Lesson Five: How Do You Plan a Garden and Our Healthy Garden Plan
For January

“Our Healthy Garden Plan” from GROWING IN THE GARDEN: LOCAL FOODS AND HEALTHY LIVING, Iowa State University Extension and Outreach. Students decide what cool season and warm season crops they want to grow by making and eating Lettuce Wraps and Fresh Garden Salsa. Using science and math concepts, they create their own Healthy Garden Plan, markers to go with it, and a calendar.

Content objectives: Identify and select locally grown fruits and vegetables to plant, grow, harvest and eat; use a variety of mathematical and science concepts and skills to create local garden plans and calendars.

Life Skill objectives: Healthy lifestyle choices, Critical thinking, Communication, Citizenship, Leadership, Decision making, Problem solving,

Core and STEM concepts and skills:
Science: Science as inquiry, Earth and space, Life science
Math: Operations and algebraic thinking, Numbers, Measurement and Data, Geometry, Mathematical practices
Language Arts: Reading, Speaking, Listening, Viewing
Social Studies: Economics, Geography

Healthy snack: Where We Live Fruit and Vegetable Sampler

Additional and supporting resources: Cooperative Extension Master Gardener’s Program can be a resource for developing your garden plan.
LESSON PLANS FOR 2012-13 SCHOOL YEAR, GRADE 3

January: How do you plan a garden the second year?

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BEFORE THE LESSON

1. **Grade 3, January: Planning the Garden 2012-2013 School Year**
   This document contains all the curriculum items and resources you need for this lesson. All lesson downloads are located on the [www.peoplesgarden.wsu.edu](http://www.peoplesgarden.wsu.edu) Educational Toolkit.

2. **Gardening Tips for Working With Kids**, Healthy Gardens, Healthy Youth Partnership
   **How do you plan a garden?** Iowa State University Extension and Outreach
   Master Gardeners and extension educators created the tip list based on their experiences gardening with kids for this project and for related summer programs. You may want to make a copy to keep handy throughout the gardening season. The garden planning document reviews basic information about starting tilled, raised bed or container gardens. You may want to read through it to see what you need to do for this year. You may want to add more soil to the raised beds.

3. Have a planning meeting
   A few weeks before doing the planning lesson, have a meeting with the all the adults that were involved in the second grade gardens and that want to be involved in the third grade gardens. Make copies of the “Gardening Tips for Working with Kids” to distribute at the meeting. You are about to use the same classroom planning lesson as the second grade teachers used, skipping some of the preliminaries and getting right down to the business of planning the third grade gardens. You may want to watch the planning lesson video recorded for the 4th grade lesson on the Healthy Gardens Healthy Youth Youtube Channel. With that in mind, here are the basic topics to discuss at the meeting. Someone should be recording the information to be used for this year’s gardens and planning experiences.

   A. After last year’s experience in preparing the gardens and planning the gardens with the students’ help, are there any experiences, recommendations, changes or suggestions to pass on for the second year of gardening?

   B. Are there some chores to do in the gardens before they are ready for the third graders? List the chores and make a plan to get them done. To assure that the students, teachers, school and community have positive and sustainable gardening experiences, your state probably has some grant money budgeted for the year two gardens.

   C. The students will taste fruits or vegetables that they could plant as cool season and warm season crops. Are there any suggestions on fruits or vegetables that the adults would like to plant with the students? Come up with three or four options for each of the cool and warm season crops so the students have an opportunity to make choices on what they would like to plant. Are there any recommendations regarding purchasing and preparing the samples for this lesson and others? Students have been and will continue to do a lot of the food preparation for these lessons.

   D. The students will be planning their garden first on a floor garden plan and then on a garden grid. They have charts to know how much space certain crops take. It would be helpful if a Master Gardener or a garden expert could help with the planning lesson so that the students can eventually come up with the garden plan that they will actually
use. The students also need help to start a garden calendar that they can follow in your region. Make a plan for a garden expert to work with the teacher and the students during the planning lesson. Share a copy of the lesson and The Lesson section below so that everyone can be ready.

E. We highly suggest trying the square foot gardening method to get the most out of small garden spaces as possible, to make it easier to plant the garden, and to eventually make it harder for weeds to grow. Refer to the lesson to learn more about this method and assign people the task of making square foot garden templates 1 and 2 from the patterns at the end of the lesson. Poster board works the best. It is nice to have at least two of each size. They will be used in the planning lesson.

4. Garden Journals
If they haven’t done so already, this is a good time for each student to start his or her own Garden Journal. Each time you do a lesson or go out in the garden there is an opportunity to add something new to the Garden Journal. Provide 1” vinyl binders or sturdy plastic folders with 3-ring binders so that students can take their journals to the garden and add pages, activity sheets, charts, recipes, etc. The binders with a window on the front are nice because students can design their front cover on a heavy piece of paper and slip it into the sleeve. The students can also design their own inside cover page. Provide permanent markers so they can at least creatively write the title, using their first and last name such as “Charlie Smith’s Garden Journal”, on the front of the binder or folder. We have found that it works best to collect the journals after each use. See The Lesson section, Garden Journal Page, for more details. Your extension service may have additional suggestions for garden journals.

5. Taste testing
Prepare to make the Where We Live Fruits and Vegetables Sampler according to the Do section of the lesson and the crops that were suggested at the meeting described in number 3 above.

THE LESSONS
1. Our Food Garden Plan is a lesson that you can divide into more than one day. Some of the students may have done at least parts of this lesson. For third graders, we are skipping over some of the activities and concentrating on other parts that might have been missed. Here are the activities that we recommend.

A. Find out who the gardeners are in your classroom and what they planted in their 2nd grade garden by asking the first two questions in the Introduction section. Make a list of the crops that the students planted and talk about their experiences. List the crops that the students might like to plant in their third grade gardens.

B. Skip to the Do section and proceed with the Where We Live Fruits and Vegetables Sampler activity. Instead of adding to the “Our Floor Garden Chart”, just add the fruits and vegetables from the Sampler to the list of crops that the student might like to plant. Circle the cool season crops (lettuce, spinach, snow peas, radishes, green onions) on the list. Based on their taste test and past experiences, give each student the opportunity to vote for the top three cool season crops they would like to plant in their garden. In other words, they can vote three times. Have
students help to count votes and make tally marks next to the fruit or vegetable. Do the same with the warm season crops. Count up the number of votes and discover the top three or more crops that the students want to grow. The number of crops you can grow depends on the size of your garden and the size of the crop.

C. You may want to do these activities on another day. Do the activities in the Reflect section. In the Teacher’s Notes, number 5 refers to “Our Floor Garden to Our Food Garden” chart. Just use the list of crops that the students want to plant. The students will be discovering how much space fruit and vegetable plants take in the garden. First they will use pictures of crops that are provided in the lesson. Then they will be measuring and cutting out newspaper or scrap paper squares representing the plant size and the number of plants they want to plant in their garden. They will use the floor garden to experiment with their garden plan. Leave the floor garden plan in place while you convert the plan to the appropriate garden grid.

D. This is another point where the activity could be done on a different day. Ask the first question in the Apply section. Choose one or two of the suggestions and try to implement it.

AFTER THE LESSON
Add a copy of the class’s Our Food Garden Plan to the Garden Journal. On the back of the page, have the students copy the list of crops that the class chose to grow. If one of their crops did not survive the vote, have them list that crop. If the class discovered that all the crops would not fit in their garden space, have them note that as well. Make a copy of the Garden Calendar so that the students can add information about their garden. Hopefully, they can write “Plant cool season crops” on one of the days.
USDA FNS People’s Garden School Garden Pilot Project: Healthy Gardens, Healthy Youth

Tips for Working with Kids and the Garden

The following tips are from HGHY Master Gardeners and site leaders and are based on their experiences gardening with kids. These are tips for both school and the summer programs. A sample in-garden lesson outline can be found at the end of this document.

Be Prepared

- Send home information about the garden program including the details about who is leading the program, what the kids will be doing, where the gardens are located, when the kids will be gardening, what is happening with the garden produce, and expectations of the young gardeners. All gardeners should be wearing close-toed shoes and have sun protection. They will not be allowed to work in the garden or with food if they are sick or have been sick within the last 24 hours.

- Every time you go to the garden, take supplies such as a first aid kit, wet wipes, water jug with cups (or have kids bring their own water) and water for washing the produce.

- Use lesson plans and educational resources to prepare for each session. Play a game, sing a song, act out a play, read a book, or make a garden-based craft each session. Remember to have fun! See the Sample Garden Session outline at the end of these tips.

Working With the Kids

- Make sure the young gardeners know the 3 R’s garden rules: Respect, Responsibility, Readiness.

- Be fully prepared before heading to the garden so there will be little down time for the kids. The tools and any supplies should be easy to access and ready to go. Break large groups into manageable sizes. Have more than one activity and rotate them. Keep every child busy and on task or their attention will shift and they will drift. Have enough adult supervision to make this happen.

- Always demonstrate before letting the kids work on their own. The more adult helpers you have to float around and guide the kids, the better. Do not do things for the kids, show them how and have them show you how back.

- Check their work. Don’t take their word for it when they say they have completed a task. You might find that things were missed.

- Take frequent shade and water breaks. Break times are good times to introduce healthy snacks, books, garden journals, or other hands-on activities.

- Every child will appreciate some one-on-one time with instructors while working in the garden. Let them tell their stories and show you the weeds they found and pulled, etc.
Planning the Garden

- Use the hands-on, deeply aligned classroom lessons to help the students plan their gardens. The kids will have fun learning and taking ownership of the garden. They will get excited about choosing what to plant and how much they need to plant by doing these lessons. A Master Gardener or an experienced gardener is a valuable resource to help kids discover what crops can be grown in the climate and in the amount of space they will have to garden. Start a Garden Journal or Garden Records right away.

- Young students are not able to prepare the site for gardening. Master Gardeners and others can provide leadership for that. FFA students, parents, Ameri-Corps, Food Corps, garden clubs, retired teachers, neighbors and others have been instrumental in preparing the gardens and helping the youth in the planning stages.

- For the young children, have the sections of the garden already measured out and marked according to the garden plan. For the older youth, help them measure and mark the garden sections.

- Kids like to use garden tools, but they LOVE to use child-sized tools such as kid-sized rakes, hoes, shovels, watering cans, and gloves. The type of garden tools they need depend on the type of garden they will be working with and how it is planted – square foot vs. rows. They can share tools. Older students have been using adult-sized tools and even tools that have been loaned by Master Gardener groups.

- Master Gardeners and FFA members are using their green houses to start seeds and grow transplants for the school gardens.

Help the students start a compost bin and get the whole school involved.

Planting

- Go over tool safety rules for hoes, trowels, and rakes. A tool safety game is part of the gardening curriculum.

- Go over ways the plants in your garden are going to be planted: seeds, sets, transplants, seed pieces.

- Plant fast growing (cool season) crops like radishes and spinach for early satisfaction. Try to stagger your crops for constant harvest opportunities. Make sure the students will have something to harvest when they return to school in the fall.

Maintaining

Watering

- Watering is extremely important, especially in raised bed gardens. If you are meeting just once a week, you may have to make plans for additional watering. Families, youth groups, organizations, neighbors can sign up for times. Someone will need to be responsible to make sure the watering plans are carried out.

- Using a watering wand is a good way to water the garden. Show how to water at the base of the plant. Teach the kids to count how long it takes to water a plant.
Weeding
- Help the kids distinguish the difference between weeds and garden plants. Show them how to pull weeds so that the garden plants are not disturbed. Tell them where you want them to put the weeds. Have challenges such as finding the biggest weed, most unusual weed, most weeds, etc. Talk about why some parts of the gardens have more weeds than other parts, etc.

Insects and pests
- Insects intrigue and scare children. They enjoy doing the lessons about pests and going on hunting missions to find and eradicate them. Getting to show everyone the squash bug they found – and sometimes their eggs – is a joy in and of itself!
- Use the lessons from Grades 2 and 4 to identify “good guys” and “bad guys” in the garden and to figure out what to do about them. Then help the kids take the next steps to protect their garden from unwanted pests.

Harvesting, Preparing and Eating the Produce!
- Kids get excited when they see fruits/vegetables growing on the plants. Make sure that they show everyone by pointing and not picking! Describe what to look for to determine when the fruits/vegetables are ready to harvest.
- Show kids HOW to harvest produce gently. For example, gently hold a bean plant before pulling off the bean, cut the lettuce with scissors, etc.
- Kids love to harvest and taste the bounty. Try to include this in every lesson.
- Include in the lesson, ideas for how the food can be eaten. Simple recipes such as cucumber-flavored water, radish or veggie sandwiches, veggies with dip, cucumbers and onions in vinegar, etc. are the best. Get a large bottle of Ranch dressing because the kids will try anything they can dip! There are several ideas in the lessons.
- Show the whole vegetable before cutting it open. Have them find the seeds.
- Plastic plates and knives can be used for cutting and preparing produce.
- Help the kids put their gardens to bed.
Sample Gardening Session

1. Meet in gathering area
   a. Remind everyone about behavior expectations.
   b. Chat a bit – What’s up?
   c. Give garden plan for the day
   d. Split into smaller groups if necessary
   e. Have a planned garden activity for each group with an adult supervisor

2. Garden projects
   a. Planting
   b. Weeding
   c. Pest patrol
   d. Watering
   e. Harvesting
   f. Washing
   g. Cutting (if necessary)

3. Snack time
   a. Make their own snacks
   b. If there is nothing to harvest, consider produce from farmer’s markets
   c. Focus on fruits and vegetables
   d. Send ideas home to the families

4. Activity session – see lessons for ideas for games, songs, stories, plays, crafts

5. Go home!
General Information

Getting Started

Gardens may become as prevalent on school grounds as swing sets. In a recent National Gardening Association Survey, What Gardener’s Think, 97 percent of 2,500 households surveyed said they thought schools should provide gardens and hands-on gardening activities for kids. Of that total, 39 percent felt that gardening activities should be implemented in schools whenever possible, and 19 percent felt that they should be implemented in every school.

Having at least one advocate for school gardening is a key factor for success. Who might be a school garden advocate where you live? Is it a teacher, food service director, administrator, school nurse, board member, parent, grandparent, PTO, school organization member, student, community garden coordinator, local food producer, or a service organization? You need their energy and inspiration to plan your garden. However, they should not be expected to do everything. It is important to have support from several representatives of the school system and the community.

The more community support you have for your garden, the more likely it will become a permanent part of your community. Many types of support can be found in your neighborhoods. Extension Master Gardeners and Master Conservationists have had extensive training and are expected to contribute volunteer hours back to their communities by sharing their expertise. There are 4-H Club members that are interested in gardening and are developing their healthy living, communication, citizenship, and leadership skills which would contribute positively to your gardening experiences. Contact your local county extension office to identify and invite Master Gardeners and 4-H’ers to participate in your garden project. Your local high school may have Future Farmers of America (FFA) members or student leaders interested in garden-related topics. Many communities have garden clubs, senior groups, service organizations, churches, institutions, agencies and after-school programs that could enhance your gardening program. Invite them into your gardening conversations and planning sessions.

Site Selection

A school garden serves several functions. It can be considered an outdoor classroom where children explore and interact with nature through first hand experiences. It can also be a park-like place for recreation and fresh air. Similar to the swing set or soccer field, a garden is a fairly permanent fixture on the school ground. With that in mind, there are several factors that should be considered when finding the best location for a school garden.

General Information continued on the next page.
Checklist for locating a school garden

☑️ **Sun.** The site should receive at least eight hours of full sunlight per day.

☑️ **Drainage.** Don’t locate the garden in a low area on the school ground or a spot that doesn’t drain well. Watch the area after a heavy rainfall. Does the water sit in a puddle for an hour or more or does it soak in and drain quickly?

☑️ **Soil.** A loam soil is ideal for a garden, but not always possible. Find the best possibility; if your site has poor soil, consider using raised beds or containers.

☑️ **Water.** Locate the garden within a hose-reach of an outdoor spigot. To be productive, garden crops require at least an inch of water per week.

☑️ **Away from play areas.** Although you don’t want the garden in a remote location where no one sees it or is a long hike to get there, you also don’t want it where children play or walk.

☑️ **Check underground.** Before digging anywhere, be sure that nothing, such as cables or other lines, are buried in that area. Call your local utilities to mark where buried lines are located. In some state, this service is provided free of charge. (If you live in Iowa, see the side column).

☑️ **Tool storage.** Find an indoor area close to the garden where tools can be safely stored when not in use. A large, locked and weather-proof container placed next to the garden will work.

☑️ **Possible locations.** Besides at schools, children’s gardens for after-school programs or summer programs can be located at community garden sites, fair grounds, empty lots, arboretums or parks, or near public buildings such as libraries, churches, extension offices, etc.

For more information on school gardening or after school programs, refer to *A Toolkit: How to Start a School Garden* by Alliance for a Healthier Generation. A link to this publication can be found at www.extension.iastate.edu/growinginthegarden or go directly to www.HealthierGeneration.org.

### SITE PREPARATION FOR TILLED GARDENS

A tilled garden is a traditional garden tilled in existing soil, similar to a field. Gardens come in many sizes and shapes. The size and type of a children’s food garden depends on the soil, available space, and financial resources. Often times it is better to start small. The number of classrooms or children that will be participating in the garden and the number of volunteers available to help maintain it will help determine the size. If the garden is too large, it quickly becomes an overwhelming task. For these reasons, a 20’ x 40’ food garden is recommended. Tilled gardens allow for wide flexibility in the types and quantities of crops that are grown. Long rows of beans, lettuce, tomatoes, and squash can be planted to provide a sizeable harvest.

**Prepare the site.** If the site you have selected was previously a grassy play area, the sod will need to be removed. Plan ahead. It is best to prepare the garden site the previous fall so that it is ready to till and plant the following spring.

*Don’t forget to have the area checked for underground utility lines before digging!*

1. Measure and stake the designated area and use a string to outline the area. Although plowing or tilling the sod can be done, it is often difficult to destroy all the clumps of sod and they often re-grow, creating weed problems later in the season. A non-selective herbicide, such as Roundup®, can be applied to kill the grass followed by tilling a week or two later.
2. Do not work the soil when it is too wet because dense clods of soil will form which will be difficult to work out and will impede good germination of garden seeds. To determine if the soil has the right amount of moisture, take a handful and squeeze it gently. If it forms a tight clump or “ball”, it is too wet. If the “ball” crumbles under pressure, it is ready to be tilled or prepared for planting.

3. Have the soil tested for fertility in the fall or prior to planting in the spring. This will help you determine your fertilizer needs. Many state land grant universities have soil testing laboratories. Contact your local county extension office to find a soil testing lab in your state. For information on taking a soil sample for testing, refer to Soil Sample Information Sheet for Horticulture Crops, available for download at: www.extension.iastate.edu/store/. Use the search box to locate publication number “ST 0011”. This might be an excellent activity for a middle school classroom to perform. The results from the soil test will be returned with fertilizer recommendations. If your garden site is “reclaimed” land within a city, it is important to have the soil on the site tested for potentially hazardous materials.

4. Soil texture can be improved by mixing in some compost, especially if the soil has too much clay or sand. If compost is applied, be sure it is well decomposed and work it thoroughly into the soil. Don’t apply too much - an inch-thick layer will go a long way. Although compost can be purchased, you may find that your city has free compost available for gardeners. It would be good learning experience if your include a compost pile in school garden project.

5. Apply the recommended amount of a complete analysis fertilizer, such as a 10-10-10, just prior to working the garden soil in the spring. A general recommendation is 20 pounds of 10-10-10 per 1,000 square feet of garden space. (Six raised garden beds that are 4 feet by 8 feet would typically require about 4 pounds of this fertilizer.)

Many of these steps are integrated into the student activities in this unit.

PLANNING WHAT TO PLANT IN A TILLED GARDEN
Planning what to plant in your tilled garden involves determining what you want to plant, how much to plant, when to plant it and how to plant it. What to plant depends on how you intend to use the garden produce. Will you prepare it for students to taste in a classroom? Will you give it to the school kitchen staff to prepare as samples or vegetable servings for the students’ lunches? Your answers affect the quantity of each crop you intend to grow. When determining the use, be sure to take into consideration the quantity of each crop the garden has the potential to grow and when it will be in season. The garden schedule and planting plan may include planting quick-maturing crops, such as leaf lettuce, green onions, radishes, and spinach in the spring. In early summer, plant crops that will come into production when the students are back in school, late August and September, such as tomatoes, peppers, green beans, and squash. Information on the labels for transplants and seed packages will tell you approximately how many days are need from planting to maturity for each crop. Count back that many days from the first day of class in the fall to determine the optimum planting day so that crops will be ready when the students return to school.

There are numerous resources available to guide you through planning and planting a garden. Your state’s university extension likely has publications online to help you select the right varieties and planting times for your area. The lessons and additional resources pages in this unit will help you to plan what to plant. Local Master Gardeners, garden experts, and local food producers are also excellent resources.
RAISED BED GARDENS

Raised beds are gardens framed with lumber, bricks, or concrete blocks. They are typically 4 feet wide and any length, depending on the size of the lumber used to construct the bed. Many commercial kits for raised beds are 4 feet wide and 8 feet long. They can be any height, although most are 6 to 12 inches tall. Do not use pressure-treated lumber, such as Wolmanized wood for raised beds that will produce food crops. Railroad ties are not recommended for edible gardens. Cedar lumber is durable and has its own natural preservatives. Pine can be used provided all sides are painted with exterior latex paint or treated with a suitable, safe wood preservative. Raised bed frames made of recycled plastic are long lasting and durable. They do not require maintenance and do not splinter.

Raised beds offer a good alternative to traditional tilled gardens. Advantages of raised beds include:

1. You can garden in areas with poor soil conditions.
2. You can control the soil mixture in the raised beds to improve drainage and nutrient content.
3. It is easy to plant, weed, water, and harvest working from outside of the raised beds.
4. The narrow beds enable reaching in to do the work so that no one walks in the garden - resulting in less foot traffic and compaction of the soil and reduces the risk of stepping on plants where the plant roots will be growing.
5. You can plant more crops and increase yields because there are no walkways through the raised beds.
6. The soil in the beds warms up faster in the spring enabling earlier planting.
7. Watering is more efficient because the water is directed to the plant beds and not the walkways. Plants can be planted closer together to shade the soil and reduce the amount of water evaporation from the soil.

In addition to choosing a site that receives full sun, a site for raised beds needs to be level.

You may want to consider watering by using a simple drip irrigation system. These watering systems are readily available and can make watering much more efficient, effective, and tidy. The drip lines emit a small amount of water over a long period of time and the foliage is not wetted, reducing the incidence of foliage diseases. Drip irrigation kits can be found at home improvement stores and garden centers.

Mulching conserves soil moisture and helps to control weeds. Several materials make good mulches. Grass clippings make a good mulch when spread in two inches thick. Avoid clippings from chemically-treated lawns. Newspapers also do a great job preventing weed growth and will decompose by the end of the season. Overlap four to six sheets of black and white newspapers between the plants and rows. Water it well and cover it with a thin layer of grass clippings or soil to hold it in place.

MATERIALS AND SUPPLIES

50’ Tape measure
Stakes for markers
Six raised bed kits or lumber and brackets
Mallets or hammers
Landscape fabric (based on plan below - at least 800 square feet)
Soil mix (½ cubic yard per 4’ x 8’ raised bed, see Step 4, check with your city for access to free compost)
Wood mulch (see Step 5, check with your city for access to free mulch)
1. Stake out the area where each raised bed garden will be located. Include a walkway between each bed. (See an example of a layout in the diagram below). The walkways should be at least four feet wide or wide enough to maneuver a wheelbarrow or wagon down it, and allowing four feet around the entire area. Although the beds will smother grass under them, you may want to destroy the sod in the walkway areas. This can be done with a non-selective herbicide, such as Roundup® a week before installing the raised beds and walkways.

   Raised Bed Diagram

2. Lay landscape fabric in the walkways between the beds and four feet around the beds to prevent weed growth and allow for easier maintenance. When installing the raised beds, tuck the ends of the landscape fabric under the side walls as they are being placed. This will secure the fabric so that it doesn’t come loose on the edges. Use landscape pins to hold the outer edges and overlapped pieces of fabric in place.

3. Construct the frames for the raised beds, set them in place, and secure them with corner stakes.

4. Fill the beds with soil mix. A good fill for raised beds is a combination of two-thirds topsoil and one-third compost. Check with the city to see if they have free compost available. (If compost is not available, peat moss can be substituted but it is expensive.) Topsoil and compost is often sold and delivered by the cubic yard. Each 4’ x 8’ x .67’ (8’) bed will need approximately .8 cubic yard of soil mix. With that in mind, six beds will require 5 cubic yards of mix, of which 3.5 cubic yards are topsoil and 1.5 cubic yards are compost. Mix it together well. Fill the beds to within one inch of the top; settling will occur.

5. Cover the landscape fabric with wood mulch. To determine the amount of mulch you will need, follow the instructions in the box below.

   GENERAL INFORMATION CONTINUED

**CALCULATING VOLUME OF SOIL FOR RAISED BEDS**

Multiply the length (in feet) times the width (in feet) times the depth (in feet) to determine the volume of soil required in cubic feet.

Divide this figure by 27 (number of cubic feet in one cubic yard) to determine the volume in cubic yards.

Take your answer times the number of raised beds you will have.

**EXAMPLE RAISED BED DIAGRAM IN #1:**

\( (4' \times 8' \times .67') / 27 = .8 \text{ cubic yards soil per bed} \)

6 beds x .8 cubic yards = 4.8 or about 5 cubic yards

**CALCULATING VOLUME OF MULCH FOR WALKWAYS**

Mulch can be purchased in bags on a cubic foot basis or in bulk on a cubic yard basis.

Multiply the length (in feet) times the width (in feet) of the outside edge of the walkways around the garden area to get the total number of square feet.

Subtract from that number, the total area or square feet of all your raised beds. This will give you the total area or square feet of your walkways.

Take this figure times the depth of your mulch (in feet, 3 inches = .25 feet) to obtain cubic square feet. Twenty-seven cubic feet is the same as one cubic yard.

**EXAMPLE RAISED BED DIAGRAM IN #1:**

\( (28' \times 28') – (4' \times 8' \times 6 \text{ beds}) = 784 – 192 = 592 \text{ sq feet.} \)

This is the total area that needs to be covered by mulch.

At a 3” depth, this is 0.25 feet x 592 sq feet = 148 or about 5 cubic yards of mulch

To convert into cubic yards:

\( 150 \text{ ft}^3 \left( \frac{1 \text{ yd}^3}{27 \text{ ft}^3} \right) = 5.5 \text{ or about 6 yds}^3 \text{ of mulch} \)

This will weigh between 600 to 900 pounds depending on the type of mulch.
PLANNING WHAT TO PLANT IN A RAISED BED GARDEN

Although a 4’ x 8’ raised bed garden offers only 32 square feet of growing space, it can produce a surprisingly large amount of produce. Planning what, when, where, and how you are going to plant is important before you purchase the seeds and plants. Raised bed gardens can often be planted earlier than traditional gardens because the soil in the raised bed warms up and dries out more quickly in the spring. You may want to plant cool season crops in late April so that you can have a salad garden party before school is out in late May or early June.

Raised bed gardens are narrow so that nearly all of the activities in the garden can be done outside the bed by reaching in. This avoids the need for walkways or wide spaces between the rows for walking and allows you to put plants closer together. Another strategy to make the most of the available space is to use the “Square Foot” method of gardening, developed by Mel Bartholomew. There are square foot gardening templates in the back pocket of this curriculum. Lesson 4A provides instructions on the square foot method of gardening. You may want to use the templates as patterns to transfer it to sturdy poster board. Refer to the resources below for additional information.

The lessons in this unit will provide opportunities for students to engage in planning and preparing the gardens in anticipation of planting.

CONTAINER GARDENS

Plants can be grown in containers or pots that can be placed inside, outside, or both. They can be placed on a dolly enabling them to be easily moved. You may want to plant container gardens to start some or your garden crops indoors in late winter or early spring. After the weather warms up and the threat of frost is past, the containers can be moved outside.

A good container for plant growth must meet the following four criteria to successfully grow plants.

1. Sturdy
2. Clean
3. Room for roots
4. Adequate drainage

The following items can be adapted into container gardens.

- Planter
- Bucket
- Wheelbarrow
- Hanging basket
- Clay pot
- Wagon
- Ceramic pot
- Strawberry jar
- Eggshell
- Paper cup
- Old pan
- Old bowl or teacup
- Bathtub
- Old shoe or boot
- Child’s plastic swimming pool

Fill container gardens with quality potting mix. Do not use soil straight from a field or garden area. It may grow crops well in the field, but when put it in a container, this soil will become very heavy and compact with small pore spaces for air and water.

Container gardens can be fed with slow-release fertilizer beads that are added to the soil mix in the container prior to planting. Some slow-release fertilizers feed the plants for three months and others may only require application once every six months. The amount to add is determined by the volume of soil in the container. Slow-release fertilizers are advantageous and easy because they release a small amount of fertilizer every time the soil is watered.
The soil in container gardens should be kept moist but not soggy or saturated. It dries out more quickly as the plants grow because the space in containers becomes more limited and the roots can’t spread out or grow deeper to find water.

The soil in container gardens needs to be checked nearly every day. Clay, or terra cotta, pots dry out more quickly than plastic containers and need water more often because they are porous. Also, be aware that soil in small containers set in sunny locations dries out quickly. When fruit or vegetable plants dry out, they wilt. Flowering and fruiting plants will drop their blossoms and fruits. Leafy vegetables will develop brown or dried leaf edges.

There are unique types of container gardens, such as EarthBox® (www.earthbox.com) and Global Buckets (www.globalbuckets.org) that are somewhat self-watering and feeding gardens. EarthBox® containers are commercially available gardening systems developed to meet the needs of gardeners who lack space and quality soil for successful gardening. Global Buckets are similar in concept, but can be made from materials found at home, school or a hardware store.

These container garden systems provide:
- Good soil (or a “soil-less” potting mix) that is well-drained and provides good air and water movement
- An adequate and regular supply of water
- Fertilizer for good plant growth
- Soil cover (plastic mulch) to reduce evaporation and prevent weed growth

EarthBoxes® and Global Buckets water the plants by wicking water from a reservoir below the soil medium. There is usually enough water for the plants; however, it is a good idea to occasionally check the moisture level in the soil and add some when necessary.
Our Food Garden Plan

CONTENT OBJECTIVES
 Identify and select locally grown fruits and vegetables to plant, grow, harvest, and eat.
 Use a variety of mathematic and science concepts and skills to create local garden plans and calendars.

LIFE SKILL OBJECTIVES
 Critical thinking, Problem solving, Decision making, Healthy living, Communicating (listening, asking, and responding to questions), Citizenship (teamwork), Leadership (sharing an idea to improve something)

INDICATORS
 Students will develop a productive garden plan that will demonstrate how much healthy food can be grown in a limited amount of space.

EVALUATIONS

SUBJECT STANDARDS

21st Century Skills: Employability skills, Health literacy

Science: Science as inquiry, Earth and space, Life science

Mathematics: Operations and algebraic thinking, Numbers and operations, Measurement and data, Geometry, Mathematical practices

Social Studies: Economics, Geography

Literacy: Reading, Speaking, Listening, Viewing

CORE CONCEPTS AND SKILLS

LEARNER TYPES
 Linguistic-words, Logical-mathematical, Spatial-visual, Bodily-kinesthetic, Interpersonal, Intrapersonal, Natural

MATERIALS
 See TEACHER’S NOTES following this list to find help with these materials and to deliver this lesson. Working with local partners grows community capacity and sustainability.

White paper (two sheets per student)
Crayons or colored pencils
2 to 4 long tape measures
Masking tape
White or black board, or large sheet of paper and markers or chalk (to reproduce the chart found in the Introduction section)
Where We Live Fruits and Vegetables Sampler (see the TEACHER’S NOTES following this Materials list)
Small paper plates (one per student)
Napkins (one per student)
Food handling gloves (optional, wash hands thoroughly)
Garden Grid (There are two pages of garden grids. Choose the page that fits your garden space. Make a copy to show the class. The grids are found at the end of this lesson.)
3 sheets of plain paper (write Small, Medium, and Large on them)
Fruit and vegetable squares (copy and cut, one square per person, found at the end of this lesson)

Materials continued on the next page.
Raise your hand if you have ever planted a garden.

What did you grow in your garden and why?

Have a few students share their experiences.

**PLAN YOUR FIRST GARDEN OF FAVORITES ON THE FLOOR**

Hand out white paper and ask the students to use their crayons or colored pencils to draw a picture of one fruit or vegetable they might like to grow and eat. Tell them that they will have five minutes to draw and color their fruit or vegetable. Remind them to choose their own fruit or vegetable and not copy others.

While they are drawing, use tape measures and masking tape to create the outside edges of a floor garden in your classroom. The garden should be almost large enough for the students to “plant” their drawings. A 4’ x 8’ garden is an example of a raised bed garden. Draw and color your own fruit or vegetable.
Have the students bring their drawings and sit around the floor garden space.

The masking tape marks the outside of what we are going to call “Our Floor Garden.” One by one, please stand up and tell us what fruit or vegetable you drew and why you chose it. Then you can plant your picture somewhere in “Our Floor Garden” space. I will start.

Don’t be concerned if the fruit really comes from an orchard or vineyard. Plant everything in the garden for now. Once the drawings are in the garden, proceed with the following discussion questions and give the students an opportunity to change where their fruits and vegetables are growing.

Take a good look at our fruit and vegetable garden.

Have you ever seen a real garden that looks like ours?
What makes ours different?
Possible answers include:
• The floor garden is a non-living thing made up of the floor, masking tape, and paper; real gardens grow living things.
• One garden doesn’t usually have this many kinds of plants and numbers of plants.
• There are too many plants in this garden. The plants are piled on top of each other.
• Some of these plants don’t grow here.
• Some fruits grow on trees. Trees usually grow in orchards or in the yard, not in gardens.
• The same fruit or vegetable is scattered around the garden, and they usually grow together in a row, section or square, or a patch.

Let’s make “Our Floor Garden” look more like a real garden.
1. Sort the pictures into groups of similar plants.
2. Identify the fruits that grow on trees and plant them in an orchard somewhere else in the room.
3. Replant the rest of the pictures in similar groups.
4. Discuss the amount of space and the variety of plants in your floor garden.

Gardeners like to record things about their gardens so they know what to plant, how much, when to plant, and so on. Let’s record things about “Our Floor Garden” using a chart.

On the board or a large sheet of paper, make a chart with four columns similar to the illustration on this page. You may need two charts depending on the number of fruits and vegetables you will be working with. The “Tallies” column will be used in the Do section.

Ask the students to name and count each of the fruits and vegetables in “Our Floor Garden.” Record the information in the “Fruits or Vegetables” and “Quantity” columns. Add the number of different fruits and vegetables and the quantities and record the total at the bottom of each column. The quantity total should equal the number of students plus you.

In the Ranking column, have the students rank the fruits and vegetables from most popular, number 1, to least popular. You may want to create a bar chart with this information.

You might want to take a survey and have the students raise their hands if they have tried eating each of the fruits and vegetables. Challenge them to try something new from the list.

We just started to plan a garden. I would love to actually grow this garden, wouldn’t you?
What are some questions we’d have to ask ourselves before we could plant our classroom fruit and vegetable garden?

Examples of questions:

• Can the fruit or vegetable grow where we live?
• How much space does each plant take and how much food does each plant produce?
• Is there enough space to grow all the plants?
• When can we plant it and when can we harvest it?

Now go harvest your fruit and vegetable pictures out of the garden and take them back to your seats. We will reuse the pictures. We are going to take what we learned and plan “Our Food Garden.”

TEACHER’S NOTES: See the Where We Live Fruits and Vegetables Sampler described in the TEACHER’S NOTES at the end of the Materials list. Wash and precut samples and store them in bags. Save a whole one to show the students and to demonstrate how to prepare or cut it. Invite a few students to help distribute the samples. You may want them to wear gloves or use tongs to put the samples on one paper plate per student. Students are more likely to try new fruits and vegetables if you add some ranch dressing or a dip on their plates. Additional local fruits and vegetables could be discussed by showing pictures from food packages, cans, models, Internet sources, magazines, or food advertisements. Explain that most of the frozen and canned fruits and vegetables they eat are not grown locally. Fresh fruits and vegetables often come from hundreds or thousands of miles away.

“WHERE WE LIVE” FRUITS AND VEGETABLES SAMPLER

Have the student helpers wash their hands first and then have the rest of the students wash their hands. Clean the serving table and your hands. Then set up the table with the fruits and vegetables, cutting boards, knives, gloves, paper towels, paper plates, and napkins. Have the student helpers put the paper plates out on the table so that they can place one sample of each fruit or vegetable on each plate. When the other students are done washing their hands, have them pick up their sample plates and take them back to their seats. Instruct them not to eat anything on their plates until they are told.

We make a lot of our food choices based on how things taste. Fruits and vegetables are healthy food choices. They are called GLOW foods because the vitamins and minerals in them can make shiny hair, sparkling eyes, glowing skin, and healthy or glowing bodies.

We are going to taste fruits and vegetables that can grow near where we live and that we might be able to grow in our garden. I grew/bought these at ______________________.
I kept most of these in the refrigerator to keep them fresh until we needed them. Then I washed and cut them into sample sizes. Please don’t eat them until we can talk about each one. Let’s see if you can identify them, and then we’ll taste them one by one.

Show one whole fruit or vegetable at a time. Have the students tell what it is. Then have them describe the outside. Slice it open and have them describe the inside. Have the students find and try that fruit or vegetable from their plate. Have them describe the taste, texture, and smell. Then use the same procedure to move on to the next fruit or vegetable. If you want to introduce more locally grown fruits and vegetables, show pictures of them.
VOTING FOR YOUR GARDEN CROPS

Have the students find the fruits and vegetables they just ate or learned about in the first column of the “Our Floor Garden” chart. Circle the fruits or vegetables as the students identify them and add new ones to the bottom of the list.

Think about the vegetables you just ate and which ones would be your first and second choices to plant in our garden. We will take a hand vote and make a tally mark for each vote beside the vegetables on our chart. You will get two votes – one for your first choice and one for your second choice. When we are done, we will count the number of tally marks and determine what we will be growing in our garden. (Ask if there are any questions. You may want to ask students to help count and to make the tally marks. Remind them that they can vote twice. Proceed with the vote.)

As a class, count up the number of tallies for each fruit or vegetable and record the number next to the tally marks. Compare the quantity, ranking, and tally columns and discuss the most popular fruits and vegetables on the chart. Put a star next to the top four to six choices. Make sure that there are two or three cool season crops such as lettuce, spinach, radishes, and green onions. You may be able to plant and harvest those before you plant the warm season crops.

We are getting closer to deciding what we will plant in our garden. What do we need to know about these plants before we include them in our garden?

Examples of questions:

- How many fruits or vegetables does one plant grow?
- How many plants do we need to grow and is there enough space in our garden?
- When will we get to eat the fruits and vegetables that we plant?

There are many decisions to make when you are planning a garden. In order to find the answers to our questions, we will need to gather more information.

TEACHER’S NOTES: Start this section on another day or after students have had a brain break. This section relates to decisions regarding space in the garden. If you haven’t had a lot of gardening experience, you may want to find expert help from the list of partners in the TEACHER’S NOTES following the Materials list. Here are some things you will need to prepare ahead of time.

1. Choose the Garden Grid, found at the end of this lesson, that best fits your garden space and make at least two copies. One should be the grid that you work on with the students; the other will be the final garden plan. Once the final plan is completed, make back-up copies. If you are using the 10’ x 15’ grid, make an outline the size of your actual garden space before you share it with the students.

2. Make a list of the crops that you will probably end up planting from the students’ choices and be sure to include spring and fall harvest crops. We suggest starting a new garden with just vegetable crops, unless you want to try melons. Fruits either grow on trees or take a few years to produce a good crop. You can add those fruits another year.

3. Copy the vegetables and fruits picture squares found at the end of this lesson. Cut apart each square so everyone receives one picture. If the vegetables or fruits you are planting are not pictured, use the blank square to draw and label your own picture. Write “Small,”
“Medium,” and “Large” on separate pieces of paper to use as headers for three columns. Project or make a copy of the Planting Guide chart found at the end of the lesson so that everyone can refer to it. You may want to use poster board to make a sample of Square Foot Garden Templates 1 and 2 found at the end of this lesson.

4. If possible, go outside where you can look at your garden spaces. Otherwise, mark out your garden spaces on the floor. You may want to show pictures of tilled, raised bed, and container gardens from the Internet.

5. Continue to use “Our Floor Garden to Our Food Garden” chart.

ACTION STEPS to explore the relationship between the space in the garden and the food plants you want to grow

1. Work together to find out how much space you will have to grow food in your actual garden. Where everyone can see it, display the Garden Grid that best matches your garden space.

   I have started a plan on this Garden Grid that will become “Our Food Garden Plan.” We will use it to plan the garden(s) that we will grow. This will help us to grow the kinds and amounts of fruits and vegetables that we want to eat.

   What is/are the basic shape(s) of our garden spaces?
   You may have different shapes depending on the use of containers. Most raised bed and tilled food gardens are rectangle, but they don’t have to be.

   We will be planting gardens in (container/raised bed/tilled) gardens. (Explain the differences by showing them the actual garden spaces or showing pictures of each kind of garden space.)

   Go outside or somewhere that you can view and measure the garden(s) you will be planting. If that is not possible, use your floor to work with the students and tape out the sizes and shapes of your containers, raised beds, or tilled gardens.

   Have the students count off by four vegetables that you are planning to plant in your garden, for example, radishes, lettuce, peppers, and tomatoes. Then have all the radish students stand on one side of the garden space, the lettuce students stand on another side, and so on.

   Show them the tape measure and talk about how it works. Give a tape measure to a student at one corner of the garden. Have the student hold the end of the tape to the corner of the garden and pass it down his or her side of the garden until it reaches the other end. Show the last person how to lock the tape measure. Have everyone on the same side lay the tape measure along the edge of the garden to make sure it is flat. Have them read the tape measure and record the measurement on the outside edges of the Garden Grid. If you have four tape measures, it would be good to leave them around the edges of the garden to show everyone how that looks. You may want to introduce the concepts of perimeter and area.

   Now that we know how much garden space we have to work with, let’s see how many plants we can grow in “Our Food Garden.”
2. **Work together to find out how big the plants will grow.**

   Write “Small,” “Medium,” and “Large” on three pieces of paper and place them like column headers on top of a large table or on your floor garden.

   Distribute the vegetable and fruit pictures, at least one per student.

   Display the “Plant Sizes” chart where everyone can see it.

   Invite the students to bring their squares with vegetable or fruit pictures to sit or stand around the small, medium, and large column headers. Have someone read the title of the “Plant Sizes” chart and another student read the column headers. Talk about the measurements that determine whether a plant is small, medium, or large. Show what 3 inches, 6 inches, and 12 inches look like on a ruler. Explain that some plants grow even bigger than that.

**Why do we need to know how big our vegetable and fruit plants are going to grow?**

   It helps us to find out how many of our plants can fit into our container, raised bed, or traditional tilled (in the ground) gardens. It also tells us how far apart to plant our seeds or young plants.

   You each have a small square with a picture on it. **Do you think the vegetable or fruit on your square comes from a small, medium, or large plant?**
   
   Let’s find out.

   We have “Small,” “Medium,” and “Large” column headers on the table/floor just like you see on the “Plant Sizes” chart. One person at a time, please tell us what vegetable or fruit you have and if you have ever seen it or eaten it before. Then guess if your vegetable or fruit comes from a small, medium, or large plant and put your picture square in the right column. We will use the chart to see if you guessed correctly. *(Everyone can help each other through this activity. Many students may not have heard of their vegetable or fruit.)*

   Let’s use “Our Floor Garden to Our Food Garden” chart and compare our pictures to the circled fruits and vegetables on the chart. Remove the vegetable and fruit squares that we didn’t eat or learn about. Those vegetables and fruits may not grow well here, and we will most likely not be planting them in our garden.

   Look at the remaining vegetables and fruits in our columns. We could grow these plants here, but we want to take a closer look at the plants we want to plant in our garden. Look at the fruits and vegetables on the chart that have stars in front of them. Remove all the other vegetable and fruit pictures until all that is left in the “Small,” “Medium,” and “Large” columns are the plants that we want to grow in our garden.

   **Focus on the characteristics of the plants that remain in the columns.** Medium-sized plants start to look like small shrubs with branches. Large-sized plants may grow tall like vines or tall plants that spread out. Discuss how many fruits or vegetables come from each of the plants and how many plants you would need to grow to produce a
sample for everyone to eat. For example, you may want to grow one radish per person, one lettuce plant for two or three people, one cherry tomato plant, two hills of sweet potatoes, and so on. Record the number of plants you think you need in the margin next to the fruit or vegetable on the “Our Floor Garden to Our Food Garden” chart. Have the students return to their seats.

3. Work together to see if the plants fit into our garden.

Let’s see how our plant choices from “Our Food Garden” chart will fit in the gardens we are going to plant. Take out your rulers, markers or crayons, scissors, and the fruit or vegetable pictures you drew. *(Have your own supplies, plus newspapers.)*

**What large plants do we want to plant in our garden and how many do we think we need?**

*(You should have at least one of these plants because they will provide your students with something to harvest in the fall when they return to school.)*

Distribute individual pages of the newspaper and have students work together to measure and cut 12 to 15-inch squares that will represent the large plants in the garden. Have them write the name of the vegetable or fruit and draw a picture of it on top of the square.

Have the students take the large squares and place them on your actual container, raised bed, or tilled garden spaces or on the floor gardens taped on the floor. If you are outside, you may need to hold the papers down with a rock or stake them down with a small stick.

Repeat this process with the medium and small plants by making 6 to 10-inch squares and 3 to 4-inch squares. Use the paper from their fruit and vegetable pictures, especially for the small plants.

Give the students five minutes to work together to fit all the crops into the actual container, raised bed, or tilled garden spaces or the taped spaces on the floor. If you are outside, use coins, erasers, or rocks to hold the papers in place.

Discuss how the garden turned out.

There is one more thing we need to explore about plants in the garden that may help us grow everything we want to grow. Let’s see if a planting guide will help us grow more things in our garden.

4. Explore the possibilities of using a planting guide to grow more crops in your garden space.

Display the “Planting Guide” chart where everyone can see it, found at the end of this lesson. Have a calendar handy to count the days from planting to eating.

This is a “Planting Guide” chart. It shows how many days it takes from the time you plant a seed or young plant to the day you can harvest and eat it. It is arranged in small, medium, and large crops so we can easily use it to think about how we might be able to rearrange the plants in our garden or grow them at different times.
Go through the chart and highlight or circle your garden choices and the days until the vegetable or fruit is most likely to be ready to eat.

Most of the small vegetables can be planted inside in late winter or outside in a raised bed when the ground is workable. Refer to the chart and a calendar to show students when you may be able to plant the small crops and then count the number of days until harvest. Mark the beginning and end dates on the calendar.

Is it possible that we could plant the small plants or crops and be able to eat them before school is out in the summer?
Yes.

If we harvested the small plants, what could we make with them?
Possible answers include: veggies and dip, salads, wraps, sandwiches, egg rolls

Some of the medium and large plants, such as tomatoes, broccoli, eggplant, and peppers, can be started from seed in containers in the classroom, and they can be planted outside once the chance of frost has passed. Use a calendar and show the students when you may be able to plant the medium and large crops. Then have them use the chart and calendar to count the number of days it will take for the fruit or vegetable to grow and be ready to eat.

Is it possible that we could plant the medium and large plants before the end of the school year and come back at the beginning of the next school year to harvest and eat them?
Yes.

What can we do with this information to help us plant and harvest all the fruits and vegetables we want to plant?
We could plant the small plants and harvest them. That would leave a space in the garden to plant the medium and large plants. If we started some of the medium and large plants in our classrooms, we could give them a head start and move them outside when there is space.

5. Plan the garden to make everything work.
An efficient use of garden space that incorporates ease of planting in container and raised bed gardens is Mel Bartholemew’s Square Foot Gardening method. You can combine the square foot method and try row gardening in a tilled garden (traditional, in the ground). The students will be using square foot templates to plant the garden. Therefore, when the students rearrange their plant squares, have them try to work in square plots instead of rows.

One more thing we can do to get the most food from our garden is to use a planting method called square foot gardening. This time when we arrange our small and medium plants in the garden, we can group them in square plots instead of rows.
Let’s go back to the garden and put the puzzle together using our plant squares as the puzzle pieces.

Use the raised bed and tilled garden plans found at the end of this lesson and the container garden illustrations on this page as examples for the students. Have the students compare the illustrations with their garden plans made by squares in the garden. Remind the students that they can use double cropping or use the space to grow spring harvest crops and then replant the garden with late summer and fall harvest crops.

Other adults or high school volunteers and mentors can work with the students to rearrange the plant squares into a spring harvest garden and then a late summer and fall harvest garden. You may need to add or subtract plant squares.

**Special note:** You may want to tape the squares together and display your garden plan like a mural or quilt on the wall.

**IMPORTANT:** Draw the spring harvest and late summer or fall harvest garden plans on the “Our Food Garden Plan” worksheet. Write the name of the plants and the number of plants in each of the sections. Record any other notes on the plan.

We now have “Our Food Garden Plan” to help us move closer to planting.

**What can we do to have more fruits and vegetables for our school?**

**Possible answers include:**
- Work with local food producers, gardeners, and farmers to share what they grow.
- Work with the community and neighborhood garden site to grow more food.
- Partner with high school students and teachers in horticulture, FFA, or 4-H.
- Expand gardens to nearby empty lots, public spaces, senior centers, health and wellness centers, after-school program sites, etc.
- Explore the possibilities of adding different types of containers to grow food such as kid’s swimming pools, plastic tubs, wagons, wheelbarrows, or decorated oil drums on wheels.

You may choose to actually expand your garden or access to healthy foods in one or more of the ways mentioned above. If so, have the students use what they have learned to plan another garden. If you are new to gardening, starting small is a good idea.

**MY HOME FOOD GARDEN PLAN**

Distribute plain sheets of paper or blank copies of one of the Garden Grids found at the end of this lesson. The students will need their pencils and rulers.

At the top of your paper write “My Home Food Garden Plan” and put your name below the title. This is an opportunity for you to draw a food garden plan that you can share and do at home. If you don’t have a yard, you can plant some plants in different containers or in a windowsill garden, or you can have a space in a community or neighborhood garden.
Think of the type of garden spaces you can create at home and the plants that you might be able to help your family grow. Use “Our Food Garden Plan” and the charts as a guide. Start small to keep things manageable; you won’t have all your classmates to help you. If you already have a garden, draw a section of it where you might be able to make your own plans.

*Ask students to share their plans with the rest of the class. Have them stand where everyone can see and speak loudly so everyone can hear.*

*Collect their garden plans and see what they learned. Give them suggestions so that they can actually use the plan or part of the plan at their homes.*

*Make copies of the family letter found at the end of this lesson on the back of the students’ “Home Food Garden Plans.” Have the students write the date at the top and sign their own names after “Thanks!” Send the students home with their letters and their garden plans. Have them describe their garden plans to their families. A few days later, give them an opportunity to share their families’ reactions to their plans.*
Garden Grid

= 1 square foot

Name

15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10
**Garden Grid**

**Our Food Garden Plan**

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**4' x 8' RAISED GARDEN**

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**15" x 30" EARTHBOX™ CONTAINER GARDENS**

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**Grade 3 January Lesson Planning**

**GROWING IN THE GARDEN: LOCAL FOODS AND HEALTHY LIVING**

**OUR FOOD GARDEN PLAN**

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**Iowa State University**

Extension and Outreach

Healthy People. Environments. Economies

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4-H Youth Development

4H-905LFHL | September 2012

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# Plant Sizes

**How big will plants grow?**

<table>
<thead>
<tr>
<th>SMALL (3 to 5 inches)</th>
<th>MEDIUM (6 to 24 inches)</th>
<th>LARGE (24 inches or more tall or long)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VEGETABLES</strong></td>
<td><strong>VEGETABLES</strong></td>
<td><strong>VEGETABLES</strong></td>
</tr>
<tr>
<td>Beets</td>
<td>Asparagus</td>
<td>Brussel sprouts</td>
</tr>
<tr>
<td>Carrots</td>
<td>Beans</td>
<td>Cucumbers</td>
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<tr>
<td>Kohlrabi</td>
<td>Broccoli</td>
<td>Okra</td>
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<tr>
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<td>Cabbage</td>
<td>Potatoes</td>
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<td>Radishes</td>
<td>Cauliflower</td>
<td>Pumpkins</td>
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<tr>
<td>Garlic</td>
<td>Collards</td>
<td>Summer squash</td>
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<td>Kale</td>
<td>Eggplant</td>
<td>Sweet corn</td>
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<tr>
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<td>Sweet potatoes</td>
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<td>Peppers</td>
<td>Tomatoes</td>
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<td><strong>FRUIT</strong></td>
<td><strong>FRUIT</strong></td>
</tr>
<tr>
<td>Strawberries</td>
<td>Blueberries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grapes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muskmelon (cantaloupe)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Watermelon</td>
<td></td>
</tr>
</tbody>
</table>
1. Make a copy of this page.
2. Cut around the 4-inch squares and cut out the circles.
3. Place one template on one corner of a poster board.
   Draw around the outside of the square and around the circles.
4. Use the same template four times to make a square-foot gardening guide.
5. Cut around the square foot and cut out the circles.
6. Write the names of the crops in the center of the guide.
7. It is best to laminate these guides to keep them in good shape from year to year.
<table>
<thead>
<tr>
<th>VEGETABLES OR FRUITS</th>
<th>DAYS UNTIL HARVEST*</th>
<th>PLANTING DATE</th>
<th>HARVESTING DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SMALL PLANTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beets</td>
<td>60 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrots</td>
<td>60 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kohlrabi</td>
<td>50 - 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onions</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radishes</td>
<td>30 - 35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kale</td>
<td>60 - 70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lettuce</td>
<td>30 - 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mustard greens</td>
<td>40 - 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinach</td>
<td>35 - 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MEDIUM PLANTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asparagus</td>
<td>3 yrs after first planting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beans</td>
<td>50 - 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td>60 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabbage</td>
<td>60 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cauliflower</td>
<td>60 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collards</td>
<td>50 - 55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggplant</td>
<td>75 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Okra</td>
<td>70 - 90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peas</td>
<td>50 - 75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peppers</td>
<td>70 - 75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strawberries</td>
<td>1 yr after first planting</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LARGE PLANTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brussel sprouts</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cucumbers</td>
<td>50 - 70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes</td>
<td>70 - 110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pumpkins</td>
<td>90 - 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer squash</td>
<td>60 - 75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweet corn</td>
<td>65 - 90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweet potatoes</td>
<td>100 - 110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td>70 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomatillos</td>
<td>70 - 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter squash</td>
<td>90 - 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zucchini</td>
<td>60 – 75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muskmelon (cantaloupe)</td>
<td>70 – 85</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* varies with variety
# Garden Calendar

<table>
<thead>
<tr>
<th></th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
</table>

**January**

<table>
<thead>
<tr>
<th></th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
</table>

**February**

<table>
<thead>
<tr>
<th></th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
</table>

**March**

<table>
<thead>
<tr>
<th></th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
</table>

**April**

<table>
<thead>
<tr>
<th></th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
</table>

**May**

<table>
<thead>
<tr>
<th></th>
<th>SUN</th>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
</table>

**June**

|   | SUN | MON | TUE | WED | THU | FRI | SAT |
RAISED BED GARDEN PLAN

SQUARE-FOOT METHOD FOR 4’ x 8’ RAISED BED

<table>
<thead>
<tr>
<th>SPRING</th>
<th>FALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant as soon as soil can be worked.</td>
<td>Plant near the end of May.</td>
</tr>
</tbody>
</table>

- **Spring**
  - Leaf lettuce
  - Onions
  - Beets
  - Radishes
  - Broccoli
  - Spinach
  - Snap peas
  - Trellis

- **Fall**
  - Butternut squash
  - Potatoes
  - Grape or cherry tomatoes
  - Peppers
  - Sweet potatoes
TILLED GARDEN PLAN

SQUARE-FOOT AND ROW METHOD FOR 10' x 15' GARDEN

cucumber cucumber tomato
pepper pepper pepper tomato

walkway

beans

broccoli broccoli cabbage zucchini
broccoli broccoli cabbage

carrots onions

lettuce flowers peas

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Grade 3 January Lesson Planning
GROWING IN THE GARDEN: LOCAL FOODS AND HEALTHY LIVING
LESSON 4A OUR FOOD GARDEN PLAN

Printed with Permission, February 2012
Dear Family,

Our class is planting a garden. We are excited to grow food to eat at school. Did you know that I tried some new fruits and vegetables today?

We made up plans for home food gardens. Do you think my garden plan would work in our yard or in some containers? Please help me make changes.

My teacher would like me to bring my plan back to school so I can share it with the class.

Thanks!