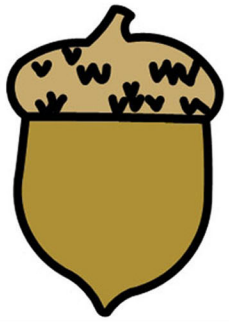
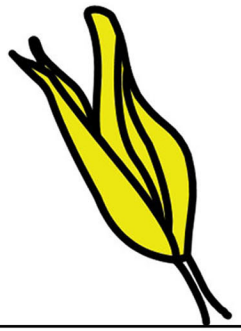
STAPLE HERE

a *How-to* guide
for Rhode Island school gardens






THE UNIVERSITY OF RHODE ISLAND
COOPERATIVE EXTENSION

PLAN * BUILD * TEACH * MAINTAIN

a *How-to* guide
for Rhode Island School Gardens

Dear School Garden Enthusiast:

This *How-To Guide for Rhode Island School Gardens* is an introductory guide designed to bring you into the garden to appreciate all that it has to offer you, your students and their families. You likely already know there is tremendous value in building and using school gardens as an outdoor classroom or 'living laboratory.'

This guide will take you through the process of creating and actively using a garden as a unique teaching space. Developed by URI Cooperative Extension, the guide includes best practices for garden establishment and management, and provides examples of ways gardens serve as multi-disciplinary learning platforms in alignment with state education standards.

We're here to help you bring these concepts and applications alive for students. **Let's get growing!**

URI Cooperative Extension

a *How-to* guide
for Rhode Island School Gardens

Prepared by:
Amy Cabaniss, PhD, *Youth STEAM Education Coordinator*
Kate Venturini, *Program Design Specialist*
Kim Downes, *Program Assistant*
Kate Lacouture, *Registered landscape architect*

Resources for You:

Check out our School Garden Initiative website!

http://uri.edu/sgi
Find garden help, resources, curriculum and information about our annual school garden conference.

Contact our Gardening and Environmental Hotline!

401.874.4836 or gardener@uri.edu

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last updated October 17, 2017

URI Cooperative Extension
Mallon Center
3 East Alumni Avenue
Kingston, RI 02881

Phone: 401.874.2900
Fax: 401.874.2259
Email: coopext@uri.edu

THINK BIG WE DO℠

PLAN

ASSEMBLE YOUR SCHOOL GARDEN TEAM

Gather support.

In-school buy-in is essential to the success of a school garden program. Strong garden teams should be comprised of a cross-representation of interested people within the school community, including the:

- Principal
- PTO/PTA Representatives
- Teachers (all disciplines / grade levels)
- School Nurse
- Food Service Provider
- Student
- Parents
- Health and Wellness Committee Members
- District / School Administrators

Engage community partners.

The more, the merrier. Consider whether community partners already working in the school might be interested in signing on to add value to the school garden program. Find out about other community partners who might be interested in engaging with the school through the garden program. Learn about volunteer initiatives at local corporations and let them know of opportunities to engage in the school garden as frequently as they're interested!

PLAN YOUR GARDEN PROGRAM

Brainstorm all potential garden uses with school garden team.

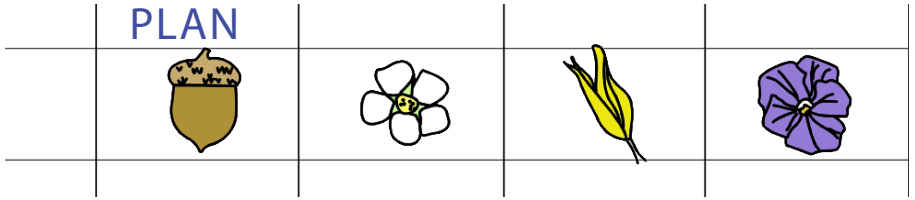
- Incorporate the garden into the existing daily routine of the school (plant during 'field day', serve the harvest at the fall open house, etc.);
- Offer to share the garden with existing afterschool and summer programs;
- Use garden workdays and celebrations to strengthen family engagement in school activities; and
- If your school already has a school garden that needs renovation, identify and address the challenges that led to previous garden disrepair and non-use. You'll want to avoid those things this time around!

Integrate the garden with the school curriculum so that teachers have a reason and the (right) time to use the garden.

- Consider the Rhode Island climate when planning to integrate a school garden into the curriculum. For example, plan plant-related units for the spring or fall and units that don't involve the garden in the winter. The fall is the best time to study ecosystems, as the garden is full of life and insects are well into their life cycles.
- As a team, think about what is required to teach, and let that inform the planning and planting of your garden. For example, if you're interested in teaching a lesson about seed dispersal, you'll want to plan to include native butterfly weed (Asclepias tuberosa) and swamp milkweed (Asclepias incarnata) in your pollinator garden.
- See the ***TEACH*** section of this document for more information about curriculum integration and lesson plans, and check out the URI School Garden Initiative (uri.edu/sgi) website for additional resources!

RHODE ISLAND PLANTING CALENDAR FOR FRUITS AND VEGETABLES

Fruit or Vegetable	Days til Harvest	Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct	
		1	15	1	15	1	15	1	15	1	15	1	15	1	15	1	15	1	15
ASPARAGUS (purchase crowns)	1-2 Yrs						CR	CR	CR										
BEANS, BABY LIMA	60-100								S	S	S	S	S	S					
BEANS, PINTO	60-80								S	S	S	S							
BEANS, SNAP	60-80								S	S	S	S	S	S					
BEETS	60-80					S	S	S	S	S	S	S	S	S	S				
BLACKEYED PEAS	90-120								S	S	S	S							
BOK CHOY	45			S	S	S	S	S	S						S	S	S		
BROCCOLI	60-90 from transplant		I			T							I		T				
BRUSSEL SPROUTS	100-120 from transplant										I		T						
CABBAGE	80-90 from transplant			I			T				I		T						
CABBAGE, CHINESE	45 from transplant			I			T					I		T					
CARROTS	60-80				S	S	S	S	S	S	S	S	S						
CAULIFLOWER	80 from transplant						I		T	I		T							
CELERY	90 from transplant			I					T										
CHARD	60						S	S	S	S				S	S				
CORN, SWEET	70-90							S	S	S	S								
CUCUMBERS	60-90								S	S	S								
EGGPLANT	60 from transplant					I				T									
ENDIVE/ESCAROLE	80-120				S	S						S	S						
GARLIC	5-7 Mths																	C	C
KALE	60-90					S	S	S					S	S	S	S			
KOHLRABI	45-60 from transplant						I		T				I		T				
LETTUCE, HEAD	45-90					S	IS	S	T										
LETTUCE, LEAF	40-70					S	IS	S	T	S	S	S	S	S	S				
LEEK	160-200 from transplant				I				T										
MELONS	80-120 from transplant						I			T									
ONIONS, BULB	SETS: 4-5 Mths					Sets	Sets												
ONIONS, GREEN	90-100				S	S	S												
PARSNIPS	100-120											S	S						
PEAS	60				S	S	S	S											
PEPPERS	60-100 from transplant				I					T									



Be strategic to get the most out of the RI growing season and the school year.

- It is possible to plant crops that are easy to grow in Rhode Island and harvestable in the spring and fall. Review the URI Master Gardener Program 'RI Planting Calendar' (uri.edu/ceoc/files/RI-Planting-Calendar.pdf) to help you make the right choices. For example, if you plant late tomatoes in May or June, they will be ready as kids are coming back in September. Cucumbers, on the other hand, would be past at that time and not be a good choice.
- Look for crops that can be planted early in the spring. For example, you can plant peas as early as St. Patrick's Day if the ground is not covered with snow and ice. Spinach, arugula, carrots and radishes are all good early crops that you can plant from seed as well. The only plants we can't grow from seed in our climate are tomatoes, peppers and eggplant because their tropical growing season is longer than our RI growing season, so we need to give them a jump start by starting seeds inside or buying seedlings.
- Plant seeds whenever possible because it's cost effective; and there's nothing like seeing a seed that you planted start to grow.

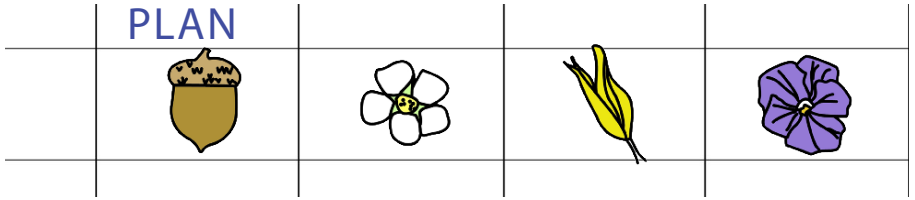
Make a wish list of programmatic garden elements.
There are many things that add value and intrigue to garden environments. It is worth the time to consider as many things as possible that could be part of your garden environment, and then pare down the list as planning moves forward. Start big and consider the items below to start:

- Garden beds assigned to each grade or class for students to plant;
- An outdoor gathering space or classroom with seating for teachers and students;
- A compost area;
- Experimental or digging beds for younger students to get into;
- Communal beds of herbs and flowers for all to enjoy;
- Signage for identification of garden plots and rules;
- Sun for plants and shade for people;
- Clearly-defined walkways;
- Tool storage;
- Food crops for nutrition education - students are more likely to try vegetables that they have grown themselves, and more likely to eat vegetable as they become familiar with them; and
- A naturally vegetated area (existing or designed with native shrubs, vines and perennials) for ecosystem study and/or a native pollinator garden with perennials that attract pollinators and provide wildlife habitat. Use the RI Native Plant Guide (web.uri.edu/rinativeplants) for plant suggestions.

RHODY NATIVE

locally sourced | locally grown

Develop a fundraising strategy.
See our School Garden Initiative (web.uri.edu/sgi) website for more information about grants and other fundraising ideas.



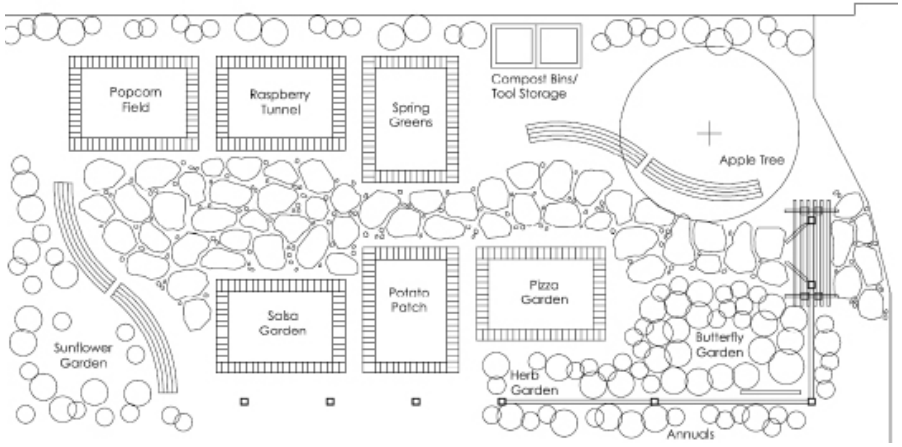
Consider this!
You might think 'food' when you think of school garden; but here are some reasons why pollinator gardens are an awesome alternative:

- Timing works well for schools: Many annuals (plants that complete their life cycle in one year and have to be replanted each year by seeds or seedlings—think tomatoes) can't be planted in our climate until late May when school is almost out; but perennials (plants that go dormant in the winter but come back every year without being replanted) start to grow much earlier in the spring so you can get out into the garden in March;
- They provide opportunities for natural observation--This is where the good science curriculum connections can be made. By planting perennials and small flowering shrubs, you attract pollinators, provide wildlife habitat and essentially help create an ecosystem to study. Native perennials are best adapted to our climate and support native pollinators. See the RI Native Plant Guide for more information; and
- They are easier to maintain--Plant your perennials close together so there's not a lot of space for weeds to grow; and once they are established, they require very little water which helps with summer maintenance.

DESIGN AND BUILD THE GARDEN

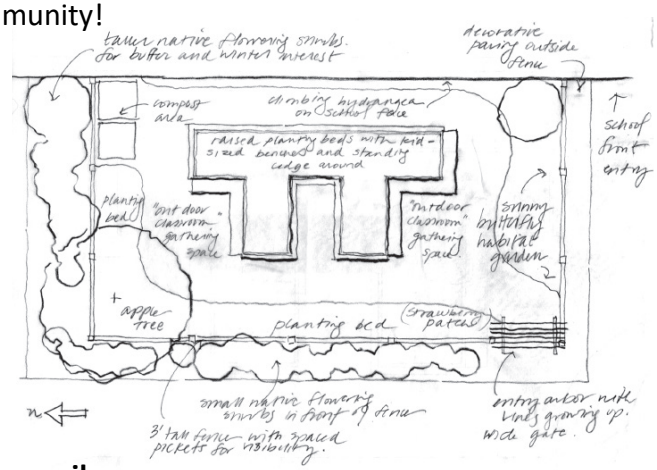
Choose the best location for your garden.

- Find a water source--If you don't have easy access to a spigot, rain barrels can be an easy way to store water. Fill up with the hose periodically for quick access to water. If your rain barrels are connected to downspouts, use the water in them only for pollinator and ornamental plants, not for plants someone will eat;
- Choose a visible location where students can interact with the garden daily, remembering that sunny locations are best for food crops and many perennials. Remember also that potential garden sites aren't always obvious - the corner of an asphalt playground or an island in a parking lot may be your best option;
- Consider whether the garden should be fenced: Is it more important to be open to the community or to keep critters and potential vandals out?; and
- If you only have a shady spot, you can still have a nice garden--just plant shade perennials and/or low-light crops like lettuce. People appreciate a shady area on a hot day.



Draw a plan.

- Measure the space and draw a diagram showing existing site conditions (e.g., building footprint, pathways, location of water source). This is your base plan;
- Use this base plan to draw your proposed garden; and
- Consult a professional if necessary; find out if you have any landscape architects or garden designers in the school community!



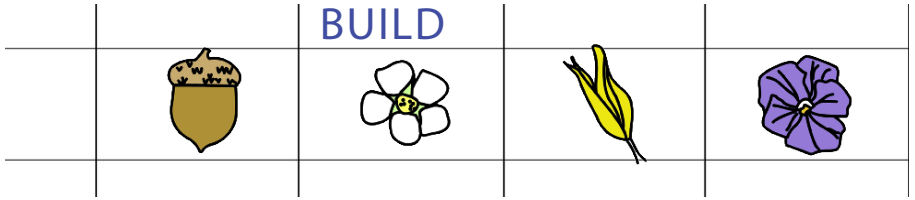
Consider your soil.

- In urban areas, you should assume your soil is contaminated and take precautions to ensure soil safety. Read the EPA's publication *Growing Gardens in Urban Soils* (www.epa.gov/sites/production/files/2014-03/documents/urban_gardening_fina_fact_sheet.pdf) for detailed information about growing in contaminated areas.

You can also test the soil through the University of Massachusetts at Amherst. They offer a metals test (~$55) and a simpler nutrient, pH and organic matter test (~$15). Go to the UMass Amherst Soil and Plant Nutrient Testing Laboratory (soiltest.umass.edu) website for more information.

Include raised beds for food production.
Raised garden beds warm up earlier in the spring, provide more soil volume, and help to ensure that students are not coming into contact with contaminated urban soils (see above). You may consider the following:

- Geotextile fabric beds can be useful for creating quick and inexpensive gardens, especially on playgrounds or other paved areas. See bigbagbed.com/ for more information.
- Galvanized watering troughs can serve as fun garden beds and come in many sizes. Just remember to drill holes in the bottom for drainage.
- Plastic kiddie pools, old bathtubs and other containers can be repurposed as garden beds.
- Build your own beds using cedar or other long-lasting natural wood, being careful to avoid pressure-treated wood for food gardens;
- Tailor garden bed sizes to your garden site and programmatic uses, keeping in mind that beds should be 4-5' wide (so the middle of the bed can be reached by students on either side) and at least 12" deep;
- Fill beds with a mixture of two parts ¾" screened loam for every one part of compost. Loam and compost should both be approved for vegetable growing. Organic compost is preferred.



Review plans based on desired elements, available space and funding.

- Build raised beds for food production;
- Plant perennials and small shrubs in ground where possible; and
- Phase the project to accommodate budget and to allow for future expansion.

Build the garden.

- Hold garden-building workdays to foster garden stewardship and family engagement;
- Offer extra school credit or other incentives for students to help build the garden; and
- Ask families to commit to assisting with summer maintenance.




TEACH

TAKING IT TO THE GARDEN

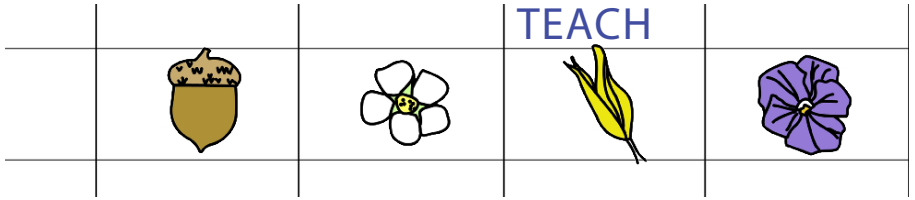
Incorporate the garden into multiple academic disciplines.
Gardens can be a tool to help reinforce learning objectives in all subjects, including science, math, reading, writing, social studies, art, health and physical education. Where might hands-on lessons in the garden help teachers in your school?

- **Science** might be the easiest connection to make. Think about what you are required to teach, and let that inform the planting design you develop for the garden. For example, if you want to cover asexual reproduction in class, plant strawberries. If you plan to observe differences between species of a single genus, make sure you include two species of the same genus in your planting design.
- **Math** is a good subject to focus on when you are building the garden or planning the garden each spring. Raised beds can help teach area, perimeter and volume. For example, students can work to determine how many cubic yards of compost you need ordered to spread a 3" layer on 10 beds that are 4' x 12' each.
- For **Writing**, consider creating how-to manuals that document what needs to be done to keep the garden running throughout the year. The manuals serve a dual purpose, encouraging students to think about all aspects of garden management and maintenance, and also serving as the institutional memory of the garden for the school. The latter is a crucial component of garden sustainability!

TAKING IT TO THE GARDEN

Incorporate the garden into multiple academic disciplines.

- In **Social Studies**, consider incorporating the three main agricultural crops of various Native American tribes in North America into a lesson. Called the 'Three Sisters', winter squash, maize (corn) and climbing beans are companion plants. The beans use corn stalks to climb toward the sun, and squash planted at the base of both provides protection with its big rough leaves.
- **Art** students might be inspired by Georgia O'Keeffe's close-up flower paintings and Andy Goldsworthy's natural temporary installations to make their own projects made from common garden materials.
- **Health & Physical Education** lessons are well suited for the garden as an outdoor space in the fresh air and hopefully full of nutritious items. Consider engaging the food service provider at your school so that nutrition education can be done in connection with the cafeteria. Offer garden harvest tastings at lunch or add vegetables that you are growing in the garden to your school salad bar!



MAINTAIN

MANAGE THE GARDEN

Be clear about garden rules and etiquette.
Signs around the garden should clearly communicate the rules, in a positive tone. Some of the messages you might stress include:

- "Always walk on the paths"
- "Ask first, pick second"
- "Save water when you water"
- "Don't squish the bugs!"

Outfit the garden to make it user-friendly for teachers.
Support teachers and garden learning with tools and proper equipment. School gardens should have the following:

- Multiple sets of smaller-sized tools and gloves;
- Educational materials like clipboards and hand lenses for garden observation; and
- A chalkboard or whiteboard to write on in the outdoor classroom area.

Train and support your teachers.
School garden programs are most successful with teacher buy-in, and buy-in comes with comfort and support. Offer professional development sessions to introduce teachers to gardening concepts, in-garden activities and learning opportunities for their particular school garden.

Include the school in the seasonal cycle of the garden.
Allow students to participate in garden activities during each season, from spring cleanups to fall harvest celebrations. Remember that there is something to do in the garden in every season, not just during peak growing times!

- In **fall**, plant cover crop seeds to study germination and to add nitrogen to the soil over the winter. Garlic is also planted in the fall.
- Through **winter**, leave stalks with dried flowers and seed pods in your garden beds to provide visual interest and food and habitat for wildlife. Start planning for spring.
- In early **spring**, cut back dried stalks of last year's perennial growth as new growth appears—it's a great illustration of the life cycle of a perennial plant!

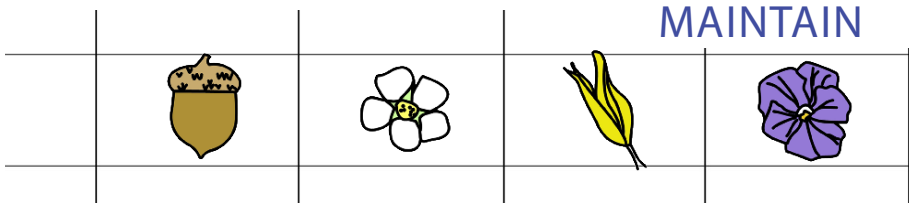
Celebrate the harvest.
Make sure your harvests are timed with the school-year calendar by choosing crops that are planted and harvested in the spring or fall. For guidance, see the URI Master Gardener Program's "RI Planting Calendar" (web.uri.edu/ceoc/files/RI-Planting-Calendar.pdf). Also consider serving the harvest as a sample in the cafeteria in collaboration with your food service provider, and/or invite families to come during the day for garden tours and a healthy snack!

DEVELOP A SUMMER MAINTENANCE PLAN

Consider a community and school garden hybrid.
If space allows, plan to offer some garden beds to community members who will grow their own food. There are a number of mutual benefits associated with hybridizing a school garden to allow the community to participate:

- Community gardeners can help care for school plots during summer, through communal work requirements related to watering and weeding the school beds;
- Community garden plot fees pay for the garden manager's stipend, communal compost and supplies;
- Students and school personnel should participate in the garden whenever possible; but it isn't realistic for them to be on the hook for daily maintenance. Students will benefit from seeing the variety of crops grown by community gardeners.

If a full hybrid isn't possible, consider this concept on a smaller scale, with one or two community members taking care of the garden and having a plot to grow their own food. Think sustainability and garden success here!

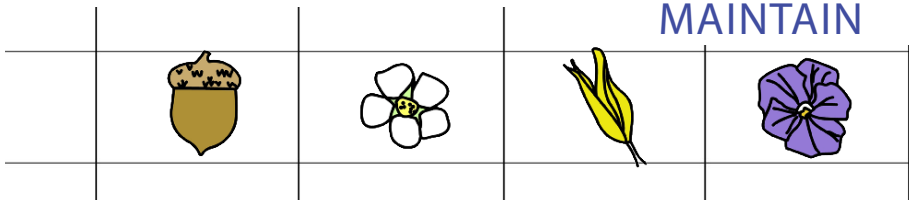


Find community partners in the organizations who facilitate after-school programs, summer camp or run nearby community gardens.
Employ youth.
Compensate them with pay, extra school credit or community service hours.

Ask families for help.
Let them sign up for a week of weeding, watering and harvesting in the summer.

Hold one or more school garden workdays during the summer.
Get the garden in shape for the start of the school year.

Plant perennials.
Once they are established, perennials don't leave much space for weeds and don't need much water if planted in the right place.



LEARN WHAT RESOURCES ARE AVAILABLE

Online Technical Resources for RI School Gardens

- RI Native Plant Guide (web.uri.edu/rinativeplants): Choose plants that suit your garden conditions and support wildlife and pollinator habitat.
- UMass Soil and Plant Tissue Testing Laboratory (soiltest.umass.edu): Check for lead and other heavy metals as well as pH, nutrients and organic matter.

Local Resources for RI School Gardens

- URI Free Seed Program: URI Master Gardeners distribute Burpee seeds left over from the previous year, donated by Ocean State Job Lot. Orders are due in February. Look for info on the URI Cooperative Extension website (web.uri.edu/ceoc);
- 50% off seeds: Ocean State Job Lot offers this year's Burpee seeds for half price;
- Seedlings: Southside Community Land Trust (www.southsideclt.org) has an annual plant sale in May. Choose from a wide variety of organic seedlings or ask about free seedlings for school gardens after the plant sale;
- Free Compost: Rhode Island Resource Recovery (www.rirrc.org/school/composting) offers free compost to RI schools, as long as you pick it up. The compost is made from the bags of yard waste collected in Providence; but because it's just yard waste and not food scraps, it doesn't have a lot of nutrients;
- Chicks: Casey Farm's Project Chick Program (http://www.historicnewengland.org/school-youth-programs/k-12-programs-resources/rhode-island/copy_of_projectchick.htm) sends a farm educator to the school along with eggs and an incubator. Students observe the eggs as they hatch in three weeks and then return the chicks to the farm.

SCHOOL GARDEN CHECKLIST

PLAN CHECKLIST

- ☐ Do you have a school garden planning team that widely represents the school community?
- ☐ Have you found community partners willing to participate in school garden activities?
- ☐ Have you considered all the ways your school garden could be engaged by the school community?
- ☐ Do you have a wish list of all garden programmatic elements?
- ☐ Will your garden committee raise money for this project?
- ☐ Have you considered how students will use the garden year-round?
- ☐ Are you growing crops that work for the RI climate and the school year calendar?
- ☐ Will the garden be tended organically?
- ☐ Will you plan to celebrate the harvests?

BUILD CHECKLIST

- ☐ Have you determined the best possible site for your school garden?
- ☐ Do you have a plan or sketch to work from?
- ☐ Have you considered all relevant health and safety standards?
- ☐ Have you scheduled your garden-building workdays?

TEACH CHECKLIST

- ☐ Have you explored all potential curriculum connections?
- ☐ Have you included programmatic elements that will support teachers in using the garden as an outdoor classroom?
- ☐ Is the garden user-friendly for teachers?
- ☐ Do you have the tools and materials necessary to support learning in the garden?
- ☐ Do your teachers understand how the garden can be used as a tool for lessons in multiple subjects?
- ☐ Are garden rules and expectations clearly communicated?

MAINTAIN CHECKLIST

- ☐ Have you considered organizing your garden as a community garden-school garden hybrid?
- ☐ Have you explored options for summer maintenance?
- ☐ Have you scheduled summer workdays?
- ☐ Have you thought of other resources that might help the garden program run smoothly?
- ☐ Do you know what resources are available both online and locally?

NOTES

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