








Naples Botanical Garden

GARDENS with LATITUDE®

and

McGraw Foundation

Kennedy Family Foundation

Sidney A. Swensrud Foundation

Collier GREENS

A Resource Manual for Growing School & Community Gardens

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Created and produced by

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Updated September 2017

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Introduction

Naples Botanical Garden regularly receives questions about school gardens from educators all over the area. Our desire to help answer these questions for teachers prompted our team to develop Collier Greens, a school garden support program for local garden educators. This guide is a supplement to our educator workshops. To receive information about the next workshop, you can contact us at **Education@naplesgarden.org**.

As other group gardens — in communities, work sites, and beyond — have started cropping up, we've welcomed representatives of those gardens to Collier Greens, as well. In fact, on need not have a garden or even be in Collier County to participate in Collier Greens.

If you are reading this guide, hopefully you are already planning a school or community garden or are currently working in one. If so, you realize that gardens require dedication, sweat, and lots of good planning. We hope to make your work as easy as possible by addressing questions you may have, anticipating challenges you may encounter along the way, and pointing you to the many helpful school garden resources that are available. Using this guide should assist you in planning, starting, maintaining, and using a school garden for years to come.

Finally, a note on language: throughout this guide, you'll see reference to "school gardens"; please understand this term to encompass a range of non-residential gardens intended to be used by a group of people. Gardening principles and precautions — like safe harvesting practices, for example — apply to everyone.

We hope this guide helps you in your endeavor and look forward to hearing about your results!

Naples Botanical Garden

Education Team

Join the discussion in the Collier Greens Facebook group!

@CollierGreens

@NBGCollierGreens

www.naplesgarden.org/education/teachers-students/colliergreens

Past workshop resources — search for topics of interest in "Read Me" index document:

goo.gl/FDd1XY

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Naples Botanical Garden
GARDENS with LATITUDE®

School gardens are of immense value to our children and community. In the age of standardized testing, the most compelling reason to start a school garden is the fact that they are linked to improved academic achievement. But, better test scores are only one of the rewards to be reaped. Pupils engaged in garden activities literally see their hard work grow and blossom. Such experience contributes to positively changed attitudes and a healthy curiosity for new subjects. Research shows that the hands-on learning that occurs in the garden environment leads to better interpersonal skills such as leadership and cooperation. In the garden, children learn to share ideas and resources, learning respect, responsibility, kindness, and pride.

There is an undeniable benefit to turning a schoolyard lawn or pavement into a vibrant place of beauty and interest. An attractive environment in which to work, study, and play creates a more pleasant and enjoyable atmosphere for students, teachers, and parents. Beautifying the school even benefits the community, as the way a school looks influences visitor perception of the school and thus the community at large. While school gardens do take planning and hard work, you can see that the positive outcomes make them worthwhile pursuits!

'YES!' TO SCHOOL GARDENS

At some point, you may need to write a proposal to support your garden program. Research-based evidence of garden benefits can bolster your efforts. Research findings fall into a few general categories of garden benefits:

- Healthy eating and nutrition
- Environmental awareness
- Positive social and interpersonal skills
- Lifelong skills
- Science achievement and attitudes toward learning

You can find abstracts of some research here:

Cornell Garden-based Learning:

gardening.cals.cornell.edu/program-tools/benefits-and-research/

Benefits of Gardening for Children Fact Sheet: www.colorado.edu/cye/sites/default/files/attached-files/Gardening_factsheet_2011.pdf

Chapter 1
Get Set for Success

This section is not to discourage you from getting involved in a school garden, but rather to encourage you to embark on the project with a plan for success. Gardens have a host of potential pitfalls that can be avoided with some planning and determination.

Along with this chapter, pay close attention to the advice in *Chapter 3: Get Started* and read through the possibilities in *Chapter 5* before you dig in. It is better to grow into a larger, more elaborate garden over the years than leap into a big project that you may need to down-size. Create a garden that best fits your school, situation, or community.

Make time for maintenance

There will be times that the garden needs attention when school is not in session. You do not want to find yourself hot, alone, and frantically weeding in the week before school opens. To avoid this scenario read the section *Closing down for summer* on page 60

If classes go into the garden just once a week, you may need to schedule more frequent maintenance for vegetables and young plants. See more on irrigation solutions on pages 21 and 59.

Create volunteer positions to take care of necessary garden maintenance. You could also set up a garden club or work days for teachers who use the garden. See page 31 for more information on volunteers.

If you do not have access to volunteers, consider options that will not need as much maintenance, such as native gardens, butterfly gardens, or container gardens.

Build solid relationships

School gardens positively impact the interpersonal skills of the students—and adults—who use them. Foster a sense of cooperation by taking the time to build relationships with all the people that are involved in and affected by the garden.

Build positive relationships with the following people and always look out for the chance to create goodwill.

Principal

Hopefully, you already have a good relationship with your school's principal. If not, try to cultivate one along with the garden. Their support is vital for a number of reasons. The principal must approve the garden and plantings, and their word holds weight in the community and school system, so their support will be key in getting recognition for the project. Ideally, the principal will formally acknowledge the garden and the benefits it offers to students and teachers, and promote it at any opportunity.

You want the principal to be a part of the garden steering committee (discussed in *Chapter 3*). They may not want to devote the time if they do not approve of or do not have interest in the project. Keep up your end by ensuring that the principal can list the school garden as a positive school achievement and source of pride.

School Plant Manager

Open and honest communication with the School Plant Manager is very important as you will be moving into their territory. You do not want to inadvertently create extra work. Keep things friendly between the school garden crew and the School Plant Manager and team.

- **One of the most important things to know before you begin is that the school garden area is not the responsibility of the School Plant Operator; it is 100% the responsibility of the school.**

Keep it friendly. Keep it fun.

As time goes on, issues will arise. Try to deal with them before they become major problems and instead foster a sense of community in the garden. This will help keep things friendly which means it will be a lot more fun to be in the school garden.

Gardens should relieve stress, not create it!

- Do not hinder access to areas that need mowing or maintenance. Be sure to leave sufficient space between beds for a mower.
- To eliminate the need for mowing in the garden work area, put several layers of groundcloth or cardboard down to suppress weeds and then mulch the entire area. This will minimize maintenance time for you and prevent the need for outside maintenance.
- If you will be planting in common areas, you will not be able to control the irrigation. Find out what the watering regime is and choose the appropriate plants.
- Communicate to the School Plant Manager that all **sprays and controls such as herbicides and insecticides should be kept well away from the garden.**

Teachers

Having more than one teacher involved in the school garden not only maximizes use, but also ensures the future of the garden. Try to establish a team of 3-5 teachers or other staff members who are committed to having a school garden.

With only one teacher involved, there is a good chance that the garden program will end when that teacher leaves. While you might plan to be at your school for years to come, do not count on it. It may help to have specific titles and job descriptions for each person. This creates ownership of the various garden areas. The roles can be the leads for the various committees discussed in *Chapter 3*.

Of course, having multiple users leads to scheduling issues. Develop a clear set of 'user guidelines' before plants go in the ground. Every garden user needs to know what responsibilities come with garden activities. Tasks that may seem obvious like cleaning and returning tools to their rightful place need to be written and shared with all participants before they start working in the garden.

What are the typical duties of a school garden coordinator? Read the sample job description (adapted from D.C. Greens) below to get an idea. As you read, you'll see that coordinating a school garden is less a plant job than it is a people job.

Sample Garden Educator Job Description

The Garden Educator is a part-time position that offers critical support to teachers and students to ensure that the school can maximize the educational potential of the garden. The Garden Educator leads garden science and nutrition education classes, while providing professional development training for teachers in the process. The Garden Educator acts as a resource for teachers as they plan their own cross-curricular lessons in the outdoor classroom, and models skills that teachers need to feel comfortable using the garden to teach science standards.

The Educator:

- Facilitates garden science classes, incorporating both environmental science and nutrition education as they relate to the garden;
- Works closely with classroom teachers to develop lessons that support classroom teaching in a range of curriculum areas (science, social studies, mathematics, language arts, etc.)
- Oversees and coordinates students' hands-on experiences in the garden (planting, tending, harvesting, and cooking);
- Builds involvement in and commitment to the school garden within the school community, including teachers, administrators, students, parents, and community volunteers;
- Builds capacity within the school by co-teaching with classroom teachers, and developing teacher skills in outdoor classroom management techniques;
- Maintains the garden, coordinating volunteers and working with the school to secure all needed supplies;
- Leads a group of students in garden-related action projects through after-school programming.

Job Responsibilities:

- Facilitate 3-4 garden-based education classes per day, two days each week;
- Manage the school garden, plan and prepare for garden work activities, manage planting schedule, ensure availability of tools and other necessary materials;
- Maintain open garden time schedule for teachers;

Sample Garden Educator Job Description *(continued)*

Job Responsibilities—continued:

- Attend school wide staff meetings;
- Lead after-school garden club;
- Coordinate community garden events to bring students, families, teachers, and community members together;
- Coordinate school-wide garden events;
- Monitor, document, and report on all activities and extent of student and teacher participation;

Desired Skills and Experience:

- At least 2-3 years of facilitation or teaching experience with youth aged 5-12 (outdoor group management experience preferred);
- Knowledge and skills in small-scale organic food production or home gardening;
- Knowledge of or interest in topics including urban gardening, botany, environmental science, health and nutrition, food systems, food access;
- Demonstrated ability to work with diverse populations including youth and adults;
- Strong oral and written communication skills, including public speaking skills;
- Ability to work independently and be flexible;
- Computer skills and project management skills.

Chapter 2
Linking School Gardens to Curriculum

Teachers can use the school garden as a living classroom to teach standards for all subjects. The school garden provides educators and students a chance for fresh air, a change of scenery, hands-on discovery, and alternative ways to learn and teach.

Science lessons, like pollination and flower structure, are obvious links from the school garden to educational standards. However, gardens are ideal places to explore activities in all subjects. Horticultural tasks introduce new vocabulary and can be used as topics to develop informative writing skills for Language Arts class. Math teachers, with the simple act of cutting fruits and vegetables from the garden, can help students explore fractions, multiplication, and division. Social studies students can explore the cultural and economic importance of garden plants.

Any teacher who wants to use the garden can develop a range of activities around their standards. Many activities can incorporate several subjects as one hands-on lesson.

For a list of resources for teaching curriculum in the school garden, see page 68. Life Lab launched a Common Core Math and Language Arts standards and Next Generation Science Standards database for garden-related lessons: **www.lifelab.org/content-standards/**.

ACTIVITY: Plant dill.

SOCIAL STUDIES

Dill originates from the Mediterranean. Find the Mediterranean Sea on a map.

VISUAL ARTS

Create an artistic label for the new dill plants using stamping.

READING/LANGUAGE ARTS

Write an informative item for your garden newspaper about growing dill.

HEALTH

Demonstrate and discuss healthy behavior when planting dill and read labels and warnings on all supplies.

MATH

Measure and mark the space needed between each dill plant.

SCIENCE

Investigate plant-animal interactions. What insects feed on dill?

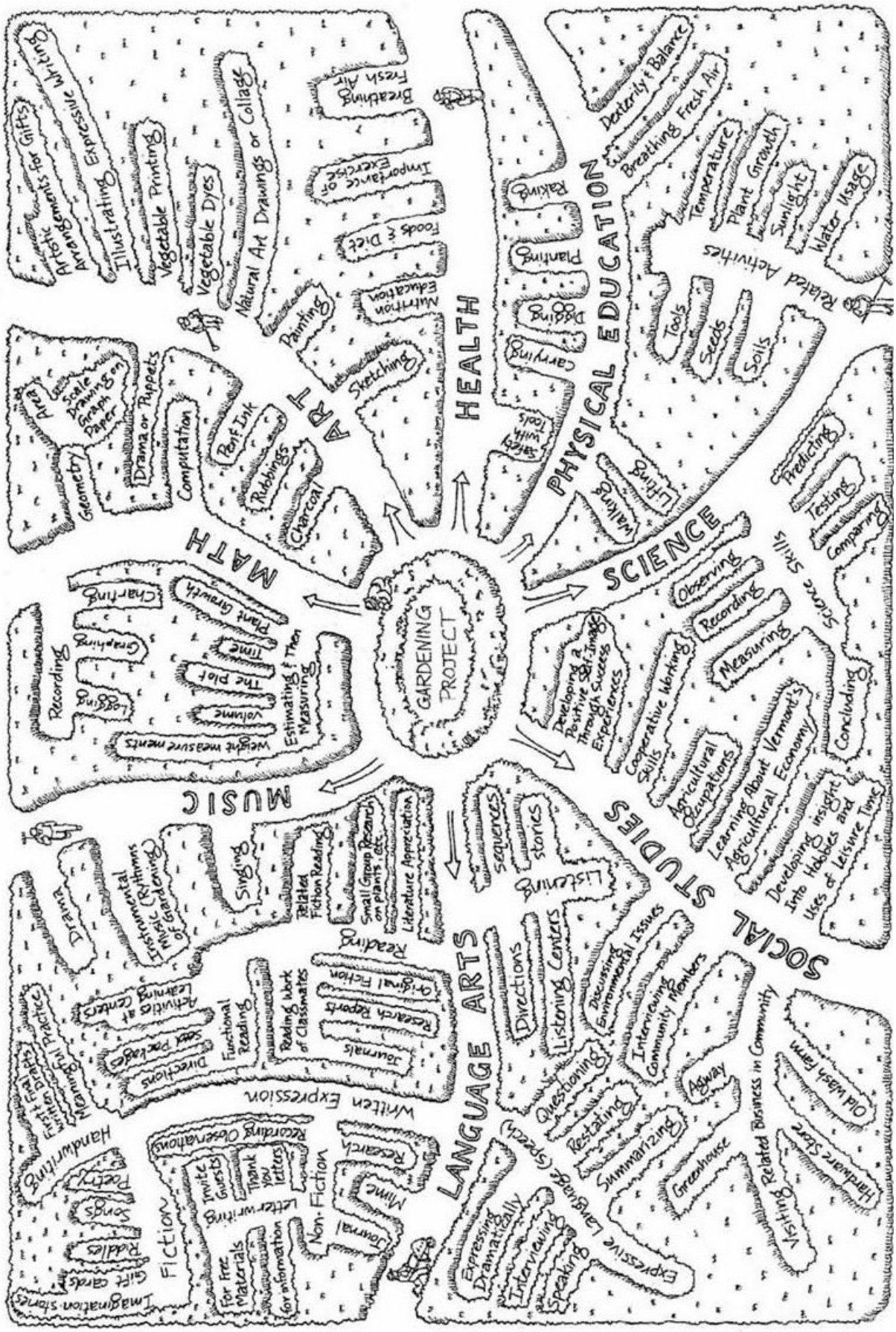
Local Inspiration

In 2016 and 2017, Naples Botanical Garden partnered with Lipman Family Farms to offer the Collier Greens Educational Garden Recognition program, which encouraged best practices in youth gardens and recognized outstanding garden programs. Gardens selected for recognition received a cash award to reinvest in their gardens, as well as signage sharing their achievement.

For Naples Botanical Garden, this program allowed us to gain a clearer picture of how educators use gardens to enhance their curriculum. The content in schools' applications for this award was so enlightening that we created a garden profile for each school so that others can learn from local successes and challenges with garden-based learning programs. Each profile includes the audience served by the garden, details on student involvement and engagement, garden history and management, goals for the garden program, parent and volunteer engagement, and information on garden product. Garden profiles for 2016 and 2017 can be found on Naples Botanical Garden's website:

www.naplesgarden.org/education/teachers-students/collier-greens/

Recipients of this award serve PreKindergarten-12th grade students at public schools, private schools, and afterschool programs throughout the area — so there is truly something for all garden educators to learn from the profiles. For example, you'll read about 3rd graders growing cabbages for a national competition; high school students maintaining salsa and pizza gardens in EarthBoxes; Kindergarteners tending to butterfly gardens; and more. Some gardens are the project of a lone teacher; others' have school-wide engagement. All engage students in a hands-on and meaningful way.



School garden learning opportunities map

Literacy in the school garden

School gardens have great potential to strengthen language skills of both English-speaking students as well as English language learners. From new processes and tools to unfamiliar fruits and vegetables, a host of new vocabulary words awaits students in the garden. Additionally, communicating about garden work involves listening and discussing. There's also a wide range of children's literature that relates to the garden world. The American Horticultural Society and Junior Master Gardeners honor outstanding children's gardening and nature books with the Growing Good Kids Book Award. To see a list of winners, visit: **jmgkids.us/bookawards/**

A lesson from Grace Place for Children and Families

Grace Place for Children and Families began as an afterschool homework club in Golden Gate city. Now, more than ten years later, Grace Place serves over 800 students in its programs for early childhood education, school-age children, and adult literacy. One component of Grace Place's school-age programs that has been a part of the organization since 2006 is its Children's Garden, which is used by 1st graders in the afterschool program at the center. Located in a highly visible area between classrooms and the playground, the garden at Grace Place features 16 garden beds, along with fruit trees, and is often visited by other students at the center. In fact, according to founder Rev. Stephanie Campbell, "Our mission and programs include parents, so there are lots of opportunities for family involvement" in the garden.

"At Grace Place, we link almost everything we do to literacy because literacy is the key to breaking the cycle of poverty," says Campbell. For that reason, their garden features garden beds themed around popular children's books. Next to beds for salsa ingredients, "Three Sisters" (corn, bean, and squash), and butterflies, you will also find a brightly-colored wooden bed for that literal literary character *Amelia Bedelia*, along with beds for *Peter Rabbit* and more recent children's books like *The Curious Garden* and *Chicks and Salsa*. "Using literary themes and children's books invites the students to engage with the garden in different ways, encourages their imagination, builds their vocabulary, and expands the education the garden provides," Campbell explains.

Chapter 3
Get Started

Create school-wide support

Most school gardens start with a passionate individual who wants to see a beautiful, productive garden on his or her school grounds. If you are that person, you should know that one person can certainly get the ball rolling, but long-term success will depend on getting support from the larger school community. Without it, you may find yourself embroiled in constant battle for your cause and find the brunt of responsibility on your shoulders alone.

Bring the wider school community on board, not only as garden users and contributors, but also as voices of support. When changes in management and school board focus occur, you want the garden to be seen as essential, not expendable. Fostering support, building pride in the garden, and encouraging a willingness to lend a hand will be what ultimately makes the project a 'School Garden,' rather than 'My Garden.'

To recruit garden fans, you need a well thought-out plan that has been incorporated into a written proposal. The proposal should include a convincing case for the benefits, a description of how the garden will be used, a site plan, a budget, and, of course, where that budget money will come from.

Gardening for Nutrition is an excellent resource for teachers who want to grow school gardens. Inside are tips on nearly every aspect of school gardens, including creating support and activities linked to Sunshine State Standards.

The guide is for teachers in Florida, so the information on what to grow and care will be suitable for our climate here in Southwest Florida. Download a PDF of the guide or request a hard copy:

http://faitc.org/teachers/gardening-for-nutrition/

Tips on creating support

- Talk to the principal. The support of your principal is essential. Ideally your principal will be supportive and you should keep communication flowing so that he or she is informed of plans and progress.
- Create a plan and budget for your school garden and then determine how you will meet that budget year after year. Go to the Budget section in this chapter to read more about creating budgets.
- Bring students on board. Students are not only your target audience, they are potentially the biggest school garden fans and you want them on board 100%. Consider how they will use the garden—a garden club, an after-school program, a program incorporated into class time—and how to build their enthusiasm for the project accordingly.
- Illustrate how the garden will both enhance the beauty and support the mission of the school when approaching your principal.
- Don't forget the parents! Parental involvement is linked to student achievement and the garden is a great place to bring parents into school activities with their child. In some schools with many students who speak a language other than English at home, we see the language barrier that keeps some parents from being involved with the school melt away when the students are the garden tour guides. Parents are also a great source of volunteers and even donors. Bring parents into the school garden in as many ways as you can.
- Talk to teachers. The more teachers who want to incorporate the garden into their lessons, the more invested supporters you have. Listen to their needs and ideas and see how they can fit into the final garden plan. The end garden may vary from your original vision, but a school garden should incorporate as many users as possible. A team of several invested teachers also helps to ensure the future of the garden.

The School Garden Wizard demonstrates how to link your garden to the school's vision and create a budget. Go to:

http://www.schoolgardenwizard.org/

All aboard? Invite the following people to be on garden committees:

- *Principal*
- *Assistant Principal*
- *School Plant Manager*
- *At least 2 Teachers*
- *At least 2 Parents*
- *At least 2 other school community members . For example: the counselor, cafeteria staff, library and media center staff , and/or representatives from a local business or organization.*

Form committees

No matter what kind of garden you grow, certain tasks have to be accomplished, many on a regular basis. Make sure someone is assigned to every job and that the role of each person is clear.

The first step is forming committees representing garden stakeholders. Participants may include representatives from the following groups: parents, teachers, school board, community groups, and local businesses.

Your committees may overlap and/or the same people may be on all committees, depending on how you structure your garden. Even if you do not have all the individual committees, the work of each committee must be accomplished.

School garden committees

Steering. This group undertakes planning and decision-making, establishes the goals/rules/framework for the garden, and keeps the garden on track once it is established.

Garden. Responsible for planning and scheduling. This group makes sure that garden chores are done, and schedules garden use, as well as inventory and maintenance of tools and supplies. They should keep records and submit regular reports to the steering committee on garden progress, use, problems, and needs.

Fundraising. Responsible for raising funds for the garden through fundraisers, grant writing, and seeking donations of money or equipment based on the needs identified by the garden committee.

Outreach and PR. These folks get the word out about the garden. Writing press releases, keeping up a website and/or social media, meeting with people in the community and keeping the garden in the minds of potential supporters, volunteers, and donors. This committee's work relates closely to that of the Fundraising committee. If the garden community is small, these two committees can be combined.

Committee Tips

- ✓ **Establish regular times that committees are to meet both individually and as a group.**
- ✓ **Individual committees may need to meet as often as once a month for the garden committee and the entire group should aim to meet at least four times a year.**
- ✓ **Keep records on all garden activities.**
- ✓ **Keep minutes for every meeting.**
- ✓ **Evaluations are an important process to go through at the end of each season. Reviewing successes and failures helps ensure that every year will be an improvement. The evaluations can be informal, as long as they are honest. Check out past Collier Greens workshop resources for ways to evaluate programs:**

https://goo.gl/UA3XoT

Garden site planning

Site selection

In some cases, site selection may be out of your hands. Your school may have a pre-designated space, you may be working with a pre-existing garden, or other restrictions may apply. You can make any space work for you, but if you get your choice of spots, you want to look for:

- ✓ An area with plenty of sunshine. Most vegetables need at least 6 hours of sunlight a day to grow properly and most plants need 4-6 hours.
- ✓ A shade tree or covered space where classes can meet and talk out of the sun. Group meeting space is considered a best practice when it comes to school and community gardens.
- ✓ A water source, either a faucet where a hose can be connected or a down-spout where a rain barrel can be set up.

- ✓ Fenced area and/or area that is away from school traffic.
- ✓ Good drainage. Most plants do not like to be in standing water after a rain. Walk outside right after a rain and see which areas of the school are pooling water. Avoid planting in those areas or plant water-loving plants there.
- ✓ Keep in mind that you really do not need a lot of space to create a great school garden. You can adapt your plan to fit your space and you will be amazed how much you can fit in a small area.
- ✓ Once you have the place, check out the Florida-Friendly Plant Database, a helpful tool to help select the right plant for the right place. Find it at:

www.floridayards.org/fyplants/index.php

Location, Location, Location

This real estate mantra applies to school gardens, too! Where you situate your garden can quickly determine your garden's potential success. For example, placing a garden in an infrequently-traveled area will make it difficult to generate interest in the garden. Likewise, building raised beds on the north side of a building, under an awning far from irrigation means your garden will receive neither sun nor water — a death sentence for plants.

If you **start small**, it will be easy to correct poor locations. One school relocated their entire garden between growing seasons, moving from the hidden side of a maintenance building to right outside the cafeteria. This relocation was possible because their garden was a manageable size and comprised of collapsible raised beds; they did not have to worry about dismantling permanent structures.

Site plan

Site planning can be intimidating to the average person. Many people feel that this is a job for professionals. In a perfect world with big budgets for all, that is true! So, if you have the money, enlist the help of a landscape designer/ architect. If you do not have the funds, ask a landscape designer or architect to donate a school garden design for your school. Collier Greens can also help you plan.

If you are not able to consult a designer for your site plan, do not worry. You can come up with a perfectly reasonable plan all on your own! Determine what your goals are, who will use the garden, and how they will use it. Answering the questions below and keeping in mind the following tips will help you create your plan.

? How many classes will use the garden and how often will they use it?

? What will they use it for? How will they use it?

? Do you need table space to work?

? Is there a place in the shade to talk and write?

? Is the garden away from other school distractions?

? How can you divide the garden space if multiple classes need separate growing areas or areas to set up lessons?

✓ **Request a survey from the School Plant Operator before creating the site plan. They will survey the area for existing pipes, wires, and any other lines that may be below the planned garden site. Do not dig without surveying!**

✓ Plant large trees on the north side of the garden, so they do not shade your other garden plants. The sun is strongest from the south.

✓ Create beds or plantings away from the shade of large trees and where there is not rain run-off from roofs.

✓ Include a secure, but accessible, area to store supplies near your garden.

Budget and supplies

You have the people, the place, and the plan. What now? You need to purchase supplies, set up the planting areas, and get growing.

The precise materials and tools needed for your garden depend on the scale of your program. For example, a garden consisting of 10 4' x 8' raised beds may need shovels, spades, wheelbarrows, and rakes; those items would be unnecessary, though, for a garden consisting of 10 EarthBoxes.

On the following page is a list of supply categories to consider for a school garden. Be sure to invest in quality tools that will hold up under regular use. Before using any tools in the garden, instruct all students—and adults—on tool safety.

Start making a list of the items you need and start shopping around. Don't forget to consider the lessons you plan to teach in the garden and include activity materials in your budget.

In some cases, the budget may be defined before the start of the program and there's little flexibility. As you make a detailed list of supplies needed for the school garden, think about different ways you can get them. Some schools have successfully approached local businesses for raised bed materials. Garage sales and flea markets might be a source for tools. Be creative!

If your budget starts rising too high and you think you will have a hard time reaching your goals, look for ways to cut costs. For example, the *Junior Master Gardener Teacher/ Leader Guide* has an activity where students create pots out of recycled paper. You can easily use these pots to start your seeds, instead of purchasing seed trays. See the following chapter for ways to raise funds and seek donations.

Junior Master Gardener Program

The Junior Master Gardener program is a 4-H program that encourages young people to get out and grow. They have lots of helpful books you can buy online.

www.jmgkids.us/

Great books for teachers who do not have time to create their own garden activities are *Junior Master Gardener Handbook* ($15) for children or *Junior Master Gardener Teacher/Leader Guide* ($56).

To order these books, visit:

jmgkids.us/curriculum/jmg-teacher-guide-youth-handbook/

Garden supply categories

The basics

- Soil—figure the volume of your beds
- Seeds, transplants
- Organic fertilizer for one season
- Raised beds, other containers. Read more about raised bed options here:

goo.gl/iARjcy

Tools

- Trowels
- Scissors, pruners
- Staking materials
- Velcro, twine
- Plant labels
- Gloves
- Tool & supply storage

Irrigation

- Hose, hose reel
- Irrigation wand with valve
- Watering cans with rosettes

Educational supplies

- Curriculum
- Journals
- Books
- Pencils
- Clipboards
- Mobile dry erase board

Harvesting

- Food-safe soap
- Containers that can be sterilized, like shopping baskets, not wicker

Cooking/food prep

See Collier Greens past program resources, "February 2015 – Eating the School Garden" for ideas about cooking without a kitchen:

goo.gl/aN04Ct

Celebration supplies

For family nights and other community events

- Reusable plates and utensils
- Serving dishes
- Tablecloths

Miscellaneous

- Rainwater harvesting system
- Composting system
- Other cleaning and storage supplies
- Signage—to invite people to your garden, state garden rules. Learn more about effective signage and signage types in this resource from a past Collier Greens program:

goo.gl/7n2oes

Garden maintenance planning

The lessons taught in the garden are the *raison d'être* for planting a garden, but if the plants are in terrible shape, the garden is a mess, and nothing bears flowers or fruits, many of the lessons you hope to teach will be lost. In addition to scheduling class time in the garden, you must factor in garden maintenance.

Irrigation planning

Once planting begins, ensure that plants are being watered when they need it, which may include days when classes are not using the garden. You need to either schedule someone to water or set up systems that do the work for you. These include:

- Putting an automatic timer on your spigot. You can buy an automatic timer for your system for under $30. They are battery-operated and very easy to use.
- Recycling plastic soda bottles into an automatic drip system. Poke small holes in the bottom of a 2-liter plastic soda bottle and weight it down with a couple inches of gravel. Fill the bottle with water and place it around plants. The water will slowly drip onto the soil, keeping the area moist. The directions for this method are from the Chicago Now website and can be found at:

  www.chicagonow.com/chicago-garden/2009/06/pop-bottle-drip-irrigation/

- Planting in self-watering containers. Collier Greens offers an EarthBox Lending Library; see page 37. You can make your own, which will require some tools and the know-how to use them. You can also ask for a handy parent to volunteer for the job or buy premade containers. To find premade containers, you can search online and find a variety of options. The Cultivating Conscience site has very detailed instructions and photos to build your own:

  www.cultivatingconscience.com/2011/03/earthbox-diy/

Time to plant

Vegetables

In Southwest Florida our growing seasons are not the same as most of the United States. Luckily, the best times to plant are when school is in session! You can sow most vegetables from September to November. Pay attention to days until harvest on your packets and plan according to what will ripen for your program. Plan to harvest all your vegetables before the December break. If you do not pick them, they could be killed off by frost or ripen during the holiday. Either way, the students could miss the joys of harvest.

You can begin sowing seeds and planting vegetables again in January. If you have a warm place to keep seed trays, you can start your seeds in January to be ready to plant in February. Starting plants in February and March means caring for plants in April and May. These two months are extremely dry and you need to have an irrigation plan in place.

If you do not have a lot of time, quick crops like radishes, bush beans, greens, and many herbs offer speedy results. If you want more variety, supplement these with potted plants from a garden center or start your own earlier in the year indoors. Although buying potted plants will speed up the time to harvest, starting seeds should be included in all garden programs so that students can observe the entire process from seed to plate.

Other landscaping

If you are growing ornamental plants rather than vegetables, you do not need to worry about harvest times. You want to plant these plants at a time when they will be able to get established before the weather gets harsh. That will give them a better chance of surviving extreme cold, heat, and dry spells. Get ornamentals in the ground before October to help plants make it through the winter.

If keeping plants watered is a problem, try to plant ornamentals at the start of February to help them survive the dry season. If your class will be available to water regularly or if you can set up an automatic system, you do not need to worry about the dry weather in April in May. Just keep plants mulched and watered and they should survive.

Luckily, summer brings rains and your ornamentals should be fine until you return to school.

Food safety fast facts

One in six Americans suffers from foodborne illness each year, resulting in an estimated 128,000 hospitalizations and 3,000 deaths.

Although everyone is susceptible, some people are at greater risk for developing foodborne illness, including:

- Young children
- Pregnant women
- Older adults
- People with compromised immune systems

The FDA specifically recommends that these groups avoid, among other things, "Unwashed fresh vegetables, including lettuce/salads."

Fresh produce is the cause of most foodborne illnesses in the U.S. – Center for Science in the Public Interest

Leafy greens alone contribute 22% of the total foodborne illnesses, more than any other commodity.

Read more:

cspinet.org/new/201512031.html

wwwnc.cdc.gov/eid/article/19/3/11-1866_article

Safe handling & harvesting protocol

Who is responsible for food safety at your school garden? Establish your safety team and protocol NOW. Include all leaders, volunteers, and students – anyone who participates in the garden. Avoid unnecessary risks because, as the saying goes, an ounce of prevention is worth a pound of cure.

Start with the basics

Be sure to decide on basic health and hygiene standards for your garden. Produce from your garden will be harvested by hand; therefore, it is important that ALL garden participants understand that proper hygiene practices must be used in EVERY process from working in the garden to harvesting produce.

Start with the basics, like handwashing. Prior to harvesting activities, participants should wash their hands under running water and dry with a paper towel. If running water is unavailable, participants may use hand sanitizer; however, be advised that sanitizer won't *clean* hands of dirt.

Decide on conditions that would exclude participants from the garden and/or harvesting activities. Excluding conditions might include:

- Recent foodborne illness or communicable disease (e.g., pinkeye)
- Living or working with a person diagnosed with a foodborne illness
- Open wounds and cuts on hands, wrists, and arms
- Diarrhea; fever; vomiting; jaundice; sore throat with fever; persistent sneezing or coughing; runny nose

Typical policies exclude people from harvesting until 48 hours after symptoms have passed (72 hours for Norovirus). Remember: whatever illness policies you establish apply to EVERYONE—teachers, students, and volunteers. No one is immune to the laws of physics and biology.

Harvest standards

In addition to practicing good hygiene, you'll want to ensure that produce is harvested and transported in a safe manner. Some general guidelines to incorporate into regular practice include:

- Cleaning and disinfecting your tools before/after use—this simple step can kill pathogens that can make you or your plants sick. Volunteers' tools from home should also be cleaned. Bleach can be corrosive to tools; alcohol wipes are a handy solution—alcohol is not as corrosive and does not need to be rinsed off.
- Food should only be harvested into food-grade containers; no shopping bags, wicker baskets, or used landscape pots. Food-grade containers include food-grade plastic buckets, Ziploc bags, bowls that are dishwasher-safe, and other containers that can be cleaned and sanitized.
- Produce should not be eaten while harvesting.
- Ideally, only pick dry fruits and vegetables.
- Remove as much dirt and debris from the produce as possible in the garden site.
- Dispose of any produce that is damaged and handle produce with care to prevent bruising.
- Keep harvest records that include the safe hygiene and harvest procedures you've undertaken. If you do not document it, it did not happen!

Harvest Tool Kit

Consider assembling a harvesting tool kit. Items to think about including:

- Designated harvest containers
- Harvest activity log including date, time, harvester names, items harvested, etc.
- Designated harvesting tools (e.g., pruners, scissors, etc.)
- Materials for cleaning containers, tools, and hands (e.g., soap, paper towels, alcohol wipes, hand sanitizer, etc.)
- Nitrile gloves
- Scale for weighing produce

The scale and harvest activity log can provide some great information to include in grant requests and garden reports about the product coming out of your garden!

Maturity and harvest

Part of the garden site-planning is to know what you will do with the plants before they go in the ground. You want to make sure you have the right number and types of plants for the lessons you will teach. You also need to plan for the changes in care as plants mature.

Butterfly gardens may require some pruning of flowering shrubs and trees and replacing or supplementing plants that have been eaten by caterpillars. Plan time for renewal pruning and replanting if needed. You may want to keep some extra money in the budget for replacement plants.

Shrubs can be allowed to grow big and wild, some reaching the height of small trees, or they can be kept trimmed. Hedges will need more frequent pruning than less formal bushes. To keep plants in optimal health, feed them once a year with an organic fertilizer or application of compost.

The plants mentioned above need fairly minimal planning, but with vegetable gardens, you need to plan for harvest and preparation. Find tips on planning for harvests throughout this chapter and reference the planting calendar in *Chapter 9*.

Fruit and vegetable harvest possibilities

Eating fresh from the garden

With minimal supplies and equipment, you can make fresh salads and salsa from vegetables and herbs harvested fresh from the garden. You will need a place to wash and prepare vegetables and equipment: two basins for washing/rinsing, cutting board, knife, food-safe containers, serving utensil, dishes (these can be disposable or, better yet, reusable), surface disinfectant, cloth to wipe down work area, dishwashing soap, and a dish scrubber.

If this idea sounds perfect for your garden, take a look at the salsa garden in Gardening for Nutrition, which can be found at:

faitc.org/teachers/gardening-for-nutrition/

Preparing meals

Although it requires more equipment and planning, you can create a simple kitchen for cooking demonstrations. You might want to invite a local chef or cook to do a cooking demonstration and talk about the food of the day. In general you will want to keep recipes simple so that students can duplicate them at home with their parents. You will need the same equipment as you would eating fresh from the garden and add: induction burner, pot holders, 1-2 pans or pots, and additional spices or ingredients to complete the planned dish.

Sending vegetables home

An easy way to use the harvest is to send it home with the students. Remember that some households may not normally incorporate fresh vegetables into their daily meals or may not be familiar with how to prepare a particular vegetable. Be sure to use food-safe containers like new Ziploc bags and not used grocery sacks. Also, consider sending home a recipe or two with the produce — or at least a note identifying the items. It is better for students to see and try a vegetable before taking it home so that they can share their excitement and how to prepare it with the rest of the family.

Donating

There are people in need all over Southwest Florida. If you do not have a way to use all of your harvest, find a food bank that will take fresh vegetables and make a donation in the name of your school garden program. Some schools incorporate food donation as a goal of the school garden program.

The Language of Recipe Writing

Why do culinary skills matter? Cooking is a craft with structure—like science. When children learn to cook food they grew, they not only gain an increased respect of and appreciation for food and its journey from soil to kitchen, they get to practice real-life science and math while learning about food chemistry, weights and measurements, ratios, and more. Language skills get a workout when it comes to reading and writing recipes, and can be great practice for writing procedures as one might do in the science lab. Here are some helpful tips to keep in mind when writing a recipe:

- A recipe is not a novel. The recipe should use each word efficiently.
- Be sure to name the recipe first. Highlight what makes it great and the produce used to make it.
- When it comes to ingredients, be sure to spell out all measurements instead of using abbreviations.
- List ingredients in order of use.
- Name the ingredient followed by what you are doing to it. For example:

  1 pound potatoes, washed and peeled vs. 1 pound peeled and washed potatoes
- Describe the type of ingredient before naming the ingredient. For example:

  1/2 cup raw unsalted cashews vs. 1/2 cup cashews, raw unsalted
- Be careful where you place the action in the ingredient list. For example, the following notations are both correct, but yield different quantities:

  1/2 cup peanuts, chopped vs. 1/2 cup chopped peanuts
- In the procedure, separate each step into a different paragraph. It may be helpful to number each step.
- When writing procedures, list the equipment first, then the amount of heat (if applicable), followed by the procedure. For example:

  In a small saucepan over medium heat, gently whisk…

Finally, be sure to test your recipes to make sure they work!

Chapter 4

Keep on Going

Funding: Grants, fundraising, sponsors, donations

In Florida Agriculture in the Classroom's *Gardening for Grades*, there is an example of a Florida school garden that started on only $80. You may have bigger plans, but, large or small, you will need to determine how to cover your program costs.

Grants

Many grants exist to help school gardens. Go to the *Chapter 8: Resource List* and explore the opportunities in the Grants section. Then, search the Internet for a host of possibilities we may have missed.

Grant applications range from simple to somewhat complicated. Luckily, Champions for Learning has a helpful way to bypass the red tape by linking people who want to help to educators with a great idea to implement. The program is called Connect with a Classroom. Through Connect with a Classroom, CCPS teachers can write a brief summary of their needs and Champions for Learning will help to match them with individual and corporate donors that want to help. You can learn more and sign up by visiting the Champions for Learning website.

Naples Botanical Garden can also help link you with grant opportunities; be sure you are on the Collier Greens e-newsletter distribution list to stay up to date.

If you are at a public school, you can also check with your grants department.

First stop:
Champions for Learning

Champions for Learning helps connect Collier County educators with funding for their projects and should be one of your first stops for school garden funding.

To post a funding request, visit the Educators & Schools section of the Champions for Learning website.

www.championsforlearning.org

Champions for Learning
3606 Enterprise Avenue
Suite 150
Naples, FL 34104
Phone: (239) 643-4755

Fundraising

Fundraisers are another option. You can have your garden fundraising committee hold one or check with the school's PTO about having one for the school garden.

Have your fundraising goal amount clearly advertised and, if possible, keep a running display of how close you are to achieving it. Often people will make a purchase to fund larger amounts when they know how much you need.

Some seed companies have special fundraising opportunities for school gardens. These and other fundraising resources are listed in *Chapter 8*. Be sure to confirm with your school administration that funds can be properly accepted.

Sponsors

Sponsors are community members and businesses that donate to become a partner with a project. It is a great way to build relationships between the school and the business community. Invite businesses such as hardware stores that can provide not only monetary donations, but materials and tools as well. Other local businesses, though they may seem unrelated, are often willing to sponsor youth-related projects. Local business owners who are also the parents of the children using the garden are a good choice for partnerships as they want to support activities that benefit their families.

Part of the partnership includes showing your thanks and promoting your sponsor. Give them recognition wherever possible. For example include a 'sponsored by' line on a sign in the garden, put sponsor logos on t-shirts or on any publications, thank supporters in your social media, and link to sponsors from your garden

website. Mention your major sponsors and donor agencies if you are interviewed about the garden or if you send a press release to local papers.

At the end of each school year, present sponsors with an official thank you letter, along with an annual report. See the end of this chapter for a checklist of sections to include in an annual report. Other items to include with the annual report are hand-made thank you cards from the students and a certificate of appreciation that sponsors can display at their business.

Promoting and thanking your sponsor not only makes them feel proud of the project they support, it also shows potential sponsors how you will give back if they decide to join the team.

Donations

Donors are generally individuals who give a one-time or infrequent donation. However, some donors may contribute regularly and give large amounts that help sustain the program. You can seek donations from anyone. Many people are able to donate small amounts of money to help a good cause and a few are able to donate larger sums. Large or small, all of it helps to keep the garden going. Advertise that donations of any size are always welcome wherever you can, during fundraisers, events, on any publications, and on your website.

Volunteers

Unless you are prepared to do all the work yourself, enlist the help of volunteers to keep the garden running. Volunteers can help with everything from pulling weeds to assisting teachers with lessons or organizing a fundraiser.

School volunteer contact

Your school volunteer contact will have a list of volunteers who may be willing and able to help. If you know someone who wants to volunteer, send them to the school volunteer contact to get started. In Collier County Public Schools, most school garden volunteers and mentors must go through a screening process to become at least Level II Volunteers.

The process requires that they complete an online application. If they pass the screening process, they then meet with the school volunteer contact for orientation before they can start in the garden. If a volunteer needs to be a Level II volunteer, they will also need to be fingerprinted and meet the District's screening criteria.

Be prepared when help arrives

Volunteers come from a host of backgrounds and can offer a different level of commitment to the project. They may be high school or university students needing service-learning hours, involved parents, or even grandparents who want to donate their time. Individuals may only be able to help out for a particular day or they may be able to return on a regular basis. Have a wish list on hand as well as a list of day-to-day tasks for volunteers so that you are ready for any help that arrives on the scene! Being well-prepared for volunteers maximizes what they can accomplish.

Ideally, you will know which volunteers will show up each day ahead of time. Have a plan for the day that accounts for what students and volunteers will be doing. Be clear about your needs: volunteers want to know exactly where they should be, what is expected of them and how to do it. Have

Volunteer guideline examples

A few things you may want to include in your information for volunteers:

- Where to park.
- What the planned activities are for the day.
- What tools they will use.
- What to bring such as hats or sunscreen if they will be outside all day.
- What not to bring, if necessary.
- What to wear — e.g., name badge, close-toed shoes, etc.
- General information about appropriate behavior with students. For example, explain that volunteers should contact a teacher if a student gets out of line as discipline is not part of the volunteer role.

A lot of information is included in the handbook for school volunteers from the Collier County Public School website. See *Chapter 8* for a link to this handbook.

all the tools ready that they will need to do their job before a volunteer's shift begins. Give a copy of any information to each volunteer on arrival or post in a communal area that all volunteers check.

Keeping harmony in the volunteer corps

Coordinating volunteers takes time and energy and requires a degree of tact. You want volunteers to feel that their contribution to the garden is welcome and appreciated. However, you also need them to get the job done and not be a distraction to the program.

Create a set of guidelines for school garden volunteers. Give a copy to each volunteer and review it with them to ensure rules and expectations are clear. Written information helps to avoid miscommunication and serves as a reference if there is confusion.

Some volunteers will be valuable assets to the program. There are many other people like you who are willing to give a lot and can be counted on when you need them most. But, volunteers may occasionally run amok. If a volunteer has made a generous donation of time, supplies or money, it may seem difficult to turn down their latest idea or correct them if they have done something wrong. However, if you have already set program goals, and volunteer ideas and actions don't contribute to those goals, you can politely refuse inappropriate advice on the grounds that it does not fit into the garden program. If they insist, offer to take all suggestions to the school garden committee for approval.

Your first responsibility and priority is to keep the garden on track, keeping it a fun, safe place for kids, teachers and volunteers. If you cannot address the problem on your own or it occurs repeatedly, consult your school volunteer coordinator.

Assembling an annual report

Even if you don't have a granting organization to report to, an annual report on your garden program can be a useful tool to recruit future supporters, share your successes, acknowledge sponsors, and inform others like parents, volunteers, school administrators, and the greater community about your garden and its impact. Increasingly, funders are treating donations as investments rather than gifts; like investors in other fields, they want to see their funds have quantifiable impacts. Heart-warming garden stories are no longer enough to sustain program support. If you track and document garden activities and keep careful records from the beginning of the program, assembling a final report will be relatively easy.

Remember: gratitude begets abundance. Thank everyone who supports your program. Do it often. Welcome them to your work.

An annual report should include the following components:

- ✓ Overview of garden program
- ✓ Thank you to sponsors
- ✓ Summary of program goals – what is the purpose of the program?
- ✓ Overview of curriculum and activities – what did you do? Why did you do it?
- ✓ Overview of students and school served by the program – demographic information
- ✓ Overview of volunteer involvement – who were the volunteers? Where did they come from? How many hours did they contribute to the program? What did they do?
- ✓ Evaluation of program – include any quantifiable data you have collected about program impact and feedback from students and volunteers, if possible
- ✓ Selected quotes about the program from students, staff, volunteers, parents
- ✓ Samples of student work, evaluation tools, media coverage, etc.
- ✓ Photos of garden and students engaged in garden throughout

Chapter 5
Possibilities

While all school gardens share similarities, yours will be as individual as you are. Most follow a common theme such as vegetable garden, butterfly garden, sensory garden, and so on, yet each has its own character depending on its purpose, type, users, and the unique space that is available. Your goal may be to encourage healthy eating habits, to teach life skills — such as record-keeping and money management — to restore a natural area in order to provide habitat for wildlife or to create a beautiful space for the school to enjoy. Every style of garden holds the opportunity to teach and share.

Information on a variety of garden types follow. However, don't feel constrained to one type of garden; you can fuse a variety of elements as needed. There are also lots of other ideas out there, so do some web searching for inspiration.

Great ideas from outside SWFL

The Jeffers Foundation supports school gardens in Minnesota. Visit:

www.jeffersfoundation.org/school-gardens.php

to see profiles of outstanding school gardens in their area.

Container gardens

The first garden to consider is a container garden. Container gardens are an excellent alternative to a large-scale school garden. They are very easy to start and maintain and cut out the stress and management issues of outdoor gardens.

Containers come in all shapes and sizes and container gardens can take place indoors or out. They can range from a few pots on the window sill to a garden of EarthBoxes. You can buy attractive clay pots at a gardening store or keep it simple and inexpensive with plastic pots from a hardware store. There are a host of possibilities.

One of the greatest things about a container garden is that at the end of the season you can discard the plant, keeping the container to start with next year. Another bonus is that space is never an issue as you can adapt to whatever is available. If you are keeping plants in the classroom, you

Make a terrarium

Building a terrarium can be a fun way to learn about the needs of plants and the role water plays in nature. You can find lots of advice and step-by-step instructions online, but the basics are:

1. **Get a clean jar with a lid.**
2. **Put a layer of pebbles on the bottom.**
3. **Put a layer of charcoal over the pebbles.**
4. **Put a few inches of soil over the charcoal.**
5. **Plant small, indoor plants in the soil.**
6. **Spray the soil gently with water.**
7. **Put the lid on the jar to complete the terrarium.**

Just spray more water every other week or when it looks dry. Leave in indirect sunlight and replace plants if they die or get too big.

have the advantage of having them under close observation, making it easy to spot and remedy problems.

A plant in a container needs water and nutrients and cannot send roots out to explore for them. They depend on you entirely. You need to monitor the plants regularly and ensure that they are getting enough, but not too much water, light, and nutrients. All of these will vary from plant to plant, so take the time, or make it part of the classroom activity, to find out the needs of your container plants.

Water

Check plants regularly for moisture as water needs vary from pot to pot and plant to plant. Just push your finger about two inches into the soil to test the moisture and water as needed. Look up information on your plants to see what kind of moisture they require. Some plants do better with less water and others need to be kept continually moist. You can also determine water needs by feeling the weight of the container; this technique is most useful for hanging plants. You will get to know when the plant is dry by the way weight decreases as water is needed.

For indoor container gardens and for outdoor gardens with just a few plants, you can take care of watering with a simple watering can. If you have a more extensive outdoor container garden, you will need a hose with a spray nozzle or watering wand attachment.

Any type of container you choose, except for a terrarium, will need at least one drainage hole at the bottom to allow water to escape. Place a dish of some sort under each plant to prevent water from running over the floor. If the dish is deep enough, you can fill it with water if you will be gone for a few days. There are even some pots, like EarthBox containers, you can purchase that have a water reservoir for self-watering.

Lights on or lights off?

Symptoms of too much light *may include curling; bleaching or brown spots on leaves; leaves that dry out and fall off; and scorched-looking plants with red leaf edges.*

Symptoms of too little light *may include weak, spindly plant growth; plants that produce smaller leaves; and leaves that turn yellow and drop off.*

Soil mix

Container plants should not be planted in soil from the garden. They need a soil mix for potted plants. The easiest way to start is to buy a bag of premixed potting soil from a garden or hardware store.

If you would like to be adventurous or teach lessons about soil composition, you can find lots of recipes online for mixing your own potting soil. One simple recipe is equal parts peat, compost, and vermiculite.

Light

You can grow nearly any plant in a container. You are limited more by the available light. If the plants will be kept inside a classroom without much sunlight, you will want to select suitable, shade-loving species, unless you can set up a lighting system for the plants. If you are able to place containers outdoors, there are a lot more plant options as you can choose a shady or sunny spot to suit the plant. To begin selecting plants, start from the type of garden you want to grow – food, butterfly, orchids, succulents, etc. – and then find out which varieties will fit your conditions.

Position plants according to their light needs, which may require shifting according to the time of year. Light colored surfaces around the plant will increase the amount of available light. Southern-facing windows will provide the most light and, of course, how close you place the plant to the window or light source will also alter the intensity of the light received.

If need be, you can supplement natural light with artificial light. A cool white fluorescent bulb can provide most of the light needs for a plant being grown for just its leaves, but is not necessarily optimum. There are special grow lights that provide the full-spectrum of light that plants need. Setting these up can range from under twenty dollars to several hundred. You will have to consider your needs and your budgets beforehand.

To control the amount of light when you are not in the classroom, you can set up simple and inexpensive timers. Don't leave artificial light on a plant day and night as this will lead to a stressed and unhealthy plant.

NPK: Know your macronutrients

You'll find three numbers on the label of every fertilizer container. These numbers represent the percentage by weight of Nitrogen (N), Phosphorous (P), and Potassium (K) contained in the fertilizer.

Nitrogen (N) is part of the chlorophyll molecule and promotes lush green growth.

Phosphorous (P) is necessary for flower and fruit development.

Potassium (K) is important to root development and regulates plant metabolism.

Fertilizer

Potted plants need regular applications of fertilizer to stay healthy. Feed container plants by applying fertilizer liquid or pellets to the soil. Plants can also absorb nutrients through their leaves, so you might want to consider a periodic foliar feed. Most container plants will do well with a weak solution of fertilizer applied every week or two. You can purchase organic fertilizers specially formulated for potted plants. If you purchase fertilizer, just follow the directions on the package.

EarthBox gardens

An EarthBox is a self-watering planter and a great way to get started with gardening. These systems are compact and portable and produce high yields. Plus, the planter's three-gallon water reservoir means that you can leave your box unattended for school vacations without worrying about it drying it out. Since the reservoir has an overflow drain, you can't overwater your box either.

Through Collier Greens, Naples Botanical Garden offers an EarthBox Lending Library in which you can borrow boxes from us for free for the growing season. Simply complete and return the Lending Agreement found in the Collier Greens section of the Botanical Garden's website to get started. Although you are responsible for providing soil and plants, we do have some ideas to share for sample layouts; see *Chapter 9*.

You can start seeds in an EarthBox, but do remember that seeds will need regular watering until they are established — brand new seedlings are not yet developed enough to reach for water held in the EarthBox reservoir.

Butterfly gardens

Butterfly gardens make wonderful school gardens. They are platforms to teach plant and animal interaction, provide food and habitat to our native butterflies and feature many flowering plants that can add a bright spot of beauty to any school property. Butterfly gardens can be stand-alone projects or be incorporated into a larger garden framework.

To create a successful butterfly garden, you will need to grow both nectar plants (for adult butterflies) and host plants (for caterpillars). A butterfly garden with only nectar plants will only attract butterflies that happen to pass by. If you provide plenty of host plants for young caterpillars, butterflies will stay in the garden and lay their eggs. This way, you and your students can witness the entire butterfly life cycle and your garden can host a new generation of butterflies.

Nectar plants

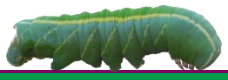
Many white flowers on weeds, shrubs, and trees contain alkaloids which are necessary for mating compounds for some species and, in some cases, give the female protection from predators. The list below contains white-flowering nectar plants for butterflies as well as two other nectar plants that are not white, but do contain the alkaloids.

Butterfly gardens: White-flowered, nectar plants

Plant name	Use	Notes	Origin
Sweet almond *Aloysia virgata*	Nectar	Shrub. Very fragrant.	Mexico, S. America
Butterfly bush *Buddleia madagascariensis*	Nectar	Shrub. Yellow variety. Avoid the *B. davidii* /any pink or purple buddleia.	Madagascar
Fiddlewood *Citharexylum spinosum*	Nectar	Small to medium tree or large shrub. Small fragrant white flowers all year. Produces small edible fruit.	Native
Scorpion's tail *Heliotropium angiospermum*	Nectar	Shrub. Flowers all year round. Can become weedy.	Native
Daisy bush *Montanoa guatemalensis*	Nectar	Shrub/tree. Blooms January-February.	Central America
Bahama coffee *Psychotria ligustrifolia*	Nectar	Shrub. Blooms all year, but peaks spring through summer.	Native
Mexican flame vine *Pseudogynoxys chenopodioides*	Nectar	Vine. Has a red-orange flower, but does contain the alkaloids.	Mexico

On the following pages are additional butterfly host and nectar plants.

Butterfly plants			
Plant name	**Use**	**Notes**	**Origin**
Smallfruit beggarstick *Bidens mitis*	Nectar	Flower. Good alternative to the weedier *Bidens alba.*	Native
Beach verbena *Glandularia maritima*	Nectar	Flower. Low-growing with purple blooms. An excellent nectar source.	Native
Chapman's gayfeather *Liatris chapmanii*	Nectar	Flower. Purple flowers in the fall.	Native
Cosmos *Cosmos* spp.	Nectar	Flower. Easy to grow from seed. Short-lived annual that easily reseeds.	S. America to SW US, Florida
Giant ironweed *Vernonia gigantea*	Nectar	Flower. Blooms summer and fall.	Native
Coral honeysuckle *Lonicera sempervirens*	Nectar	Vine. Needs to be able to climb. Also a nectar plant for hummingbirds.	Native
Tropical sage *Salvia coccineus*	Nectar	Flowers all year, but peaks in spring. Also a nectar plant for hummingbirds. Other non-native, cultivated salvias are also excellent nectar sources.	Native
Blue porterweed *Stachytarpheta jamaicensis*	Nectar	Flowers all year round.	Native
French marigold *Tagetes patula*	Nectar	Annual. Strong scent, reportedly deters garden insect pests.	S. America
Sunflower tree *Tithonia diversifolia*	Nectar	Large shrub. Very showy, large, yellow flowers.	Mexico, C. America
Mexican sunflower *Tithonia rotundiflora*	Nectar	Easy to grow from seed. Loves sun and heat. Readily reseeds.	Mexico, C. America
Zinnia *Zinnia* sp.	Nectar	Flower. Wide variety of blooms. Thrives in hot, dry weather. Easy to grow from seed.	SW US to S. America



Butterfly plants continued			
Plant Name	**Use**	**Notes**	**Origin**
Turkey tangle fogfruit *Phyla nodiflora*	Nectar, host	Groundcover. Excellent nectar source for many butterflies; host for common buckeye (*Junonia coenia*), phaon crescent (*Phyciodes phaon*), and white peacock (*Anartia jatrophae*). This plant may already be growing in the garden; if not, check vacant lots. Easily roots from cuttings.	Native
Swamp milkweed *Asclepias incarnata*	Nectar, host	Wildflower. Host for monarch (*Danaus plexippus*), queen (*Danaus gillipus*), soldier (*Danaus eresimus*).	Native
Bahama senna *Senna mexicana* var. *chapmanii*	Nectar, host	Shrub. Host for orange-barred sulphurs and (*Phoebis philea*), cloudless sulphurs (*Phoebis sennae*).	Native
Candlestick cassia *Cassia alata* Popcorn cassia *Cassia didmobotrya*	Nectar, host	Both plants host orange-barred sulphurs (*Phoebis philea*), cloudless sulphurs (*Phoebis sennae*). Foliage of popcorn cassia smells like popcorn	Mexico, Central America Africa
Corkystem passionvine *Passiflora suberosa* Maypop *Passiflora incarnata*	Nectar, host	Plant passionvines for zebras (*Heliconius charitonius*), gulf fritillaries (*Agraulis vanillae*), Julias (*Dryas julia*). Zebras are attracted to passionvine planted in the shade.	Native
Dill, fennel, parsley	Nectar, host	Host for black swallowtail (*Papilio polyxenes*).	

Host plants

Remember: nectar plants provide the butterfly food and host plants provide the caterpillar food. You want both, but you probably need more of the host plants as a hungry caterpillar can eat a lot of leaves in a short time. Caterpillars can grow as much as 3,000 to 10,000 times their original body weight. Imagine a 10-pound baby becoming a 30,000-pound adult!

Butterfly plants continued			
Plant name	**Use**	**Notes**	**Origin**
Dutchman's pipevine *Aristolochia* spp.	Host	Host for polydamas swallowtail (*Battus polydamas*). *Aristolochia gigantea* – Giant Dutchman's Pipevine - has a very showy flower and is especially popular with the polydamas. Requires trellis.	Various
Sweet bay *Magnolia virginiana*	Host	Tree. Hosts tiger swallowtail. Needs moist soil.	Native
Red bay *Persea borbonia*	Host	Host for palamedes swallowtail (*Papilio palamedes*) and spicebush swallowtail (*Papilio troilus*), which is less common than the palamedes.	Native
Swamp bay *Persea palustris*	Host	Hosts for palamedes swallowtails (*Papilio palamedes*) and tiger swallowtail (*Papilio glaucus*). As the name swamp bay indicates, it needs to be in a moist environment.	Native
Bacopa *Bacopa monnieri*	Host	Groundcover. Host for white peacock (*Anartia jatrophae*). Grows easily from cuttings. A wetland plant, but does well in dry locations.	Native
Wild lime *Zanthoxylum fagara*	Host	Small tree or large shrub. Host for giant swallowtail (*Papilio cresphontes*).	Native

Tips for butterfly gardens

- **Skip the poison.** Most insecticides, whether conventional or organic, can be detrimental to insects including caterpillars and butterflies.
- **Create layers of sun, shade and shelter.** When planning a butterfly garden, remember that butterflies are sun-loving creatures and tend to avoid shade. However, you can create layers within your butterfly garden of taller shrubs in the center or northern edge with smaller shrubs and lower flowers tapering off to the opposite ends.
- **Get to know your butterflies.** Learn which butterflies live in your area; you can't attract what doesn't live there.
- **Diversity is key**. A diversity of plants will yield a diversity of butterflies, so plant a variety.
- **Place plants for easy caterpillar observation.** Consider planting host plants toward the front of the bed. Of course, the plants will be chewed up, but the students will have an easier time looking at eggs and caterpillars.
- **Go native**. When possible, try to plant native plants, which co-evolved with native butterflies. Avoid plants that are listed as invasive species; check the Florida Exotic Plant Pest Council Invasive Plant List here:

www.fleppc.org/list/list.htm

Caring for captive caterpillars

Rearing caterpillars indoors is a fun and rewarding activity. Instead of ordering a butterfly kit, though, consider scouting your school grounds for caterpillars. You can monitor caterpillars in their natural habitat or collect them to raise indoors. Do keep in mind that caterpillars will need to be fed daily (and they can eat a lot!) and their containers cleaned just as often.

Learn more including suggested containers for rearing, parasites and pests that might plague caterpillars, and tips for keeping caterpillars healthy in this file from a past Collier Greens workshop:

goo.gl/jUyVYt

Native gardens

Consider natives first for any planting, whether for butterfly gardens, ornamental gardens, or as pollinator plants around vegetable gardens. You can also revitalize unused areas and reduce areas that you mow by planting a native garden. Natives are ideal as they are adapted to our climate, provide habitat and food for Florida wildlife, and offer a wide assortment of beautiful plant choices.

Below is a list of natives that are suited to school plantings. This is by no means a comprehensive list of all the natives you can use, but it is a start.

For additional ideas for native plants for a South Florida landscape, take a look at the Natives for Your Neighborhood feature of the Institute for Regional Conservation website. This feature allows you to find a list of native plants suitable for your specific area simply by entering your ZIP code.

regionalconservation.org/beta/nfyn/

Native plant list		
Plant name	**Form**	**Notes**
Simpson stopper *Myrcianthes fragrans*	Shrub	Makes a great hedge in full sun or can be left to grow into a small (25 ft.) tree. Flowers are white, profuse, and fragrant, and attract butterflies. Small reddish edible fruits attract birds but are not messy. Leaves are fragrant. Drought tolerant once established.
Spanish stopper *Eugenia foetida*	Shrub	Accent shrub or small tree. Semi-showy white flowers. Small black or brown berries provide significant food for birds and other wildlife.
Beautyberry *Callicarpa americana*	Shrub	Bright, purple fruits attract birds. Should be pruned to the ground after fruiting. Flowers provide nectar for butterflies. Drought tolerant.
Cocoplum *Chrysobalanus icaco*	Shrub	Great hedge. Fruits are edible. Drought tolerant once established.
Fiddlewood *Citharexylum spinosum*	Shrub	Beautiful shrub, hedge, or small tree. Shiny leaves, colorful fruits and leaves. Fragrant white flowers attract butterflies. Male and female flowers on different plants. Fruits attract birds. Drought tolerant.
Bahama wild coffee *Psychotria ligustrifolia*	Shrub	Best wild coffee for the garden. Small, slow growing shrub. Flowers attract butterflies, fruits attract birds.
Pigeon plum *Coccoloba diversifolia*	Shrub or small tree	Related to sea grape. Great small tree that maintains a formal shape without pruning. Fruits attract birds. Do not plant over sidewalks or paved areas as the fruit will drop and look messy. Male and female flowers on different plants.

Native plant list continued		
Plant name	**Form**	**Notes**
Myrsine *Myrsine cubana*	Tree, shrub	Small evergreen tree or shrub with dark, shiny leaves. Blue to black berries attract birds.
Gumbo limbo *Bursera simaruba*	Tree	Native tree with beautiful reddish, green, or white bark. Common tree in hammocks. Fruits attract birds. Remove seedlings that appear under the tree. Semi-deciduous. Drought tolerant once established.
Dahoon holly *Ilex cassine*	Tree	Small to medium tree. Requires moist organic soils for best growth, but will tolerate some drought. Beautiful red, orange, or yellow fruits attract birds. Great choice for color during the school year.
Blanketflower *Gaillardia pulchella*	Wildflower	Attractive annual wildflower. Deadhead after blooming, leaving some to reseed. Drought tolerant.
Dune sunflower *Helianthus debilis*	Wildflower	Attractive, long-lived wildflower. Use as a groundcover. Best choice 'Dune Supreme' cultivar. Spreads rapidly covering large areas, plant at least 3 feet apart. Trim after peak flowering to renew. Drought tolerant.
Spotted beebalm *Monarda punctata*	Wildflower	Fragrant-leaved wildflower. Grows into a large clump. Attracts bees. Trim to maintain formal growth. Give room to grow—at least a 6' x 6' area.
Black-eyed susan *Rudbeckia hirta*	Wildflower	Short-lived annual wildflower. Reseeds easily.
Tropical sage *Salvia coccinea*	Wildflower	Short-lived annual wildflower. Reseeds easily. May be trimmed to encourage new growth.
Beach verbena *Glandularia maritima*	Wildflower	Flowers throughout the season, but best in cooler months. Spreads rapidly.
Bacopa *Bacopa monnieri*	Succulent	Plant in low wet areas. Great butterfly attractor.
Coral honeysuckle *Lonicera sempervirens*	Vine	Coral-colored vine that can be used as a groundcover or climbing vine. Will not burden trellises like many heavy tropical vines. Attracts hummingbirds and butterflies.
Elliott's lovegrass *Eragrostis elliottii*	Grass	Beautiful silver-leaved grass. Plant lots together with wildflowers. Short lived but will reseed.
Purple lovegrass *Eragrostis spectabilis*	Grass	Beautiful green grass with purple flowers. Plant lots together with wildflowers. Short lived but will reseed.

Native plant list continued		
Scientific Name	**Form**	**Notes**
Sand cordgrass *Spartina bakeri*	Grass	Perfect for use in natural plantings along borders. Large clumping grass with golden foliage. No trimming required.
Pink muhly grass *Muhlenbergia capillaris*	Grass	Accent grass or groundcover with pinkish-purple inflorescence from summer to winter. Is exceptionally showy when at its peak blooming in the fall. Although it generally requires moist soils, it is tolerant of short periods of drought once established.

A note on bees

Bees are a critical component of any garden; in fact, bee pollination is necessary for fruit production of some common edible plants. The vast majority of bees are solitary and are unlikely to sting. Prevent bee stings by teaching children to be calm and respectful of bees in their habitat. Learn more about bees in the garden from this past Collier Greens program resource:

goo.gl/bwX3yZ

Above are some of the Florida native plants suitable for a school garden. *Clockwise from left:* pink muhly grass, spotted beebalm, tropical sage, coral honeysuckle, fiddlewood.

Ornamentals

You may want to plant a garden as a school beautification project. Although we recommend natives as a first choice, there are many wonderful exotic ornamentals that enhance the landscape. Our subtropical climate allows us to grow a wide array of plants from around the globe, which provides the opportunity for complimentary lessons about different cultures.

Check out the Florida-Friendly Landscaping website which includes a plant database with suggestions for plants for any situation.

www.floridayards.org/index.php

Vegetable gardens

Vegetable gardens are labor-intensive gardens and can be the most difficult to do successfully. However, they can also be the most rewarding to students who get to pick and eat something they have grown from seed. With childhood obesity and diet-related illnesses at record highs, there is no better time to begin educating children about healthy eating. Children will more enthusiastically sample a vegetable that they have sown, grown, harvested, and prepared themselves. The positive experience with new foods hopefully gives students the courage to expand their food palates in general.

One of the greatest disadvantages to a vegetable garden is that most of the plants are seasonal annuals. When you plant a butterfly or native garden, all you have to do each year is maintain existing plants, adding or subtracting as you see fit. Not so with a vegetable garden. Every season you have to weed, prepare beds, sow seeds, harvest, use that harvest, and break down for the next planting. Of course, this is also the greatest advantage to the vegetable garden because students are actively involved in every stage from seed to plate. See *Chapter 9* for a vegetable planting calendar for Southwest Florida.

ECHO

For information on ECHO's community garden projects, including school gardens, and to learn about visiting ECHO, check out the ECHO website at:

http://echonet.org/

Perennial Edibles

In Southwest Florida, we are able to grow a wide range of food plants, that can't be grown in temperate climates, including perennial edibles, which do not have to be replanted every year. In fact, some peppers and eggplants perennialize here. Because perennial edibles can be harvested at any time of year, these plants offer a tasting opportunity when other vegetables are not yet ripe.

Most of the perennial vegetables available are vegetables that most kids in the United States will not be familiar with. These vegetables can be a fun, unique treat and a good chance to discuss other countries and cultures. ECHO (Educational Concerns for World Hunger Organization) is located in North Fort Myers and offers information, field trips, and plants, such as perennial vegetables, for sale. See the previous page for ECHO contact information.

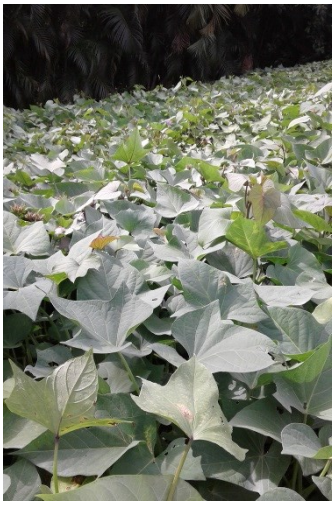
If incorporating perennial edibles into your garden, be sure to consider how your garden's design will change over time, especially where shade is concerned. Plants grow year-round here and can quickly outgrow an area.

For more about landscaping with perennial edibles, including recommendations for trees, see program resources from a past Collier Greens workshop:

goo.gl/BmQfUi

Perennial edibles to consider		
Plant name	**Form**	**Notes**
Sweet potato *Ipomoea batatas*	Groundcover	Tubers and new shoots/young leaves are edible; can sauté shoots like asparagus; excellent summer cover crop — thrives in heat; look for cultivars resistant to root-knot nematodes.
Cuban oregano *Plectranthus amboinicus*	Shrub	Low-growing, sprawling habit. Easy to grow from cuttings and hard to kill; thrives in intense heat and can tolerate partial shade. Aromatic, velvety leaves.
Lemongrass *Cymbopogon citratus*	Grass	Fragrant leaves used in cooking and teas; can get large, but easy to divide. Excellent mulch crop.
Nopales (spineless) *Opuntia* sp.	Shrub	Be careful: not all "spineless" *Opuntia* are actually spineless. The nopal is the pad of the cactus; remove outside rim and slice like a pepper to use in cooking.

Perennial edibles to consider continued		
Plant name	**Form**	**Notes**
Pigeon pea *Cajanus cajan*	Shrub	Attractive flower; drought-resistant; can steam green pods like edamame, or dry pods, shuck, and cook pigeon peas like lentils. Enriches soil through nitrogen fixation.
Barbados cherry *Malpighia emarginata*	Shrub	Showy pink and white flowers, followed by attractive bright red cherries; typically flowers and fruits twice a year. Can grow in sandy soil; pruning can keep it small.
Asian winged bean *Psophocarpus tetragonolobus*	Vine	Fun to grow with kids; all parts of the plant are edible, including leaves, which can be eaten like spinach. Unusual pods have four winged edges.
Seminole pumpkin *Curcurbita moschata*	Vine	Tolerant of our summer heat and humidity and relatively pest- and disease-resistant. Vines can grow to 25' long and need room to spread.
Society garlic *Tulbaghia violacea*	Herb	Attractive, edible flowers; aromatic edible leaves. Grows in clumping habit and is somewhat drought tolerant. Aroma deters some pests.
Turmeric *Curcuma longa*	Herb	Grows by underground rhizome in partial to full shade; gorgeous foliage and flower. Can plant turmeric roots found in supermarkets.
Dragon fruit *Hylocereus undatus*	Vine	Night-blooming climbing cactus; white flesh and seeds of unusual bright pink fruit is edible.



From left to right: sweet potato, pigeon pea, Barbados cherry.

Dragon fruit pictured on previous page.

Tips for vegetable gardens

Plan before you plant! You will need a garden plan indicating where each vegetable will grow. Make sure that larger plants do not block the light from smaller plants and schedule the rotation of similar crops to avoid pests.

Plant only what you can use. Many of us automatically think in rows of produce, but a row of zucchini is usually more than anyone can use. Square-foot gardening (find more information in *Chapter 8*) is an excellent way to plan an efficient vegetable garden with minimal waste and maximum yields. Remember: you do not have to plant all of the seeds in a packet; many seeds are viable for a few years if stored in a cool, dry location.

Prepare to prepare the food. If food will need to be washed, chopped, cooked, or prepared on-site in any way, include this in the plan. You may need nothing more than a table and a bowl or you may need access to a full kitchen.

Take note of harvest times. Find vegetables that will be ready to harvest when students will be in the garden. Many vegetables have early ripening varieties.

Determine how you will use the produce before deciding what to produce. Do you want students to taste veggies fresh from the garden? If so, plant vegetables that can be eaten fresh, such as watermelon, cherry tomatoes, herbs, and carrots. Will you prepare cooked foods? Consider eggplant, broccoli, or Swiss chard. Will the produce be sent to the school cafeteria, sold, or sent home with students? Then plant enough and plant what will be used.

Factor in the weeds. Vegetable beds lie empty for portions of the year and empty beds, especially here in Florida, mean weeds. Facing a weed-filled bed at the start of the season can be depressing, unsightly and a lot of work. Control pesky weeds by means of mulch or plastic vegetable bed covers. Digging a shovel into loose soil that has been protected under heavy mulch is a more appealing option by far! Find more information on mulching and closing down the garden on page 60.

Homeschool gardens

A homeschool garden may be the easiest to organize. You don't need to get permission from the principal or convince the cafeteria to use your produce. It is all up to you! Of course, it is all up to you to weed and look out for pests also, but if you need assistance you can organize a garden club with other homeschool parents and children.

Day-to-day, the garden is a wonderful place to relate lessons. As the primary educator of your child, the homeschool garden allows you to incorporate a host of different subjects into the garden. Being at home for school also means you can follow your garden through all the seasons.

To start a homeschool garden, you can apply the same principles from the other chapters.

Worksite gardens

More and more worksites are offering employee gardens. These gardens encourage activity and enhance the sense of community within a worksite. Some worksite gardens might be a landscaped area with seating; others might include vegetables and herbs that staff can harvest. Even Naples Botanical Garden has an employee garden! Not all of our staff works outside, so we wanted to give everyone the opportunity to reap the benefits of gardening. Interested staff could sign up to be the farmer of an EarthBox. This activity brought staff who might not normally work together to the EarthBox garden, where they planted together and shared their harvest.

Local businesses can borrow EarthBoxes from the Collier Greens Lending Library for worksite gardens:

www.naplesgarden.org/education/teachers-students/collier-greens/

Gardens for special populations

Do you garden with students with special needs or another group that can benefit from therapeutic horticulture? In the folder link below, you'll find a host of resources from the Collier Greens workshop, "Welcoming Therapeutic Outcomes in the Garden," including considerations for your garden space beyond wheelchair accessibility, recommendations for non-threatening, inviting plants, and other tips from the field of horticultural therapy that engage and empower your audience.

goo.gl/3iNzeq

Naples Botanical Garden discourages and Collier County Public Schools prohibits planting:

- Any plants with thorns or spines, such as saw palmetto and bougainvillea.
- Any plants with irritating sap
- Trees that drop branches easily, such as royal poinciana, black olive, and moringa
- Trees that develop surface roots that can interfere with sidewalks and structures, such as royal poinciana
- Trees that drop all of their leaves or continually shed leaves that need to be raked
- Trees and bushes that are knocked down easily in strong winds

Forbidden gardens

Many plants are not appropriate for a school garden. Some are toxic and pose a threat to children and other plants are invasive and could pose a threat to the environment. Before you select a plant for a school garden, take some time to make sure you are not introducing something that may be a problem for students or the environment. At the same time, you don't need to be an alarmist. For example, you will find potatoes and tomatoes on poisonous plant lists. While these can contain poisons or have poisonous parts, we eat these plants on a regular basis with no ill effects. It is good to be aware of potential threats and to exercise common sense precautions. See *Chapter 8* for websites with lists of plants with toxins to avoid.

In the sidebar are other characteristics you might want to avoid in school garden plants. Check with the nursery where you are buying your plants, do a search online, or ask a Master Gardener. Master Gardeners occasionally have office hours at Naples Botanical Garden; check their Plant Clinic website for the current schedule:

collier.ifas.ufl.edu/HomeGarden/PlantClinics.shtml

Special guidelines for Collier County Public Schools:

- Teachers must seek approval from their Principal prior to starting any gardens.
- Gardens are prohibited in or around storm water structures, such as catch basins and swales.
- Maintenance must survey the potential install area to be sure the garden will not disrupt necessary access.
- Schools are responsible for identifying all buried utilities in the proposed garden area. This includes all fees associated with locating and marking the buried utilities.
- Schools must provide a list of plants and their intended location to the Supervisor of Grounds prior to installation.
- The District prohibits any plants that can collect water and encourage mosquito breeding, such as bromeliads.
- Planting fruit trees is prohibited.
- Avoid planting trees altogether. The School District would prefer seeing smaller, more manageable sites.
- Schools that plant trees are responsible for pruning and fertilizing trees.
- Schools need to remember that they are 100% responsible for all funding, maintenance (including during summer and other breaks, and expenses associated with the gardens or their removal).
- Installing or modifying existing irrigation systems for a garden is prohibited.

Chapter 6
How to Grow a Garden

Sustainable practices

Using sustainable practices in the school garden is an important lesson for children and adults alike. Sustainable agriculture is based on practices such as using organic controls and inputs, water and soil conservation, including native plants and avoiding invasive species.

The horticultural practices outlined in this guide are based on sustainable, organic methods. Hopefully, valuing our natural resources and treating the earth carefully will be lessons that last a lifetime.

The word 'sustainable' indicates an ongoing system, which is a great approach to any garden. You want the garden to be labor efficient, attractive, and have the resources it needs to grow year after year.

Organic gardening

Organic gardening means gardening without synthetic chemicals. Many of the chemicals in conventional fertilizers, pest controls and weed controls can have a negative impact on our environment and the humans who use the chemicals.

There are lots of organic pest controls on the market or you can make your own from simple ingredients. The best way to avoid pests is to grow healthy plants. Healthy plants will resist most pests and be better able to recover from minor invasions.

Good soil

Good plants start with good, healthy soil. Most of our soil in Southwest Florida is sandy and low in nutrients and will need amendments. It's recommended that you purchase soil mixes from local hardware/garden supply stores for vegetable gardening.

You want your soil to have good drainage, good structure and plenty of available plant nutrients. Adding organic material can improve drainage and structure and,

depending on its composition, it can also provide nutrients. Organic material can be comprised of material: leaves, kitchen waste, garden waste, lawn clippings, and many other possibilities. Look around your garden and community to brainstorm free sources.

Composting

Composting is the act of breaking down your garden and food waste into a soil-like material. Making compost can help you teach lessons on decomposition and sustainability and gives students the opportunity to practice record-keeping in a meaningful way.

Your compost is ready to use when it starts to get a fine, dirt-like texture. If you have large pieces of sticks and stems that have not yet broken down, you can just take these out and add them to another compost pile. Be sure to get approval for your compost system first and use animal-proofing to keep out unwanted visitors. For more on composting, see resources from the March 2016 Collier Greens workshop:

goo.gl/tPgFC5

Fertilization

Plants need food, in the form of fertilizer, to flourish. Adding compost to your beds when mixing the soil and mulching plants with compost can provide most of the nutrients that your plants need. If you do not make compost at your school or if you do not have enough for all your plants, buy a commercially available, Organic Materials Review Institute (OMRI) certified organic fertilizer. Apply the fertilizer a week before planting or just after planting, following the instructions on the package.

Vegetable gardens will require the addition of compost or fertilizer with each new crop or after excessive rain. Shrubs and trees can be fertilized on planting and then annually, if at all, after that.

Testing your soil for nutrients can be a great chemistry lesson for students.

Vermicomposting

Vermicomposting is the use of earthworms to convert organic waste – like kitchen scraps – into fertilizer. Not only is vermicomposting good for your garden, it is an educational and fun project to undertake.

Vermicomposting requires very little equipment to get started:

- ✓ Worms (red wigglers or night crawlers)
- ✓ Worm bedding (shredded newspaper and sphagnum moss)
- ✓ A bin to contain the worms and organic matter
- ✓ A cool place inaccessible to birds and other predators

Learn more about worm care and feeding here:

goo.gl/i1cXpU

Start strong

All plants need a good healthy start in life, so pay attention to the plants you start from seed. You can either plant seeds directly in the garden, following the instructions on the packet, or you can start them in containers and transplant into the garden once they are established.

The advantage to starting seeds in containers is that you can more easily control their growing conditions and can put them into the garden as strong, healthy plants. The disadvantage is that transplanting time is a delicate time for plants and you will need to make sure the tender, young plants are transplanted with care.

If you would like to start seeds in containers, buy seed trays or pots for sowing seeds. If you are working with young children, you may prefer to use individual, 3- to 4-inch containers. You can easily damage the plants when removing and handling seedling from trays. The containers, on the other hand, offer more of a buffer of soil and can be taken individually by children to the site where they will be planted before being carefully removed.

To plant seeds in trays or containers, use a general potting mix available from any garden center. Pay attention to the seed packet's recommendation for planting depth.

Whether planting in containers or directly into the garden, seeds need to be kept continually moist but not soaked. Seeds also need to have soil packed firmly, but not deeply, around them.

In the case of beans, peas, corn, and plants with a large taproot like radishes, carrots, and beets, it is best to sow directly into the garden bed rather than transplant.

Garden pests

Observation is the key to organic gardening. Keep an eye out for signs of pests, such as those listed in the sidebar on the next page. If you see an insect, but no sign of damage, there is a chance that it is a beneficial insect. Rather than going into attack mode at the sight of any insect, first look to make sure it is causing damage. You can look it up on the Internet and see if it is a pest or a beneficial organism. Many insects can be pulled off plants by hand and killed either by stepping on them or drowning them in a jar of water. For some insects, such as lubber grasshoppers, manual removal is the best way to control them.

For the organic garden, you have several options to purchase, such as Bt (*Bacillus thuringiensis*) and neem oil. You can also make a few simple pesticides of your own. Sprays of water blended with garlic and/or hot pepper with a little soap and oil can combat a number of insects.

Always follow all label directions and leave insect pest treatment to an adult.

Some of the major pests to look out for in Florida are:

Tobacco Hornworm Caterpillars: Spray leaves with Bt. You do need to keep a close eye out for these caterpillars because just one can eat all the leaves off a tomato plant in just a day or two.

Root-knot Nematodes: Nematodes are the bane of many South Florida gardeners. They thrive in our native sandy soils. If your plants are doing poorly and you see short, fat roots with little balls on them, you know you have a nematode problem. There is a variety of marigold that is kills nematodes, which you can order or you can buy marigolds from a local garden store. Check that they are a cultivar of *Tagetes patula* (French marigold).

Signs that you have bugs in the garden

- Leaves with holes means something is making a meal. Check the plant carefully to try to find the culprit.
- Curled edges of leaves may hide thrips. Also look for stunted and deformed leaves.
- Ants, along with black sooty-looking patches of leaves, often means aphids or scale.
- Black, sooty-looking mold can mean scale.
- Trails on leaves indicate leaf-miners.
- Holes in fruit could indicate leaf-footed bugs.
- Leaves with chomped margins can be lubber grasshoppers or caterpillars, both of which can cause a lot of damage in a short period of time.

You can also buy nematicides, made from sesame oil and chitin (from the shells of crabs and lobsters). Both the agricultural-grade sesame oil and the chitin are fairly expensive and only available online, so if you have a tight budget, plant marigolds and change the type of vegetable you plant in an area when you replant. Raised beds and containers can help you avoid nematodes, as can planting nematode-resistant plant varieties.

Mealy bugs/Scale/Aphid: All of these pests can most be often controlled with just soapy water. You will need to spray more than once, so depending on how bad the infestation is, make a plan to spray every day, every other day or every few days for at least a week or two. You may only need two applications. Another very easy method is to blast the insects off plants with a strong stream of water from the hose.

Cutworm: Cutworms can be very frustrating as just when seedlings are poking out of the ground, the cutworms can chomp them all down in a night. Paper or cardboard collars can control cutworms and could be a fun project for students. Cut an empty toilet paper roll or make rings from strips of old cereal boxes and press them around seedlings or seeds just below the surface of the soil.

Don’t think of pests in the garden as failure, but as learning opportunities and a chance to apply scientific observation!

Weed control

Weeds never stop trying to find a way into the garden, but there are many ways to reduce the amount of weeds growing in your garden.

- Trees create shade that keep weeds down. If you are growing an ornamental garden, dense plantings of shrubs can help shade-out weeds. You can also plant ornamental ground covers that will reduce the space for weeds to grow.
- In the vegetable garden, weeds can be controlled by cover crops, mulching, and hand-weeding. For times when the garden will not be active, make use of mulch and/or cover crops that can remain until your program starts up again.
- Remember that not only beds, but areas around beds, on paths, and any other garden area are susceptible to weeds. Fill those spaces with shrubs, ground covers, and plants or mulch and keep your work to a minimum. On paths and around beds, you can use landscape/weed fabric covered with mulch.
- Weed early and often. Pulling weeds while they are small is a lot less work than pulling weeds that are large and will reduce the amount of time and effort you spend weeding.
- Be careful to pull weeds before they set seed and spread throughout the garden.
- When you weed, get all the roots along with leaves you see above the ground.
- Use tools to help. A hoe, regular or stirrup, can help you.
- Soil in the beds should be soft and crumbly enough that weeds come up easily with a tug. If you are struggling with pulling weeds, your soil is probably too compact. In compacted areas, you can dig weeds out with a trowel, garden fork, or shovel.

Irrigation

It is best to water first thing in the morning or as late in the afternoon as possible. You want to give the water time to dry off the plants before night, but you don't want to water in the heat of the day when most of the water will be lost in evaporation.

Let the natural lay of the land do your work by choosing the right plant for the right spot. Drought-tolerant species can be placed in areas without access to regular irrigation, while water-loving species will do best in low-lying areas that retain water.

It is better to give plants a good drenching than it is to give them just a little water. If you water them well, you should not have to water as often. Short, frequent irrigation leads to shallow roots and plants that are more prone to problems.

The sandy soils typical in Florida can be tricky to water because the top of the soil may look wet while underneath the surface, it is dry. To make sure your plants are getting a good watering, do not rely on the look of the surface to decide whether you have watered enough. See if your soil is moist enough by sticking your fingers into the soil and checking the moisture.

For lots more watering tips, you can download the Water Wise manual on the South Florida Water Management District (SFWMD) website.

SFWMD also has a page that shows you how to create and install a rain barrel. Install a rain barrel to catch rain and either water from watering cans or attach a drip system to the barrel.

Closing down for summer

Butterfly gardens and trees

Luckily, Southwest Florida is known for humid, stormy summers. That means your established trees and shrubs should survive until your return. Leave a nice thick mulch around the base of plants to keep down weeds and so that maintenance personnel will not need to use machinery that may damage roots and trunks to get to weeds and grass. For extra weed protection, place a layer of cardboard on the ground, then cover the cardboard with your mulch.

Vegetable gardens

A large vegetable bed can be unsightly during the off-season if left to sprout weeds. If a vegetable garden is included in your plans, you need to show that it can be maintained during holidays and long weekends and that it can be kept attractive during times when it is not being used.

When closing down for the summer, place a four- to six-inch layer of mulch on top of the beds, which should help keep most of the weeds down for the summer. It will also make it easier to pull any weeds that do make it through.

If you have been having a lot of problems with weeds and garden pests, you may want to solarize the soil over the summer. Solarization kills off weeds, bacteria, and pests with heat. Cover the beds with sheets of clear plastic weighted down with rocks. You can leave the plastic on all summer, but not less than four to six weeks.

If you have any unfinished compost, spread it on top of your garden beds. Layer mulch on top of the compost to discourage any weed seeds that may still be alive. Tamp each layer down into the beds, and with our warm, wet summers, you should return to beds with finished compost ready for planting.

If you have container vegetable gardens, cover them with a sheet of plastic covered with a thin layer of mulch just to make it look nicer. You can also just dump the soil into your compost beds and put away the entire container for the summer. Find more resources about preparing your garden for summer from this past Collier Greens workshop: **goo.gl/mojS1A**

Chapter 7
Month-by-Month Reminders & Suggestions

August

Administrative

- ✓ Make sure you're on the Collier Greens e-newsletter distribution list. Email Education@NaplesGarden.org to check your status
- ✓ Start planning what you will grow this year and order seeds. Consult the planting quick reference spreadsheet for Southwest Florida in Chapter 9 to find out what to plant when.
- ✓ Remember to consider pollinator plants in your planting plan, particularly if you are growing curcurbits (watermelon, cucumber, cucumber, squash, etc.), which need bee pollination.
- ✓ Write program goals. What outcomes do you hope to achieve this year?
- ✓ Decide on a program evaluation strategy
- ✓ Develop budget and start ordering program supplies
- ✓ Create shared calendar for other adults involved with garden program
- ✓ Start record-keeping system now to capture garden observations and activities
- ✓ Plan your garden for the year. Consider crop rotation. If using last year's soil, check your notes to see what you planted where last year. Avoid planting vegetables from the same family in the same spot year after year.

Community

- ✓ Recruit volunteers and mentors
- ✓ If you have major projects that require a lot of help, contact Florida Gulf Coast University's Office of Service-learning & Civic Engagement to connect with FGCU students: ServiceLearning@fgcu.edu
- ✓ Organize a community workday in the garden to prepare the area for students

Garden

- ✓ Clear paths and weed garden
- ✓ Clean and sharpen tools
- ✓ Connect rainwater harvesting system

Month-by-month reminders and suggestions

September

Administrative

- ✓ Schedule garden committee meetings for the year
- ✓ Assign students or classes to care for areas of the garden
- ✓ Develop pest management plan and start practicing it now so that it becomes routine
- ✓ Implement safety standards and establish garden rules
- ✓ Plan fertilizer schedule. Include on shared garden calendar
- ✓ Have students create their own journals to use in the garden to keep track of what they plant. Allow students the opportunity to write freely in their journals. Consider giving students writing prompts for expository writing exercises. Journals can be a great historical resource of garden activities and samples should be included in the end-of-year report.

Garden

- ✓ Harvest last spring's sweet potatoes
- ✓ Till in other cover crops
- ✓ Add compost to beds
- ✓ Sow fall seeds like squash, tomatoes, cucumbers, mustard, and bunching onions

October

Administrative

- ✓ Maintain records of which plant cultivars you're using this year and their success in the garden

Garden

- ✓ Adjust watering schedule as rainy season comes to an end
- ✓ Plant strawberries in mid-October. 'Sweet Charlie' and 'Festival' are the best cultivars for our area.
- ✓ In late October, plant cool season crops like radish, winter greens (kale, lettuce, cabbage), carrots, kohlrabi, and cilantro.
- ✓ Fertilize plants
- ✓ Regularly monitor and scout garden for pests with students
- ✓ Weed control should be a major concern. Don't allow weeds to flower and set seed because a seed bank will build up in the soil; the weeds will then be much more difficult to control. Have students assist with weeding and continue to weed regularly all year.

Month-by-month reminders and suggestions

November

Administrative

- ✓ Start planning end-of-semester Family Night

Garden

- ✓ Harvest produce and continue to sow seeds
- ✓ Monitor irrigation in the garden and ensure that watering schedule is sufficient. Remember that seeds and new transplants need regular watering, especially now that rainfall is in short supply.

December

Administrative

- ✓ Be on the lookout for end-of-year seed sales. Although the growing season is ending for most people across the country, people in Southwest Florida can still plant through the winter.
- ✓ Plan garden care for winter break
- ✓ Write a recap of the season thus far in your record-keeping system

Community

- ✓ Host end-of-semester Family Night and invite members of the community
- ✓ Acknowledge and thank volunteers for their contributions to the garden

Garden

- ✓ Avoid planting anything that will need special care or attention before the holiday break
- ✓ Continue to harvest

If you have a vermicomposting system, remember that the worms will need to be fed and cared for over winter break!

Month-by-month reminders and suggestions

January

Administrative

- ✓ Look at September's Administrative tasks for ideas about what needs to be done at the beginning of spring semester

Community

- ✓ Host a back-to-school garden clean-up day

Garden

- ✓ Be aware of approaching cold fronts and take proper precautions. If freezing temperatures are anticipated, it may be necessary to cover garden beds and cold-sensitive plants with frost protection fabric.
- ✓ Continue to plant cool season crops

February

Garden

- ✓ Greens planted in late fall will continue to produce edible leaves if harvested regularly. Trim leaves from the outside of plants first.
- ✓ Sow more carrots and radishes in early February

March

Administrative

- ✓ Plan for garden care over spring break
- ✓ Start collecting departure dates of volunteers who are seasonal residents. Make sure you are able to thank them for their garden service before they leave.

Garden

- ✓ Continue to implement pest management plan and fertilizer schedule
- ✓ Harvest as much as possible before spring break

April

Administrative

- ✓ Start planning end-of-year celebration
- ✓ Make a checklist for closing the garden for summer vacation. Include items that need to be purchased (like weed protection barriers and cover crops)
- ✓ Plan end-of-year evaluations to capture feedback from students and volunteers

Garden

- ✓ Continue to harvest
- ✓ Stop planting by mid-April

Month-by-month reminders and suggestions

May

Administrative

- ✓ Perform a self-evaluation of the garden. What successes and challenges did you have this year? Did your pest management protocol work? What can be improved for next year?
- ✓ Using the records you've kept all year, along with samples of student work, activity photos, and program evaluations, write an annual report for the garden (see page 33)
- ✓ Formally thank volunteers for their contribution to the garden
- ✓ Confirm plan for summer garden care

Community

- ✓ Host end-of-year celebration and invite faculty, family, and other community members

Garden

- ✓ Adjust automatic irrigation for upcoming rainy season
- ✓ Disconnect rainwater harvesting system
- ✓ Initiate summer closure checklist
- ✓ Till your beds. Add crab meal to suppress harmful nematodes. Solarize, plant marigolds, or mulch heavily.
- ✓ You can also plant other cover crops like sweet potatoes, sesame, and buckwheat.

- To solarize your soil, till and wet the soil, smooth the surface and remove large pieces of old plants and roots.
- Cover the moist soil with clear polyethylene tarp for at least 4-6 weeks, ideally in June and July. Beds can be solarized for up to 12 weeks.
- Leave this covering on until ready to plant. Do not till or mix the soil after solarization.

June/July

Garden

- ✓ Despite your best prevention efforts in May, weeds can still grow out of control during the warm and wet summer months. Periodically visit the garden and try to keep on top of weeding. It may be necessary to organize a mid-summer workday with many hands.
- ✓ Determine if it will be necessary to replace raised beds for next growing season
- ✓ Renewal prune perennial shrubs and trees

Chapter 8
Resource List

This section points you to great resources where you can find in-depth information or more details on the many subjects covered in this manual. Most of the resources are organized according to chapter.

Most useful school garden sites

- **Grow to Learn NYC**

  Of all the many school garden websites, we found the most useful to be the Grow to Learn website which we recommend you check out first.

  www.growtolearn.org

- **Collective School Garden Network (CSGN)**

  CSGN has lots of great resources for planning, maintaining and teaching in school gardens, including a manual which you can download.

  www.csgn.org

- **National Gardening Association**

  www.kidsgardening.org

- **School Garden Wizard**

  The School Garden Wizard has a downloadable manual that takes you through all stages of setting up a school garden.

  www.schoolgardenwizard.org

- **Gardening for Nutrition**

  www.faitc.org/teachers/gardening-for-nutrition

- **ECHO Community Garden Toolkit**

  goo.gl/vS7XtD

- **Education Outside**

  www.educationoutside.org

- **Life Lab**

  Life Lab has a host of information and resources on starting a school garden, including a downloadable PDF manual called *Getting Started: A Guide for Creating School Gardens as Outdoor Classrooms*.

  www.lifelab.org

  www.ecoliteracy.org/sites/default/files/uploads/getting-started-2009.pdf

- **University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS)**

  For excellent information from an organization that knows how to grow in Florida, check out the school garden program by UF/IFAS.

  gardeningsolutions.ifas.ufl.edu/schoolgardens/

- **Collier Greens**

  Find all past workshop resources including handouts and PowerPoint presentations here. Be sure to read the "Read Me" document first which includes a linked index to all resources.

  goo.gl/XnDDrN

Organizations to contact for assistance and information

- **Naples Botanical Garden**

  education@naplesgarden.org

  www.naplesgarden.org/education/teachers-students/collier-greens/

- **ECHO**

  echonet.org

- **Collier Fruit Growers Council**

  Collierfruit.org

- **Cooperative Extension (UF/IFAS)**

  The local Extension office:

  collier.ifas.ufl.edu

  Electronic Data Information Service (EDIS) is the repository of all UF/IFAS publications, including a range of fact sheets on plants, pests, and much more.

  edis.ifas.ufl.edu

  UF/IFAS also has a resource area specifically for school gardens.

  gardeningsolutions.ifas.ufl.edu/schoolgardens/school_gardens/index.shtml

Chapter 2: Linking School Gardens to Curriculum

- **Florida Wildflower Foundation**

  The Florida Wildflower Foundation has a short PDF with garden activities for teachers covering a variety of subjects.

  goo.gl/6W6L2k

- **Collective School Garden Network**

  www.csgn.org/teaching-standards

- **Life Lab**

  www.lifelab.org/for-educators/schoolgardens/#lessons

  www.lifelab.org/2013/12/content-standards/

- **Edible Schoolyard**

  edibleschoolyard.org/Berkeley

  This program has online kitchen and garden lesson libraries for 6th-8th grade.

- **Gardening for Grades/Gardening for Nutrition**

  An excellent place to find activities linked directly with the Sunshine State Standards.

  www.faitc.org/teachers

- **National Wildlife Federation**

  This website has lessons on life science, ecology, wildlife biology and more. All the lessons are aligned to the National Science Education Standards.

  www.nwf.org/Get-Outside/Be-Out-There/Educators/Lesson-Plans.aspx

- **The Junior Master Gardener**

  www.jmgkids.us

  This website directs you to the links to purchase the Junior Master Gardener books that are filled with curriculum-based lessons.

- **School Garden Wizard**

  The School Garden Wizard focuses on activities correlated with National Science Standards.

  www.schoolgardenwizard.org/wizard/make/gather_standards.html

  The Wizard also has several more helpful links about teaching in the garden.

  www.schoolgardenwizard.org/wizard/learn/teaching.php

- **Education Outside**

  Educationoutside.org/gardening-greening-guides

- **Grow to Learn NYC**

  Growtolearn.org/

- **The School Garden Weekly**

  The School Garden Weekly not only has helpful garden curriculum, but lets you post comments and questions and communicate with other educators.

  schoolgardenweekly.com/instructional-activities/school-garden-lessons-activities-and-curricula

- **Slow Food USA**

  Slow Food USA seeks to engage children in the food itself, rather than just embedding garden lessons in traditional curriculum. As of this writing, Slow Food USA is in the process of developing and releasing their Good, Clean, and Fair School Garden Curriculum; the Good and Clean sections are available for free download on their website.

  "Good" means enjoying the pleasures of healthy food and includes chapters on sensory education and kitchen tools and equipment.

  "Clean" is gardening for sustainability and consists of chapters on basic garden skills and knowledge and "slow food" gardens.

  gardens.slowfoodusa.org/curriculum

Chapter 3: Get Started
Create school-wide support

- **State of Florida**

  Florida's Department of Agriculture and Consumer Services has excellent resources tailored to the needs of our region.

  School Garden Guide: Starting and Sustaining a School Garden in Florida is a 12-page primer that might be helpful to share with others interested in joining a school garden committee.

  goo.gl/bPPJJ9

  Grow to Learn is a 112-page school gardening guide for Florida.

  lake.ifas.ufl.edu/lawn_and_garden/documents/GrowtoLearnSchoolGardeningGuide.pdf

- **Gardening for Nutrition**

  Download the *Gardening for Nutrition* manual by Florida Agriculture in the Classroom and go to Chapter 1: Starting Your Nutritious Garden to learn more about garnering support.

  www.faitc.org/teachers/gardening-for-nutrition

- **Collective School Garden Network, Gardens for Learning**

  Gardens for Learning from the California School Garden Network covers how to get started in the chapter on 'Planning Your School Garden'

  www.csgn.org/content/planning-your-school-garden-program-0

Site planning: Selecting plants

- **Florida-friendly Plant Database**

  A tool to help select the right plant for the right place.

  www.floridayards.org/fyplants/

Chapter 4: Keep on going

Grants and funding

- **Champions for Learning**

  Champions for Learning has the Connect with a Classroom program for teachers.

  www.championsforlearning.org

- **Whole Foods Market—Whole Kid's Foundation**

  The Whole Foods Market's Whole Kid's Foundation has a garden grant program. Apply to receive up to $2,000 for your school garden; deadline is typically at the end of October each year.

  www.wholekidsfoundation.org/gardengrants.php

- **Donors Choose**

  Public school teachers are invited to post classroom project requests.

  www.donorschoose.org

- **National Garden Association**

  www.kidsgardening.org/grants/

- **Captain Planet Foundation**

  www.captainplanetfoundation.org

- **Grants Alert.com**

  www.grantsalert.com

- **League of Environmental Educators of Florida**

  leef-florida.org/core/news/list.aspx

- **Project Learning Tree**

  www.plt.org/apply-for-greenworks-environmental-education-grant

- **The Home Depot Community Impact Grant**

  corporate.homedepot.com/grants/community-impact-grants

- **Lowe's Toolbox for Education Grant**

  responsibility.lowes.com/apply-for-a-grant

- **Kohl's Cares—Associates in Action**

  www.kohlscorporation.com/CommunityRelations/Community04.htm

- **National Wildlife Federation**

  www.nwf.org/schoolyardhabitats

Fundraising

- **PTO Today**

  PTO Today has helpful information on choosing and holding a fundraiser for your school.

  www.ptotoday.com/pto-today-articles/article/1005-how-to-choose-a-fundraiser

- **Seed Company Fundraisers**

  Some seed companies offer special merchandise for school fundraisers:

  www.highmowingseeds.com/fundraisers

  www.botanicalinterests.com/more-information/fundraising-with-botanical-interests-seeds

  www.reneesgarden.com/pages/raise-funds-for-your-school-or-non-profit-organization

Volunteers

- **Collier County Public Schools**

  Find a link to the current Collier County Public Schools Volunteer Handbook in the sidebar:

  www.collierschools.net/Volunteer

Chapter 5: Possibilities

Container gardens

- **UF/IFAS**

  gardeningsolutions.ifas.ufl.edu/schoolgardens/school_gardens/container_gardening.shtml

  The following link includes a few different topics like raised bed gardening and terrarium design for youth.

  edis.ifas.ufl.edu/topic_container_gardening

Butterfly gardens

- **UF/IFAS**

  gardeningsolutions.ifas.ufl.edu/schoolgardens/school_gardens/butterfly_garden.shtml

- **North American Butterfly Association South Florida Regional Garden Guide**

  www.nababutterfly.com/guide_southflorida.html

- **Monarch Watch**

  www.monarchwatch.org/garden/

Native gardens

- **Florida Association of Native Nurseries**

  Finding plants for native gardens can be challenging; luckily, there is the Florida Association of Native Nurseries. Use it to look up nurseries in your area that supply native plants.

  www.floridanativenurseries.org

- **Florida Wildflower Foundation**

  The Florida Wildflower Foundation has information and resources on growing native wildflowers.

  flawildflowers.org/planting.php

- **National Wildlife Federation**

  The National Wildlife Federation has a Schoolyard Habitat program with information and resources on setting up a certified wildlife habitat at your school.

  www.nwf.org/schoolyardhabitats

Vegetable gardens

- **Gardens for Learning**

The CSGN manual *Gardens for Learning* has an excellent section on Healthy Eating gardens.

www.csgn.org/sites/csgn.org/files/CSGN_book.pdf

- **Gardening for Nutrition**

  Find vegetable garden ideas and some great plans for specialized gardens such as a salsa, soup, or pizza garden.

  faitc.org/teachers/gardening-for-nutrition/

- **FAO, Setting up and Running a School Garden**

  www.fao.org/docrep/009/a0218e/a0218e00.htm

Square foot gardening

- **Square Foot Gardening**

  www.squarefootgardening.org

Forbidden gardens

The following sites have information on poisonous plants. Check with these sites and others to ensure that your garden does not contain poisonous plants.

- **Poisonous plants**

  www.poisoncentertampa.org/poisonous-plants.aspx

  www.poison.org/prevent/plants.asp

- **CCPS Facilities Management Department**

  www.collierschools.com/facilities

Chapter 6: How to Grow a Garden

General

- **OrganicGardening.com**

  Visit their almanac for Florida gardeners.

  www.organicgardening.com/learn-and-grow/monthly-garden-calendar-florida

- **UF/IFAS**

  edis.ifas.ufl.edu/topic_organic_gardening

Composting

- **UF/IFAS—Compost Tips for the Home Gardener**

  edis.ifas.ufl.edu/ep323

Irrigation

- **DripWorks Drip Planning Guide**

  DripWorks sells drip irrigation supplies and equipment. They offer a comprehensive, easy-to-follow drip planning guide that will help you determine your irrigation needs and the components needed to set up your system.

  www.dripworks.com/resources/drip-planning-guide

- **The South Florida Water Management District (SFWMD)**

  SFWMD has links to many tools for water-saving garden ideas.

  www.sfwmd.gov

  SFWMD's Florida-Friendly Landscaping page has links to more resources.

  www.sfwmd.gov/community-residents/florida-friendly-landscaping

  For more in-depth information on 'water wise' gardening see the SFWMD PDF manual, *Water Wise.*

  goo.gl/nFU38N

Garden pests

- **UF/IFAS**

  edis.ifas.ufl.edu/topic_vegetable_garden_pests

Cover Crops

- **ECHO**

  The ECHO Community Garden Toolkit has information on growing cover crops on page 17.

  goo.gl/vS7XtD

Other

- **Chez Panisse Foundation**

  Alice Waters' well-known school garden program by the Chez Panisse Foundation has two useful books for free digital download.

  The Kitchen Companion: Inside the Edible Schoolyard Classroom

  https://edibleschoolyard.org/sites/default/files/GardenCompanion_Singles.pdf

  Ten Years of Education at the Edible Schoolyard

  edibleschoolyard.org/node/2589

- ***Teaching in Nature's Classroom* by Nathan Larson**

  Teaching in Nature's Classroom is a free book available for digital download in English and Spanish that highlights best practices in garden-based education.

  www.teachinginnaturesclassroom.org

Suggested books

How to Grow a School Garden: A Complete Guide for Parents and Teachers
by Arden Bucklin-Sporer and Rachel Pringle
ISBN 13: 978-1604690002

Edible Schoolyard:
A Universal Idea
by Alice Waters
ISBN 13: 978-0811862806

Asphalt to Ecosystems
by Sharon Gamson Ducks
ISBN 13: 978-0976605485

Big Ideas:
Linking Food, Culture, Health and the Environment
by Center for Ecoliteracy
ISBN 13: 978-0981840901

Learning Gardens and Sustainability Education: Bringing Life to Schools and Schools to Life
by Dilafruz Williams and Jonathan Brown
ISBN 13: 978-0415899826

The Book of Gardening Projects for Kids
by Whitney Cohen and John Fisher
ISBN 13: 978-1604692457

The Growing Classroom: Garden-Based Science
by Roberta Jaffe and Gary Appel
ISBN 13: 978-0915873487

Ripe for Change:
Garden-based Learning in Schools
by Jane S. Hirschi
ISBN 13: 978-1612507712

Children & Nature Network maintains an easy-to-search database of reports and studies about the health benefits of connecting children and nature. A search of "garden" reveals over 500 results. This database is a helpful resource for finding evidence-based research that you can use in your funding and support requests.

www.childrenandnature.org/learn/research-resources/

Chapter 9
Planting Guides

EarthBox Theme Ideas

Herb Garden 1

- Tarragon
- Cilantro
- Oregano
- Thyme
- Mint
- Marjoram

Herb Garden 2

- Basil
- Oregano
- Parsley
- Rosemary
- Fennel
- Sage

Herb Garden 3

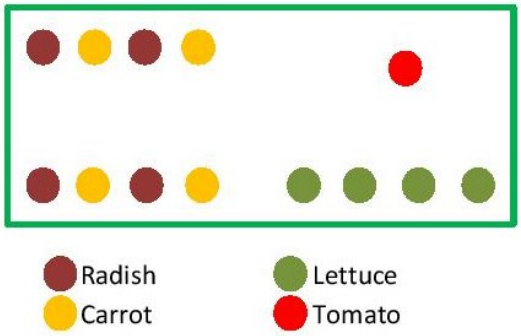
- Thai basil
- Holy basil
- Hot pepper
- Green onion
- Lemon basil
- Cilantro

Herb Garden 4

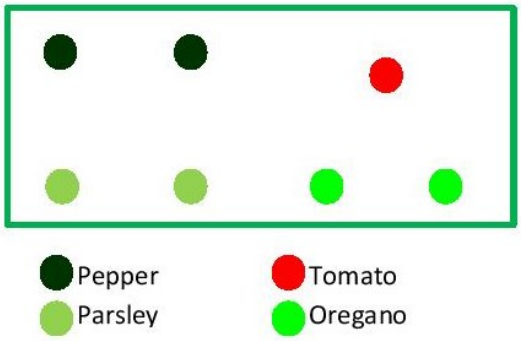
- Dill
- Chives
- Nasturtium
- Lemon Verbena
- Catnip
- Spearmint

Specialty Garden
Grow several varieties of one plant (greens, basils, peppers, mints, etc.)

Salad Garden



Pizza Garden



Salsa Garden – is about the same as a pizza garden, except instead of parsley and oregano, plant cilantro and bunching onions.

Stirfry Garden

- Bok choy
- Green onion
- Kohlrabi
- Pepper
- Eggplant
- Kale

EarthBox Planting Recommendations for SWFL

Plant	When to plant	How many plants per EarthBox?	Notes
Beets	October - March	6	Start from seeds
Bok Choy (Chinese cabbage)	October - January	6	Start from seeds or transplants
Broccoli	October - January	6	Start from seeds or transplants
Cabbage	October - January	6	Start from seeds or transplants
Carrots	September - March	16	Start from seeds
Cauliflower	September - January	6	Start from seeds or transplants
Collards	February - November	6	Start from seeds or transplants
Cucumbers	September - March	4	Need to climb. Start from seeds or transplants
Eggplant	June - August	2	Start from seeds or transplants
Kale	September - March	6	Start from seeds or transplants
Kohlrabi	September - March	8	Start from seeds or transplants
Lettuce	September - January	8	Start from seeds
Mustard greens	September - March	6	Start from seeds or transplants
Peppers	August - April	6	Start from seeds or transplants
Radishes	October - April	16	Start from seeds
Squash	September - October; January - March	2	Start from seeds or transplants
Strawberries	October - mid-November	6	Grow from transplants. Plant 'Sweet Charlie' or 'Festival'
Swiss Chard	September - March	6	Start from seeds
Tomatoes	August - March	2	Start from seeds or transplants. Some varieties need support

Most herbs that you might want to plant can be grown from seed or transplant with a few exceptions. Members of the carrot family like dill, fennel, parsley, and cilantro have a large tap root and do not easily survive transplanting. Therefore, those herbs should be grown in place from seed. Herbs in the carrot family should also be planted at the same time of year as carrots - they do not tolerate heat well.

Southwest Florida Planting Quick Reference

August	September	October	November	December	January	February	March	April	May	June	July
Beans	Beans					Beans	Beans	Beans	Beans		
		Beets	Beets	Beets	Beets	Beets	Beets				
		Bok choi	Bok choi	Bok choi	Bok choi						
		Broccoli	Broccoli	Broccoli	Broccoli						
		Brussel Sprouts	Brussel Sprouts	Brussel Sprouts	Brussel Sprouts						
		Cabbage	Cabbage	Cabbage	Cabbage						
Cantaloupe	Cantaloupe					Cantaloupe	Cantaloupe				
	Carrots	Carrots	Carrots	Carrots	Carrots	Carrots	Carrots				
	Cauliflower	Cauliflower	Cauliflower	Cauliflower	Cauliflower						
Celery	Celery	Celery	Celery	Celery	Celery						Celery
Collards	Collards	Collards	Collards			Collards	Collards	Collards	Collards	Collards	Collards
Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn				
	Cucumber	Cucumber	Cucumber	Cucumber	Cucumber	Cucumber	Cucumber				
Eggplant	Eggplant									Eggplant	Eggplant
	Kale	Kale	Kale	Kale	Kale	Kale	Kale				
	Kohlrabi	Kohlrabi	Kohlrabi	Kohlrabi	Kohlrabi	Kohlrabi	Kohlrabi				
		Leeks	Leeks	Leeks							
	Lettuce	Lettuce	Lettuce	Lettuce	Lettuce						
	Mustard	Mustard	Mustard	Mustard	Mustard	Mustard	Mustard				
Okra	Okra					Okra	Okra	Okra	Okra	Okra	
	Onions	Onions	Onions	Onions	Onions	Onions	Onions				
	Peas	Peas	Peas	Peas	Peas	Peas					
Peppers	Peppers	Peppers	Peppers	Peppers	Peppers	Peppers	Peppers	Peppers			
Pumpkin	Pumpkin					Pumpkin					Pumpkin
		Radish	Radish	Radish	Radish	Radish	Radish	Radish			
		Spinach	Spinach	Spinach	Spinach						
	Squash	Squash			Squash	Squash	Squash				
Summer Peas			Summer Peas	Summer Peas	Summer Peas	Summer Peas	Summer Peas	Summer Peas			
						Sweet Potato	Sweet Potato	Sweet Potato	Sweet Potato	Sweet Potato	Sweet Potato
	Swiss Chard	Swiss Chard	Swiss Chard	Swiss Chard	Swiss Chard	Swiss Chard	Swiss Chard				
Tomatillo	Tomatillo	Tomatillo	Tomatillo	Tomatillo	Tomatillo	Tomatillo	Tomatillo				
Tomatoes	Tomatoes	Tomatoes	Tomatoes	Tomatoes	Tomatoes	Tomatoes	Tomatoes				
		Turnip	Turnip	Turnip	Turnip	Turnip					
Watermelon	Watermelon				Watermelon	Watermelon	Watermelon				

As you can see from this calendar, Southwest Florida's prime growing season coincides with the school year! Additionally, vegetables one typically associates with summer time are actually winter crops here. Keep this calendar in mind when shopping in big box stores: just because a tomato plant is available for purchase in June does not necessarily mean it will be productive in June. In fact, in the case of tomatoes, our summer nights are too hot and humid for plants to set fruit.

Wondering when to plant herbs? Consider the herb's family: parsley, dill, fennel, chervil, cilantro, and lovage all belong to the carrot family. These herbs grow in the cooler months — like carrots. Herbs in the mint family, including basil, rosemary, oregano, sage, thyme, and lemon balm have origins in dry, rocky areas and eschew cool, wet months.

Final Thoughts

It's easy to become overwhelmed by the volume of information and ideas available about school and community gardens. Although there is a lot to learn and keep track of, just remember these four things as you embark on this gardening journey:

1. **START SMALL.** We cannot overstate how critical it is to start small. Remember that a garden is never really *finished*; keep this in mind when you see photos of other established school or community gardens. Those gardens did not happen overnight.
2. **BUILD A COMMUNITY.** Don't try to take on a garden project by yourself. Re-read page 14 for reasons to seek out support for your garden. Not only is it important to have people who can assume garden management duties when you're unavailable, having help and support will stave off garden exhaustion. Plus, it's nice to have someone to talk to while you weed!
3. **REMEMBER YOUR PURPOSE.** Periodically, take a moment, and ask yourself what is the reason for your garden? Who are you serving? Are you making progress to your goals? If you're working with children, don't forget them! Be wary of getting caught up in to-do lists and other distractions.
4. **PARTICIPATE IN COLLIER GREENS.** Throughout this guide, you've seen references to resources from past Collier Greens workshops. If you haven't been a regular participant, join us! You will find a number of like-minded individuals who can offer you advice and support. YOU have valuable experience to share, too.

Thanks!

The ***Collier Greens*** manual was made possible thanks to support from:

McGraw Foundation
Kennedy Family Foundation
Sidney A. Swensrud Foundation