Composting replicates this process by breaking down organic matter including garden trimmings, leaves, fruit and vegetable scraps, straw, cardboard and paper.

Every school garden should have several compost alternatives: a worm composting box can take small amounts of food scraps and produces a great soil amendment and kids love exploring what lives in the bin. A three-bin composting system can take care of larger amounts of fruit and veggie scraps and also garden and yard trimmings. Be sure to find an outside source of good quality compost as well. A small composting system helps provide great usable compost but almost never produces as much as the garden will need.

Composting is easy, cheap, good for the environment and fun to do, but there are some key things to know before starting a worm bin or an outdoor bin. You need to ensure your compost bin doesn't get smelly or attract pests. For composting how to's and resources, visit <http://www.ccetompkins.org/compost> or www.howtocompost.org.

Mulch

Keeping water in the ground is always a challenge in a hot summer vegetable garden. Several inches of mulch on top of the planting beds helps to conserve water and keeps roots from drying out. Mulch is any covering on top of the soil which prevent unwanted seeds from blowing onto the soil or sprouting from below; it can be river rocks, wood chips, straw, or anything else that will make a barrier between the elements above and the soil below. Tree care companies who do a lot of chipping often have a great plentiful supply of wood chips and usually they are very happy to donate (and often deliver) them to a school garden to avoid paying a dumpster fee. The work of hauling and spreading mulch can be entirely carried out by students from as young as kindergarten. The work is fun and they enjoy it thoroughly.

Manure

Manure is not recommended for use in school gardens due to concerns about *E. coli* contamination.

²⁶ Falk, Elizabeth, Cornell Garden-Based Learning.

Many school districts prohibit the use of manure so, always check with your school district before using any manure in a school garden. If manure is used in the garden, you must follow strict food safety precautions to avoid *E. coli* contamination. All produce must be carefully washed before tasting or consuming, and students must thoroughly wash their hands after working in the garden.

Detecting Contaminants and Testing your Soil²⁷

It's a good idea to send a sample (or two for larger gardens) of your soil to a soil lab for testing. If there is concern that the school garden soil might be contaminated with lead or other toxins, sending a soil sample is a must. Even if you do not think there is a chance for contamination, a soil sample is a great, simple way to find out what nutrients are in your soil, which are lacking and what the pH of the soil is. When you receive your soil test results, you will also be given some recommendations for amending the soil so it is better suited for growing vegetables.

It can take about 2-4 weeks to receive the results of your soil test, so be sure to plan ahead. As long as the soil is not frozen, you can send in soil samples at any time of year. Be sure to read the directions on the soil testing form. The form will tell you how deep you need to dig to get the soil for the test and how much soil you need to send in each sample.

To find a soil lab, first start with your local [Cooperative Extension](#) office. Be sure to ask them if they test for soil contaminants such as lead and arsenic. Not all labs can do these tests, but they can direct you to one that can.

STEP 7: CREATING A BUDGET²⁸

Before you begin searching for financial support and donations revisit your **Needs Assessment** of materials and supplies (*see page 15*). Estimate the costs for the entire project and prepare a realistic budget. You might find it helpful to organize your needs/budget items over time, for example, to think about what the garden needs are for the next 0-6 months, 6-12 months, and 1-2 years. This will make the budget feel less overwhelming and help you prioritize what you need to focus on first. Remember to include expenses for the site development and improvement, operation, curriculum, and miscellaneous items. If you skip this step and do not take time to organize your efforts, you might end up with an abundance of supplies, but still be missing key items.

You will likely need to spend some time researching prices at various stores and consider that sometimes the cheapest things aren't always better, especially with garden tools. You should also ask your school administrator about the school's tax exemption status and get the Tax Identification Number (Tax ID # or TIN) of the school. If the school is not tax exempt, be sure to budget tax into your calculations.²⁹

Why is a budget so important? You don't want to be missing important supplies that delay garden implementation, nor do you want to end up with supplies you cannot use. A vague request for supplies for a new school garden could result in 10 garden hoses and one shovel, when what you really need is

²⁷ Falk, Elizabeth. Cornell Garden-Based Learning.

²⁸ Adapted from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA, pp 48-52

²⁹ More information on TIN can be found on the IRS web site,

<http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html>

10 shovels and one hose. Having even a simple budget in hand as you search for support will also demonstrate the organized and professional nature of your garden and give potential sponsors confidence in both you and the program.

Design the budget so you and the garden committee understand it and can easily work with and adapt it. Sample budgets are available online. Here's a sample [school garden budget from Georgia Organics](#) that displays three different sized budgets.

STEP 8: OBTAINING SUPPLIES AND FUNDS

Once you have a list of needs, where do you begin your search? First, determine whether or not your school or school district has internal supply funds to help with your program. Internal funding may be limited, but it never hurts to try; after all, you are competing for funds with a smaller number of people. Next, look for additional local resources within your community.

Most school gardens use three main approaches to seek funds: donations, grants, and fundraising projects. You will probably want to use a combination of these strategies to secure the funds needed to begin and maintain your garden program.

Since you're purchasing on behalf of a school local businesses are often happy to provide discounts and sometimes even donate products. Don't hesitate to ask if you qualify for a discount. Businesses like to support local initiatives because it helps them strengthen their ties to the community, closely track the progress of their investment, and reap public relations benefits from their generosity. For instance, a garden business that donates plants hopes the students' parents will acknowledge the investment made in their children and respond by shopping at that store. After looking locally, expand your search to regional, state, and national opportunities.

Donations

Note: While this section focuses on donations, we delve more into fundraising on page 52.

Seeking donations is a task that many people dread because they often hear "no" numerous times before getting a "yes." Before you begin your quest, create project folders for your school garden that you can take with you and leave with each potential donor. The folders will show that your effort is well organized and that the program has the full support of the school administration. The project folder does not need to be flashy, but should include an enthusiastic endorsement letter from the director, principal, or coordinator; a one-page project description; a garden plan; a list of people who support the project; a list of garden needs; and personal appeals like quotes or drawings from students.

Here is a list of tips to make sure your donation search is rewarding rather than frustrating:

- Begin with the parents of your youth. They are strongly invested in your program and may be able to donate the items you need or may have community connections that can fulfill your needs. Reach parents in parent volunteer meetings, school newsletters, letters and e-mail appeals.
- Identify potential donors by matching your needs with their services and products. Meet with potential donors in person, if possible.

- Know the tax status of your school or organization and the name that should use when making out checks to support your work.
- Businesses receive requests for donations all the time, so be professional and organized. Ask only for appropriate amounts of cash and specific materials.
- Remember that businesses need to sell their products and make a profit to survive. Be ready to tell them why they should invest in your school garden project and how you will recognize them if they do support it.
- Money may be the first gift that comes to mind, but other donations can be just as valuable. These may include plants and seeds, lumber, soil, amendments, fencing, tools, release time for employees who wish to participate, and in-kind gifts like use of equipment.
- Acknowledge all donations, large and small, in the form of notes, posters, banners, and so on. Include students in the acknowledgment process.

If you do not like to ask for donations, find someone on your garden team who is more comfortable doing so. Donors pick up on hesitation and are more likely to say “no” to a person who lacks enthusiasm and confidence. When people say “no,” accept it gracefully and thank them for their time. Who knows? They may change their mind or you may need to approach them about other opportunities in the future. You can find a **sample donation letter** on the [School Garden Wizard website](#) to help guide you in writing your own.

V. PLANTING THE GARDEN

The most exciting part of the process is always planting day. Watching a landscape design turn into a garden energizes students and adults.

GROUNDBREAKING³⁰

A great way to kick off the garden and involve the school and surrounding community is by holding a groundbreaking event just as the weather is changing to spring. For your garden program this can be an event that requires a lot of initial planning and that is both a celebration and a workday in which you will build community and the infrastructure of your garden program. Planning ahead and sharing all the preparation responsibilities among the garden team will help to make the event a success. *Also refer to the Working with Volunteers section on page 44.*

Thorough recruitment efforts are extremely important. Involve the whole garden committee to get the word out. Be sure to advertise in the school newsletter, on a school bulletin board, on the Web site and any school and neighborhood list serves.

Planning for the Workday³¹

Any work that requires the use of heavy machinery (e.g. excavator) or dangerous equipment (e.g. power saws) should be done in advance of a groundbreaking workday. Refer to your garden design and prioritize the jobs that need to be accomplished by breaking them down into smaller projects such installing a seating area, constructing raised beds, planting trees or bringing in new soil. Creating a loose

³⁰ Adapted from Sporer-Bucklin, Arden and Rachel Kathleen Pringle. *How to Grow a School Garden*, 2010, p.72.

³¹ Adapted from Sporer-Bucklin, Arden and Rachel Kathleen Pringle. *How to Grow a School Garden*, 2010, p.73.

schedule for the day is useful when coordinating multiple tasks with many volunteers of differing skill levels.

Each smaller project within your groundbreaking plan will require specific materials. Determine who from the garden team will be the lead coordinator on each smaller project and then work together to determine how much and what kind of lumber or other building materials, nails, fasteners, and soil are needed and have these items delivered before the workday. If you don't have enough of something, don't hesitate to ask your volunteer community to bring something for the day. Try not to take on too many smaller projects if you don't have coordinator for each. No matter how prepared you are you can't run multiple projects at once very well. The morning of, have each project coordinator help place materials and supplies in the space where they will be built or used so they are easy to find. (Revisit the *Stocking your Tool Shed* box on page 18). Try to provide gloves for people and be sure to get some child-sized ones. Also, plan for needed horticulture supplies as well; purchase plants and seeds you intend to put in the ground during the workday and have labels and sharpies on hand so you know what is planted where.

Make sure you have enough activities planned to accommodate people of all abilities and ages. Children can do a lot more than we sometimes think and they are usually excited to help with building projects. However, it also is a good idea to have some paints, brushes and small pieces of wood on hand so youth can make garden signs or some potting soil, pots and seeds in case the youth would like to start some seeds for the garden or to take home. If you know a volunteer is coming to the workday who loves working with kids, perhaps ask him or her to be in charge of organizing activities for youth. Parents will be pleased to know that their child is enjoying themselves and being supervised.

The groundbreaking workday is your first big chance to tell the garden's story. Think about ways you might promote the work you're doing. Could you make a large copy of the garden's design to put on display so people can see it? Can you make postcard size flyers about the garden and who to contact to get involved? If you don't have a name for the garden yet, perhaps make a box and provide people small pieces of paper so people can enter name ideas. If you already have a name, think about doing an unveiling of the garden's sign during the groundbreaking day.

VI. MAINTAINING THE GARDEN³²

The excitement of Planting Day is hard to top, but it is the continual care and observation of plant growth that strengthens students' connection to the land and broadens their understanding of the environment and food systems. Once plants are in the ground, you will need to maintain the garden through regular activities such as watering, thinning, weeding, fertilizing, mulching, composting, and monitoring for pests. These activities promote healthy plants by providing for their needs. The five basic needs of plants are water, light, nutrients, air, and a place to grow.

1. **Water.** Plants use water for a number of important processes, including photosynthesis (production of food) and transpiration (evaporation of water from the leaves into air that cools the plant and creates pressure to move water from roots to leaves). Water also aids in the absorption of some nutrients.

³² Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., pp69-72

2. **Light.** Energy from light is captured to use during photosynthesis.
3. **Nutrients.** Just as people need vitamins, plants need special nutrients to help them grow properly and for their biological processes to function. The top three essential nutrients for plants are nitrogen, phosphorus, and potassium. Most plant nutrients are provided by the soil, and we increase their availability through fertilization.
4. **Air.** Plants take in carbon dioxide and use oxygen during photosynthesis.
5. **A Place to Grow.** Plants need a place to call their own with room to grow to maturity.

The need for each of these components varies by plant. Research your school garden plants to learn how to care for them properly. Plants also provide signals when they have a need. For instance, a plant needing water will wilt, and the leaves of a plant needing nitrogen will turn yellow. It is important for your students to discover and understand these signals.

This section provides background information on some of the techniques your team will employ to maintain the garden, along with an overview of seasonal garden tasks. It concludes with tips for dealing with such common challenges as how to maintain the garden during summer breaks and how to deal with vandalism.

Pop Bottle Drip Irrigation System

A great and affordable way to provide a steady water supply to plants without constant attention is to make your own drip irrigation system for free using recycled materials.

The materials you need:

- 2 liter plastic soda bottle or water bottle that still has the lid
- Drill and small drill bit
- Sharp knife

Drill 4-8 small holes into the can and top of the plastic bottle. If you want it to drip slower use less holes, faster use more holes. Don't make holes that are too small, they will become clogged up by debris.

Remove the bottom of the bottle by cutting across with a sharp knife. This creates a funnel for you to easily pour water into.

Dig a hole in between a group of plants that is deep enough to bury at least 1/3 of the bottle.

Place the bottle in the hole with the cap side down.

Pour water into the bottle until it is full. You will need to fill your bottle when it is empty. Frequency depends on how much direct, hot sun your plants receive. Place several bottles next to plants that require a lot of water.

WATERING

As a general rule, during active growth most plants require about 1 inch of water (from rain or irrigation) per week. In hot, dry, and windy conditions they need more. In cool and humid conditions they need less. Feeling the soil around the plants is the best indicator of when it is time to water. The soil should be moist, but not too wet. Poke your finger about 1 inch down in the soil. If the soil feels dry, then it needs additional water. Plants wilt when not enough water is getting to the leaves. However, do not automatically assume that you need to water wilted plants, because they may also wilt when there is ample or excessive water. **Test the soil first.** Touch it with your bare fingers and indent your finger into the soil an inch or two. **It should feel like a moist, wrung-out sponge.** If the plants are wilted but the soil is wet, it is still a sign that the leaves are not getting enough water – but it is a root problem. If the plant is new or recently transplanted, it may just need some time for the root system to become established. Sometimes new roots cannot keep up with the water demands of the leaves. If the problem continues, it could mean the roots have a fungal disease. In this case, remove the plant and the soil around it to prevent possible disease spread.

When you or your students water, **apply the water to the base of the plant** and avoid excessive moisture on the leaves. The plants are absorbing water through their roots, so the water needs to be in the soil. Additionally, water on leaves can lead to a number of disease problems. **Water plants in**

the early morning to cut potential losses by evaporation. **Apply water slowly** to give it time to sink into the soil. If water is applied too quickly or with too much force, it will run off into drainage areas along with loose soil and new seeds. Children often water until the soil looks moist on the surface, but that might not be enough to benefit the plant. After watering, it is always a good idea to check the soil by poking a finger into the soil around the plant's roots. A number of watering tools are available. Watering cans and garden hoses are the least expensive alternatives. However, they take quite a bit of time and close monitoring. Other alternatives are soaker hoses, drip irrigation, and sprinkler systems. Drip irrigation slowly delivers water into the soil directly around the roots and can be purchased from you local garden center. Irrigation requires less time and can be linked to automatic timers, easing the chore of watering during weekends and long breaks. These tools are more expensive, however, so you may need to look for additional funds or donations.

THINNING

Many times more seeds are planted than can grow to maturity in the available space. Once the seeds germinate, you and your students need to "thin" your crop by removing some of the seedlings growing too close to each other. Although it is never easy to remove plants, if you leave too many plants in a small space they will compete for resources and will not be able to grow to their full potential. When your students thin, instruct them to identify the healthiest seedlings and remove the others. One technique is to pull out the less-healthy seedlings. However, doing so risks disturbing the roots of the plants you want to keep. An alternative is to cut the tops off the unwanted seedlings, after which the roots will eventually decompose. Thinning can be a challenging activity for younger children, and they may need close guidance.

You can place thinned plants in a compost pile or worm bin. Also, some vegetable sprouts are edible and full of nutrients – perfect for a great nutrition lesson and tasting activity.

WEEDING

Weeds are plants growing in the wrong place. You should remove all such plants because they will compete for space, light, and water with your intended crops (and many times weeds will win, because they are well adapted to your conditions). First, you and your students need to learn how to identify the seedlings of your crops. After students know what to keep, they will know what to remove. Pull weeds by hand or remove them by hoeing or cultivating around the plants, staying far enough away from the plants you want to keep to prevent damage to their roots. With either approach, make sure the roots of the weed are completely removed.

To ensure that weeding does not become an overwhelming job, encourage students to monitor the garden continuously and remove weeds when they are small. If weeds are allowed to grow for too long, they will flower and spread seeds, which will escalate the weed problem. Simple ways to decrease weed problems is to apply a layer of mulch to the soil and to "sheet mulch" prior to the garden season (*revisit page26 for details*).

MULCHING

Mulching the garden can dramatically reduce the need for weeding and watering. *Please revisit pages 26-29 for more mulch details.*

FERTILIZER

For healthy growth, all plants require certain nutrients. The three they need in the largest quantities are nitrogen (N), phosphorus (P), and potassium (K).

Nitrogen is important for stem and leaf growth and for the photosynthesis process. Phosphorus promotes root growth and improves flowering and fruiting. Potassium contributes to root development, the overall growth of the plant, and disease resistance. Other essential nutrients are equally important, but plants require them in much smaller amounts. Plants acquire most nutrients from the soil by absorbing them through their roots.

During your **site analysis** (page 22) you completed a soil test that provided information on the nutrient content. It is common to find that your soil is low in nutrients, especially the “big three.” Since nutrients aren’t always abundant enough in soil to support healthy plant growth, gardeners make up the difference by adding fertilizer.

A number of different types of fertilizers are available. Some deliver nutrients to your plant immediately; others release nutrients slowly over time. Examples of common fertilizers are liquid or solid synthetic fertilizers, slow-release pellets, compost and fish emulsion. Any product sold as a fertilizer will have a nutrient analysis on the label with three numbers. The numbers represent what percentage of the three major nutrients – nitrogen (first number), phosphorus (second number), and potassium (third number) – the fertilizer contains. The product label should also tell you how much to use for different crops and areas. Check with school administrators to see if there are any restrictions on the type of fertilizer your class may use in the garden. Always follow the warnings on fertilizer products and store in a secure location.

Fertilizers should be handled by adults or under close adult supervision. You might think that if a little bit of fertilizer will help your plant grow, a lot of fertilizer will result in an even better harvest. However, the phrase “the more the better” is *not* applicable to fertilization. Excessive fertilizer can contribute to plant diseases and lead to runoff of the extra nutrients so make sure to apply only the amount you need.

Fertilizing is not a one-time event. As plants grow, they deplete the soil’s available nutrients, so you will need to constantly monitor nutrient levels and provide additional fertilizers when needed. Keeping soil healthy is the key to maintaining healthy and productive plants.

COMPOSTING

In the natural world, decomposers such as earthworms, sow bugs, slugs, molds, mushrooms, and bacteria use dead plants and animals as food, breaking them down into smaller particles and thereby releasing nutrients back into the soil. In the garden, we simulate this decomposition process by creating compost piles.

Compost piles are made up of garden waste and other organic matter high in carbon and nitrogen and exposed to moist conditions to attract decomposers. As the decomposers use the composted organic matter for energy and maintenance, they break it down into simpler molecules. This process gives off heat, which in turn speeds up decomposition. Compost can be made in freestanding piles (3- by 3- by 3-foot is an optimal size) or contained in special bins as long as it receives proper water and air movement.

Once the materials are broken down, the compost can be incorporated into the soil to increase the nutrient content and improve the structure. *Review the section on Compost (page 28)*

MONITORING FOR PESTS³³

Your garden ecosystem is home to many insects and other organisms, and only a handful of them are actually harmful to plants. Even when plant pests are present, they are not necessarily a threat to the garden. Like healthy people, healthy plants are usually able to ward off some stress and handle minor damage while continuing to perform well.

In order to keep pest problems to a minimum, the best practice is to monitor the garden regularly. Insect and disease problems are easiest to fix if caught early. Check the plants for plant-eating insects like aphids and scale (they often hide under the leaves). If pests are spotted early, their populations can be controlled through handpicking or using a high-pressure water spray. Also look out for leaf spots, which can be a sign of fungal or bacterial disease. Remove leaves with signs of disease so that it does not spread through the bouncing of irrigation and rainwater.

Place plants you suspect of being diseased in the trash rather than in the compost pile. When you find signs of pests, your first step should be to identify what is causing the problem. This can be an exciting investigative activity for your students.

Once your sleuths identify the problem, you need to decide whether the damage is significant enough to warrant any action. Tolerate some plant damage. Observing the interactions in a garden ecosystem is an important part of the learning process for your students. Many plant pests have natural predators, and if you remove the pests, your students will never get to see the predators in action. For example, ladybugs are ferocious aphid consumers. However, if you don't have any aphids, then you also won't attract any ladybugs.

If the damage becomes more severe, decide whether or not the plants are worth keeping. Disease problems are often a sign that the plants are not well adapted to the environment, so pulling them up

Use for those old CD's!

One of the simplest, cheapest, and most environmentally safe ways to keep birds, rabbits, and squirrels – and perhaps even other critters, out of your garden is by using old CD's or reflective tape. CD's are preferred because they are often free, found lying around many houses and no longer played. You can even use scratched ones!

Hang the CD by a string at the appropriate height for the pest you are targeting. E.g. To keep birds from eating cherries, hang the CD's in the cherry tree branches. For rabbits, hang the CD on a stake just 1-2 feet off the ground. **Make sure you hang the CD so it can blow in the breeze.**

How it works. First and foremost, the CD's provide a visual deterrent because of their reflective quality. Secondly, the CD's can provide a sound deterrent if you hang them close enough to tap against each other. As they spin in the breeze a pest is scared into thinking there is a predator and so they are warded off.

³³ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., pp.74-75

and replacing them with crops better suited to the location may be the easiest solution. If you feel that more control is necessary, such as the use of pesticides, check with school administrators and maintenance personnel. Schools have strict pest control regulations.

In addition to monitoring the plants and providing proper maintenance to promote good plant health, here are some additional techniques to minimize pest and disease buildup in the garden:

- **Plant appropriate** varieties for your area. Many plants will not thrive if they are grown in the wrong climate zone.
- **Practice crop rotation.** Pests and diseases that affect certain crops (or families of crops) build up in the soil if the same crop is grown in a particular bed year after year. By planting a different crop in the bed each year on a three-year cycle, you can avoid many problems.
- **Discourage excess moisture on foliage.** Most fungal and bacterial diseases can infect plant surfaces only if there is moisture present. In regions where the growing season is humid, provide adequate space among plants so that air can circulate freely. Try to keep students out of the garden when it's wet so they don't spread disease organisms.
- **Clean up your garden.** Diseases and pests can remain on infected and dead plant material, making it easy for them to attack other plants. Remove infected plant leaves, keep weeds to a minimum, and clean up the garden at the end of the growing season.
- **Encourage beneficial organisms.** Make the garden inviting to pest predators such as ladybugs, wasps, lacewings, and birds. Flowers and herbs provide nectar to predatory insects, and a water source such as a fountain or bath will attract birds. Growing perennial plants (those that last two or more seasons) helps to provide year-round habitats for beneficial organisms.
- **Install barriers.** You can place floating row covers made of lightweight fabric over plants to protect them from invading pests. The fabric allows light, moisture, and air to pass through. However, if you cover a crop that requires insect pollination in order to bear fruit, you will have to remove the covers when the plants begin to blossom. Row covers may also deter some animal pests, but fences are often the only way to keep large, persistent creatures out of the garden. Use netting to protect fruit crops from hungry birds. A collar of newspaper, stiff paper, or boxboard circling seedling stalks and extending 2 inches above and below ground prevents cutworm damage.

VII. USING YOUR SCHOOL GARDEN³⁴

SUSTAINING THE GARDEN

There is more to sustaining your garden than keeping the plants alive. Considering the time and resources invested, your garden program should serve as an education tool for this year's students and for students using it 10 years from now. You also should create a positive garden experience for all participants. This section provides tips from experienced school garden educators on how to sustain your garden efforts, including ideas for outdoor classroom management and communicating success. Also, be sure to review the section on *Positive Youth Development* starting on page 8.

When you're ready, and just as critical, when the students and garden project are ready, read through **Section VIII, Beyond the School Garden** that starts on page 49, for an overview of the extensive possibilities of involving the entire community into the school garden. Even though using a garden as a teaching tool is the ultimate goal, remember that each step of this process provides valuable learning

³⁴ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., pp. 79-81.

experiences for you and your students. Don't get bogged down in the details – enjoy the adventures along the way!

It seems obvious, **but in order to sustain the garden, your team must actively use it.** If at all possible, plan garden time into the weekly schedule. While more time is ideal, even just an hour a week will have a dramatic effect on the gardens' wellbeing and on the students' relationship with the garden. Implement lessons around garden activities and experiments. Encourage and invite other teachers and youth groups to use the garden, too (after establishing some basic guidelines for use). Ask for and be open to ideas they may have. Perhaps there's a way to incorporate garden produce into the school snack or even the cafeteria.

Increased involvement will add value to its role as an educational tool. To use the garden effectively, make sure to match lessons and activities with your curricular goals, adopt good outdoor classroom management techniques, create measurements for success, and document all your efforts.

DOCUMENTING EFFORTS

In the midst of an active garden program, it is easy to neglect the job of recording your efforts. But keeping track of your progress is critical. Keep a notebook of your activities with detailed descriptions and photos. Track all **donations** of funds and materials along with the names and contact information of the donors. Log volunteer hours you and others put into the project, or better yet, give each volunteer a log sheet to keep track of their own hours. Also, log all the **positive feedback** you receive from students, parents, and community members. Take a lot of photos! Perhaps there is a volunteer willing to be the garden photographer, or if the budget allows, give each child participant a disposal camera and connect picture taking to a particular assignment. You will draw on this documentation as you share your work with administrators, community members, look for additional funds, and recruit new volunteers.³⁵

INTEGRATING INTO THE CURRICULUM

In today's educational climate, teaching mandatory curriculum standards and passing related standardized tests are top priorities. A school garden can be a natural tool for teaching these standards, and promoting that use of the garden helps to secure administrative support.

The seven units provided in this Educational Toolkit are a tiny sampling of how gardens integrate into the curriculum. The following pages provide additional ideas on how to integrate gardening with classroom curriculum. Although science is the most natural fit, the school garden can also act as a springboard for a wide range of lessons in mathematics, history-social science, English-language arts, visual and performing arts, and health. Begin by looking at the education standards and your own curriculum goals and making a list or map of areas you intend to cover. Make a second list of garden tasks, projects, and goals, and match them with the student outcomes detailed in the standards. Next, select or develop specific activities that can help students achieve the standards. The lists that follow represent just a sampling of garden-focused subject area activities to get you started.³⁶

Free garden curriculum resources for teachers are plentiful. For lesson and activity ideas, check out the "Curriculum" link on the [California School Garden Network Web site](#) and the Activities section on [Cornell](#)

³⁵ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., p 82.

³⁶ Adapted with permission from *Gardens for Learning: Linking Gardens to School Curriculum* pp. 20-28.

[Garden-Based Learning Web site.](#)

Science

The garden provides ample opportunity for making science inviting and relevant to students' lives by inspiring active exploration and problem solving. The garden encourages inquiry as students use their senses, reasoning, and communication skills to find answers to questions. These experiences can help improve students' attitude toward science. Key science concepts that can be explored in the garden include organisms, cycles, basic requirements for sustaining life, plant anatomy, adaptations, food webs, decomposition, interdependence, ecological principles, pollination, and diversity of life. Students practice and hone scientific process skills by observing, classifying, inferring, measuring, predicting, organizing and interpreting data, forming hypotheses, and identifying variables.

Below are a few ideas for life, physical, and earth science activities in the classroom garden.

Life Science

- What are the differences between living and nonliving things? How are humans like plants? How are they different? Distinguish and describe differences and similarities.
- How does a plant grow? Observe the life cycles of plants using fast-growing plants in your classroom.
- What do plants need to grow? Do all plants need the same things? Study the various conditions that different plants need to grow. Compare the things people need to the things plants need. Create experiments investigating what happens when plants are exposed to different amounts of light, water, air, space, and nutrients.
- Investigate the functions of different plant structures (cotyledons, roots, stems, leaves, flowers, fruits, and seeds).
- How do plants reproduce? How do seeds work? Dissect flowers and seeds. What factors influence germination of seeds? Create experiments to investigate how light, heat, and moisture affect germination. Explain to students that some characteristics are inherited and the environment causes others. Locate examples of both in your garden.
- How do plants use energy from the sun to make food? Discuss photosynthesis. Do plants need light to photosynthesize?
- Discuss how plants adapt for survival. Research adaptations of seeds for dispersal and adaptations of flowers for attracting pollinators. Observe pollinators in the garden.
- Investigate the impact of environmental changes on plants.
- Study wildlife and insects along with their habitats.
- Investigate food chains and webs. Demonstrate how plants are the primary source of energy for all food chains.

Earth Science

- Create a garden weather station. Record daily measurements and compare conditions with plant growth.
- How are some soils different from others? Compare and contrast the properties of different types of soils (density, air spaces, presence of living organisms, composition, texture, smell, appearance).
- Simulate soil erosion in your classroom garden. Observe the difference in soil loss when water is splashed on a tilted, planted pot, and on a tilted, unplanted (but soil-filled) pot.

Physical Science

- What is pH? How does it affect plants? Use litmus paper or a test kit to test the pH of different soils. Investigate how plants respond to soils with different pH levels.
- Simulate the water cycle in the indoor garden by covering it with a “dome” of clear plastic. Study and observe the transpiration, evaporation, and condensation of water.
- What are the properties of different types of light? Cover pots with cellophane of different colors to screen out all but one wavelength of light from plants. Observe plant growth.
- How does energy change to matter during photosynthesis?

Mathematics

The garden provides a plethora of opportunities to practice basic mathematical activities such as calculations, comparisons, measurements, and varied representations of data (charts, graphs, etc.). Math becomes practical and relevant when students implement concepts they have learned in the classroom in a real-life garden setting.

Designing and planting a garden takes mathematical problem solving and practice. The hands-on applications presented by gardening activities can help to motivate students often confused by abstract textbook questions and examples. Here are a few math activity ideas:

- Measure the growth rates of plants and display results on different types of graphs. Make predictions regarding future growth. Use standard and nonstandard units of measurement.
- Host a bean race. Plant a number of beans at the base of a trellis and track their growth on a chart. Determine the rate of growth and award the fastest plant a blue ribbon.
- Using information from seed catalogs, predict dates of germination and maturity.
- Plan backward from a desired harvest date to determine when each crop should be planted.
- Measure your garden parameters and calculate the area. Use graph paper to make a map to scale of your garden.
- Calculate amounts of fertilizer to use per quart and per liter of water.
- Chart temperatures of the air and soil in your garden in Fahrenheit and Celsius.
- Determine the weight and volume of soil mix when wet and dry. Determine the volume of soil in a rectangular window box.
- Investigate vegetable prices in a supermarket. Track the amount of produce harvested in your garden and use the market prices to determine the value of your harvest.
- Count the number of seeds planted and the number of seeds that sprout and calculate the germination rate.
- Measure the height of a group of plants and determine the mean, median, and mode.
- Calculate serving sizes of different fruits and vegetables using common cooking supplies.
- Make a recipe that uses fruits and vegetables from the garden and requires various measuring techniques.

History—Social Science

Plants are an important part of world history. They have influenced human civilizations and economies since the beginning, and as the base of all food chains and supplier of oxygen for our air, they will always be essential to our survival. Gardening activities can be used to teach students about specific historical

events and cultures, and also to introduce current events like the impact of biotechnology. Some gardening activity ideas:

- Research and report on cultural or ethnic differences in food consumption and gardening practices.
- Research agricultural history and create a timeline of important events.
- Visit some local farms and interview farmers about choice of crops, growing practices, marketing, and farm history.
- Study the contribution of Native American foods and other cultures' foods to our history and diet. Grow samples in the school garden. (*Download a great [Three Sisters curriculum online](#) at Cornell Garden-Based Learning*)
- Research the histories of classroom garden plants. Discover where they originated, the impact they've had on our diets, and how today's varieties differ from the original plants. Locate their origin on a map and then trace their movement around the world.
- Use the Thanksgiving holiday to explore meals throughout history and the different crops grown and harvested at that time of the year.
- Complete a site analysis of the school garden and create a garden map noting important features, including a north arrow.
- Trace the path of a fruit or vegetable from the field to the table.
- Use the classroom garden to complement a study of the influence of climate on food production.
- As a class, develop garden rules and then vote on them.

English-Language Arts

Reading and writing are two very important classroom basics, and mastery of these skills provides students with the power to succeed. Relating language arts exercises to the garden can add an element of fun, too. Example activities:

- Keep daily garden journals documenting observations, weather conditions, and classroom activities.
- Research the growing habits of the school garden plants using the Internet and reference material.
- Create a planting schedule based on the information.
- Write letters to local merchants explaining the school gardening project and asking for donations.
- Write thank you notes to volunteers and garden sponsors.
- Write, illustrate, and publish a collection of garden stories and poems.
- Brainstorm different adjectives to describe each plant in your garden.
- Study new vocabulary that relates to plants and gardens.
- Publish a class newsletter with student articles about the garden and distribute it to other classrooms and parents.
- Write step-by-step instructions for common garden activities.
- Follow written instructions to perform a garden task like planting seeds.
- Read books and stories about plants and gardens.
- Write a research paper on a favorite plant, including source citation.
- Prepare and deliver a presentation about the garden for other students, teachers, and parents.
- Learn about the origins of scientific plant names.
- Read a garden magazine article highlighting a plant and distinguish between the facts and opinions presented by the writer.
- Research the nutritional value of your favorite garden vegetable and then write a script for a 60-second advertisement designed to get more people to grow and eat it.

Visual and Performing Arts

Nature is the inspiration for many works of art, dance, music, and drama. Your school garden is a small piece of nature that can inspire budding artists. Activity ideas:

- Create paintings and drawings of garden plants.
- Paint a class garden mural to hang in the hallway for parents' night.
- Make a seed mosaic.
- Create a color wheel collage using pictures from old seed catalogs.
- Make musical instruments from gourds and learn how to play them.
- Make prints using paint and stamps made from various plant parts.
- Create and perform a garden-inspired dance expressing the growth of a seed or the opening of a flower bud.
- Pantomime various gardening tasks (transplanting, fertilizing, sowing seeds, pollinating).
- Learn a collection of songs that relate to food, gardens, and the environment.
- Draw your dream garden.
- Listen to the music of composers inspired by nature.
- Build clay or tissue paper models of flowers.
- Use leaves to make crayon rubbings or fossils in clay.
- Using a movie camera with single-frame capability, make a time-lapse film of a plant growing.
- Create a skit about food safety.
- Paint a classroom mural using samples of different soils as the medium.

Health and Nutrition

Research continues to document the significant health benefits of eating fruits and vegetables, and yet most children do not eat the recommended daily amount. Growing fruits and vegetables in the school garden improves students' attitudes toward these healthy foods and motivates reluctant eaters to try them.

You can use the garden as a hands-on tool to teach nutrition lessons, including the importance of fruits and vegetables and proper food preparation techniques. Specific activity ideas:

- Compare the importance of nutrients in the health of humans and of plants.
- Study the nutritional value of the various crops in your garden.
- Identify the parts of the plant represented by common fruits and vegetables.
- Discuss the difference in nutritional value of various plant parts.
- Study adaptations of plant parts that make them good food sources.
- Sprout various seeds for eating.
- Conduct a blindfolded taste test using classroom-grown vegetables and supermarket vegetables.
- Experiment with food preservation techniques, such as drying, freezing, and canning.
- Grow a salad garden and give students a chance to sample the harvest with a salad party. (See the [Seed to Salad curriculum available online](#) in English and Spanish)
- Invite a grocery store employee to talk to the class about where their products come from.
- Visit a local farm.
- Create brochures with information on daily food intake recommendations.
- Plan a day's menu that includes all components of a balanced diet.
- Keep food journals that highlight how many fruits and vegetables are eaten and describe any new

produce tried.

- Invite chefs from the community to do cooking demonstrations for students and parents. Coordinate a cooking lesson in your school’s kitchen using the produce your class has grown.
- Ask cafeteria managers to share safe food handling information and provide tours of school kitchens.
- Invite a registered dietitian to visit classrooms and discuss healthy food choices and healthy preparation methods in connection with MyPyramid.gov.
- Present a skit or puppet show about food safety.
- Use MyPyramid.gov to help you choose a healthy diet. Come up with tasty recipes that use lots of fruits and vegetables and little fat or sugar.
- Create a classroom or school recipe book that features produce grown in school gardens.
- Compare the nutritional content of different colors of a specific variety of vegetables, e.g., salad greens. Contrast this with other vegetables.
- Research and compare fruits and vegetables with various origins. Identify cultural dishes and their preparation methods. Host an “international day” and provide healthful samplings of fruits and vegetables from those cultures.
- Incorporate literature using the book *Stone Soup* and involve students in making their own stone soup. Have students discuss the benefits of the ingredients and how they fit into MyPyramid.
- Research cultural holidays and the symbolism of particular fruits and vegetables that are included during those holidays.
- Create a public service announcement or school announcement promoting fruits and vegetables. The promotion could highlight something growing in the garden, a fruit or vegetable offered in the cafeteria, or both. This will encourage students to develop skills for marketing food choices.
- Grow and use fresh herbs to flavor dishes and decrease the use of salt in recipes.
- Visit a local farmers’ market or start a school farmers’ market.

These ideas are just a sampling of the classroom gardening activities available to you. Search books, magazines, and Web sites for additional ideas. Also, as you grow with your garden, you will create many activities of your own. Be sure to pass them along to other teachers and parents.

OUTDOOR CLASSROOM MANAGEMENT

Working with students in an outdoor learning environment is different from teaching in a traditional classroom setting. To make sure your time in the garden is both productive and enjoyable; here are a few tips on classroom management:

- **Establish garden rules.** Create a set of simple rules to share with students before you go out to the garden. Additionally, post the rules in the garden as a reminder. Try to phrase them in a positive way. Rules may include items like remembering to walk on paths, asking before you pick, and remaining in the garden area during class. Keep the list short so rules are easy to remember and follow.
- **Train students on using tools.** Before going out to the garden, show students all the different tools they may use and demonstrate the proper way to use them. Make sure they know to carry the working end of the tool below their waist and not to run while holding tools. Also discuss proper storage of the tools and why it is important not to leave them lying in pathways.
- **Recruit help.** You will need at least one other adult in the garden to be prepared for emergencies (if one child needs special attention inside, you cannot leave the rest of the class unsupervised outside). Depending on the size of your class, it may be preferable to have three or four adult volunteers.

Keeping the activities hands-on is an important aspect of learning in the garden, and this is hard to accomplish without plenty of volunteer support.

Divide your class into small groups. Smaller groups allow for more hands-on experience. It is best if you have a volunteer to lead each group, but if that is not possible, provide clear instructions for what each group should accomplish. Choose the groups carefully, taking care to match up students who will work well together.

- **Provide a comfortable sitting area.** If you are planning to talk to the class as a whole for an extended time in the garden, use an area where they can comfortably sit to listen. Trying to talk to the group in a small space with obstructed views quickly becomes a frustrating experience, and students quickly lose interest. It is best if the area allows them to sit in a circle so they can clearly see you and feel connected to the rest of the group. Some schools create sitting areas with benches, hay bales, or even a well-maintained lawn area. If you do not have a good sitting area in your garden, deliver presentations in the classroom and reserve the garden for the smaller group activities.
- **Be prepared for emergencies.** Always have a first aid kit in the garden. Know if any of your students have special health concerns, such as asthma or an allergy to bee stings.

TIPS ON OUTDOOR CLASSROOM MANAGEMENT

Provide a shady space for students so they have a place to listen, write, and retreat from full-sun days. A big tree, a pop-up tent or an arbor are a few possibilities.

Use clipboards with pencils attached so that papers don't blow away, get lost, etc. (Having someone in charge of the portable pencil sharpener is helpful too!)

Cultivate "I can" and "I matter" attitudes by rotating responsibilities among small groups or individuals to help, e.g., watering, garden hose pickup, tool shed key security, etc.

Preview & Review before going out to the garden. Discuss what will be done; review which teams are in charge of what, and preview academic science content. After gardening, review what was accomplished, how things went logistically, and what were the ties to additional lessons. Linking garden activities to classroom learning reinforces the importance of taking garden time seriously.

Cultivate "I belong" attitudes by building **opportunities for free exploration** into garden activities where possible. This is an important part of inquiry-based learning, and kids are naturally going to stray from focused activities when drawn to some phenomenon of their own interest. Often if they know that they will have a set time in the garden to freely explore their individual interests, they'll remain more focused during more formal instructional activities.

Adapted from Arden Sporer-Bucklin and Rachel Kathleen Pringle. How to Grow a School Garden, 2010.

VIII. WORKING WITH VOLUNTEERS ³⁷

Volunteers contribute a wealth of experience and enthusiasm to a gardening program. They also bring abundant skills, fresh ideas, and extra hands to help with garden activities. There are a number of best management practices to adopt when working with volunteers, but communication is the key. If you effectively communicate your needs and expectations, provide volunteers with the information needed to complete their assignments, follow up with clear words of appreciation; you will have strong volunteer relationships.

Establishing Roles for Volunteers

³⁷ Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., pp86-92.

Before recruiting, define the role you want volunteers to play in your garden program. Create a list of specific jobs you need help with and also when these activities should take place. Do you want volunteers who can be there on a weekly basis or just for special events? Do you want them to help plan and prepare garden programs, or do you just want them to help with the activities?

Keep in mind that people volunteer for different reasons, and any group of people will have a wide range of talents. If you communicate the jobs available for volunteers to complete, then they can determine whether your opportunities match their interests and skills. The time you spend preparing for volunteers and establishing clear responsibilities will help you create an effective and efficient volunteer team.

All volunteers want to feel that they are contributing in a meaningful way. Just as was discussed with regards to **positive youth development** (page 8), volunteers also benefit from taking part in both menial and highly important tasks. Many volunteers will continue to be involved if they develop a sense of pride in and ownership of the project and feel they have a truly effective role. Involve them in as much of the planning and decision making as possible to create the sense of ownership and independence. Although you will certainly need help with some “grunt work,” as long as volunteers know their efforts are helping the program, they will feel like valuable team members.

Don't be afraid to ask people to take on jobs and encourage people to do things they enjoy or want to learn more about. Certain parts of your garden design will require a skilled project leader to coordinate and complete construction. Find members of the garden team or from the school community to lead these specific projects or to find an expert to do the work.

RECRUITING VOLUNTEERS

Once you know how you are going to use volunteers, begin the recruiting process. Look for volunteers who will encourage exploration and inquiry-based learning during garden activities and who will approach the garden with a fun and adventurous attitude. Think outside the box too. Volunteers lacking gardening experience can often be just as helpful as those with gardening experience. They are eager to learn new skills and more often than not, have another useful skill to share. Think about the types of skills you might need from volunteers such as carpentry, engineering, landscape design, event planning, just to name a few!

Most schools find their strongest volunteers through parent groups. Reach out to parents in newsletters, on the school Web site, at parent meetings, and at open houses. Additionally, search for volunteers through local horticulture clubs (e.g. garden club members, college and university horticulture or sustainability clubs), “green industry” businesses (e.g. garden centers, landscape design firms), senior citizen organizations, and service organizations (e.g. Cooperative Extension Service Master Gardeners and 4-H, Rotary, Boy Scouts, Girl Scouts, AmeriCorps and FoodCorps), and local volunteer service programs.

The garden team members who help plan the garden will often be transformed into a core of strong volunteers. Another possibility is to recruit older students to provide support for garden activities. Elementary school students love to interact with middle school and high school students. A mentoring relationship provides an excellent learning experience for the older students, too. Some volunteers will be available only for special events. For instance, a Boy Scout might develop an Eagle Scout project at

your garden. Other volunteers may be available to help on a regular basis, for example, a stay-at-home parent with a horticulture degree. Garden programs benefit from a diverse set of volunteers.

As you reach out to potential volunteers, schedule a special meeting to share information about the program and the opportunities available. If possible, hold this event during the same hours you typically need volunteer help. If people are available for the informational meeting at that time, they may well be available to volunteer in the future during the same time frame.

In both written and oral requests, be sure to inform potential volunteers of your expectations, including time commitments and tasks. You may even consider writing a short volunteer **job description** to make sure the message is consistent. We have provided a few sample job descriptions in the Appendix on page 62. Be as specific as possible; give the dates and times their services will be needed. Also **check your school's policy on volunteer recruitment procedures**. Most schools require volunteers to complete a background check with fingerprinting before service can begin. Individuals should be informed of this type of requirement during the recruitment stage. Additionally, you may find it helpful for volunteers to complete a short **application** so you know a little more about their interests and backgrounds. Requiring an application is also a good way to get emergency contact information if ever needed. A sample application can be downloaded from [Cornell Cooperative Extension-Tompkins County](#).

When people sign up or indicate an interest in volunteering, follow up with a phone call or in person to reiterate these expectations and give them a chance to ask questions. Not all individuals are a good fit with a school garden program, and it is best for both parties to figure this out during the recruiting stage rather than in the middle of the program.

Although mass recruiting is less time consuming, keep in mind that people like to be asked in person. It is a first step in making them feel important; it conveys respect and builds confidence. Consider making phone calls or sending personal invitations to individuals you have met who would be good volunteers or who have been recommended to you by others.

The recruiting process may sound like a substantial undertaking, and it is. However, you will be rewarded by a supportive, dedicated, and informed volunteer group who will help sustain your garden efforts.

VOLUNTEER ORIENTATION

You will likely receive interest from people who want to volunteer once-in-a-while and others who want to help regularly. It is helpful for all volunteers to be given an orientation. Depending on the size and scope of your project and interest from volunteers, you may find you need to provide this orientation several times throughout the year.

It is recommended to begin by orienting them to the program, the students, and the school. Start by reminding them of your expectations, as you noted in your publicity and/or job descriptions. Next, brief them on school policies. For example, let them know where to park, where to sign in, and what the procedures are for screening. Provide the group with a tour of the garden and school. They need to know things like the locations of bathrooms, how the students will travel to the garden, where tools are stored, water sources, etc.

VOLUNTEER TRAINING

For volunteers who offer to help out regularly and who you will want to encourage to take on more leadership roles, you will need to provide a volunteer training to properly prepare the volunteers for their jobs, whatever they may be, and to assist with coordinating other volunteers. The most important thing is to always provide clear instructions as to what you want them to do and give them a chance to ask questions. To be successful, volunteers must know what is expected of them.

Provide background on any specific skills or knowledge needed to complete tasks by sending copies of your lessons a week ahead of time, or links to information on Web sites or recommended books. In addition to regular training and information related to activities and programs, it is a special treat for volunteers to attend “advanced training.” For instance, you can invite a guest speaker to introduce a new curriculum or teach volunteers a technique or skill they want to know. Depending on their level of involvement, certain volunteers might be invited to attend trainings conducted for educators by school districts and other organizations. Training is a powerful tool to motivate your volunteers and keep them excited about your program.

Provide regular volunteers with a log sheet to track the hours they spend helping the program. Volunteer hours can be documented as “in-kind” donation for grant purposes and demonstrate documented community investment in the project. (You may want to have regular volunteers log information about drop-in volunteers as well.) And, be sure to introduce regular to key school personnel like the principal and office secretaries since they will be a regular face around the school.

In addition to these in-person orientation and training, make a simple **Volunteer Binder** that includes all the information volunteers need to know in writing for later reference. Some ideas of what you may want to include in the binder are:

- Contact information – garden leaders, regular volunteers, school principal, custodian
- Who to call if there is an emergency – 911
- Pertinent health information about any regular volunteers or participating youth
- Volunteer hours log-sheet
- Codes for any locks needed for garden program
- Blank volunteer application forms
- Postcards with garden program information
- Planting/harvest log-sheets

COMMUNICATION AND FEEDBACK

As previously mentioned, clear communication with volunteers is essential. When communication is poor, volunteers feel uninformed, unimportant, and underappreciated. Disorganization and lack of communication will frustrate them, and they will quit. Here are a few communication tips for working with volunteers:

- Keep a good record of volunteers with up-to-date contact information and how they prefer to be contacted. It would be unfortunate to accidentally miss someone. This may be a simple spreadsheet or an online database. Use a method that works for you and easy to update.
- Establish a standard method of communication that is delivered consistently. This may be a weekly e-mail, a monthly newsletter, or a regular Web site posting. Choose a method that works well for you

and your volunteers. By establishing a routine, you remind yourself to communicate with your volunteers, and in turn they have a place to go for the latest information. **Remember, not all volunteers have Internet access all the time.** Try to note which volunteers might prefer a phone call or letter.

- Create a written schedule of events that is accessible to all volunteers. It can be mailed out or posted on a Web site. Make sure you have an effective way to notify volunteers if any changes are made (via either e-mail or a phone tree).
- Hold a regular volunteer meeting either monthly or quarterly. Personal contact allows for more interactive discussions, and it is very important for volunteers to have a chance to provide you with feedback and suggestions for the program. This is also a great time for you to show your appreciation for their work. Provide snacks to share if possible.
- Provide members of the group with comments about their job performance. Although a formal evaluation may not be possible, volunteers need constructive feedback so they can learn and grow during this experience.

With your busy schedule, it may seem overwhelming to find time for this level of communication. If you feel that you cannot maintain strong communication, seek out a volunteer willing to assume this role. Communication is not a task that can be neglected even briefly without negative consequences. It is the key to a successful volunteer experience (for the volunteers and for you)!

RETAINING VOLUNTEERS

All the suggestions mentioned thus far will contribute to the satisfaction of your volunteers and help you retain them. In a school setting, you will naturally lose volunteers as students graduate and families move, but by adopting good techniques, you can decrease the number of people who quit because of a negative volunteer experience.

If you are concerned about volunteer retention, take time to find out why people sign up. Volunteers often pitch in because they care about the project and its participants. Some may have children in the program with whom they want to spend more quality time; others may want to be more involved in their communities, meet new people, or make a difference. To keep volunteers interested and motivated, it is important for you to understand and meet their needs as much as possible while still meeting yours. For instance, if someone volunteers because she wants to spend time with her child, but you never assign her to work with her child's class, she will not stick with it for long. Or, if someone volunteers in order to meet new people, and you always ask him to assist with individual preparation, he will get discouraged and quit.

Also remember that volunteers should support, not replace, educators. Although you may find volunteers who are willing to take on significant planning and educational delivery responsibilities, most volunteers will feel overwhelmed if left on their own to teach a full lesson, or will feel they lack proper guidance. Classroom teachers should be present during all garden activities.

As discussed earlier, not all individuals have the personalities and skills to be strong garden volunteers, so if you find your needs and their needs do not match, you may suggest other volunteer opportunities that would be better suited for them.

VOLUNTEER APPRECIATION

Volunteers need to feel appreciated. To be sure, contributing to the community is personally satisfying. Also, working with students and watching their curiosity and excitement bloom is motivational and inspiring. But in addition to these rewards, you should implement both informal and formal methods of thanking your volunteers. Informal ways to thank your volunteers include simple thank you's and smiles when they come to help or a quick e-mail after activities. More formal thanks include handwritten notes (from you and the students), small gifts from the garden (like pressed-flower bookmarks or herbal sachets), and recognition of volunteers in newsletter and newspaper articles. If possible, hold a special event each year focusing on volunteer appreciation, such as a ceremony in the garden or a luncheon. This event can be specifically hosted for garden volunteers, or you can work with other teachers to recognize volunteers in several programs.

Involve your students as much as possible in appreciation efforts. This helps them learn the importance of being grateful and showing respect for those who help them. It is an important life lesson that is often overlooked in our fast-paced society.

IX. BEYOND THE SCHOOL GARDEN

SEASON EXTENSION

Cloches – A cloche is any material used as a protective covering to shield plants from the effects of cold and wind, and can also be used to shield plants from insect damage. Sometimes the term “cloche” is used to refer to a protective row cover, a lightweight synthetic, such as clear plastic (polyethylene) or spun-bound polyester. It is placed directly above beds or rows of plants crops on a supporting framework—often, on wire hoops to form a low tunnel—and usually left in place for several weeks until crops are well established. However, it's important to monitor the crops beneath a cover, as both coverings can create a microclimate that can get too hot and the plastic covering will not let rain reach the soil. [Here's an overview of making large row covers](#) that can be adapted to the garden size you are working with.

More often, a cloche refers to a bell shaped covering made of glass or plastic, that can placed over individual plants to provide similar protection as row cover. These can be purchased or made by the students using 1-liter plastic bottles or gallon jugs. Here's a helpful [link to a photo and how to make your own](#). If you choose to purchase cloches, just as we suggested when purchasing tools, spending a bit more money upfront will likely ensure what you purchase will last longer and in the end, send less waste to the landfill. Glass or strong plastic will last for several season, while cheap plastic ones may not even last a full season.

Hoop Houses³⁸ – In his book *The Winter Harvest Handbook*, Maine farmer Eliot Coleman outlines techniques and methods he uses for growing select crops throughout the snowy winter months. Coleman's farm lives within USDA hardiness climatic Zone 5 where the average annual low is between -10 degrees F and -20 degrees F. He found that if he covered certain crops with two layers of protection, first a floating fabric row cover, and then an overarching hoop house (a greenhouse that Coleman prefers to call a “cold house”), he effectively moved that planting area three zones south to Zone 8, where the average annual low is between 10 and 20 degrees F.

³⁸ How to Grow a School Garden, p. 156.

During the day, the heat from the sun (which is shining for an efficient amount of time at that latitude during the winter) warms the house enough to keep the temperature above freezing, and crops will survive. Winter crops are adapted to colder temperatures and these layers allow them to persist within their range. Such crops include spinach, kale, chard, certain types of lettuce, Asian greens such as mizuna and tatsoi, and radishes. Growing these crops also depends on well-timed planting schedule and thorough preparation in the fall.

Coleman's farm is growing crops for market, and he has gone into great depth in explaining how these methods, and others, can be used to make farming economically viable during the coldest months. In a school garden, these techniques could simply be a fascinating way to experiment with your growing season as a part of your garden curriculum for older students. Perhaps you plant a bed of cold-hardy greens and stake a bit of a row cover fabric over it to protect it from early frost. You could then follow that by erecting an inexpensive plastic covered hoop house (frames with plastic pipes or wood) to keep the snow off and to trap heat during the day. Students could take measurements of temperature, record growth rates by observing change over time, and record hypothesis for success or failure of crops. There are, no doubt, school gardens that are already extending their growing season in some fashion by using greenhouses; this inexpensive double layer approach might be an interesting way to take the garden one step further, and in colder climates, to enjoy harvest later in the school year.

Further information on climate, day length, garden design, and the history and research related to growing in cold temperatures can be found in *The Winter Harvest Handbook*, which also has lists of supplies and suppliers.

AG IN THE CLASSROOM

Agriculture in the classroom provides rich cross curriculum experiential learning that will add value to lifelong skills including textile development and "...introduce them [children] to the origins of food, plant life cycles, community values, and the pleasures of work, while kitchen classes allow them to prepare and eat delicious, nutritious, seasonal dishes made from produce they have grown in the garden."³⁹

Here are a few resources for Ag in the Classroom ideas and curricula:

- **USDA Agriculture in the Classroom.** The Agriculture in the Classroom National Resource Directory is an online searchable database that lists hundreds of educational resources designed to help educators locate high quality classroom materials and information to increase agricultural literacy among pre-K through 12th grade students. <http://www.agclassroom.org/teacher/agknow.htm>
- **New York Agriculture in the Classroom** works with pre-K through middle school teachers, Cornell Cooperative Extension and other community educators, farmers and producers, volunteers, parents, and community partners to increase agricultural literacy in New York State. <http://www.nyaged.org/aitc/index.html>
- **California School Garden Network.** How to videos and guides. www.csgn.org
- **History of School Gardens. School Gardens with Constance Carter,** Library of Congress Webcast. <http://www.loc.gov/rr/program/journey/schoolgardens.html>

³⁹ The Edible Schoolyard. <http://www.edibleschoolyard.org/>

FARM TO SCHOOL

Many school systems struggle to provide healthy food to children. Knowledge, food bias, limited budgets and difficulty thinking outside the box are often limiting factors in school systems. As food costs rise, it becomes more and more difficult to provide fresh options that children need in their diets to flourish. The result is that most often school food is the cheapest available transported over thousands of miles. Produce loses nutritional value once it's harvested so the longer it takes to transport it to a plate, the less quality it is. Additionally, food transported so far depends on consumption of fossil fuels, which contributes to climate change and supports large scale industrial agriculture rather than economies of local farms.

To strengthen regional sustainability, concerned community members, parents, administrators, teachers and students can move forward to develop a Farm to School program that connects school systems with local farms. The farms, your school, and the community have the potential to develop exciting and relevant educational opportunities from preschool to high school seniors (and, even universities have Farm to School programs). Here are a few resources for more information:

- **National Farm to School Network.** <http://www.farmtoschool.org/>
- **Going Local: Paths to Success for Farm to School Programs** by Anupama Joshi, Marion Kalb and Moira Beery. <http://departments.oxy.edu/uepi/cfj/publications/goinglocal.pdf>
- **USDA, National Resources & Grant information.** <http://www.fns.usda.gov/cnd/F2S/Default.htm>
- **FoodRoutes Network.** Including regional sustainability information and marketing materials. <http://www.foodroutes.org/farmtoschool.jsp>
- **Cornell Farm to School Extension and Research Program.** <http://farmtoschool.cce.cornell.edu/>

X. FUNDRAISING AND GRANTWRITING⁴⁰

For those planning youth gardens, there is never a shortage of ideas for programs and activities, but do you find the room quiets when the topic switches to funding the project? The good news is that a gardening program does not need to be huge to be successful. Students can learn as much from a 4- by 8-foot raised bed as from a half-acre plot. But even on a small scale, your gardening program will need basic supplies like soil, tools, and plants, of course. So where can you go to find these materials?

Finding the resources necessary to begin and maintain a youth garden is always a challenge, but it does not need to be a roadblock. Think of your funding search as an opportunity to provide additional community members a chance to participate in an extraordinary and powerful youth program. Search out people and organizations who share your love for children and who can benefit from being a part of your success. Donors and funding organizations want to invest in long-term ventures and will look carefully at your support network, plans for implementation to determine whether your program will last and that your budget is reasonable. Create a firm foundation before you gather the supplies to build and before you seek funding.

Get a group of educators together, begin to discuss program challenges, and it's inevitable: the topic of raising funds, not having enough funds, or a fear of lack of funding will probably surface. Regardless of the scope or audience of your garden project, at some point you will likely have to raise funds or secure **in-kind donations** to support the creation and maintenance of the garden, or to advance facets of the

⁴⁰ Eames-Sheavly, Marcia. Cornell Garden-Based Learning.



garden program, particularly in today's financial climate. There are many strategies, ranging from grassroots approaches that involve lots of people while garnering relatively fewer funds, to grants that can provide significant dollars and that require writing skill. Improve your chances for success by employing several approaches.

DEVELOPING A BUDGET

You can't put the cart before the horse, so they say. Before you can ask for money or specific supplies, you need to know what you need and how much it will cost. A simple Garden Budget will help tremendously in your fundraising efforts. To get a general sense of prices for supplies, check your local hardware store or do a simple search online. Consider a flexible budget for the school garden, one that can change as funds and resources become available. Start by budgeting for small projects that will quickly produce visible results. Prioritize your expenses. Which items are essential to the start up of the garden? Keep in mind: the first year of a garden is usually the most expensive year due to installation costs.

Possible Income: Creative financing is a hallmark for many successful garden projects. Financing varies from penny collecting and bake-sale hosting to grant writing. How the garden is funded may depend in part on whether this is the first garden at the school or following a gardening tradition.

Resources for income should come from both the school as well as outside funders. Income should be divided between resources within the school and outside resources. School resources may include Parent-Teacher Organizations, parents, a school fundraiser or adding a line item to the school's extra curricular budget. Outside resources can include individual businesses or national and local grants. For a current list of fundraising ideas and available national resources visit <http://www.kidsgardening.org>

Referring to your list of needs (page 17), update this and use it as a wish list to advertise in the school newsletter, on public bulletin boards, and in the newspaper. In-kind donations are a great resource, but should not be relied on entirely. Although many tools, plants, seeds and materials can be donated in-kind, make allotments in the budget for these items. If the materials are donated, then the money allotted is available for other projects and advancements. Relying heavily on in-kind donations can often delay the design or restrict the garden design.

Refer to the box of tools, supplies, and materials for a typical school garden on page 18.

Tips on Kids' Tools:

- Consider having enough tools on hand for an entire classroom.
- Get the best quality tools the budget allows. Kids' gardening tools are great for younger students, but often don't sustain the wear and tear of multiple uses. Consider offering a mix of small, sturdy, and adult sized tools for the garden.
- Encourage safety by teaching children the appropriate handling of tools and having a safe space to store tools when not in use.

FUNDRAISING TIPS FOR GARDEN-BASED LEARNING PROGRAMS



There is tremendous “in-kind value” in the time that volunteers, teachers, parents, administrators and community members lend to the program effort. Here, however, we will focus on two approaches to raising monies and donations: grassroots fundraising and grant writing.

Grassroots Fundraising

From dollar drives to bake sales, this method is important since it doubles as a publicity opportunity, and can create a strong sense of ownership among all who contribute. One school brought the circus to town each year to raise money for the garden. This fundraiser generated about \$1000 annually, and of course, provided an enjoyable venue for hundreds of families and community members, all of whom were investing in the garden while having a good time. Another community program created small, inexpensive bouquets and sold dozens of them in the highly visible foyer of the local supermarket for Mother’s Day. Consider:

- These methods can be time and energy intensive.
- They are an excellent way to engage youth in the fundraising process, since young people can identify approaches, and follow through on each aspect of planning and completion.
- All community members can participate.
- Car washes, tag sales, bake sales, bottle drives, selling seeds, bulbs or seedlings, penny and dollar drives have proven to be successful. With multiple approaches, the funds can add up to something considerable. Don’t forget carnivals, fairs and other unique fundraising opportunities.
- This approach increases awareness, participation, and ownership among those who help or contribute.

Engaging Local Businesses

An important element of grassroots fundraising, donations from local businesses can make a significant impact on a program and do require planning and coordination. It’s wise to designate one person as a point of contact, so that businesses do not receive multiple requests, making your program appear disjointed. Sometimes stores have affiliated foundations to approach for materials; do your homework to find out. Some examples of requests:

- Plant, soil, and mulch donations from a nursery or garden center.
- Donation of a wheelbarrow, fencing or tools from a home improvement store.
- Monetary donation from a local bank.
- Refreshments provided by a grocery store or restaurant.
- Free rental of a rototiller and other tools.

Before approaching businesses, we suggest creating a Project Folder

This concise packet of relevant program materials can be used to represent your program and its needs and can be left with a business for further review. Know your tax status and to whom checks should be written before you approach businesses. Consider including:

- Succinct, well written one-page description of your program.
- Letter of endorsement and support from the director, principal, or coordinator.
- Photo page, with drawings and statements from participants
- Garden plan or design.
- List of key project leaders, participants, and volunteers.
- Specific, realistic and concise list of your project needs.

- Contributors in the community to date.

Document and Share Your Accomplishments

All along the way, gather positive feedback, anecdotes, and evaluation data to highlight what you are doing well. There is an old fundraising adage that “money begets money.” The more you can spread the news regarding the success of what you are doing, the more comfortable local businesses, private donors and others will feel about investing in a well-planned, known entity.

- Identify a point person with photography, video, and writing skills as a documentarian.
- Contact the local news for an article, and then, include it with your project folder.
- Apply for a community award, and publicize it when you receive it.
- Make a point of thanking everyone who participates or assists with your program.

GRANT APPLICATIONS

Grant writing is a way to secure larger funds and materials to develop your program. Since it can seem daunting, we encourage you to do your research, and first begin identifying small regional foundations or agencies that support projects in your location, county or state. Local arts-, environment-, or science-based agencies often work well as a jumping off point. Securing a small grant can grow confidence, and also provides demonstrated success in preparation for something larger. Consider:

- It is an important courtesy to notify any staff-like people involved with the garden program and the school principal prior to preparation and submission of a grant.
- Read all grant guidelines carefully and do not hesitate to call the agency to ask for clarification.
- Include all the information outlined in the grant guidelines.
- Be attentive to page limits, and be certain to send the number of copies requested.
- Be concise and highlight your strengths.
- Convey enthusiasm, that you are well organized, have clear goals and objectives, and are planning a sustainable project.
- Highlight the accomplishments you have made so far, as well as the strengths of your program.
- You may include current challenges if you have a clearly identified plan for overcoming them.

Vital Secrets to Your Grant Writing Success:

- Begin writing *early*, well before the deadline.
- Write, read, and revise. Ask for review from multiple parties and perspectives, and revise again before submission.
- Be courteous. Identify key people with different skill sets well in advance. Ask them to read through the grant and provide edits. Give them a realistic time frame to do so! Asking them the day before the proposal is due, which suggests that they work into the evening, is highly inconsiderate and does not reflect well on you or your program.
- Remember that *real* people read these proposals. Complicated wording and jargon only make a proposal difficult to read. Stick with the basics of who, what, when, where, how, and perhaps most importantly, why this is critical and who will benefit from it.
- Read through it and ask yourself: can you remove words and still carry the same meaning? Then, begin to prune.

Grant Writing Tips⁴¹

⁴¹ *How to Grow a School Garden from the SF Green Schoolyard Alliance*



Some school communities might have experienced grant writers among the parent community. Writing grants is an acquired skill, but with a little practice and confidence, it can be accomplished by anyone with a little time and some writing ability. Most public schools have nonprofit status (501c3) and are able to receive money from charitable foundations. Usually grants are distributed through local, state, and federal government departments, or through private foundations. Large corporations often have foundations for grant making as well. These organizations have diverse goals and missions and it is your first job to seek out the foundations that support the kind of work you are doing. Conduct an Internet search to identify a local foundation that might have a similar vision as your garden program. Take the time to have a phone conversation with a program officer at the foundation. They will be able to tell you quickly whether or not your program is a good fit. If it is, the next step is to develop a proposal that you will submit to the foundation.

Successful grant writing efforts require programs that have strong leadership, demonstrated community support, a mission with clearly identified goals and objectives, the ability to communicate a vision, and a plan for sustainability. The act of writing a grant is useful for clarifying these topics in your own mind. Once a grant proposal is developed, it may be used as a template for proposals to other foundations. Most foundations have online application guidelines; **follow them carefully**. Pay close attention to how submittals are received and when they are due. Grants, like most things in life, are about building relationships. The organization that funds the garden program will often assume the role of a partner. They will want to be informed of successes and challenges, and mid-term and final reporting will keep them up-to-date. Following the tips in the *Documenting Efforts* section (page 28) can help make reporting easier.

As a rule, foundations prefer to fund programs rather than salaries, but someone needs to run the program, so salary may be embedded as a program cost. Start by trying to win small grants of \$1,000-\$5,000 and build as your garden program, and confidence, grows. If your proposal is declined by a foundation, don't give up. Keep writing proposals, honing your vision, and fostering community support.

Dealing with confusing grants language

Most proposals require a **rationale, background information, or justification**. These sections provide important background into the nature of your request, as well as the reasons as to why your proposal is so vital to the topic identified as critical by the organization, such as student achievement, youth engagement, building community economic capacity, and so forth. Each section will provide specific information requested. In general, be certain that there is an **excellent connection between the goals of the funding agency, and what you are proposing**. Do your homework, and include research with citations.

Example excerpt: "Our school garden program began with an elementary school curriculum only. We recognize the importance of engaging a teen-aged audience in outdoor settings, as well as how teen-aged youth can benefit from interactions with other members of the school community (citing research to support this). As our program has grown and generated interest among older youth, more than 20 young people have inquired about opportunities for a well-planned youth leadership project, in which they would gain the community service credits required by our school for graduation, by serving as mentors to children in the garden setting. We propose to create a new, well-planned opportunity for young people to engage in the decision-making process with adult leaders, and to become youth leaders of elementary-aged children, through a series of deliberately staged activities (which you describe

concretely in the **activities or methods section of the proposal**). Research has shown that gardening interest is strongly correlated with decision-making among children and youth (and then cite it). We plan for further foster this interest among school children and their older youth mentors through....”

Be certain that your objectives are measurable, and that they **align with your intended outcomes**. You only need three to six well written objectives. Too many may be difficult to assess and follow through with. **To practice, write one objective** (“To teach youth leaders how to effectively engage the interest of third grade children in gardening activities.”) First ask, **can you measure it to evaluate your effectiveness in achieving this objective?** How? (Yes, by observing, surveying, and/or interviewing children and youth.) Now, take the words **“as a result of”** and place it at the beginning of your objective. This will illuminate the related outcomes. Be as specific as you can. Here are some examples.

As a result of providing opportunities for youth leaders to engage with third graders:

- 10 youth will learn garden-based learning activities to teach to schoolchildren.
- After participating in an Act for Youth training, 10 youth will demonstrate leadership competencies, will increase in self-confidence, and learn effective communication strategies.
- Youth will have opportunities to display their newly acquired leadership skills in other areas of the school setting identified as critical by a committee on teen behavior, including the school cafeteria, outdoor recreation area, and during assembly.
- 75 third graders will be inspired by the opportunity to interact with older youth mentors, increasing their interest in the garden and in serving as youth leaders in the future.
- Youth leaders and third grade students will take home lessons learned and begin family gardening at home.
- Teachers will have capable assistance in the garden, allowing them to focus their attention on involving students in planning the newly forming wildlife habitat.
- Administrators will observe demonstrated successes and provide continued support for the garden.

As you can see, one clear objective can generate a number of positive outcomes to choose from. You need not list all of them; these illuminate the possibilities. The important point: you must be focused, clear, measurable, and aligned.

Where to go from here?

We encourage you to begin by searching for regional foundations, or local businesses that may have affiliate foundations, such as Lowe's, Target or the Wegman's Family. Try different search terms, starting with familiar names for your region (e.g. Finger Lakes Region, Central New York) and adding terms such as foundation, funding agency. You can begin to focus your search with other terms (e.g. health, environment, arts, children, youth). Depending on your locale, “gardening” may be too narrow. A dedicated search will surface some local opportunities. For example, some programs in Central NY have benefited greatly from the generosity of the small and vibrant John Ben Snow Foundation.

As you grow in confidence there are larger foundations that offer rolling or continued opportunities to apply. Some websites and programs keep lists of agencies for fundraising. School Garden Wizard, the California School Garden Network and The North American Association for Environmental Education offer fundraising guidance and/or lists of fundraising opportunities.

More on fundraising including research to support your work can be found at Cornell's Garden-Based Learning web site <http://www.gardening.cornell.edu/>. We wish you the best of luck!

XI. GARDEN IN THE PUBLIC EYE

In addition to communicating with your support team, communicate success with community members who are not directly involved in the garden. Promoting the school garden in the community helps to establish a solid reputation, which not only validates the efforts of your current team, but also helps with recruitment of new members. You cannot rely on a small number of volunteers and donors to sustain your gardens year after year because interests and time or funding availability may change. Also, if you expect too much from your supporters, you risk burning them out. Be on a constant lookout for additional partners.⁴²

What's more, by promoting your garden, you may inspire other schools to begin gardening and increase the enthusiasm and support for school gardening throughout the community. To promote your garden effort in the community:

- Write press releases and send them to local media outlets.
- Invite the press and government officials to special garden events.
- Use your students' new horticultural expertise to help with a special community beautification project or service project.
- Host annual garden tours open to the public (this can also become a fundraising event).
- Network and share your story everywhere you go!

One way to generate increased community attention and support is through local media coverage. Local newspapers, as well as radio and TV stations around the country, continue to be eager to publicize their communities' school garden programs.⁴³

Be sure to invite members of the local press to any school garden events you organize, or give the local newspaper a call whenever something interesting is happening at your school. Be sure to let them know of any photo opportunities that might be of interest. Consider the political angle: invite your assemblyperson, congressperson, or mayor to speak at your garden event.

Generating good public relations can also involve the students. Here are a few examples of ways children have brought their living laboratory activities to the public's attention: one sixth-grade class compiled and called in weather reports to their local radio station; first and second graders read their garden poems on a local public radio children's show; at another school, students worked together to write a press release about an upcoming garden work party.

Events and Special Activities

Special events revolving around your garden program are a great way for your school to come together and celebrate, and they give members of the community a way to get involved as well. Events can be as

⁴² Adapted with permission from *Gardens for Learning*, 2006, the California School Garden Network, Irvine, CA., pp. 82-83

⁴³ Getting Started. Life Lab Science Program www.lifelab.org, pp. 41-43.

simple or elaborate as you like. Be creative and be sure to involve students in planning—they have wonderful ideas. Some schools sell plants or garden produce at their special events; many plant a special tree or shrub as part of the festivities. Classes often put on skits about their studies, and students might even dress up as their favorite garden fruits or vegetables.

The first event held by many garden programs is a dedication and/or groundbreaking ceremony (more on groundbreaking on page 31). This event provides an opportunity to give an early introduction of the program to the community. It should include everyone who is involved or who you would like to be involved. Try inviting your state senator or U.S. congressional representative. Most are delighted to be associated with a unique, locally developed project. Be sure to notify the local media of any events.

Once schools get their garden program going, most develop a series of annual events that students and teachers can look forward to each year. Some examples to consider: seasonal planting and harvesting festival; Halloween pumpkin sale followed by pumpkin compost; Garden Science Fair; community workday; family gardening activities; or sharing the school harvest with senior citizens.

Any new addition to your outdoor classroom can also be cause for celebration. Many schools have ceremonially dedicated their new wildlife area, nature walk, or birdhouse. Some schools use their school garden events as fundraisers. Many also hold more traditional fundraising events to support their programs, including raffles, carnivals, walk-a-thons, or casino nights, usually organized by their community support groups.

The underlying theme in gathering support for your outdoor classroom is to make your program accessible in a variety of ways to the entire community, including people who don't ordinarily associate with schools. In this way, your school garden program becomes a catalyst for expanded community involvement with our most important resource—our children.



APPENDIX

UNDERSTANDING NATURE'S CYCLES

From Getting Started, Life Lab Science Program, Center for Ecoliteracy, pp.45-50. www.lifelab.org

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Over the past two decades a new systems view of life has emerged at the forefront of science. The central insight is that there is a basic pattern of life that is common to all living systems—living organisms, ecosystems, or social systems. That basic pattern is the network. There is a web of relationships among all the components of a living organism, just as there is a network of relationships among the plants, animals, and microorganisms in an ecosystem, or among people in a human community.

One of the key characteristics of these living networks is the fact that all their nutrients are passed along in cycles. In an ecosystem, energy flows through the network, while the water, oxygen, carbon, and all other nutrients move in these well-known ecological cycles. Similarly, the blood cycles through our body, and so does the air, the lymph fluid, and so on. Wherever we see life we see networks; and wherever we see living networks, we see cycles.

These three insights—the network pattern, the flow of energy, and the nutrient cycles—are essential to the new scientific conception of life. But the basic phenomena are the web of life, the flow of energy, and the cycles of nature. And these are exactly the phenomena that are experienced, explored, and understood by children through gardening.

As we move towards the twenty-first century, the great challenge of our time is to create ecologically sustainable communities, communities in which we can satisfy our needs and aspirations without diminishing the chances of future generations. For this task, we can learn valuable lessons from the study of ecosystems, which are sustainable communities of plants, animals, and microorganisms. To understand these lessons, we need to learn the basic principles of ecology. We need to become ecologically literate, and the best place to acquire ecological literacy is the school garden.

Gardening and cooking are examples of cyclical work—work that has to be done over and over again, work that does not leave any lasting traces. You cook a meal that is immediately eaten. You clean the dishes, but they will soon be dirty again. You plant, tend the garden, harvest, and then plant again.

In the garden, we learn about food cycles, one of the earliest and most important ecological concepts. From the beginning of the science of ecology, ecologists have been studying feeding relationships. At first, they formulated the concept of the food chain, which we still use today—small creatures being eaten by bigger ones, which are eaten in turn by still bigger ones, and so on. Soon ecologists realized that all the big creatures are eaten by smaller ones when they die, by the so-called decomposer organisms. This led to the concept of food cycles. And finally, ecologists recognized that these food cycles are all interconnected, because most species feed on several other species, as we do, and thus the food cycles become part of one interconnected network.

So, the contemporary concept in ecology is that of the food web, a network of feeding relationships.

In the garden, we learn that green plants play a vital role in the flow of energy through all ecological cycles. Their roots take in water and mineral salts from the earth, and the resulting liquids rise up to the leaves, where they combine with carbon dioxide (CO₂) from the air to form sugars and other organic compounds. In this marvelous process, known as photosynthesis, solar energy is converted into chemical energy and bound in the organic substances while oxygen is released into the air to be taken up again by other plants, and by animals, in the process of respiration. By blending water and minerals from below with sunlight and CO₂ from above, green plants link the earth and the sky. We tend to believe that plants grow out of the soil, but in fact most of their substance comes from the air. The bulk of the cellulose and the other organic compounds produced through photosynthesis consists of heavy carbon and oxygen atoms, which plants take directly from the air in the form of CO₂. The weight of a wooden log comes almost entirely from the air. When we burn a log in a fireplace, oxygen and carbon combine once more into CO₂, and in the light and heat of the fire we recover part of the solar energy that went into making the wood. All this we can learn from gardening.

In a typical food cycle, the plants are eaten by animals, which in turn are eaten by other animals, and thus the plants' nutrients are passed on through the food web, while energy is dissipated as heat through respiration and as waste. The wastes, as well as dead animals and plants, are decomposed by insects and bacteria, the decomposer organisms, which break them down into basic nutrients, to be taken up once more by green plants.

Links in the Web of Life

In gardening, we integrate the natural food cycles into our cycles of planting, growing, harvesting, composting, and recycling. Through this practice, we also learn that the garden as a whole is embedded in larger systems that are again living networks with their own cycles. The food cycles intersect with these larger cycles—the water cycle, the cycle of the seasons, and so on, all of which are links in the planetary web of life.

In the garden, we learn that a fertile soil is a living soil containing billions of living organisms in every cubic centimeter. These soil bacteria carry out various chemical transformations that are essential to sustain life on Earth. Because of the basic nature of the living soil, we need to preserve the integrity of the great ecological cycles in our practice of gardening and agriculture.

Another type of cycle we encounter in the garden is the life cycle of an organism—the cycle of birth, growth, maturation, decline, death, and new growth of the next generation. In the garden, we experience growth and development on a daily basis. We can follow the development of a plant from the seed to the first shoot, the growth of the stem and leaves, the buds, the flowers, and the fruits. And when we look into a fruit, we find that at its very core are the new seeds; and so the life cycle begins again. The understanding of growth and development, of course, is essential not only for gardening but also for education. While the children learn that their work in the school garden changes with the development and maturing of the plants, the teachers' methods of instruction and the entire discourse in the classroom changes with the development and maturing of the students. This is systems thinking in action— applying the same principle to different systems levels.

Since the pioneering work of Jean Piaget in the 1920s and 30s, a broad consensus has emerged among scientists and educators about the unfolding of cognitive functions in the growing child. Part of that consensus is the recognition that a rich, multisensory learning environment—the shapes and textures, the colors, smells, and sounds of the real world—is essential for the full cognitive and emotional development of the child. Learning in the school garden is learning in the real world at its very best. It is beneficial for the development of the individual student and the school community, and it is one of the best ways for children to become ecologically literate and thus able to contribute to building a sustainable future.

SIMPLE OUTDOOR CLASSROOM CHECK LIST

1 Planning the Garden

- Get permission
- Form a steering committee of students, teachers, administrators, parents, and community members
- Select a garden site ideally with at least six hours of sunlight, access to water, and visibility from classrooms, however, if the “perfect site” isn’t available, don’t give up! Think creatively respecting the limitations of the site you have. Perhaps a container garden can work out front of the school, or a shade garden, or a water garden.
- Assess the site and the soil.
- Make a list of wants and needs and a simple budget for what it might cost
- Get the whole committee involved to plan and design the garden and if possible, an outdoor classroom. Indicate the location of the garden bed areas, the tool shed/storage area, the compost area, the outdoor instruction area, the greenhouse/cold frame area, the water system, etc. Start small! You can always add-on later.
- Purchase tools and materials you really need. Many items can be borrowed or donated.

2 Breaking Ground/ Preparing the Ground

- Organize a community work day
- Cultivate soil, add soil amendments as needed
- Do a preliminary soil test
- Establish a compost pile
- Order seeds, stake garden beds

3 Maintaining the Garden

- Plant seeds in containers
- Cultivate garden beds
- Protect from pests and harsh weather
- Add soil amendments
- Plant and transplant
- Maintain compost area
- Water plants as needed
- Prune plants, weed and mulch
- Harvest crops
- Plant cover crops

4 Managing the Garden

- Schedule class use of the outdoor classroom
- Post garden maintenance tasks in outdoor area
- Develop a work schedule for volunteers
- Plan a holiday and summer maintenance program
- Create a supply-ordering system

Source: Getting Started, Center for Ecoliteracy.

SAMPLE GARDEN-RELATED JOB DESCRIPTIONS

Job descriptions are helpful for volunteer and paid positions and help clarify the position expectations for both the organization recruiting the position and the person interested in filling it. Some key components to include in the position are:

- Stipend or salary, if paid. State that the position is voluntary if that is the case.
- Qualifications required – This typically includes formal education and work experience that is *required* to fill the position (e.g. Bachelors Degree in Environmental Science).
- Skills required – This typically refers to ability or knowledge that somebody has that may have not been acquired from formal education that is *required* to fill the position (e.g. fluent in English).
- Desired qualifications or skills – refers to qualifications or skills that would be a “bonus” if an applicant has them but they are not a requirement to be considered for the position (e.g. compost experience).
- City and State where the position is available. If the employee is expected to work in an office, state the address of this location.
- Time requirement and length of the position. State whether it is part-time or full-time, if benefits are offered, and if it is permanent or temporary.
- How to apply and application due date, if applicable.

Here are a few specific examples:

Job Title: School Garden Volunteer Coordinator

Duties: Meet with the garden manager on a regular basis to discuss current needs and to plan and evaluate volunteer activities. Assist with recruitment in order to expand volunteer involvement in the school garden program. Create a volunteer application. Interview prospective volunteers to assess individual objectives and assets. Discuss proposed volunteer placement with garden manager. Maintain volunteer records and assist in preparing reports concerning volunteer involvement.

The position is voluntary, 5-10 hours/month.

Qualifications: An individual who is organized, outgoing and friendly, dedicated to school gardens and comfortable working with people of all ages and speaking in front of a large group. Excellent email and verbal communication skills are a must. The ideal candidate will be fluent in English and Spanish.

A few more extensive job descriptions that you may find relevant to a school garden can be found online at the University of Georgia College of Agricultural & Environmental Sciences web site at

<http://www.hort.uga.edu/extension/mastergardener/MasterGardenerJobDescriptions.html>

