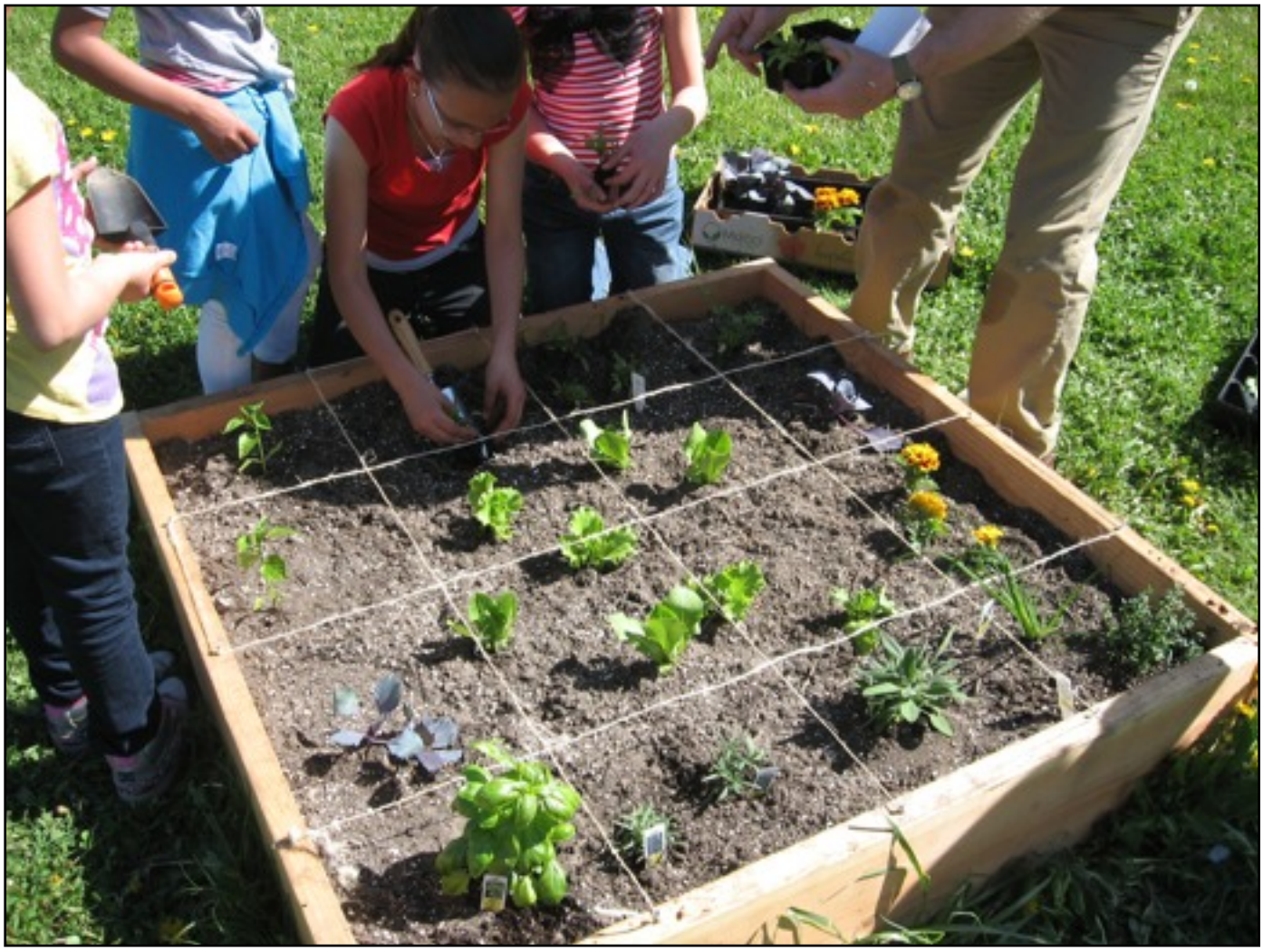
Massachusetts Agriculture in the Classroom

School Garden Start-Up Workbook



"There are no gardening mistakes, only experiments." - Janet Kilburn Phillips, horticulturalist.

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All photos and drawings- author

Cover: Square foot gardening at the Bowe School in Chicopee.

The Goal of this Workbook

The goal of this how-to manual is to serve as a workbook as you start up your school garden. Like many school garden guides, it outlines the steps typically suggested when starting a school garden. There are many wonderful guides on starting a school garden out there and the task can be overwhelming! Luckily, the fact is that just as no two gardens look alike, no two school gardens will be started in the same way. Your particular local situation and resources can be your unique strength, if you take the time to observe what is around you, and find local mentors and draw upon your local resources. This will make your garden relevant to the unique culture of your community and school, and therefore your students.

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Massachusetts Agriculture in the Classroom: What is MAC and What Does it Do?

Massachusetts Agriculture in the Classroom (MAC) is a small non-profit 501(c)3 organization that has been working since 1983 to provide agricultural education, training and resources for Massachusetts educators as well as activities for children. MAC has developed a strong network of educators throughout the Commonwealth and is recognized as a leader in promoting agricultural awareness and education reaching thousands of educators annually through our programs and resources. By promoting agricultural literacy, MAC is working daily to create a new generation that better understands and appreciates the importance of agriculture. MAC's programs and educational materials help teachers and other educators to take agriculture into the classroom by supporting connections to the Curriculum Standards using agricultural examples.

MAC has developed a strong network of educators and is recognized as a leader in promoting agricultural awareness and education. A small non-profit, it is guided and managed by an all volunteer Board of Directors. Its greatest asset and most enthusiastic support comes from the farmers it serves by providing awareness about the importance of agriculture to the teachers it reaches via workshops, conferences, summer graduate course, mini-grants, its educational newsletter, on-line curriculum resources and website.

Our Mission

"The Mission of Massachusetts Agriculture in the Classroom is to promote agricultural literacy among educators and to provide them with the skills and support to integrate agriculture into the classroom."

MAC and School Gardens

The MAC garden classroom program seeks to support the creation and sustenance of school gardens throughout the Commonwealth of MA, and to create links between these gardens and Massachusetts agriculture.

MAC has supported school gardens for many years. Since 1994, MAC has awarded e more than $208,000 to 288 projects planned and carried out by educators across the state of Massachusetts. More than 200 of these were projects that have included garden-based education, nutrition and instruction about healthy local foods. Over the past 17 years, professional development trainings have reached 5,600 educators through 243 workshops and 20 conference with a variety of agricultural topics, many with links to garden-based education. Written materials have supported gardening at the school, including teacher resources on soils composting, and growing specific fruits, vegetables, herbs and flowers.

Resources MAC offers for school gardens includes:

-a directory of school gardens throughout the state
-seasonal conferences with school gardening focused workshops in each session.
-hands-on workshop days for educators in the garden
-newsletters with many helpful resources for school gardeners
-MA state framework based garden curriculum
-Mini Grants that are available to fund school garden projects
-a rich website with many resources for school gardens

The MAC School Garden Mentoring Program

Each year, MAC mentors a number of teachers and other educators in their school garden, many of these are just starting a school garden while others are working to expand their gardens or to find long-term support or sustenance. Schools that participate in MAC's school garden mentoring program receive two years of garden mentoring directly from MAC. Mentoring includes an initial assessment and consultation, from which we will co-develop a plan with you for your garden. We will then make seasonal (spring, winter and fall) visits. In-between these visits phone and e-mail support is available. During these two years mentored schools will assemble a garden support group, including a local farmer or other horticultural mentor, which will take over support of the garden at the conclusion of the mentorship.

Detailed information about this program can be found here:
http://www.aginclassroom.org/School%20Gardens/mentoring.html

MAC on the Web

A quick reference guide to some of the resources on our website:

- **Directories for School Gardens in Massachusetts**

  (schools with school gardens, organizations that support school gardens, and green industry resources)

- **Garden-Based Lessons**
- **School Garden Mentoring Program**
- **A School Garden Blog**
- **School Garden Recipes**
- **How-To Guides :**

  ---- **School Garden Startup Budget and Plant List**

  ----- **Siting the School Garden**

  ----- **Soils**

  ----- **Building the Garden Beds**

  ----- **Gardening in Containers**

  ----- **Selecting Plants for the School Garden**

  ----- **Seeding**

  ----- **Transplanting**

----- **Watering**

------**Composting**

----- **Mulching**

- --- **Cover Crops**

----- **Themes in Your School Garden**

----- **Fall Garden Guide**

Follow us on Facebook and Twitter! Join our E-mail list for upcoming events and opportunities.

An Invitation to MAC Seasonal Conferences

Consider attending the MAC seasonal conferences as you move forward with your garden. You can learn new ideas for your garden, network with other educators doing the same things at their schools, earn PDPs, and attend panels on topics to move your program forward. Additionally, we are always looking from presenters to share their experiences with their peers, so come and share what you know.

14 Best Practices For School Gardens That Are Here To Stay!

(Adapted from 10 Best Practices for Sustaining School Community Gardens by the "Friends of Burlington Gardens"2011.)

Best Practice # 1: Location, Location, Location
The most sustainable school gardens occupy a highly visible site on or next to school grounds. The site should have plenty of direct sunlight, good drainage and access to water.

Best Practice # 2: Permanence
Work on visual cues right away that communicate to your school community that your garden is here to stay. The first sign of permanence is a colorful sign for the garden. A fence around the garden will also help. Post clear rules in the garden, and consider a garden bulletin board.

Best Practice # 3: Build the Fertility of Your Soil
Soil fertility increases through composting, mulching, and cover cropping.

Best Practice # 4: Crop Diversity
Plant a variety of vegetables, berries and fruits for fresh food, and flowers to provide color and nectar sources for pollinators.

Best Practice # 5: Curriculum Integration
Integrate hands-on garden activities with core classroom curriculum. Take advantage of resources to tie these activities to state standards.

Best Practice # 6 Organization
A skilled coordinator and engaged steering committee, effective communications, shared planning and decision making, and youth engagement and involvement are all essential to ensuring a sustainable school garden.

Best Practice # 7: Administrative and School Board Support
Strive to ensure that the garden is an integral part of the school and community, and consistent with district goals.

Best Practice #8: Plan for Succession
Have plans in place from the start for sustaining your garden through leadership turn-over, grant cycles, and the need for funds when worn-out materials need to be replaced. Make room for new ideas and improvements.

Best Practice # 9: Community Access
Involve the community in your garden, especially during the summer. Consider having an extra garden bed for community members and weekly summer meeting times when activities take place at the garden.

Best Practice #10 Work with a Horticultural Mentor. Work with an experienced horticulturalist to avoid disappointment and gain knowledge and skill when building your garden.

Best Practice #11: **Publicize Your Garden.** Include information about the garden in the school newsletter and school web site. Write a press release about your garden to send out to local newspapers.

Best Practice # 12: Celebration and Acknowledgment
Thank sponsors volunteers and donors, and share surplus produce and flowers with friends, neighbors, and people in need. Build investment and involvement through garden potlucks and harvest celebrations. Make work in the school garden fun!

Best Practice #13 Connect to Your Local Agricultural Community
Your local farms and nurseries are wonderful sources of knowledge, history, supplies and a way to connect your school garden to your local food system at large.

Best Practice #14 Enjoy the Harvest
Be sure to eat and enjoy your harvests! Link the garden to nutrition lessons, and cafeteria local or healthy food initiatives. Encourage eating and cooking as celebrations in your garden.

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Activity: Interview another school garden team. Find a school from MAC's directory of school gardens, call them up and arrange a time to visit their garden, or at least talk on the phone. Ask them what best practices they have discovered for their school garden.

Sample questions could include: How did they get started? What were their biggest hurdles? What do they grow? How do they care for their garden over the summer? Etc!

"I have never had so many good ideas day after day as when I worked in the garden."
~John Erskine - (Literary Scholar and Professor at Columbia, 1896–1954)

Self Assessment

If you are reading this manual, chances are that you are going to be a key driving force behind developing your school garden. Congratulations! Taking a moment for self-assessment can help you identify your skills and also the amount of time you can devote to the project. It can also help you identify kinds of assistance you will need.

Ask yourself a few questions and write down the answers below:

Why am I interested in gardening with my students?

What kinds of things do I see myself doing in a garden classroom?

What are my gardening skills and how do they relate to gardening in a school setting?

What kinds of gardening assistance might I need?

Are my organizational skills strong?

Am I good at connecting with all of the constituencies within my school community?

Am I experienced in seeking donations, fundraising and grant writing?

Where might I find assistance or other people to accomplish these tasks?

How much time per week, month, or year, do I have to devote to this project to ensure its success?

Get Started: Gather Together a Working Group for your Garden

Most successful school gardens seem to have a primary garden leader as their driving force. On the other hand, having a small, agile garden committee or "working" group that meets for the purpose of dividing up and assigning jobs is an important way to distribute the work of decision making around your garden. Strive to create an active group of people (however small, 2-6 is a good number) who are willing and able to take on the tasks that will make the garden succeed. You may wish to have community input meetings, gatherings for your garden support network or even a long term advisory or steering group outside of this core group. The working group however should be small, goal oriented and able to make small decisions efficiently. Other people can be invited to join the group later as necessary.

The working group should consist of at least one school teacher or staff member from the school and perhaps an older student or two. Don't forget to ask members of the school food service, janitorial staff, or assistant teachers to join. Importantly, in addition to your group of enthusiastic school gardeners, be sure to invite an experienced horticultural/farmer mentor to join the effort.

The MAC Mentor Program provides two years of horticultural mentoring. After the two years are over, a school is asked to match themselves up with a mentor in their local community. MAC believes horticultural mentoring is a key factor in the long-term success of a school gardening program. Gardening can be harder than people think. Initial enthusiasm can wane due to a poor harvest or lack of beauty in the garden. Even intermediate gardeners can benefit from support from a mentor to help with bouncing ideas around and providing encouragement. Don't second guess. Make sure you have a horticultural mentor as an advisor or member of your working group.

Take a moment to write a few down a few people who you think might be good candidates, and contact them right away!

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For the sustainability of your garden group as staffing changes occur, be sure to provide a structure at the outset for future involvement of new people as time goes by. Keep good records and lists of contacts to provide a good start to this.

The following activities may be done alone, or with a working garden team.

Get Started: Observe Your Site and Your Community

Although you may be itching to jump in, take time to *observe* before launching on your garden project to help get you off on the right foot and also save time later on.

Observe **your school grounds** in order to find a suitable garden site. The location of your garden can make or break its success. Although you do not need to have an exact site at this stage, pick several to propose to your administration. In a nutshell, try to find a sunny (at least 6 hours of full sun a day), well drained site in a convenient, safe location with water access. Take some time to look over MAC's "Siting the School Garden" guide: http://www.aginclassroom.org/School%20Gardens/How-To-Guides_For_School%20Gardening/Siting%20the%20School%20Garden.htm You will not regret taking this time in advance! Note: Some successful "school" gardens are hosted at other nearby institutions, farms or community gardens. If you encounter a road block at your school site, consider other location options. MAC mentors one school that has their garden hosted at the next door fire station, and another school that has its garden at a neighboring farm.

Observing your **community landscape** is also an important preliminary step to take. You may do more research on these things later on, but you should also take a moment now to write down what you already know. The resources you have closest to you may be your most useful and sustaining resources. Here are some examples:

History: Has there ever been a garden at your school before? If so, with whom can you talk about it? Which teachers, parents, grandparents, students or other school personnel already have gardening skills or experience?

Local people and organizations: Are there any gardens, large or small, or farms, within walking distance from your school? What garden or farm organizations are in your town, county or state? What farms, garden centers etc are in your area? Who are the leaders in food and nutrition in your school community? Who landscapes and maintains your school grounds right now?

Activity: Create a garden resource map.

Below or on a poster sized piece of paper draw several nesting circles. Write the name of your school in your center circle, neighborhood in the next, town in the next, county or area in the next, state in the next and national/international in the next. Fill in resources for your school garden starting closest to home and moving out...

Get Started: Visions of Sugar Snap Peas! Develop Community Dreams for your School Garden

This is your chance to think big. What are your hopes for your school garden? What will it look like? What kinds of plants might you grow? Who will visit it and/or tend the garden? What kinds of activities will take place in it? What will it look like ten years from now?

"We have a responsibility to ourselves and our communities to let ourselves dream big"- Karen Washington, (community garden educator and leader, Bronx, NY.)

Involve as many members of your community as you can in this process. Involving students, teachers, parents, neighbors, local community members, school administrators, janitorial staff, and local retirees in this process will make asking them for their support later easier because they will already feel invested in the garden and its continuance. This stage of the process is not to identify people who will do the actual work of the garden, but it may help you find an individual or two to add to your core garden committee.

There are many ways to initiate this process. Send out an e-mail, or survey. Invite input by putting up a big piece of paper in the entry way to your school. Have your students conduct interviews in the community. Organize a community brainstorming event to generate ideas. This could be an event for everybody or you could hold separate events for different groups: Students, teachers, parents etc.

Dream big! Harness the Power of the Community Brainstorm!

Tips on a community brainstorm:

★ Make sure to explain that this is a visioning, not a planning session, where you want to harness the power of your community to get ideas for your school garden.

★ Remember the point of a brainstorm is to generate ideas, not to weed out which ideas you think will work.

★ Instruct participants not to criticize each other's ideas.

★ Write down all ideas so that each person feels heard.

★ Take notes on a big piece of paper. Use different colors, arrows, connecting lines and symbols to stimulate visual and creative thinking.

★ Keep the brainstorm free form, or focus it around particular topics, depending on who is in the room (teachers, students, school administrators, community members etc) : e.g. Who could support the garden? Who might donate supplies? What will we do with the food from the garden? What will the garden look like? What can we learn there? What kinds of events could we have in the garden?

★ Make sure to have a sign up sheet at these events. These contacts may be invaluable later as you develop the garden and garden team.

★ Thank participants and make sure you let them know when they might next hear from you. Send a thank you note and follow up e-mail.

Make a Plan with Your Working Group

Plan: Develop a mission, vision and goals statement

A working **mission statement** and **vision statement** can help with garden planning going forward. Many of you will have common goals when starting a garden program, but identifying them specifically can help drive your planning.

A working mission statement should be no more than a few sentences long. It should explain both *why* a garden will be good for your school, but also specifically *how* it will benefit the school, and *whom* specifically it will benefit.

A **vision statement** can be a longer paragraph. "Our vision for our school garden is..." What will the garden will look like? What will happen there? What will students learn about in the garden? What will they experience? How will the garden link students to state agriculture?

Take a moment to draft these working documents alone or with your garden team. Draw from the ideas generated during your school or community brainstorm. How can you represent the unique character of your community in your garden?

Plan: Determine your curriculum goals

Having students keep a garden journal, take observations, measure growth, rainfall and report on the garden are all ways to generate a wealth of curriculum connections in your garden. Pinpoint some key curriculum goals to help you share the garden with other teachers and serve as a reminder to you as well of how to integrate the garden into a packed teaching schedule. MAC's curriculum integration resource is included in the appendix of this guide. Look forward to how STEM is a great fit for the garden. Pick ten lessons or concepts that you hope to teach in the garden to help you move forward with your own planning or gain support.

E.g. Grade 1 Science: Standard: Describe the weather changes from day to day, and over the seasons. Plan: Keep a class garden weather log, using visual observation and simple instruments. Describe what is happening in the garden due to weather and seasons.

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Plan: Design your garden layout

Sketch your garden layout ideas. This is not a final blue-print, but should include basic ideas about how you will make your garden, and what your hopes are. It is a map of your long term vision rather than a plan for what to do right away this year.

Mark north. Will you have raised beds? How many eventually? Will you include perennials and trees? Will there be other structures (arbors, bird baths, tool shed etc.) in your garden? Will your beds have themes? Mark your water source and any surrounding buildings, trees, and existing walkways or beds. This is a wonderful exercise to do with your students.

Plan: Pinpoint garden supplies and activities

Figure out your essentials for garden start up to help with budgeting, planning and asking for donations. Make an inventory of what you already have.

Year One

- ☐ Seeds and/or seedlings
- ☐ Fertile soil
- ☐ Mulch (leaves, straw, etc.)
- ☐ Source of water (watering cans, hose with spray attachment etc)
- ☐ In-ground beds, containers, or raised beds
- ☐ Basic garden tools (shovels, rakes, hoes, trowels)
- ☐ Garden calendar
- ☐ Garden sign
- ☐ Planned garden activities
- ☐ Aprons, spare children's boots, safety goggles

Years 2-5 - Rate according to priority

- ☐ Tool shed
- ☐ Compost area
- ☐ Wheelbarrow
- ☐ Trellis
- ☐ Fencing (for pests, vandalism)
- ☐ Work tables
- ☐ Seating area
- ☐ Garden art
- ☐ Indoor seed starting grow-lights
- ☐ Greenhouse
- ☐ Harvest festival or other community event
- ☐ Community bulletin board
- ☐
- ☐

Plan: Generate a list of plants for your garden

As a part of this initial planning, choose some plants you hope to grow in your garden. For more detailed garden planning, especially in the future, or just for inspiration, use our "Selecting Plants" resource, our "Theme Beds" guide, and also our "Fall Garden Guide." (Find these at http://www.aginclassroom.org/School%20Gardens/How-To-Guides_For_School%20Gardening/How-To-Guides.html) More careful planning will be necessary especially if your garden has a lot of light, maintenance or space limitations.

To get started for planning purposes at this stage circle some ideas from the following list. These plants have been chosen as they are able to be harvested during the school year.

Annuals to plant and harvest in spring:
- Peas
- Spinach
- Lettuce
- Arugula
- Other greens such as chard, "Asian" greens.
- Radish
- Cilantro
- Baby kale, collards and other hardy greens.

Annuals to plant in the spring and harvest in the fall:
- Cabbage
- Brussel sprouts
- Broccoli
- Squash such as pumpkins, butternuts and watermelons (not for small spaces).
- Flour corn and popcorn
- Dry beans
- Kale, collards
- Flowers
- Beets
- Carrots
- Potatoes
- Sweet potatoes or yams
- Nasturtiums

Spring bearing perennials:
- Rhubarb
- Strawberries
- Asparagus
- Herbs (chives, mint(will spread), thyme etc.)
- Sunchokes (Jerusalem artichokes - you eat the root. Will spread)
- French sorrel (you will be surprised at how much kids love eating this!)

Fall bearing perennials
- Apples
- Grapes
- Fall bearing raspberries
- Herbs

Also, don't forget:
- Garlic (Plant in the Fall and harvest in the Spring)

If you must have tomatoes... send your vegetables home with students on vacation!
- Plant tomatoes, peppers, cucumbers and eggplants in containers and send them home with students for the summer. Or plant them in a special bed for your summer program or summer volunteers.

List other plants you wish to grow here for your further research:

Plan: Make a preliminary budget

On your list of first year garden necessities, identify what you have, will have donated, need to buy, or could borrow. From this list, generate a start up budget and a donation request list. This exercise carried out early will help with realistic goal setting and fundraising. Focus on first year necessities and work on fundraising for future things later so you don't get overwhelmed!

See "Sample Budget" in the Appendix.

Item	Number needed	Cost

Plan: Develop a 5 year plan

As your final step in the initial planning process, start listing items for a five year plan. A longterm plan will help with setting manageable goals from year to year, and keep you on track. Lay out some year to year goals for your garden. Draw from your plant list, garden supplies and activities list, goals for school and curriculum integration, as well as community outreach and plans to grow. See the Appendix for a sample plan of yearly growth. Start with a few things and add more as you go along.

Year 1

Year 2

Year 3

Year 4

Year 5

"How we feed ourselves and each other is the backbone of how, historically, we have organized our communities and societies. The ways in which we arrange our agricultural systems make evident our larger world views. Food literally and figuratively connects us to each other, to our ancestors, to our cultures, and to the earth. All food is soul food (with a low bow to true Southern cooking) because it is, in fact, that deep.- Tory Field, in Harvesting Justice .

Community: Assemble your garden support system

'Involving people' can seem like an overwhelming task initially, but is central to the success of your garden project. People bring life into a garden with energy and ideas, aspirations and needs. Begin to include people through easy and manageable steps over time. Involvement is about building support,. It does not need to happen all at once, but will greatly help the growth of your garden if you start bringing people in early.

Community: Your garden contact list

Putting together a garden contact list is a good exercise that will benefit you greatly as you go along. It can also help to ensure long term sustainability for your garden when a transition in leadership becomes necessary.

MAC Mentor/ other horticultural advisor: _____

Address: _____

Phone: _____Email: _____

Comments: _____

School Principal: _____

Address: _____

Phone: _____Email: _____

Comments: _____

Contact at County Office of Education:_____

Address: _____

Phone: _____ Email: _____

Comments: _____

Building Maintenance Supervisor:_____

Address: _____

Phone: _____ Email: _____

Comments: _____

Curriculum Coordinator: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

Massachusetts Master Gardener: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

PTA/PTO Representative: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

UMass Cooperative Extension Educator: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

Local farmer: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

Key Community Volunteer: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

Local Garden Center or nursery : _____

Address: _____

Phone: _____Email: _____

Comments: _____

Local Lumber Yard: _____

Address: _____

Phone: _____Email: _____

Comments: _____

Other: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

Other: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

Other: _____

Address: _____

Phone: _____ Email: _____

Comments: _____

Community: Find a horticultural advisor

If you are a farmer or long-term vegetable gardener yourself, you may not need a horticultural advisor. Although as discussed earlier, working with another gardener may be helpful for fun and support, or to fill in gaps in your knowledge as you adapt to the school year. Finding a horticultural advisor could also be as simple as connecting with a co-worker who you know has a big garden, or in the case of one school I visited, walking across the front lawn of the school to the old farm house where the family still lives who used to farm the school land before the school was built.

Start by looking within your school community. These people have the double benefit of already having a connection with your students. Reach out to parents. Don't overlook grandparents, aunts and uncles as possible garden mentors! Also keep in mind janitorial staff, school administrators, substitute teachers and bus drivers.

Give this search time. After you have looked in your immediate school community and have not found someone with enough time to devote to helping you, or simply no-one that you have "clicked" with, consider looking to retirement communities, college or high school agriculture departments, or reaching out to local garden clubs.

While the person you find may be knowledgeable about plants, be sure s/he is also willing and able to spend some time with you in the garden. The individual you identify may not do actual garden work, but spring and fall walk throughs, winter planning discussions and trouble shooting over the phone will keep you on track. While the Internet and advice from a distance may be helpful at times, you will save yourself a lot of time and mistakes, and create a richer experience for your students by developing a relationship with a local person.

What to look for in a potential advisor: Find out about their experience. How many years have they gardened or farmed? What have they grown? Have they grown annuals or perennials? Have they grown on the scale that your garden will be? Aside from their skill level, do they seem like someone you would like to work with?

Decide how best to develop your relationship with this person. Will you meet for a tea you provide weekly? Will you invite them to come and make a garden at your school and split the harvest with you, as a "resident gardener?" Think of how to engage them in a mutually beneficial arrangement where you provide the organizational structure of the garden in the community and they provide their skills and art in the garden!

Community: Gaining support from parents

Parents can be a wonderful and key support for your garden. Whether donating supplies, time, experience, or simply offering another set of hands they can make many things easier. Making space for parents to step forward with expertise or time can also be an important bridge from home to school for students. You many want to send a letter home (in all the languages your students families speak) explaining the garden, why you believe it will be good for the school and students, and specifics about what they can do to help. Holding a parent event in the garden can be a great first step in getting families involved. Families can be wonderful resources for celebrations and events, summer maintenance, and transportation.

Keep a log of parent responses and offers. Even if you do not need it now, you will find it valuable to have to draw from it in the future.

List specific ways parents could help in the garden to use as a reference when talking casually to parents or during an organized event:

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Keep a log of your parent garden connections:

Parent	E-mail	Comments

Community: Tips for connecting to local farmers, landscapers and other "green professionals"

Find out who the farmers are in your community. Who runs a nursery near you? Where is there a locally owned garden center? Is there a local landscaping company? Cultivating relationships with "green professionals" in your community can be a great step for garden sustainability. Not only do they have the supplies and plants you need for your garden, but they can also be a great source of locally relevant information and support. Although they are busy people, you may find them to be enthusiastic about and eager to support your school garden in whatever way they are able. Buying directly from farmers can also often be a way to save money, and stretch limited resources. Some things to consider:

★Bring the list of things that you will need early on to your local garden center or farm. This will help them work with you. Perhaps they can special order things, or will have suggestion for what you might have missed. If you have a limited budget, you could mention this too. Perhaps they would be willing to post the list of what you need so that their other customers can make donations on the spot to your garden.

★Discuss with the farmer or owner when in the year their farm store or stand has things that you need for your garden. Keeping this discussion going will make sure you don't miss when they get their seed potatoes in stock, when their seeds go on discount, when their sales are etc. They might even be willing to work with you for a strange planting calendar e.g. If you need to buy kale starts in July for fall eating, etc.

★Consider getting in touch with local people even if they do not have a retail store. A landscaping company might be a good source of compost, a cattle farmer might have mulch hay, a market garden might have vegetable seedlings.

★Be aware that many of these professions are seasonal. Contacting a vegetable farmer in June may be a hard time for them. For most of these places, December through March is an ideal time to get in touch with requests. If they have a retail store, it could be more year-round.

★In addition to supplies, consider asking them if they would be able to visit your classroom or help plant a tree in the garden. What an inspiration to have someone making their living through doing the same kinds of things that your students do in the garden! Perhaps invite them for a visit to your garden in the spring, and then have your class do a fall visit to their farm.

★Some farmers might even be willing to be on your garden advisory team. Keep in mind their involvement may need to be seasonal, but this kind of relationship could be a great support for your garden.

★Be sure to consider how to repay them for their help. Thank them with letters and perhaps something they can hang in their store. Consider inviting the press to cover your connection.

Community: Creating and sustaining a successful garden support team.

A garden support team or advisory group should consist of people outside of your small garden working group who can help out on a less frequent basis. Be specific about what you are asking people to join, and why you hope they will, and how often they will meet. Four times a year might be realistic. These could be administrators, parents etc, anyone with a stake in the garden. These are also good meetings to invite new people to, to get them involved. Take a moment to write down people that could be good for your advisory group:

Community: Other volunteers

Many other people in your community may be helpful volunteers for your garden project. Retired people, civic groups, college students, community garden clubs and others may be able to take on some of the jobs or maintenance work that you may be overwhelmed by as a busy teacher. Before recruiting volunteers, try to figure out the specific skills you are looking for. It is also a good idea to talk with them about their motivations and what they are hoping to get out of volunteering. Matching volunteers' tasks with their skills is a key factor in everyones satisfaction.

Take a moment to write down things potential volunteers might do for your garden:

Community: Reaching out to local businesses

Local businesses can be great sources of donations, supplies and community support. Send out a letter to local businesses, asking for support. Invite your local business owners to an opening celebration, ground breaking or harvest supper.

Request for Donations

Use Your School's Letterhead

Date

Business Name and Address.

Dear (Business owner):

The children in the second, third and fourth grades at the (your school name here) are excited to be starting a school garden, and we are asking our neighbors for help to make this possible.

We were wondering if you would consider donating (some general category that you need e.g. tools) that we will need to build this garden for our school. We need (specifics on what you are looking for that you think they might have)—or whatever you are able to provide us, this would help a lot.

We will have an opening celebration on (date) in the garden in front of the school (School address) You and your staff are invited to help break ground for the first plants that will go in. The ceremony starts at xx a.m. We hope you can join us!

Many thanks for your help in advance,

Ms./ Mr xxxxx and the students of xxxx School
(Your contact information, including telephone number.)

Have students sign names here or provide a large poster with names, drawings, etc.
Include a drawing of the garden plan and a list of what you need. Here you can again ask the donor to consider selecting one or more thing to donate, or the cash equivalent.

Community: Donor records

Keep a record of donations to your garden. This way you can be sure to thank and credit people, and this information may also be useful for grant purposes. This will serve as a resource when you need to transfer garden leadership at some point, by enabling a new person to see who has helped in the past.

Business Name	Contact Person	Contact Info	Thank you letter sent:
			_____/_____
			_____/_____
			_____/_____
			_____/_____
			_____/_____
			_____/_____
			_____/_____
			_____/_____

Community: Sending thank-you letters

Thank you letters or cards are extremely important! Print up some cards in advance, or write a letter. Including photos or children's drawings is a great way to personalize a thank-you. Consider a thank you with flowers from the garden!

For example:

Your Address or School Letterhead

Date

Their Name and Address

Dear

We would like to send you many thanks for your contribution to the (xx) school garden project. We would not be able to offer our students this wonderful opportunity to learn from a garden, experience growing healthy nutritious food (add other benefits here!) , without support from generous neighbors like you.

This garden means a lot to our school and our children, and your donation of (xxxxxxx) has had a wonderful effect of (xxxxxxxx) on our garden.

Again, thank you so much for your generosity!

Sincerely,
(your and students names here)

P.S. "We are a tax-exempt organization and your donation qualifies as a tax deduction should you care to take it. This letter can serve as your receipt."

Attaching photos is always a hit!

"No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden." —Thomas Jefferson

Community: Community agricultural resources

Below is a list of organizations that may be used as resources for information, or as garden mentors or community partners.

Massachusetts Department of Agriculture: http://www.mass.gov/eea/agencies/agr/ specifically their Mass Grown program: http://www.mass.gov/agr/massgrown/index.htm to find a map of local farms, farm events and fairs.

FFA: www.ffa.org
FFA is a student-oriented leadership organization that strives for agricultural education. FFA may be a great help to your school garden with planning or maintenance if you have a chapter in your district.

Master Gardeners: http://massmastergardeners.org/ and http://wmmga.org/
The Master Gardener Program is a corps of volunteers in Massachusetts who are trained in the science and art of gardening. The also have a garden "hot line," and hold workshops and events.

American Farm Bureau: www.fb.org Massachusetts State Farm Bureau: http://mfbf.net/
Check out both of these sites for information from one of the Country's largest farm organizations.

The Grange: Massachusetts chapter: http://massgrange.org/, national site: http://www.nationalgrange.org/

4-H: www.4husa.org **Massachusetts 4-H:** http://mass4h.org/
4-H is a youth development program that has a focus on agriculture, leadership, and community service. 4-H volunteers may be the perfect way to keep up your summer maintenance!

UMass Cooperative Extension: http://ag.umass.edu/ Extension has countless resources for gardeners. This website contains many links that will be helpful to you. Look at particularly their resources for home gardeners: http://ag.umass.edu/home-lawn-garden-information

The Massachusetts Garden Club Federation: http://gcfm.org/

Community Groups: Senior Groups, Boy/Girl Scouts, and other youth groups, Rotary clubs, employee service projects, college clubs and more!

Donating produce: Most schools with gardens donate produce to their local food bank or other community organizations. To find local food banks, check out the America's Second Harvest site at http://www.secondharvest.org.

Plant a Row for the Hungry: The Garden Writers' Association "Plant a Row for the Hungry" program. http://www.gardenwriters.org/

Massachusetts Farm to School: A great group to get in touch with if you do not know about them already. They have been instrumental in getting local produce into schools :**http://www.massfarmtoschool.org/**

Garden Management

Management: Garden record keeping and evaluation

Encourage record keeping in your garden. Plan to have your garden team assess your garden yearly, write up events in your garden, classes who used it and what was successful or needed improvement. For example: Consider starting a community garden binder for users of the garden to record what they did, as well as their observations about plant health, and any safety concerns. Encourage people to collect quotes from their volunteers and students, and add pictures. This can be a great way for multiple classes to "sign in" to the garden, and see what the last people in the garden did, or what is on the "to do" list.

Sample Garden Log (In a binder in a waterproof box in the shed!)

Date	Class or Group	Activity (s)	Notes for Next Group	Quotes
E.g 5/2/14	Mrs Smith 3rd Grade	-Bed Measuring Math -Weeding Carrots	-Last half of carrots still need weeding	-" Eating tiny baby carrots is not just for rabbits!" - Jane.

Management: Some strategies for a safe garden

Arrange a garden introduction and tour for all students, teachers and volunteers who will use it that includes a safety component! Knowledge is safety! Post a weatherproof sign with garden rules. Go over these rules in the classroom. For example:

Welcome to our garden.

Please enjoy this beautiful and important space at our school.
Please follow the rules below so that we can all enjoy this space.

Respect! Each other, the teacher, the garden, the garden tools.
Ask before you pick or eat anything
No running or wrestling in the garden
Do not climb on garden structures or beds
Have fun!

Do periodic safety assessments. Have a member of your garden team do a periodic walk through of your garden to assess hazards. Create a log book to record potential hazards and actions to be taken. For example:

Hazard	Who could be harmed and how?	What are you already doing?	What action is further necessary?	Who?	When?	Done?
e.g Uneven surfaces	All, especially elderly volunteers	Caution to volunteers about this	Level out the ground with shovel.	Frank	9/1	10/1

Management: Make a plan for succession of garden leadership

Unless you have new leadership in place when you leave your post as leader of the garden, it's unlikely that it will survive your departure. The purpose of this planning workbook is to help pass along the information necessary to run a school garden program successfully.

Plan ahead for succession. Consider looking outside of your teacher pool if you are unsure if there is a new person willing to take over being the driving force, to parents or community members, or organizations, who would be willing to be temporary transition leaders until a new leader is found or trained. Ideally, the incoming garden leader(s) would shadow you for a few weeks before they assume full care of the garden. Consider some kind of novel ritual such as passing down a decorated shovel or plaque during a school ceremony to a new garden leader to note the new leadership.

Ideas for training new leaders include: An orientation and tour. Assessing their garden skill level and finding appropriate support people to help on an as-needed basis. Introduce them to the binder and review what is in it. Review current stable of garden helpers and introduce the helpers to this new leader.

Management: Tips on applying for grants

Writing in this workbook will get you in great shape for applying for grants. Things such as your mission and vision statement, and your five-year plan can be used in many applications. Be sure to collect copies of any press coverage in your garden portfolio, as well as letters of support, and quotes from your students and volunteers.

There are many grants out there currently for school gardens. "Kids Gardening" the school garden website from the National Gardening Association is a great resource for grants: http://grants.kidsgardening.org/ Massachusetts Agriculture in the Classroom has a small mini-grant program to support a limited number of agriculture endeavors in the classroom, including garden efforts with a strong link to agriculture. Check out that program, and read up on past projects to see what MAC has funded: **http://www.aginclassroom.org/Awards_Grants/Mini_Grants/mini_grants.html**. Don't forget that your garden project may fall under a service learning, ecological, nutrition, youth development, or public health grant topic. Be sure to look into these categories of foundations too.

While there is no one way to write a winning grant application, be sure to read directions well and follow them exactly. Know the mission of the granting organization and the goals for funding grants. Observe all deadlines for submission and be in good contact with your grantor. Ask someone outside of your project to proofread your application and offer feedback and fine-tuning. Include evidence of community support for your project such as letters, and donations. Demonstrate that you are working on the sustainability of your project. Look for a good grant writer in your pool of volunteers. That can be a great asset.

An accurate budget can be a lot of work in writing a grant proposal. The figures need to be based on research, not guesses. Look to other similar funded projects to see what their budget was, and/or use MAC's sample budget for reference - but find out prices specific to your area. (See Appendices)

An extensive list of research that supports school gardens can be found on this website by Cornell: http://blogs.cornell.edu/garden/grow-your-program/research-that-supports-our-work/highlights-from-journal-articles/.

Celebrate Your Garden

Celebrate! Celebrate your garden and Massachusetts agriculture

Celebrations are a wonderful way to keep the momentum of your garden going, as well as focus volunteer help and donations. Plan seasonal celebrations in your garden. Enlist volunteers to help carry them out, or keep them small and simple to the capacity of your garden team. Invite your wider community.

Connect up with national and state days, such as national "Food Day" http://www.foodday.org/, or "Mass Harvest for Students Week" (http://www.massfarmtoschool.org/programs/harvest-for-students/) to join with other schools.

Find ways for your garden program to have a presence in school events and activities. Have a garden presence at your existing school celebrations by offering a snack. Hold a "bake sale" with your garden produce for teachers and parents at the end of school. Give out "Great Gardener" awards to students.
Involve the community at large. This will raise awareness of how well your program is doing, and cultivate potential volunteers, donors and other kinds of support. Send a bouquet to a new business in town, a nursing home, or the Chamber of Commerce. Donate vegetables to a local soup kitchen or food pantry. Be sure that anything harvested from your garden to be donated is in good shape, clean and well presented, and represents your garden to the community well.

Your community will be interested in learning about your school garden. Maintain your garden so that your school can be proud. Make a large garden sign so that people visiting your school know what your garden is.

Develop a relationship with local media outlets (local newspapers, radio & TV stations) and have the students develop press releases. Be sure to invite media representatives to special events.

Some tips for contacting the media:

- Contact or send releases to a specific person. Find out who covers education or community stories. Develop a relationship with local media staff. Spell check and proofread press releases. Focus on who, what, where, when, why, and how. Keep press releases and pitches for stories short and concise. Include contact information. Return calls promptly. Send out press releases early. Make sure information is newsworthy. Start with a brief description of the news, then distinguish who announced it, not the other way around. Provide as much contact information as possible: individual to contact, address, phone, fax, e-mail, website address.

Celebrate! List your School In Our Directory Of School Gardens in Massachusetts

Let other schools know you are there! Be a part of the growing list of Massachusetts schools with school gardens. List your school in our school garden directory here:

http://www.aginclassroom.org/School%20Gardens/School-Gardening_Directories/Directories.html

Appendix

Appendix A: Other Organizations that Support School Gardens

Many of the organizations in Massachusetts that offer support for school gardens can be found in our on-line directory.

Download the directory here:

http://www.aginclassroom.org/School%20Gardens/School-Gardening_Directories/Garden%20Resource%20Directory%20web.pdf

Appendix B: Sample 5 Year Plan

Year One

Fall
★ Observe your site. Conduct soil, shadow, drainage and other observations and tests.
★ Put together your working group
★ Make your initial plan
★ Start a garden management binder and calendar
★ Identify your horticultural mentor
★ Site your garden (see our siting guide)
★ Make a budget.
★ Hold a community brainstorm
★ Seek donations from the community for spring needs.
★ Plan for spring planting (see our selecting the crops guide)
★ Identify your compost source
★ Gather leaves!

Spring
★ Start small. Make one or two beds, or start a container garden. Fill with your soil mix and buy seedlings.
★ Set up your watering system.
★ Make a garden sign.
★ Hold a community ground breaking to put them in. Invite people from all the categories discussed who might help your garden.
★ Assemble your garden support committee.
★ Make a goal of one academic activity per class in the garden.
★ Mulch in your seedlings
★ Make a summer plan for care

Year Two

Fall
★ Hold a fall harvest event with your vegetables for parents and/or for other classes
★ Build more beds
★ Build a shed if possible
★ Expand your goal of academic activities in your garden: two per class?
★ Put in fall bulbs around your garden for early spring color

Winter
★ Set up indoor grow light(s) for starting seedlings for your garden

Spring
★ Start an after school garden club

★ Plant more annuals for the school year.

Year Three

Fall

★ Start a composting program for your garden
★ Plan new ways to enjoy the harvest
★ Plant some fall and spring bearing perennials

Spring

★ Build a community bulletin board
★ Start a volunteer program with the local senior center

Etc: Start small, build slowly, and get support!

Appendix C: Sample Budget- First Year Garden, One Bed

This sample budget is pretty minimalist. See our full budget for ideas for more things if you can afford it. You could start with less money if you are able to get more of these things donated, and/or if you use salvaged materials. If you are starting from scratch, you could consider a container or an in-ground bed, although we highly recommend raised beds.

For two Garden Beds	**2**				
Category	**Item**	**# needed**	**est. price**	**Total**	**Notes**
Raised Bed Supplies					
	2‘x4”x8’ Hemlock	3	10	60	Can use any rot resistant wood
	1 lb box of 3.5” wood screws	1	14	28	
	Thompson’s water seal**	1	10.98	14.98	Can also use non-toxic outdoor paint.
	4” corner braces. 4 Pack	1	4	4	
	Pack of 2” wood screws	1	3	3	
	2x2x8 Hemlock/other for bracing corners	1	4	4	
Raised Bed Tools					
	One extra long wood drill bit, 4” long (not typically found in drill bit sets)	1	4	4	
	Electric drill ideally 12v or higher			Borrow !	
	Hand saws			Borrow !	
	Measuring tape			Borrow !	
	Pencil			0	

	Standard drill bit set			Borrow !	
Raised Bed Fill					
	Compost (in yards). Be sure to use good quality!	1.2	35	84	For 1/2 loam / compost bed mix
	Loam (In yards)	1.2	20	48	Assuming you can't use your own soil...
Watering System					
	Lead-free garden hose	1	30	30	Kids may drink from it so lead-free is important!
	Timer	1	20	20	For weekends and holidays
	Watering nozzle for hose	1	5	5	
	Watering cans	2	5	10	
Tools				0	
	Kid-sized tools: shovel, spade, rake, hoe, fork	8	12	96	adjust by # of students...
	Full-sized tools (see above)	5	14	70	
Seeds, perennials and slips					
	Seedlings (in six packs)	7	2.5	35	This will vary depending on what you want to grow!
Mulch					

	Straw mulch bales to augment collected mulch	1	7	14	Check for straw without weed seeds.
		Estimated start-up cost for first year (can be much lower or much higher!)		529.98	

Appendix D: MAC Curriculum Connections Resource

Please see below for a list of example activities based on Massachusetts State curriculum standards as outlined in 2012.

For ideas about linking garden activities to STEM you can download the Fall 2013 newsletter on the subject here: http://www.aginclassroom.org/Newsletter/macnews2013i3.pdf

Examples of School Garden Activities Linked to Massachusetts State Curriculum Standards

Grade 1

Standard	Sample Activity

Science

Earth and Space Science

3. Describe the weather changes from day to day and over the seasons.	-Keep a garden weather log, using visual observation and simple instruments. Describe what is happening in the garden due to weather and seasons.
4. Recognize that the sun supplies heat and light ... and is necessary for life.	- Mark the reach of shadows in the garden during different times of day with stakes or landscaping flags. Record. Discuss how sun affects plants, and talk about where the best place would be in the garden area to grow sun loving plants. Participate in planting these plants.

Life Science

1. Recognize that animals and plants are living things that grow, reproduce, and need food, air and water.	- Take on the responsibility of watering the garden for part of the week. Link to the weather station and see if it has already rained enough that day. Observe what happens to plants when you don't water them by setting up test plots or leaving a pot unwatered for a few days. Link needs of plants to those of humans.
3. Recognize that plants and animals have life cycles...	- Follow the life cycle of plants you are growing in the garden such as a tomato. Start the seeds in the classroom under lights, transplant into the garden, observe the plant flowering and producing fruit. Save seed from the fruit to plant and start the cycle again the next year.
7. Recognize changes in appearance that animals and plants go through as the seasons change.	- Make observations about the garden and school ground animals in each season. Make a poster with categories such as insects, plants, animals, humans, etc. Explain what you observe about each one.

8. Identify the ways in which an organism's habitat provides for its basic needs...	- Plant a pollinator garden with shelter for butterflies and birds, install a bird bath or bird houses in the garden, make a toad home. Talk about how each of these provides for the needs of these living things.

History and Social Studies

1.6 Give reasons for noting the days that mark the changes in seasons.	Keep a classroom seasonal calendar. Show the solstices and the equinoxes and discuss how they are the beginning of Spring, Summer, Fall and Winter. Look at which cultural holidays are near these dates. Hold events on these dates and celebrate customs of celebration from around the world e.g. Easter or passover for Spring.
1.9 Explain that Americans have a variety of different religious, community and family celebrations and customs.	Plant theme gardens using plants important to different traditions. Make posters as a class illustrating one plant and explain why this plant is important to people. (e.g. recipes, holidays it is eaten at, other ways it is used such as decoration or fiber.)

Mathematics

1. Use addition and subtraction within 20 to solve word problems.	Do seed saving from the garden. Count seed yields, do germination tests and use addition and subtraction to figure out how many seeds sprouted out of total seed yield.
Geometry. 3.	Harvest round things like melons from your garden. Figure out how to divide them up amongst students in the class into equal shares.
Measurement and Data. 2.	Assign each child a plant. Put a measuring stick next to their plant and record how tall it is as it grows. Use a rain gauge to measure rain fall in whole units.

English Language Arts

Writing Standard: 2. Write informative/ explanatory texts 5. respond to questions and suggestions from peers and adults... 6. Use a variety of digital tools to publish writing 7. Participate in shared research writing projects	- Write step by step explanations of common garden activities. - Write thank you letters to volunteers and donors to the garden. - Write opinion pieces, informational pieces, and how-to articles about garden topics and contribute to, or start a garden magazine. Publish your garden magazine and share with other classes, parents and community members. - Make a presentation about your favorite garden vegetable and why people should eat it!

Language Standard: 5. Vocabulary acquisition and use: demonstrate understanding of word relationships	- Keep individual or a group garden journal, recording observations from the garden. Use descriptive words about the seasons etc.

Grade 2

Standard	Example Activity

Science

Earth and Space Science

3. Describe the weather changes from day to day and over the seasons	Keep a garden weather log, using visual observation and simple instruments. Describe what is happening in the garden due to weather and seasons.
4. Recognize that the sun supplies heat and light ... and is necessary for life.	- Mark the reach of shadows in the garden during different times of day with stakes. Record. Discuss how sun affects plants, and talk about where the best place would be in the garden area to grow sun loving plants.

Life Science

1. Recognize that animals and plants are living things that grow, reproduce, and need food, air and water.	- Take on watering the garden. Link to the weather station and see if it has already rained enough that day. Observe what happens to plants when you don't water them. Compare this to humans, and what we need.
3. Recognize that plants and animals have life cycles...	- Follow the life cycle of plants you are growing in the garden such as a tomato. Start the seeds in the classroom, transplant into the garden, observe the plant flowering and producing fruit. Save seed from the fruit to start the cycle again the next year.
7. Recognize changes in appearance the animals and plants go through as the seasons change.	- Make observations about the garden and school ground animals in each season. Take photographs in the same spot as a class and discuss differences.
8. Identify the ways in which an organism's habitat provides for its basic needs...	- Plant a pollinator garden with shelter for butterflies and birds, install a bird bath or bird houses in the garden, make a toad home. Talk about what each of these things provides in terms of the needs of these things

History/ Social Studies

2.8 ...give examples of traditions or customs from other countries that can be found in America today.	Make a class recipe book with dishes from students home, or ancestors countries. Hold an event inviting families to try these different dishes.

Mathematics

Measurement and Data. 1.	Measure garden beds, or plant height.
Work with time and Money. 7.	Note the day, month, year and time in your garden journals. Look up days from germination to harvest for a vegetable, and figure out when you need to plant it to get a desired harvest date.
Represent and interpret data 10.	Make a simple bar graph of bean yields of different types of beans.

English Language Arts

Writing Standard: 2. Write informative/ explanatory texts 5. respond to questions and suggestions from peers and adults... 6. Use a variety of digital tools to publish writing 7. Participate in shared research writing projects	-Write step by step explanations of common garden activities. -Write thank you letters to volunteers and donors to the garden. -Write opinion pieces, informational pieces, and how-to articles about garden topics and contribute to, or start a garden magazine. Publish your garden magazine and share with other classes, parents and community members. -Make and video tape a one minuet commercial about your favorite garden vegetable and why people should eat it!

Grade 3

Standard	Example Activity

Science - also noted where there is overlap with Technology / Engineering standards

Earth and Space Science

4. Explain and give examples of the ways in which soil is formed. 5. Recognize and discuss the different properties of soil...	- Do a soil shake experiment with soil from your garden. Add water to a sample in a bottle and let soil settle into its composite parts. Observe differences with a hand lens between organic matter, sand and clay and discuss different kinds of soils. Make an educated guess as to your soil type, and compare it to online soil maps. - Design and construct a compost bin (also T/E 1.2, 2.1- 2.3)

Life Science

1. Classify plants and animals according to the physical characteristics they share.	- Use a simple dichotomous key to identify plants in the school grounds. - Look at vegetable "families," and group seed packets or pictures of vegetables e.g allums, cucurbits etc.
2. Identify the structures in plants that are responsible for food production, support,... (etc.)	Press or make drawings of plants from the garden. Identify and label their major structures, and describe the functions of these structures.
3. Recognize that plants and animals go though life cycles.	- Grow plants for the garden from seed. Make observations throughout the life cycle about emergence of structures, height, etc.
9. Recognize plant behaviors	- Change the direction or height of the light source in indoor seed starting. Observe the way the plants move, or stretch upwards towards the light.
11. Describe how energy derived from the sun is used by plants to produce sugars...and is transferred within a food chain...	- Design and build a compost bin. Make an energy transfer map of plants - animals - decomposers etc (also T/E 1.2)

History / Social Studies

3.2 Identify the Wampanoags and ...describe their way of life.	Plant a three sisters garden. Make foods from the garden traditional to the Wampanoags.
3.4 Explain how the Puritans and Pilgrims differed... describe the daily life, education and work of the puritans in the Massachusetts Bay Colony.	Plant a historical herb garden, make historical food and do activities such as grinding wheat, making butter.

Mathematics

Geometric measurement 5, 6, 7	Measure areas of garden beds. Using space requirements of garden plants, figure out how many plants can fit into a given area.
Measurement and Data 2, 3, 4	Keep a log book about garden vegetables. Weigh and measure individual garden vegetables such as squash or beans. Record detailed measurement, such as growth of bean plants over time.

English Language Arts

Writing Standard: 2. Write informative/ explanatory texts 5. respond to questions and suggestions from peers and adults... 6. Use a variety of digital tools to publish writing 7. Participate in shared research writing projects	Write step by step explanations of common garden activities. Write thank you letters to volunteers and donors to the garden. Write opinion pieces, informational pieces, and how-to articles about garden topics and contribute to, or start a garden magazine. Publish your garden magazine and share with other classes, parents and community members. Edit articles from other classes to add to the magazine.

Grade 4

Standard	Example Activity

Science - also noted where there is overlap with Technology / Engineering standards

Earth and Space Science

4. Explain and give examples of the ways in which soil is formed. 5. Recognize and discuss the different properties of soil...	- Do a soil shake experiment with soil from your garden. Add water to a sample in a bottle and let soil settle into its composite parts. Observe differences with a hand lens between organic matter, sand and clay and discuss different kinds of soils. Make an educated guess as to your soil type, and compare it to online soil maps. - Design and construct a compost bin (also T/E 1.2, 2.1- 2.3)

Life Science

1. Classify plants and animals according to the physical characteristics they share.	- Use a dichotomous key to identify plants in the school grounds. - Look at vegetable “families,” and group seed packets or pictures of vegetables, e.g allums, cucurbits etc.
2. Identify the structures in plants that are responsible for food production, support,... (etc.)	Press or make drawings of plants from the garden. Identify and label their major structures, and describe the functions of these structures.
3. Recognize that plants and animals go though life cycles.	- Grow plants for the garden from seed. Make observations throughout the life cycle about emergence of structures, height, etc.
9. Recognize plant behaviors	- Change the direction or height of the light source in indoor seed starting. Observe the way the plants move, or stretch upwards towards the light.

11. Describe how energy derived from the sun is used by plants to produce sugars...and is transferred within a food chain...	- Design and build a compost bin. Make an energy transfer map of plants - animals - decomposers etc (also T/E 1.2)

History/ Social Studies

4.15 Describe the diverse nature of the American people ...	-Plant a three sisters garden, talk about corn and other indigenous foods. -Talk about slavery in this country and the history of agriculture. Put agricultural work in context of the history of who has done the majority of agricultural work in different time periods.
4.16 Identify major immigrant groups that live in Massachusetts...	Use food as an entry point to talk about different immigrant communities. Plant and harvest crops important to different cultural cuisines.

Mathematics

Measurement and Data 1, 2	Make a garden log book. Measure heigh of vegetables over time, record rain fall, measure vegetable weight and seed yields converted into multiple formats such as feet, inches and centimeters.
Measurement and Data 4.	Make a line plot to display your data set from your garden log book. Then use your line plots to find and interpret the difference in measurement, e.g. height of bean plants.

English Language Arts

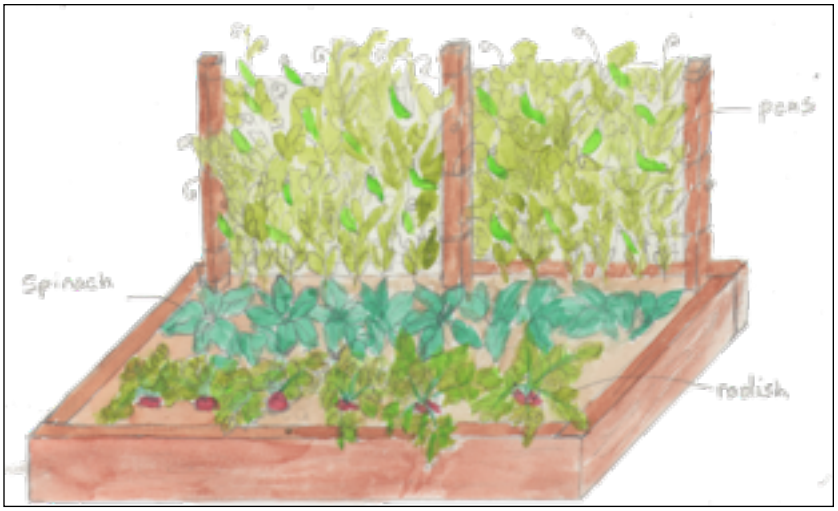
Writing Standard: 2. Write informative/ explanatory texts 5. respond to questions and suggestions from peers and adults... 6. Use a variety of digital tools to publish writing 7. Participate in shared research writing projects	-Write step by step explanations of common garden activities. -Write thank you letters to volunteers and donors to the garden. -Write opinion pieces, informational pieces, and how-to articles about garden topics and contribute to, or start a garden magazine. Publish your garden magazine and share with other classes, parents and community members.

Health: All Grades

1.3 Identify appropriate accommodations and aids for people with physical disabilities	Design and install accessible garden beds. Discuss what accommodations people might need in order to participate in the garden.
1.4 Distinguish the characteristics of living and non-living organisms. List the stages in the basic growth processes of living organisms.	How are people different than a plant, a rock? List characteristics of each. Compare our growth process to that of a plant.

3.5 Identify the connection between food served in the home with regional food production.	Link the vegetables grown in the garden to area farms growing the same thing. Plan out which vegetables will be grown in the school garden, and link this to what area farms can grow, due to your climate. Look at countries on a map where other foods you eat come from.
3.6 Describe personal hygiene and safety measures used in preparing foods	Look at food safety garden to table. Make food safety posters to remind about hand washing, refrigeration etc.
3.7 Describe how food choices are influenced by availability, individual and family preferences... identify healthy foods within various social groups.	Grow plants used in cooking in different cultures. Show how all cultural cuisines include healthy options. Talk about food access. Map out where people can buy fresh vegetables in your area.
12.2 Interpret the symbols and information provided on the labels for health care products and food products.	Make a dish from your garden. Compare it to a store bought version. Look at ingredients, and compare nutritional information about calories etc with research about these things in your homemade version.
13.1, 14.2 Through study of interdependence students will: Describe types of natural resources and their connection with health.	Make a chart about what a plant needs to be healthy and grow. Now make a similar one for a person. Once natural resources, such as water or soil are identified, talk about what happens if these things are polluted or unavailable. Look at our interdependence with plants, and things we both need.

Resources Used in Writing This Guide and Acknowledgments



Creating and Sustaining Your School Garden Workshop hand out packet. California School Garden Network. http://www.csgn.org/csysg

Getting Started : A Guide for Creating School Gardens as Outdoor Classrooms. Life Lab and the Center for Ecoliteracy. http://www.ecoliteracy.org/

NY Ag in the Classroom Kids Growing Food Garden Project Guide. www.cerp.cornell.edu/aitc/KGF_Resources.html

Burlington Community Garden Network Website Resources: burlingtongardens.org/school_community_gardens.html

http://schoolgardenwizard.org/

California School Garden Network: http://www.csgn.org/

Resources used for Curriculum Resource:

Mass state standards www.doe.mass.edu

“Linking State Standards to Your School Garden” - California Foundation for Agriculture in the Classroom. www.csgn.org.