

AFTER SCHOOL PROGRAM

FALL GARDENING CLUB CURRICULUM



GREEN MOUNTAIN FARM-TO-SCHOOL

Green Mountain Farm-to-School (GMFTS) is a non-profit organization in Newport, VT that strengthens local food systems by promoting positive economic and educational relationships between schools, farms, and communities. GMFTS supplies fresh, local food to schools and institutions and gives students of all ages the knowledge and skills they need to make healthy food choice through school gardens, farm-to-school programs, a regional food hub, and mobile learning kitchen. For more information, visit www.GreenMountainFarmtoSchool.org.

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FALL GARDEN CURRICULUM FLOW

Each lesson is divided into different sections. Use the lesson as a template to follow when teaching a class, but feel free to add your own personality and ideas.

GOALS

The goal of the Fall Garden Harvest curriculum is to provide a time and space to:

1. Teach students about harvesting and growing food from the garden.
2. Harvest the school garden produce for the cafeteria.
3. Have debris-free garden at the end of the season.

LESSONS

The lessons are set up to be taught in a specific order, but they can be rearranged according to your needs.

Each lesson has several components for you to choose from. Do some of them or all of them depending on time, your students, and your garden.

- An education activity
- A garden activity
- A garden harvest
- A snack
- A journal page
- An active game

The components that are highly recommended are:

- The pre and post survey (for evaluating the success of the program)
- Harvesting the produce at the right time so the cafeteria can use it, see Fall Harvest List for details
- Weighing and documenting all harvested produce
- Planting garlic – this can be done in mid October
- Cleaning the garden of all plant debris
- Fun Fillers is a great section to use when you need to fill a few minutes with a joke, quick run around game, or a circle activity.
- Remember to take pictures of the students doing the activities.



When you see the camera symbol, there is a photo opportunity in the activity.

FROST SENSITIVITY LIST

This is a frost sensitivity guide, not a planting guide. This will help you determine when you can safely plant your crops. The length of time it takes for your crop to mature and when you want to harvest it will determine your planting date.

HARDY

Can plant 4-6 weeks before last frost date

- Lettuce
- Peas
- Radishes
- Spinach

MOSTLY HARDY

Can plant 2 weeks before last frost date

- Broccoli
- Beets
- Carrots
- Cauliflower
- Celeriac
- Kale
- Onions
- Parsley
- Potatoes
- Rutabaga
- Swiss Chard
- Turnips

FROST SENSITIVE

Can plant on or after last frost date

- Basil
- Bush beans
- Calendula
- Cilantro
- Cosmos
- Corn
- Dill
- Larkspur
- Leeks
- Marigolds
- Nasturtiums
- Pole beans
- Sunflower
- Zinnias

FROST INTOLERANT

Plant 2-3 weeks after last frost date

- Cucumber
- Peppers
- Pumpkin
- Summer squash
- Tomatoes
- Winter squash

USING A SCHOOL GARDEN

1. Garden expectations for kids:

- Walk when you are in the garden.
- Be safe with tools: always keep the “tool” part below your waist, keep an arms distance away from others, be aware of your fingers when using pruners, do not hurry when using garden tools, and always wear closed-toed shoes in the garden.

2. Before each daily program, walk through the garden to see what needs to be harvested.

- Use garden map to find produce.
- Refer to the Fall Harvest List to determine what plants you will be harvesting each week by using the frost date.
- Make sure you know how to properly harvest the item before you do it with the students.
- Make sure you have all of your harvesting supplies:
Harvest baskets, harvest knives, scissors, bags to put clean produce in, water buckets (for washing), a scale, and harvest collection sheet with a pen.

3. Show students HOW to harvest the items and tell them exactly how much to take (i.e. all of it, 2 handfuls, only the leaves, half the bed).

4. Weigh and document the names and weights of all the harvested food.

Give students daily jobs.

Veggie Washer – dunk and scrub produce carefully

Weigher – weigh produce carefully and read weight to recorder

Recorder – write correct name and weight of all produce harvested

5. Leave CLEAN produce in the school kitchen in the place requested by the FSD.

Leave a note of what you harvested and any other information you have (there is a lot of lettuce to harvest if you have time this week; we harvested 10lbs of potatoes!; etc) and a copy of a recipe from the cookbook.

HARVESTING A SCHOOL GARDEN

1. Before each daily program, walk through the garden to see what needs to be harvested.
 - Use garden map to find produce.
 - Refer to the Fall Harvest List to determine what plants you will be harvesting each week by using the frost date.
 - Make sure you know how to properly harvest the item before you do it with the students.
 - Make sure you have all of your harvesting supplies:
 - Harvest baskets, harvest knives, scissors, bags to put clean produce in, water buckets (for washing), a scale, and harvest collection sheet with a pen.
2. Show students HOW to harvest the items and tell them exactly how much to take (i.e. all of it, 2 handfuls, only the leaves, half the bed).
3. Weigh and document the names and weights of all the harvested food. Give students daily jobs.
 - Veggie Washer – dunk and scrub produce carefully
 - Weigher – weigh produce carefully and read weight to recorder
 - Recorder – write correct name and weight of all produce harvested
4. Leave CLEAN produce in the school kitchen in the place requested by the FSD. Leave a note of what you harvested and any other information you have (there is a lot of lettuce to harvest if you have time this week; we harvested 10lbs of potatoes!; etc) and a copy of a recipe from the cookbook.

BEFORE GETTING STARTED

Explain that the after-school program is a place for fun learning. In after-school program, the same rules they follow during the day at school are the rules they will follow with you. Similar to a classroom, we have some basic rules to ensure that all students have fun and are safe.

1. Explain that we have four basic expectations. We want all students to be:
 - i. Safe – with tools, bodies, and materials.
 - Have a student show you an example of what being safe looks like.
 - ii. Respectful – use kind language, be good listeners, be careful while cooking
 - Have several students show you an example of what being respectful looks like: using respectful words, being a respectful listener and speaker, being respectful with cooking tools, being respectful to the room.
 - iii. Responsible – participate in activities, take care of belongings, stay on task in the garden or classroom.
 - Have a student give an example of what being responsible is.
 - iv. Have Fun
 - How can you tell if someone is having fun in a safe, respectful way? We expect that everyone will want to participate in the activities and have fun. If, for some reason, someone is being unsafe, disrespectful, or irresponsible, there will be consequences like there are during the school day. Students are still in school, even though it is after school, and the same school rules apply. Inform them of any consequences you have discussed with the principal.
2. Signal for attention: Explain to the students that there will be a signal for when you want to get everyone's attention and have them listen for new directions. Everyone is to respond to the signal by having quiet mouths and eyes on the teacher. Until this happens, you should wait quietly until they respond appropriately, try the method again, or use a different method. Do not move on to the next direction/activity until they are all listening to you.
3. Every day we will do similar activities:
 - Welcome Circle with a thinking question
 - A lesson or activity
 - Some active games and partner games
 - A book
 - Journal time
 - A snack

TOP 10 EDUCATOR TIPS

1. Set your expectations for the students at the beginning.
 - a. Ask principal for school expectations and procedures. Most discipline structures look like this:

1st offense: warning – “It is not okay to You need to The next time you do that, you will have to sit out.”

2nd offense: sit out/take a break/time out – “It is not okay to You were warned before. I need you to take a break.” Student will sit out for an activity or a few minutes. You will need to talk with the child before they reenter the group. Explain why what they did was not okay and what they should be doing. Remind the student of the consequence for a 3rd offense.

3rd offense: This will be based on the school and your conversation with the principal or site coordinator. They will either need to call home, be removed from the program, or talk to the principal the next day.
 - b. Ask students for their suggestions.
 - c. Have a short but specific list of expectations.
 - i. Be safe, Be Respectful, Listen to Directions, Have Fun
 - d. Take time to talk about what each expectation looks like, act it out.
2. Use a signal to get students attention and use it every time. Wait for everyone to stop, look, and listen before you give directions. If it isn't working, try another one.
 - a. Use a visual sign: peace, quiet coyote, hand in the air
 - b. Use a verbal sign: “When I say ‘Sprouts!’ you say ‘What?’” clap a pattern
3. Be prepared and organized. Have everything ready to go before students arrive.
4. Be flexible. You might need to change an activity if it isn't working or a game may not last as long as you thought. It's okay to change your plan. Also look for teachable moments that aren't connected to the lesson but are important and interesting for students.
5. Have a few games or activities in mind that don't involve any materials that you can do at a moment's notice.
6. Watch the group's body language. Circles are best for discussions and giving directions. Tables are good for doing group activities.
7. Be as enthusiastic and involved as you want the kids to be. They will pick up on your attitude and behavior.
8. Have a sense of humor!
9. Let students find the answers. Instead of giving them all the information, ask questions to allow them to come up with the answers themselves.
10. Give an overview so they know what to expect for the day and individual activity.

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LESSONS

LESSON ONE

GARDEN EXPLORATION/SAFETY

SUMMARY

Students will be introduced to the goals and expectations of the program and will explore the garden.

MATERIALS:

Pencils

Markers

Journals sheets

Intro Survey

Garden Tic Tac Toe Sheets

Garden Grocery List

(prepare list of items to harvest from the garden)

Washing Basin

Knife

Cutting Board

Paper Plates and/or napkins

Harvest Baskets and bags

Bags and boxes for FSD

Scale for weighing veggies

Flower Press

(card board & rubber bands)

Blanket, towel, bandana

Brown Paper Bag

(to store mystery items in)

Camera for group harvest photo

GUIDING QUESTIONS:

1. What do we already know about our garden?
2. What can we learn about our garden?

GOALS:

1. Students will learn what is growing in the garden.
2. Students will understand the garden and program expectations.

OUTLINE:

- Welcome Circle and Name Game
- Ground Rules
- Survey
- Journal
- Garden Tic Tac Toe
- Garden Harvest
- Garden Taste Test
- Filler: Harvest Mystery Blanket
- Filler: Veggie Tag
- Wrap-Up

WELCOME CIRCLE AND NAME GAME – 5 MINUTES

Welcome students to the Sprouts Program. Explain that in the program they will learn all about the food system by growing a garden, cooking, and by doing fun hands-on activities.

Greeting: Share gardening or outdoor experience from the summer.

Today's Plan: Let's explore what we already know about our garden and find out what else we can learn about our garden!

Name Game: Have the students introduce themselves and share one thing. Possible examples: an adjective or something they like that begins with the same letter as their name; their favorite fruit or vegetable; etc. Ask the students who can repeat everyone's name and word.

GROUND RULES – 5 MINUTES

Explain that the after-school program is a place for fun learning and that similar to a classroom, we have some basic rules to ensure that all students have fun and are safe.

Explain that we have four basic expectations. We want all students to:

- a. Be Safe – with tools, bodies, and materials.
 - i. Have students give examples of what being safe looks like.
- b. Be Respectful – use kind language, be good listeners, careful in garden
 - i. Have students give examples of what being respectful to each other, to the teacher, and to the garden looks like.
- c. Be Responsible – participate in activities, take care of belongings, stay on task in garden
 - i. Have students give an example of what a responsible Sprouts student does.
- d. Have Fun
 - i. How can you tell if someone is having fun in a safe, respectful way?

We expect that everyone will want to participate in the activities and have fun. If, for some reason, someone is being unsafe, disrespectful, or irresponsible, there will be consequences like there are during the school day. Students are still in school, even though it is after school, and the same school rules apply. Inform them of any consequences you have discussed with the principal.

1. Signal for attention: Explain to the students that there will be a signal for when you want to get everyone's attention and have them listen for new directions. Everyone is to respond to the signal by having quiet mouths and eyes on the teacher. Until this happens, you should either wait quietly until they respond appropriately, try the method again, or use a different method. Do not move on to the next direction/activity until they are all listening to you.

- a. Your hand high pointing 2 fingers in the air, like a peace sign.
 - b. The middle finger and ring finger touching the thumb to make a silent coyote.
 - c. Teacher says “Sprouts,” students say “What”. Repeat twice or until you have everyone’s attention.
 - d. Teacher: “If you can hear me clap once...if you can hear me clap twice.” Or “If you can hear me put your hands on your head...if you can hear me put your hands on your ears.”
2. Consequences: Establish 1st offense 2nd offense, and 3rd offense consequences.
Tips: Use a piece of paper to create a “Garden Rules” pledge to sign.
3. Every day we will follow a similar outline:
- Welcome Circle with greeting and introduction to lesson
 - Fun Activity
 - Harvesting
 - Sometimes a Snack
 - Game
 - Story (optional)

INTRODUCTION SURVEYS – 10 MINUTES

Surveys are used to calculate and record student knowledge and progress. We use them to help guide us in lesson planning.

1. Explain that before we begin today you need to learn a little bit more about them as students; what they know, what they would like to learn about. Tell them not to worry if they don’t know some of the answers, it is not a test; we just want to know what they already know. All of the topics will be covered in the program.
2. Let students know that these surveys are very importance for us because they help us gauge the success of the program. We like to know when students have a memorable time and what they learn. This helps us get funding for the program and to stay at the school.
3. Pass out the surveys and pencils. If you have younger students in the group who are learning to read, consider reading the questions one by one as a group. “If you would like to go ahead and read the questions to yourself, please start. If you would like me to read the questions to you, sit by me and I will read them one by one.”
4. When students are done and waiting, they can draw on the back of the survey or work on another activity. Gather the surveys when they are complete. They can be stored in the filing cabinet under “pre test” for each school.

GARDEN INTRODUCTION AND RULES IN THE GARDEN – 5 MINUTES

Now, let's go outside and explore our garden!

1. Gather with students at the edge of the garden.
2. Welcome everyone to the garden. Does anyone know the name of the garden?
3. Ask students how they can be respectful in the garden.
 - a. How do we move? (walking)
 - b. Where do we walk in the garden? (paths)
 - c. How do we know which plants we can pick or weed? (ask adult)
 - d. Where does all of the food go? (cafeteria)
 - e. What if I want to eat something? (ask adult)
4. Let the students know that if they have any questions about anything in the garden they can ask you!
5. Encourage students to explore the garden for a few minutes.

JOURNAL – 5 MINUTES

1. Gather students in a circle outside the garden.
2. Pass out garden journal covers.
3. Explain to students that they will be using the garden journals throughout the program to record their observations and document the program's activities. You will collect them at the end of each lesson to ensure that we have them each week and students will take them home at the end of the program.
4. Have students write their name (first and last) on the cover.

GARDEN HARVEST – 30+ MINUTES

Students will harvest fruits and veggies that are in danger of frost damage (herbs, green beans, cucumbers, flowers, melons, peppers, tomatoes, summer squash, etc.)

Before the lesson, prepare a list of edible items that are ready to be harvested out of the garden. Prepare wash and weigh stations.

Part I: Harvest:

1. Show students the garden grocery list and ask one student to read it aloud.
2. Divide students into groups to harvest different crops or make groups while touring the garden together.
3. Work together as a group to locate each item and demonstrate how to harvest it properly. Keep students engaged by asking questions: What is ripe? How big should the summer squash be when we pick it? Etc.
4. Continue with several crops, leaving a few students with each. (Be specific about how much they should harvest eg. 10 green beans, until your basket is full, every tomato that is red etc...



5. Have students put produce into harvest baskets or bags.
6. Take group harvest photo.

PART II: RECORD AND STORE:

Gather the students together and set up four garden stations for remaining tasks:

Wash:

- Tear off excess foliage
- Wash veggies in washing bin
- Send veggies to record station

Record:

- Record the type of produce harvested, quantity, and weight (use scale)
- Send produce to storage station

Storage:

- Place produce in proper storage containers, including:

Cardboard boxes: tomatoes, peppers

Wax boxes: greens, bunches of herbs

Milk crates: squash

Grain bags: potatoes

Flower Press:

- Gather flowers
- Press flowers

1. Ask for volunteers to work at each station or assign students jobs.
2. Instruct students on the specific activities at each station.
3. After harvest for the day is done, all students should help clean up:
 - a. Gather refuse foliage from wash station and take to compost
 - b. Gather refuse, vines, debris from around the garden and take to compost

TASTE TESTS – 20 MINUTES

Each student will get a chance to taste produce from the garden.

1. Gather everything together and head to the kitchen, classroom, or stay outside.
2. Before everyone begins tasting, explain the importance of trying new things. Sometimes it takes trying new things 10 times before you begin to like them!
3. Explain that our program has a rule “Don’t Yuck my Yum!” which means that we don’t say negative things about how something tastes because it might offend someone and discourage others from trying something new. Ask students how they can respectfully express that they do not like something. (“I don’t care for it.”)
4. Talk about each food as you cut it into small taste test pieces and place them on a serving plate or napkin.
5. Pass the taste test samples to students and enjoy! Encourage students to share their feedback about the different foods using descriptive words.

Reflect: What foods did you enjoy? Did you like anything that you didn’t expect to like? What was it like eating straight from the garden? Are there any differences between garden fresh foods and those purchased from a store?

FILLER GAME: HARVEST MYSTERY BLANKET – 10 MINUTES

Now that students have explored the garden and gotten an overview of what’s growing, they will explore garden foods using their sense of touch.

1. Explain to the students that you have harvested five mystery vegetables from the garden. You are going to put them under a blanket (or in a bag) and it will be their job to guess what it is using their sense of touch.
2. One group will put their hands under the blanket and describe the vegetable to another group trying to guess what it is.
3. Show the students a sample object and have them practice by using descriptive words to describe the vegetable. Be sure to correct any words that are not descriptive or say the name of the vegetable. It can be a word that describes its size, shape, texture, temperature, etc. (Some students may need help with this.)
4. Divide the students into two groups.
5. One group will place their hands under the blanket. One person will hold the vegetable at a time and think of one descriptive word to describe it.
6. After everyone in the group has described the vegetable, the other group will have some time to discuss what they think it is and make a guess.

7. The second group will make a guess and then the first group can make a guess. Reveal the object!

8. Have the groups switch roles.

Reflect: Was it hard to describe the object? What was it like trying to guess what the vegetable was? What other senses could we have used to describe the vegetable?

FILLER GAME: VEGETABLE TAG - 5-10 MINUTES

In this active game similar to TV tag, students practice vegetable vocabulary.

1. Set up boundaries using the supplies you have or a designated area.
2. Ask for one student volunteer to be “it.”
3. This person tries to tag other students. If they are tagged, they must remain frozen in place.
4. To avoid being tagged, students can run away or become “safe” for a moment by shouting out the name of a fruit or vegetable. Once the student has named a fruit or vegetable, the tagger must move on to another student (no puppy guarding!).
5. To challenge the students, make a rule that once a fruit or vegetable has been named, it cannot be repeated. If the student names a fruit or vegetable already mentioned, the tagger can still tag them.

WRAP-UP

Reflect: We got to know the garden a little today. Many people tried new foods today for the first time. Are there other situations when trying new things is important? What are you looking forward to doing in and around the garden in this program?

Take Home: Extra taste test veggies.

FALL GARDEN CLUB SURVEY

Name: _____ Grade: _____ School: _____

1. Two foods we grow in our garden are _____ and _____ .

2. Draw or name 2 insects you find in the garden.

3. Pumpkins and squash grow on _____.

4. What are two ways to save or store food from the garden?

1. _____

2. _____

5. How far apart do you plant garlic cloves?

2 feet

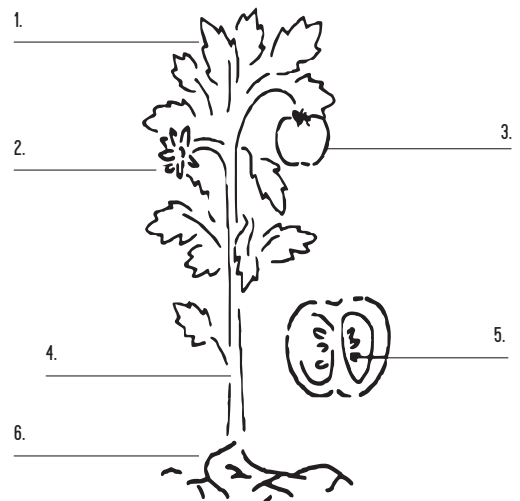
2 inches

1 foot

4-6 inches

6. What does it mean to “clean up” a garden or
“put the garden to bed?”

7. Label or name three plant parts.



JUNIOR CHEF CLUB SURVEY

ANSWER KEY

1. Two foods we grow in our garden are:

Multiple answers can include: carrots, potatoes, kale, sunflowers, beets, lettuce, tomatoes

2. Draw or name 2 insects you find in the garden.

Multiple answers can include: worms, ladybugs, cabbage worms, wasps, bees, beetles, tomato horn worms

3. Pumpkins and squash grow on vines.

4. What are two ways to save or store food from the garden?

1. pickle
2. freeze, dehydrate

5. How far apart do you plant garlic cloves?

2 feet

2 inches

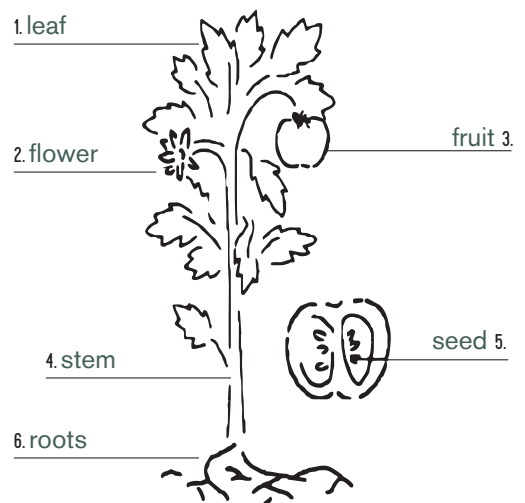
1 foot

4-6 inches

6. What does it mean to “clean up” a garden or “put the garden to bed?”

Answers can include: harvest crops, pull out debris, rake, clean, compost, get ready for winter, etc

7. Label or name three plant parts.





FALL GARDEN CLUB

JOURNAL



GARDEN DETECTIVE TIC TAC TOE

Name: _____

There are 4 Tic Tac Toe games in all. With your partner, decide who will be Xs and who will be Os.

When it is your turn, if you find an item in one of the boxes, draw an X or an O.

The first one to get three in a row wins!

A Green Fruit	A plant growing out of the garden	A shaded place
TALLEST Plant	Fruit Ready to Pick	Evidence of People
Vegetable in a Salad	Small Insects	A Seed

Leaf Ready to Eat	A Weed	Earthworm
BIGGEST plant	Spider	Broken Stems
Plant Disease	Rotten Fruit	Hay in the paths

Leaves Eaten by Insects	Blooming Flower	Rotten Fruit
Earthworm	Plant Disease	Animal Tracks
Dead Plant	Not Enough Rain	A Weed

Evidence of People	Food Ready to Pick	Small Insects
Compost Pile	A Weed	Broken Stems
Spider	Insect Eggs	Too Much Rain

LESSON TWO

GARDEN HARVEST I

SUMMARY

Students harvest all of the frost sensitive garden produce and learn how to clean and weigh it for the cafeteria. There is only a limited amount of time to get all of the produce out before the cold weather comes.

MATERIALS:

Pencils
Markers
Journals sheets
Washing Basin
Knife
Cutting Board
Paper Plates and/or napkins
Harvest Baskets and bags
Bags and boxes for FSD
Scale for weighing veggies
Blanket and vegetables
for "Observation"

GUIDING QUESTIONS:

1. What do we eat as food and how does it grow?
2. What people and tasks are required to harvest quality food?

GOALS:

1. Students will demonstrate the correct way to harvest different kinds of produce.
2. With a partner, students will correctly weigh the produce harvested from the garden then record the name and weight.

OUTLINE:

- Welcome Circle and Attendance
- Garden Harvest Walk-Through
- Harvest Time
- Weigh & Record
- Snack: Garden Harvest Taste Test
- Filler, Game: Observation
- Filler, Active Game: Garden is Ready
- Filler, Journal: "September Garden Drawing"
- Wrap-Up

WELCOME CIRCLE AND ATTENDANCE – 5 MINUTES

Greeting: Welcome! Today we are going to be harvesting all of the frost sensitive crops from the garden before the cold weather kills them.

Today's Plan: What do we eat as food? How does it grow? What do people need to do to make sure we can eat that food? (This is an open-ended, no-right-or-wrong-answers, question. Revisit this at the end of class and see if their answers have changed.)

GARDEN HARVEST WALK THROUGH – 30+ MINUTES

Students will walk through the garden with the teacher. As the students go through the garden, they will carefully point out the food they see in the garden.

1. Before students go into the garden, go over the rules/expectations as needed.
2. Walk through the garden as a group or in small groups. For the first harvest, it may be best to do it as a large group to walk through all of the steps. Find a crop that you can all harvest together, like green beans, tomatoes, etc.

Harvest:

1. Demonstrate to each student how to harvest it properly. Ask them leading questions like: What is ripe? How big should the summer squash be when we pick it? What part do we not pick? Where should the crop go after you pick it?
2. Emphasize that the crop needs to be carefully placed in the harvest basket because it can bruise and they are picking it for the school and possibly themselves.
3. Be specific about how much they should harvest (10 green beans, until your basket is full, every tomato that is red).
4. Leave a few students at the garden bed or stay there as a group.
5. When students are done harvesting, they should take the produce to the weighing station.

Weighing Station:

1. The weighing station should have a tub of water for washing the produce, a pile for excess foliage, a scale, the recording paper, a pencil, and harvest bags.
2. In this area, students should have jobs so that things go smoothly and the weights are recorded properly.

Cleaners – The cleaners wash the dirt off the produce and tear off extra foliage, roots, etc. All extra foliage will be put into the compost/refuse pile.

Weighers – The weighers will use the scale to measure the weight of each crop individually.

Recorder – The recorder will work closely with the weighers. He or she will need to write down the name of the crop and then the correct weight of each crop.

Storage – When crops are cleaned, weighed, and recorded, they will need to be placed into a storage container so they can be transported later to the cafeteria.

Cardboard boxes: tomatoes, peppers

Wax boxes: greens, bunches of herbs

Milk crates: squash

Grain or burlap bags: potatoes

****Educator Note:** Harvest items like herbs, beans and sunflowers at this time to be used in a few weeks for Lesson 5: Garden Drying**

SNACK: GARDEN HARVEST TASTE TEST – 15 MINUTES

Each student will get a chance to taste produce from the garden.

1. Gather everything together and head to the kitchen, classroom, or stay outside.
2. Before everyone begins tasting, explain the importance of trying new things. Sometimes it takes trying new things 10 times before you begin to like them!
3. Explain that our program has the rule “Don’t Yuck my Yum!”. This means that we don’t say negative things about how something tastes because it might offend someone and discourage others from trying something new. Ask students, how they can respectfully express that they do not like something? (“I don’t care for it.”)
4. Talk about each food as you cut it into small taste test pieces and place them on a serving plate or napkin.
5. Pass the taste test samples to students and enjoy! Encourage students to share their feedback about the different foods using descriptive words.

Reflect: What foods did you enjoy? Did you like anything that you didn’t expect to like? What was it like eating straight from the garden? Are there any differences between garden fresh foods and those purchased from a store?

FILLER GAME: OBSERVATION – 5-10 MINUTES

Students will play a memory guessing game with vegetables.

1. Place several different vegetables on a table or ground.
2. Have students stand around the table for one minute and try to memorize the vegetables.
3. Cover the vegetables with a blanket and have students write down as many as they can remember.
4. After three or four minutes, call time and collect the lists.
5. Lift up the blanket and see who guesses the greatest number of vegetables. The player who guessed the most wins!

FILLER GAME: GARDEN IS READY – 5-10 MINUTES

This game is best played inside where there are chairs. You could also play it outside if you had a place marker (such as their shoes) where students knew where to sit.

1. Make sure there are enough chairs for all students minus 1 (if there are 10 students, only set out 9 chairs).
2. Without telling the others what he or she has chosen, have each student choose the name of a vegetable that grows in the garden. They will be this vegetable this round of the game.
3. Pick one player to be the gardener. Everyone else will sit in a chair. The gardener will stand and say, "The garden is ready to harvest."
4. Walking around the room, he or she calls out the names of various garden vegetables. When a player hears the name of his or her vegetable, he or she gets up and walks behind the gardener.
5. When most of the vegetables have been called out of their seats, the gardener shouts: "Salad."
6. At this the students, including the gardener, must find new seats.
7. The last student to find a seat becomes the new gardener. The students sitting will all become new garden vegetables of their choosing.

JOURNAL: SEPTEMBER GARDEN DRAWING – 5-10 MINUTES

1. Pass the journals out to the students.
2. Today, students will complete the journal sheet "September Garden Drawing." See journal pages for details (next page).
3. Collect the books when they are finished

WRAP-UP

Reflect: We got to know the garden a little today. What is some food we picked? Did all the vegetables we picked grow the same way? What did we have to do to harvest them?

Take Home: Extra taste test veggies, if available.

SEPTEMBER GARDEN DRAWING

Name: _____

Every month the garden changes. Document what the garden looks like today.
Find a place to sit near the edge of the garden and draw what you see.



LESSON THREE

PLANT PARTS

SUMMARY

Students are introduced to the different parts of the plant and the parts of the plant that we eat.

MATERIALS:

Plastic foods and bags
Snack (carrot, sunflower seeds, broccoli, apples, celery, spinach)
Craft bin
Pencils
Knife
Cutting board
Napkins
Liquid glue
Tape
Plant Parts Diagram
journal sheet
Plant Part Bingo Sheets
Pots
Soil
Permanent markers

GUIDING QUESTION:

1. What parts of plants do we eat?

GOAL:

1. Students will name the six different plant parts and give an example of a food we eat for each one.

OUTLINE:

- Welcome Circle
- Plant Parts Diagram
- Plant Part Snack
- Brown Bag Lunch
- Design-A-Plant
- Plant Part Bingo (optional extra activity)
- Wrap-Up

WELCOME CIRCLE – 5 MINUTES

Greeting: If you were a plant, what plant would you be?

Today's Plan: Today we are learning all about plants, eating lots of different parts of the plant, and maybe discovering that each of us has a different (or similar) favorite part of the plant!

PLANT PARTS DIAGRAM – 20 MINUTES

Let's begin our discussion of plants by looking a little closer at one plant to see if we can begin to identify its different parts.

Note: Plant Part Snack can be done in conjunction with the Diagram activity.

1. Pass out the Plant Part Diagram journal sheet. If you are outside, have a plant ready from the garden with all six parts visible for students to explore. If you are inside, draw a picture of the plant on the board and ask students to follow along.
2. Give students time to draw the plant.
3. Ask students to identify the plant parts. They will label the different parts of the plant: roots, stem, leaves, flower, fruit, and seeds.
4. When identifying parts of the plant, have students write down a corresponding food item. (Label the leaf. What is an example of a leaf we eat? Lettuce. Label the root. What is an example of a root we eat? Carrots or beets. Label the flower. What is an example of a flower we eat? Broccoli or cauliflower. Label the stem. What is an example of a stem we eat? Celery or rhubarb. Label the fruit. What is an example of a fruit we eat? Apple or blueberry. Label the seed. What is an example a seed we eat? Sunflower or pumpkin. Write the example.)
5. What are the jobs of the different parts of the plant? (Have students write notes on the back of their picture and maybe have one student at a time write ideas on the dry erase or chalk board.) Do you think we eat all of these different parts? (Record predictions).
 - Roots (store nutrients and support plant)
 - Stems (transport water, nutrients, etc.)
 - Leaves (photosynthesize to make sugar and carbohydrates)
 - Flowers (reproductive organs, attract pollinators)
 - Fruits (protection to developing seeds)
 - Seeds (genetic info to reproduce plant)

Ask: Is it possible to eat every part of the plant?

Reflect: What is the most interesting plant part? Why?

PLANT PART SNACK – 15 MINUTES

Now that we agree that we eat every part of the plant, let's share a snack that features each part of the plant!

1. Show students the various snack items: carrot, celery, spinach, broccoli, apples, and sunflower seeds.
2. Ask them to identify the parts of the plant that the food items came from.
3. Although these snacks each came from different plants, ask the students to imagine that one plant produced all these snack items, a SUPER plant! What would that plant look like? How could we arrange these snack items, based on the part of the plant that they represent, to become one new plant in which every part is edible?
4. Each student will arrange the ingredients on a napkin or plate to create their own SUPER plant!
5. Eat snack!

Reflect: Which part of the plant do you think you eat the most of? Which part of the plant is your favorite?

?

Explain to the class that they will be doing a sorting activity based on the different plant parts that people eat. Explain that you have set up six bags around the room, each labeled with a different plant part: root, stem, leaf, flower, fruit, and seed.

1. Divide the students into small groups.
2. Give each group a grocery bag filled with a different selection of food items made from plants.
3. Each group should work together to look at the food items in their grocery bag and decide which part of the plant they are made from. Their job is to classify the different vegetables by their plant part.
4. As a decision is made for each item, one person from that group should place that food item in the bag labeled with the correct plant part.

After groups have finished sorting the plant parts, bring all the plant part bags to the front of the room. Select a few food items from each bag and ask the group whether they agree with the classification of the food. As you review each category of plant parts, check off that part on the Plant Part Diagram on the board as a part of the plant we eat.

Reflect: Do we eat all the parts of the plant?

DESIGN-A-PLANT – 15-20 MINUTES

Now that we have talked about all the parts of a plant, everyone is going to design their own plants.

1. Using a craft bin, students will make their own plant.
2. Show them a sample plant identifying each part.
3. Encourage students to be creative as they design their own plant: it can be large or small, bright or dark, moving or still, etc.
4. When designing their plants, each student must include all six plant parts (write list on board):
 - Roots
 - Stem
 - Leaves
 - Flower
 - Fruit
 - Seeds
5. Each student should come up with a name for their plant and decide whether any part of the plant is edible. Give them an estimated time to complete their job.
6. Students should use various materials from the craft bin to create their plant. They can use glue, tape, scissors and/or hole punches.
7. Allow students to share their creations in a circle.

Reflect: Have each student present their plant (name, explain parts, etc) to the group.

FILLER ACTIVITY: PLANT PART BINGO – 5-10 MINUTES

Let's test your knowledge! Students will play a bingo game where they have to guess the part of the plant each food item came from.

1. Pass out bingo sheets.
2. Pass out beans to use to cover spaces.
3. Begin by holding up food cards. Ask the students to name the part of the plant that we eat.
4. Play until everyone gets a Bingo.

Adaptation: Use plastic fruit instead of calling out spaces. Another option is to hold up the fruit, and the first student to identify which part of the plant it is from.

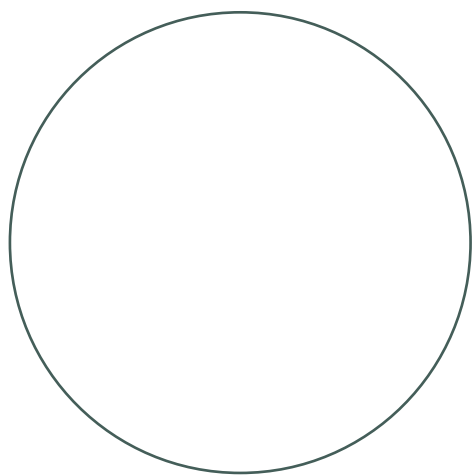
WRAP-UP

Reflect: There are many parts to plants that you can eat!

Take Home: Planted sprout

PLANT PART HARVESTING

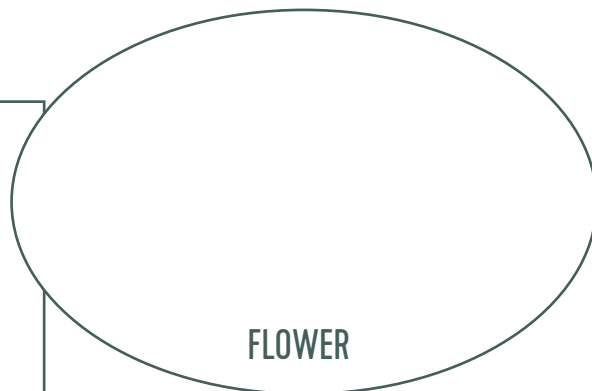
Think about the plants you harvested in the garden today.
For each plant part below, draw a picture of the fruit or vegetable you harvested.
When you are done, you will have a “SUPER PLANT”!



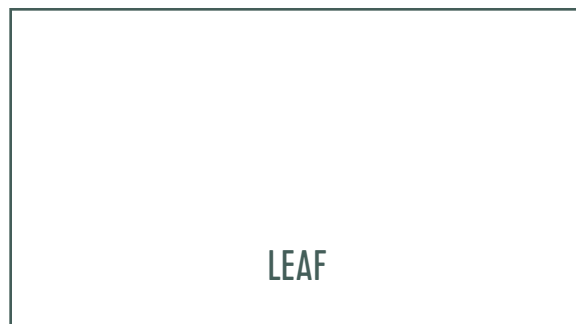
FRUIT



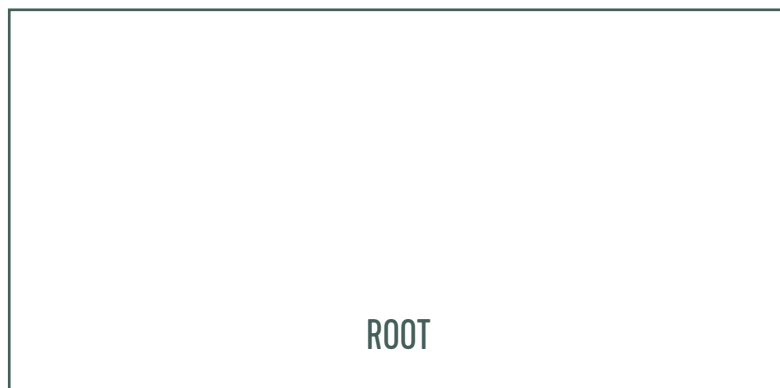
STEM



FLOWER



LEAF



ROOT

PLANT PART BINGO

FLOWER	ROOTS	FLOWER	ROOT	STEM
LEAF	FLOWER	FRUIT	FRUIT	FLOWER
ROOT	STEM	FREE SPACE	STEM	LEAF
SEED	SEED	ROOT	FLOWER	FRUIT
FRUIT	STEM	SEED	ROOT	FRUIT

FLOWER	ROOT	STEM	SEED	LEAF
STEM	LEAF	FLOWER	ROOT	STEM
LEAF	ROOT	FREE SPACE	FRUIT	FRUIT
STEM	SEED	SEED	FRUIT	LEAF
LEAF	ROOT	FLOWER	STEM	LEAF

LESSON FOUR

GARDEN HARVEST II

SUMMARY

Students harvest as much frost sensitive and frost resistant produce from the garden as possible. They will learn how to harvest, clean up the garden, clean produce, and weigh it for the cafeteria. As they harvest, students will also look for signs of other things that eat or use our garden.

MATERIALS:

Pencils
Markers
Journals sheets
Washing Basin
Knife
Cutting Board
Paper Plates and/or napkins
Harvest Baskets and bags
Bags and boxes for FSD
Scale for weighing veggies

GUIDING QUESTIONS:

1. What or who eats the garden food?
2. In what ways do we depend on the creatures that live and eat in the garden?

GOALS:

1. Students will demonstrate the correct way to harvest different kinds of produce.
2. Students will draw or list 2 animals or insects, besides humans, that live and eat in the garden.

OUTLINE:

- Welcome Circle and Attendance
- Journal: Who's in Our Garden?
- Garden Harvest Walk Through
- Snack: Garden Harvest Taste Test
- Filler, Game: Bug Observation
- Filler, Active Game: Frogs, Insects, Flowers
- Filler, Journal: "October Garden Drawing"
- Wrap-Up

WELCOME CIRCLE AND ATTENDANCE – 5 MINUTES

Greeting: Students will harvest as much frost sensitive and frost resistant produce from the garden as possible. As we harvest, we will pay close attention to signs that other creatures are eating our produce!

Today's Questions: What or who eats the garden food? What creatures do we depend on to live and eat in the garden? Why? (This is an open-ended, no-right-or-wrong-answers, question. Revisit this at the end of class and see if their answers have changed.)

WHO IS IN OUR GARDEN? – 10 MINUTES

Students will find proof of other life in the garden.

1. When students are still in the circle, continue the conversation based on the day's questions: What or who eats the garden food? What creatures do we depend on to be in the garden? Why?
2. How do they know if a creature has been in the garden? Have them make a list of evidence they could look for.
3. Pass out student journals and have them find the page, "Who is in Our Garden?" In pairs, have students walk through the garden in search of evidence of other life. When they come across the evidence, they should document it in their journal page. [Students can do this independently throughout the class while some students are harvesting.]
4. In a group, share the evidence they found.

GARDEN HARVEST WALK-THROUGH – 30+ MINUTES

Students will walk through the garden with the teacher. As the students go through the garden, they will carefully point out the food they see in the garden.

1. Before students go into the garden, go over the rules/expectations as needed.
2. Walk through the garden as a group or in small groups. As you come to crops that need to be harvested, do it as a group, or just use a few students. For the first harvest, it may be best to do it as a large group to walk through all of the steps. Find a crop that you can all harvest together—green beans, tomatoes, etc.

Harvest:

1. Demonstrate to each student how to harvest it properly. Ask them leading questions like: What is ripe? How big should the summer squash be when we pick it? What part do we not pick? Where should the crop go after you pick it?
2. Emphasize that the crop needs to be carefully placed in the harvest basket because it could bruise and they are picking it for the school and possibly themselves.
3. Be specific about how much they should harvest (10 green beans, until your basket is full, every tomato that is red).
4. Leave a few students at the garden bed or stay there as a group.
5. When students are done harvesting, they should take the produce to the weighing station.

Weighing Station:

1. The weighing station should have a tub of water for washing the produce, a pile for excess foliage, a scale, the recording paper, a pencil, and harvest bags.
2. In this area, students should have jobs so that things go smoothly and the weights are recorded properly.

Cleaners – the cleaners wash the dirt off the produce and tear off extra foliage, roots, etc. All extra foliage will be put into the compost/refuse pile.

Weighers – the weighers will use the scale to measure the weight of each crop individually

Recorder – the recorder will work closely with the weighers. He or she will need to write down the name of the crop and then the correct weight of each crop.

Storage – when crops are cleaned, weighed, and recorded, they will need to be placed into a storage container so they can be transported later to the cafeteria

Cardboard boxes: tomatoes, peppers

Wax boxes: greens, bunches of herbs

Milk crates: squash

Grain bags: potatoes

SNACK: GARDEN HARVEST TASTE TEST – 10 MINUTES

Each student will get a chance to taste produce from the garden.

1. Gather everything together and head to the kitchen, classroom, or stay outside.
2. Before everyone begins tasting, explain the importance of trying new things. Sometimes it takes trying new things 10 times before you begin to like them!
3. Explain that our program has the rule “Don’t Yuck my Yum!”. This means that we don’t say negative things about how something tastes because it might offend someone and discourage others from trying something new. Ask students, how they can respectfully express that they do not like something? (“I don’t care for it.”)
4. Talk about each food as you cut it into small taste test pieces and place them on a serving plate or napkin.
5. Pass the taste test samples to students and enjoy! Encourage students to share their feedback about the different foods using descriptive words.



Reflect: What foods did you enjoy? Did you like anything that you didn’t expect to like? What was it like eating straight from the garden? Are there any differences between garden fresh foods and those purchased from a store?

FILLER GAME: BUG OBSERVATION – 15 MINUTES

Students will try to find as many camouflaged insects as possible.

1. Place several plastic insects in one garden bed near the edge of the garden when students aren't looking.
2. Have students walk slowly and carefully to count all of the insects. They should leave them on the ground until all students have had a chance to look for them.
3. When students are done looking, they will be surprised to find out how many were actually hidden.
4. Try to have the younger students hid them for the older students and vice versa.
5. This is a fun game that encourages careful and quiet observation, especially for the creatures living in the garden.

FILLER GAME: FROGS, INSECTS, FLOWERS – 10 MINUTES

This tag game plays off the natural order of life in the insect kingdom.

1. Divide the group into three circles, one inside the next. The people in the outer circle are flowers, and remain stationary. The players in the inner circle are insects, and begin the game with one knee to the ground. The players in the middle circle are frogs -they begin the game standing.
2. When the whistle sounds the insects have ten seconds to run and tag a flower. They may avoid capture (being tagged by a frog) by flying (touching one knee to the ground). Frogs chase the insects and can "follow" an insect by turning 360° pivot during which the insect can dash off.
3. After each round, the results are noted. A successful animal remains as that animal for the next game. A captured animal becomes the same animal as his captor. An unsuccessful but uncaptured animal dies and becomes a flower.
4. Each round creates changes in populations and inter-relationships can be easily observed. A balanced game can go on indefinitely, but if frogs become too efficient, the insects are wiped out whereupon the frogs ultimately die. If the frogs are inefficient they may be wiped out and large uncontrolled fluctuations can result in the insect population.

JOURNAL: OCTOBER GARDEN DRAWING – 10 MINUTES

1. Pass out the journals to the students.
2. Today, students will complete the journal sheet "October Garden Drawing." See journal pages for details.
3. Collect the books when they are finished.

WRAP-UP

Reflect: What is some food that we picked? What are some creatures we found? Which creatures do we need to keep in the garden?

Take Home: Extra taste test veggies, if available.

WHO IS IN OUR GARDEN?

Draw a picture of the evidence.	What was here? Why was it here?	What was it doing in the garden? Was it good for the garden?

OCTOBER GARDEN DRAWING

Name: _____

Every month the garden changes. Document what the garden looks like today.
Find a place to sit near the edge of the garden and draw what you see.



LESSON FIVE

GARDEN DRYING

SUMMARY

Students will still continue harvesting produce from the garden, but will specifically harvest some herbs, flowers, and corn that they will prepare to dry. They will use flowers saved 1-2 weeks prior to this lesson and learn how to dry seeds for seed saving.

MATERIALS:

Pencils
Markers
Crayons
Old or extra seeds
Pictures of plants that match seeds
Name cards of plants
Journals sheets
Washing Basin
Knife
Cutting Board
Paper Plates and/or napkins
Harvest Baskets and bags
Bags and boxes for FSD
Scale for weighing veggies
Seed packets

GUIDING QUESTION:

1. What steps are required to bring food to the table?
2. What steps are required in the fall to plant seeds next year?

GOAL:

1. Students will harvest herbs or flowers and follow the steps to prepare them for drying.
2. Students will demonstrate the steps needed to harvest and dry seeds from the garden.

OUTLINE:

- Welcome Circle and Attendance
- Seed Sort
- Garden Harvest Walk Through
- Seed Packet Discovery
- Seed Saving
- Filler, Active Game: Rock, Paper, Scissors...Seed!
- Filler, Journal: Create A Seed Packet
- Filler, Book: Pumpkin Town! by Katie McKy
- Wrap-Up

WELCOME CIRCLE AND ATTENDANCE – 5 MINUTES

Greeting: Welcome! Today we will continue our harvest, but focus on plants and seeds we can dry. Hopefully we can save some seeds to plant next spring.

Today's Questions: What steps do we need to do to plant some of these same garden plants in the garden next spring? (This is an open-ended, no-right-or-wrong-answers, question. Revisit this at the end of class and see if their answers have changed.)

SEED SORT – 5 MINUTES

To learn more about seeds students will match seeds to pictures of the plants they come from. This is a good activity if you have extra time to fill at the end.

1. Divide the students up into three groups.
2. Go over the cards as a group so each student understands the activity.
3. Give each student in Group One a plant name card.
4. Give each student in Group Two a bag with a seed.
5. Give each student in Group Three a picture of a plant.
6. Instruct the students to group themselves together by plant. Each group should have 3 students with a seed, name, and picture.

Reflect: Seeds can come in many different shapes and sizes. Did any of the matches surprise you?!

GARDEN HARVEST WALK THROUGH – 10 MINUTES

Students will walk through the garden with the teacher. As the students go through the garden, they will carefully point out the food they see in the garden.

1. Before students go into the garden, go over the rules/expectations as needed.
2. This time in the garden, students will harvest herbs, flowers, and corn. Show them how to harvest it and how to clean up the garden bed afterwards.

Harvest:

1. Demonstrate to each student how to harvest it properly. Ask them leading questions like: What is ripe? How big should the summer squash be when we pick it? What part do we not pick? Where should the crop go after you pick it?
2. Emphasis that the crop needs to be carefully placed in the harvest basket because they are picking it for the school and possibly themselves.
3. Be specific about how much they should harvest (10 green beans, until your basket is full, every tomato that is red).
4. Leave a few students at the garden bed or stay there as a group.
5. When students are done harvesting, they should take the produce to the weighing station.

Weighing Station:

1. The weighing station should have a tub of water for washing the produce, a pile for excess foliage, a scale, the recording paper, a pencil, and harvest bags.
2. In this area, students should have jobs so that things go smoothly and the weights are recorded properly.

Cleaners – The cleaners wash the dirt off the produce and tear off extra foliage, roots, etc. All extra foliage will be put into the compost/refuse pile.

Weighers – The weighers will use the scale to measure the weight of each crop individually

Recorder – The recorder will work closely with the weighers. He or she will need to write down the name of the crop and then the correct weight of each crop.

Storage – When crops are cleaned, weighed, and recorded, they will need to be placed into a storage container so they can be transported later to the cafeteria

Cardboard boxes: tomatoes, peppers

Wax boxes: greens, bunches of herbs

Milk crates: squash

Grain bags: potatoes

SEED PACKET DISCOVERY – 10 MINUTES

1. Split Sprouts into groups of 2-3.
2. Pass out seed packets, 1-2 seed packets per group.
3. Ask them what they see or notice.
4. Make sure to keep a running list on a white board of items kids spot.
5. Discuss things that might be confusing (i.e. USDA, organic, germination).
6. Allow students to compare numbers they might find (days to germination, spacing requirement, height, sun).
7. Pass out blank and empty seed packets to students.
8. Have them decorate their seed packets (based on seeds you saved prior) with the following information:
 - a. Seed Company name (museum walk through everyone's made-up names)
 - b. Type of seed (sunflower, bean, dill, etc)
 - c. Their name
 - d. Picture of the plant

SEED SAVING – 15 MINUTES

1. Remind students about the seed harvesting they completed a few weeks prior in Lesson 2: Garden Harvest I.
2. Discuss types of seeds they saved.
3. In their groups, pass out dried sunflower heads, bean pods, etc.
4. Allow students to harvest their seeds.
5. Ask students how we can store these seeds for next year? Discuss storage requirements (dry, moderate temperature, good container).
6. Have them dry any seeds that might be wet.
7. Pass out seed packet templates and growing information for the back of the packets. They can be pre-cut or have students cut them out.
8. Have the students glue the growing information on to the blank seed packet.
9. Students can decorate the seed packet cover.
10. Fill seed packets with the seeds harvested from the garden.
11. Ongoing discussion questions:
 - a. What happens as plants evolve over time?
 - b. What do you look for in your plants?
 - c. Name some characteristics that you could select for. (color, size, flower, storage, taste)
 - d. How do we know what plant to select seeds from?
 - e. Look for the best example of the specific traits, like largest corn ears, healthiest plant, pest resistance, most beautiful color. This will ensure the highest quality stock for your seed bank.
 - f. How do you store the seeds properly? The seeds should remain dry and protected from sunlight, heat, and extreme cold.
12. Ask for a volunteer to make a seed packet for the school garden.

Reflect: What did you notice about the seeds? What would happen if we didn't save our seeds? What would happen if others didn't save seeds for us?

FILLER, GAME: ROCK, PAPER, SCISSORS... SEED! – 10-15 MINUTES

This is a group game of Rock, Paper, Scissors. Be sure to explain the rules of Rock, Paper, Scissors for those who don't know.

1. Everyone begins as a seed squatting on the ground. The seeds waddle to each other and play RPS. The winner rises to his/her knees becomes a sprout, the loser stays a seed (squatting).
2. Now, sprouts find sprouts and seeds find seeds and play with each other, either advancing or staying the same.
3. Sprouts advance into flowers by standing with arms out to the side and flowers turn into the kids' favorite fruit or vegetable (pretending to be that piece of produce).
4. The fruits and veggies then play each other and the winners turn back into seeds. If at any point there is only one of an early stage, they automatically advance to the next stage.

FILLER, JOURNAL: CREATIVE SEED PACKET – 5-10 MINUTES

1. Pass out a blank journal sheet out to students.
2. Today students will complete a journal sheet detailing what they learned about seed saving.
3. Collect the books when they are finished.

FILLER, BOOK – 10 MINUTES

Pumpkin Town by Katie Meky

The book follows two brothers through their journey of planting, growing, and harvesting pumpkins that take over their town.

Listening Question: What is the lesson that the brothers learn about pumpkin seeds?

Reflect: How are the brother's efforts rewarded? How is their garden like your garden at home? How is it like the school garden?

WRAP-UP

Reflect: What are some seeds that we saved? What did we do in order to save them? What was first, second, third...?

Take Home: Seed packets

BACKGROUND INFORMATION

SAVING SEEDS

Note: Most seeds need to be dried thoroughly before saving the seeds. Due to the nature of our program, you can either a) pick the plants a week ahead of time to dry indoors or b) remind students on the day of seed saving that the seeds need to be dried when they get home.

Save seeds for GMFTS: We save the seeds of the pole beans we grow to plant for the next year. Bring several seeds of Purple Lima Beans and Red Noodle Beans and dry them at the office. They then need to be placed in a small seed saving envelope and label with the name of the bean and date. We will need 4-8 seeds of each type for each school.

BEANS

Beans are self-pollinated, and different bean varieties do not commonly cross-pollinate each other. Similarly colored varieties should be separated by enough distance to keep the vines from intertwining, to make them easy to distinguish at harvest. Allow pods to dry on the vines before picking and shelling, then finish drying the beans in a dry spot.

If you're eating your beans green, allow just one or two pods per plant to remain and mature for seed... too many pods maturing on an individual plant will cause it to stop setting more beans and concentrate on maturing the ones it has.

Pick beans for seed after the pods are ripe and have dried on the plants. Don't allow dried pods to get rained on as the beans may quickly mildew or sprout in their pods. When very dry many pods will split on their own to drop their seeds; the rest can be easily crumbled in the hands and the finer chaff blown away after removing the big pieces. Finish drying the beans in a dry spot indoors or under cover.

Bean seeds, properly dried and stored, will keep for 4 years.

CORN

Wind-pollinated corn requires up to a mile for safe isolation in exposed areas. Exact isolation distances will depend on neighboring growers and wind patterns, windbreak protection, etc. (corn pollen is relatively heavy and falls to the ground quickly under quiet conditions).

Instead of distance, "time isolation" can also be used—plant a first, faster-maturing corn crop early enough so that its ears have been pollinated, and their silks dried, before a second, later-maturing crop's tassels have begun to shed pollen (see Time Isolation in Preserving Existing Plant Varieties).

www.howtosaveseeds.com/isolate.php#timeisolation

Corn is not self-pollinating—pollen must be carried by the wind from tassels of one plant to silks of another for pollination to occur. Seeds which do not get pollinated will not form kernels. For this reason it is important for good pollination to plant corn in blocks instead of in a single long row.

Allow corn ears to mature and dry on the stalks, but harvest as soon as the ears are dry to keep them from getting rained on or the kernels may rot or sprout. Watch also for ants attacking kernels. Let corn kernels continue to dry thoroughly on the cobs (with husks shucked) in a protected spot. After the kernels are thoroughly dry, rub them off the ears with your hands.

Sweet corn seeds remain viable for up to 3 years when properly stored; starchier dent, popcorn and flint corns can remain viable for 5 or more years.

LETTUCE

Lettuce is self-pollinating, but plants can cross under some circumstances. 25 feet of separation is generally sufficient to prevent crossing, however.

While each flower opens only during the morning of one day, the flowering period is long and there are almost always flowers blooming on the plants. This means that a flowering plant will have flowers and seeds in all stages of maturity.

Gather dried seed heads (they are easy to recognize) every couple or three days as they ripen and dry, or wait until most seed heads have dried and hang the plant upside down over a tarp or in a paper bag (harvest dry seeds if rains threaten).

Lettuce seeds can remain viable for 3 years if properly stored.

RADISH

Radishes will cross other radishes including daikon, but not turnips (*Brassica rapa*) or other members of the Cabbage Family. Separate radish and daikon varieties from each other by ½ mile for safe distance isolation.

Pick pods after they dry completely on the plant. Pick every day or two, as the pods will break open naturally to release their seeds soon after drying.

Radish seeds can last 4 or 5 years if properly stored.

SUNFLOWERS

Harvest completely dry sunflowers by gently running your hand over the heads to pop out the seeds. Pop out the seeds over a newspaper spread flat. If the seeds do not release easily from the head, wait to harvest until they do. Seeds should be fat and hard to the touch. Any seeds that are not easily released and be eaten by the students.

Planting Depth	Seed Spacing	Row Spacing	Days to Germination	Space After Thinning	Days to Maturity
1-1/2"	2-3"	36"	8-16	4-6"	60-75

Beans

Sow seeds when danger of frost has passed.

Bush Beans:
Harvest regularly for greatest yields and plant new successions every 2-3 weeks for continuous supply.

Pole Beans:
Trellis pole beans with sturdy poles or fence. Allow to dry on the plant then harvest.

Planting Depth	Seed Spacing	Row Spacing	Days to Germination	Space After Thinning	Days to Maturity
1"	8"	12-18"	7-14	12-18"	60-80

Sunflower

Sow in average soil in full sun after danger of frost. Sow seeds about 8" apart and cover with 1" of fine soil. Firm lightly and keep evenly moist. Seedlings emerge in 7-14 days. Thin to stand 12-18" apart when seedlings are 1" high.

Planting Depth	Seed Spacing	Row Spacing	Days to Germination	Space After Thinning	Days to Maturity
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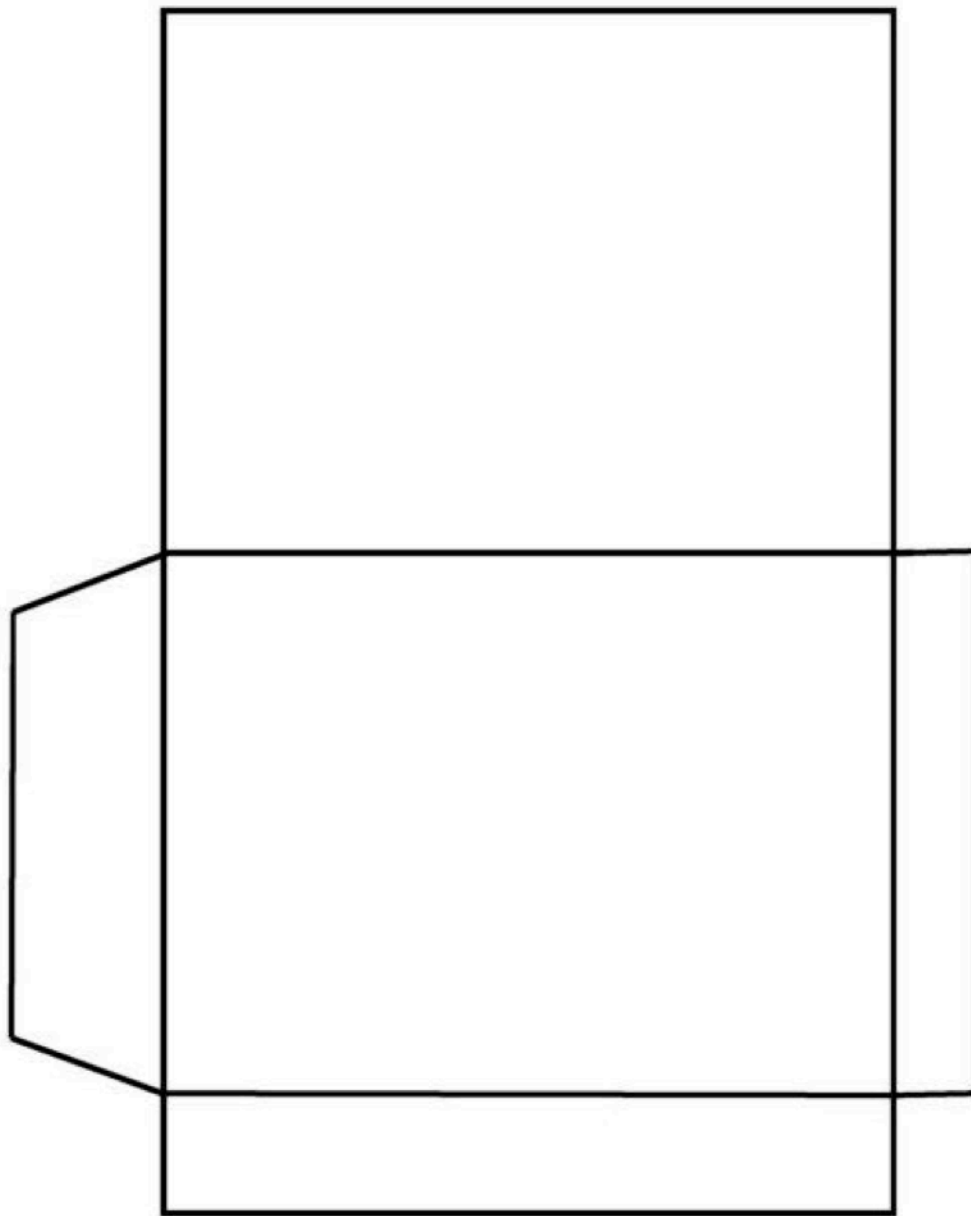
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SEED PACKET TEMPLATE

Print the template for each student.



HOW TO DRY YOUR GARDEN SEEDS

BEANS

- a. Allow bean pods to dry on the vine. You'll know they're ready when they turn brown and become dry and brittle. The pods might even be cracking!
- b. Open the pods and harvest the beans from inside.
- c. Spread beans on cardboard in a cool, dark, and dry place.
- d. Let beans dry about 2 weeks. If they are still soft when you touch them, let them sit longer!
- e. Once they're all ready, store in a seed packet in dark, cool, and dry location.

SUNFLOWER

- a. To make sure the sunflower is mature check if the back of the flower head is brown and dry, and the yellow petals have dried and fallen.
- b. Cut flower head off stalk, leaving one foot of stalk connected to the flower.
- c. Tie string or twine around a bundle of sunflowers (2-3). Make sure the twine or string is tied close to the cut part of the stalk.
- d. Hang flowers upside down in a dark, dry area.
- e. Once the flower is completely dry, rub the seeds out of the head by hand. Place on newspaper, make sure they don't touch, and let dry. Once they're completely dry, store in a seed packet in a dark, dry location.

MARIGOLD

- a. Harvest seeds when the seed heads are dry and brown.
- b. Crumble the seed heads. You want to save the long seeds with the black tips.
- c. Place on a paper plate for a few days.
- d. Save in a seed packet in a dry, cool, and dark place.

PUMPKIN/SQUASH

- a. Cut open mature pumpkin/squash.
- b. Scoop out the pumpkin.
- c. Carefully rinse seeds off with water in a colander. Remove the clinging pumpkin fibers.
- d. Place seeds on newspaper or paper plate in a dark, dry area. Make sure to move seeds around every few days, otherwise they will get stuck!
- e. Once your seeds are completely dry (about 2 weeks), store in a seed packet in a dark and dry location.

LESSON SIX

PUMPKINS & SQUASH

SUMMARY

Students harvest all pumpkins and squash from the garden and clean up the beds. They will clean and weigh them and then use a few of them for an art project, math activity, or science experiment.

MATERIALS:

Pencils
Markers
Journals sheets
Washing Basin
Knife
Cutting Board
Paper Plates and/or napkins
Harvest Baskets and bags
Bags and boxes for FSD
Scale for weighing veggies
Toasted Pumpkin Seeds
Pumpkin sequence cards

GUIDING QUESTION:

1. What are the parts of a pumpkin or squash and how does it grow?

GOALS:

1. Students will demonstrate the correct way to harvest pumpkins and squash.
2. They will identify the various parts and life cycles of squash and pumpkins.

OUTLINE:

- Welcome Circle and Attendance
- Garden Harvest Walk Through
- Pumpkin Life Cycle
- Filler, Game: Scavenger Hunt
- Filler, Game: Seed Guess
- Snack: Toasted Pumpkin Seeds
- Filler, Game: Look Up
- Filler, Journal: "Pumpkin Still Life"
- Wrap-Up

WELCOME CIRCLE AND ATTENDANCE – 5 MINUTES

Greeting: Welcome! Today we will harvest the pumpkins and winter squash in the garden.

Today's Questions: What in the garden do we use as food or decoration? (This is an open-ended, no-right-or-wrong-answers, question. Revisit this at the end of class and see if their answers have changed.)

GARDEN HARVEST WALK THROUGH – 20+ MINUTES

Students will walk through the garden with the teacher. As the students go through the garden, they will carefully point out the food they see in the garden.

1. Before students go into the garden, go over the rules/expectations as needed.
2. This time in the garden, students will harvest only squash and pumpkins. Show them how to harvest it and how to clean up the garden bed afterwards. All squash plants and roots should be removed before moving on to the next activity or harvest.

Harvest:

1. Demonstrate to each student how to harvest it properly. Ask them leading questions like: What is ripe? How big should the summer squash be when we pick it? What part do we not pick? Where should the crop go after you pick it?
2. Emphasis that the crop needs to be carefully placed in the harvest basket because it could bruise and they are picking it for the school and possibly themselves.
3. Be specific about how much they should harvest (10 green beans, until your basket is full, every tomato that is red).
4. Leave a few students at the garden bed or stay there as a group.
5. When students are done harvesting, they should take the produce to the weighing station.

Weighing Station:

1. The weighing station should have a tub of water for washing the produce, a pile for excess foliage, a scale, the recording paper, a pencil, and harvest bags.
2. In this area, students should have jobs so that things go smoothly and the weights are recorded properly.

Cleaners – the cleaners wash the dirt off the produce and tear off extra foliage, roots, etc. All extra foliage will be put into the compost/refuse pile.

Weighers – the weighers will use the scale to measure the weight of each crop individually.

Recorder – the recorder will work closely with the weighers. He or she will need to write down the name of the crop and then the correct weight of each crop.

Storage – when crops are cleaned, weighed, and recorded, they will need to be placed into a storage container so they can be transported later to the cafeteria.

Cardboard boxes: tomatoes, peppers

Wax boxes: greens, bunches of herbs

Milk crates: squash

Grain bags: potatoes

PUMPKIN LIFE CYCLE – 15 MINUTES

1. With your group in a circle, pass out pumpkin life cycle cards to students, one card per person or team.
2. Ask students to hold up their cards if they think they are the first in the life cycle. Ask the group if they agree. If more than one card is raised, ask for their opinion about which one comes first.
3. After the appropriate stage in the life cycle is identified, have students place their card on the ground in order.
4. Continue until the life cycle is complete. Cards should be lined up on the ground.
5. Ask the group if they know what happens next. Does the life cycle stop there?
6. Have the group curve the line into a circle to represent how the life cycle cycles!

FILLER, GAME: SCAVENGER HUNT – 10 MINUTES

Hide pumpkins or squash in the garden after they have been harvested and students aren't looking, or have students go on a scavenger hunt game as they harvest the pumpkins. Make sure each student has at least one pumpkin or squash to harvest. If they want, students can take one pumpkin or squash home with them.

FILLER, GAME: SEED GUESS – 15 MINUTES

Each student will estimate and count the seeds in one pumpkin.

1. Pick one pumpkin that the students harvested to use for this activity and the snack.
2. Ask students to guess or estimate how many seeds they think are inside that pumpkin. Write that number on the white board.
3. Have the students come up with a plan of how you will count all of the seeds. It would be best to divide the students into groups and have someone keep track of how many they count.
4. The teacher will cut the pumpkin in half and scoop seeds out to the students. At this time, give students an opportunity to make a second estimate of how many seeds there may be.
5. As the students count the seeds, they can clean them and place them in a bowl.
6. When all of the students are done, have some clean up and the others tally the results.
7. How close did they get to their estimate(s)?
8. If students want to take some seeds home, divide seeds into small sandwich bags. They can bring the Toasted Pumpkin Seed recipe with them so their parents can help them make it.

SNACK: TOASTED PUMPKIN SEEDS – 5 MINUTES

Toast pumpkin seeds ahead of time so that students have a chance to taste what the seeds would be like toasted. Ask if anyone has ever toasted pumpkin seeds at home.

FILLER, GAME: LOOK UP – 5 MINUTES

This circle game is fun and quick.

1. Players stand in a circle, all with their heads looking down.
2. The facilitator yells "look up". All players look up at someone else (they cannot change who they are looking at after they look up). If two people happen to be looking at each other (i.e. make eye contact), they both have to scream. Whoever screams last is eliminated from the circle. If someone screams when they are not making eye contact with anyone, they are also eliminated.
3. The facilitator then says "look down" and everyone looks down. The facilitator then says "look up" and the process continues.
4. The game continues until there are only two players left.

FILLER, JOURNAL: PUMPKIN STILL LIFE – 5-10 MINUTES

For this activity, bring in an assortment of different-looking pumpkins for the students to draw.

1. Pass the journals out to the students.
2. Today, students will complete the journal sheet “Pumpkin Still Life.” See journal pages for details.
3. Collect the books when they are finished.

WRAP-UP

Reflect: What is some food that we picked? How can we use it as food or decoration?

Take Home: Pumpkin Seeds

FALL TOASTED PUMPKIN SEEDS

INGREDIENTS

1 1/2 cups raw whole
pumpkin seeds
2 teaspoons butter, melted
1 pinch salt

DIRECTIONS

1. Preheat oven to 300 degrees F (150 degrees C).
2. Toss seeds in a bowl with the melted butter and salt. Spread the seeds in a single layer on a baking sheet and bake for about 45 minutes or until golden brown; stir occasionally.
3. Remove from oven and let cool.
4. Eat!

PUMPKIN STILL LIFE

Place a pumpkin in front of you. Using this paper and a pencil, you will draw a pumpkin still life.
Start by drawing the outline of the pumpkin using both short and long lines.

If you would like, start adding shading with the tip and side of your pencil.

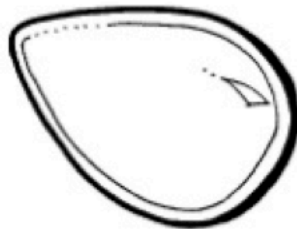
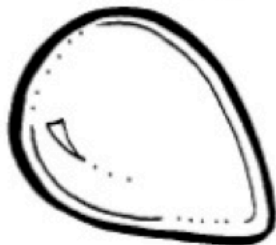
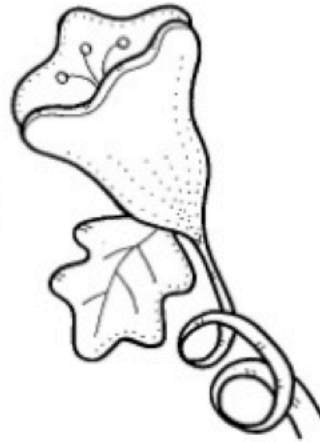
Where the light shines on the pumpkin, do not add shading.

Where there is a shadow, add more shading.

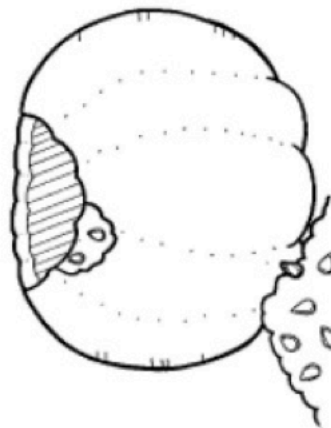
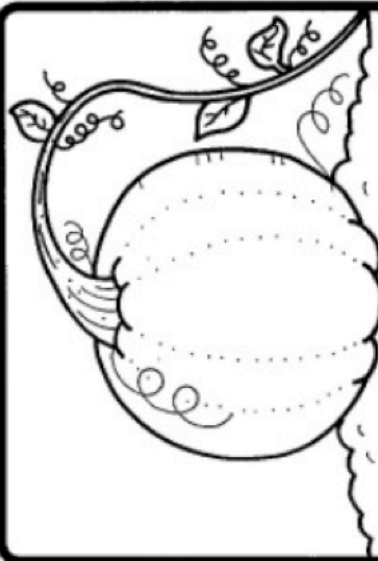
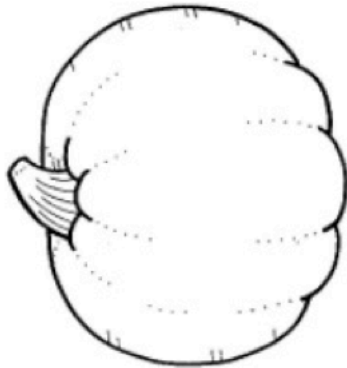
It will help to rotate the paper as you add shading around the pumpkin.

And remember you can always ERASE!

Pumpkin Sequence Cards



Pumpkin Sequence Cards



LESSON SEVEN

GARDEN COOKING

SUMMARY

Students will use garden produce (or purchased produce, preferably local) and will follow a recipe that can be eaten or preserved.

MATERIALS:

Pencils

Markers

Journals sheets

Examples of preserved foods

Food, based on recipe selected

Bowls

Spoons

Measuring spoons and cups

Other cooking utensils, based
on recipe selected

GUIDING QUESTIONS:

1. What happens to food between the garden and your plate?
2. What steps and resources are required to bring food to the table?

GOALS:

1. Students will collaboratively work in a group by taking turns.
2. Students will follow directions in a recipe with help from an instructor.

OUTLINE:

- Welcome Circle and Attendance
- Why Preserve?
- Cooking 101
- Preserving the Harvest
 - Root Chips
 - Salsa
 - Refrigerator Carrots
 - Refrigerator Beans
 - Refrigerator Pickles
 - Shredded Zucchini
- Snack
- Filler: Utensil Mystery Blanket
- Filler, Active Game: Vegetable Tag
- Filler, Journal: What I Cooked Today
- Wrap-Up

WELCOME CIRCLE AND ATTENDANCE – 5 MINUTES

Greeting: Welcome! Today we will turn some of our garden produce into snacks.

Today's Questions: What happens to food from the garden to your plate? (This is an open-ended, no-right-or-wrong-answers, question. Revisit this at the end of class and see if their answers have changed.)

WHAT & WHY WE PRESERVE – 5-10 MINUTES

Students will discuss with the educator why we preserve foods. They will also learn about other foods we eat that have been preserved.

1. Discuss that some fresh foods which come from farms are preserved so we can eat them in the winter: corn in January, peaches in February. Can students name some other foods that we “save” for different times of the year?
2. Show students different preserved items: freezer items, dried items, and canned items (for example: frozen corn bag, raisin box, canned tomatoes). Brainstorm a list of common dried foods such as raisins, rice, pasta, beans, peas, and spices. Brainstorm a list of foods that are frozen or canned.
3. Lead students to understand that food and resources are shared for the common good of society. Relate this to their own experiences with sharing resources with others at the school, at their church, or in their town/state. How do they feel when they share and how do they feel when someone shares with them? Although they have the right to keep their resources, they also have a community responsibility to share. For example, helping your neighbor shovel the driveway or sharing the extra produce from your garden.

COOKING 101 – 3 MINUTES

Students get a crash course in cooking!

1. Explain to students that today we are making ____! Ask students to think about other cooking experiences they have had, how did they know how to prepare the food correctly?
2. Explain that often when cooking, we start with a recipe. What does a recipe tell us?
 - a. A recipe is a set of instructions about how to prepare a meal.
 - b. Most recipes cover the same key elements:
 - i. The dish name
 - ii. The serving size
 - iii. The ingredients with measurements
 - iv. The directions about how to use the ingredients
 - c. Review with students the layout for Sprouts Program recipes.
3. Explain that we will be using various kitchen tools in the program.
 - a. Review with the students the tools and equipment you will use:
 - i. Bowls
 - ii. Spoons
 - iii. Measuring spoons and cups
 - iv. Sheet pans
 - v. Oven mitts
 - b. Explain to students the various measuring units and demonstrate how to use the measuring spoons and measuring cups.
4. Explain that cooking in the kitchen is a fun experience and in order to be safe and respectful we must do the following:
 - a. Review the kitchen sequence:
 - i. Wash hands
 - ii. Divide students into groups (if needed)
 - iii. Review the recipe together as a group
 - iv. Pass out all the necessary equipment
 - v. Follow recipe directions and work step-by-step as a group
 - vi. Clean up the kitchen (It is not ours and we need to leave it cleaner than we found it so we can continue to have the privilege of using the space.)
 - b. Things to remember when cooking:
 - i. Have your group partners double check measurements
 - ii. Be sure to take turns with others in the group
 - iii. Taste testing happens only as a group. If there is something you want to try, ask the teacher

Reflect: Are we ready to have fun working together as team?

PRESERVING A HARVEST – 20-40 MINUTES

Students will learn how to do a simple preservation technique (freezing is the easiest to do with students after school) to either bring home to their families or leave with the school. What they preserve will depend on what is growing in the garden, if a local farm had a large glean, or what food is available through Farm Direct. Decide a few weeks in advance what you will make at each school and what supplies and materials you will need. Will the food go to the cafeteria or will it go home with the students?

Ideas:

- Salsa (recipe attached)
- Kale Chips (recipe attached)
- Refrigerator carrots for students (follow pickle recipe)
- Refrigerator beans for students (recipe attached)
- Refrigerator pickles for students (recipe attached)
- Shredding zucchini with food processor and freezing for school

1. Have students ever preserved food at home before by canning, freezing, or drying? What kinds of food? Today they will be preserving a food together.
2. Ask all of the students to wash their hands, and then sit at a table together.
3. Pass out the recipe and vegetables. Go over each step with the students. Depending on your recipe, go over the ingredients, teaspoons and tablespoons, cup measurements, and knife safety.
4. Divide the tasks up among the students. Pairing an older student with a younger one can help with reading and measurement tasks or put the youngest students in one group that you can work with directly as the other students work independently.
5. When the food prep is over, divide up the cleaning tasks: dishes, wiping down the table, putting supplies back into the tub, etc.
6. If students are taking the food home, remind them to put it in the freezer/refrigerator and use it after or before a certain time. If the food is going to the cafeteria, thank them for sharing their talents and experiences with the school.

SNACK – 10 MINUTES

Allow students to eat some of their preserved items if possible.

FILLER GAME: UTENSIL MYSTERY BLANKET – 5-10 MINUTES

Now that students have explored cooking, they will explore kitchen utensils using their sense of touch (do not use anything sharp, like a knife in this activity). Use a garlic press, bowl, spoon, fork, butter knife, whisk, cutting board, wooden spoon, measuring spoons and cups, etc.

1. Explain to the students that you have placed five mystery kitchen items under a blanket or in a bag and it will be their job to guess what it is using their sense of touch.
2. One group will put their hands under the blanket and describe the item to another group trying to guess what it is.
3. Show the students a sample object and have them practice using descriptive words.
4. Divide the students up into two groups.
5. One group will place their hands under the blanket. One person will hold one item at a time and think of one descriptive word to describe it.
6. After everyone in the group has described the item, the other group will have some time to discuss what they think it is and make a guess.
7. Once the group has identified the item, have the groups switch roles.

Reflect: Was it hard to describe the object? What was it like trying to guess what the item was? What other senses could we have used to describe the item?

FILLER GAME: VEGETABLE TAG – 5-10 MINUTES

In this active game similar to TV tag, students practice vegetable vocabulary.

1. Set up boundaries using the supplies you have or a designated area.
2. Ask for one student volunteer to be “it.”
3. This person tries to tag other students. If they are tagged, they must remain frozen in place.
4. To avoid being tagged, students can run away or become “safe” for a moment by shouting out the name of a fruit or vegetable. Once the student has named a fruit or vegetable, the tagger must move on to another student (no puppy guarding!).
5. To challenge the students, make a rule that once a fruit or vegetable has been named, it cannot be repeated. If the student names a fruit or vegetable already mentioned, the tagger can still tag them.

FILLER JOURNAL: WHAT I COOKED TODAY – 10 MINUTES

1. Pass the journals out to the students.
2. Today, students will complete the journal sheet “WHAT I COOKED TODAY.”
See journal pages for details.
3. Collect the books when they are finished.

WRAP-UP

Reflect: What happens to food between the garden and the plate? What are some examples of other foods that you eat that have been processed or preserved?

Take Home: If possible, some of the food saved.

BACKGROUND INFORMATION

Eating healthy is a matter of choice for most of us today, but it wasn't so simple for early American colonists. We know that a healthy diet includes eating plenty of fresh fruits and vegetables and we can usually get some variety of these at the grocery store. But early Americans could only get fresh fruits and vegetables during the growing season. There were no refrigerated rail cars or trucks to bring food from more temperate climates. For the rest of the year they had to rely on food preservation techniques that were difficult and time-consuming.

Methods available for preserving food included drying, salting, sugaring, pickling and cold storage. These methods had been developed through trial and error, but no one knew exactly why they worked. Bacteria had not yet been discovered.

We now know that drying, salting and sugaring reduce the activity of water. This inhibits the growth of bacteria and the activity of internal enzymes that cause food spoilage. Acidification and salting inhibit the growth of many spoilage bacteria, and the low temperatures in cold storage slow down their reproductive rate.

SENSATIONAL SALSA

INGREDIENTS

6 tomatoes
1/4 cup onions chopped
2 Tablespoons olive oil
2 Tablespoons lemon juice
2 cloves garlic
1 teaspoon salt
2 Tablespoons chopped cilantro
1 Tablespoon chopped parsley
1 bag of tortilla chips

DIRECTIONS

1. Chop tomatoes.
2. Chop onion.
3. Chop parsley and cilantro.
4. Press garlic.
5. In a large mixing bowl, mix all ingredients together and serve with tortilla chips!

KALE CHIPS

INGREDIENTS

- 1 bunch kale
- 1 Tablespoon olive oil
- 1 teaspoon salt

DIRECTIONS

1. Preheat oven to 350 degrees. Grease a cookie sheet, or line it with parchment paper.
2. With a knife or kitchen shears, remove the kale leaves from the thick stems and tear into bite sized pieces. Wash the kale and thoroughly dry it.
3. Place kale in a bowl. Drizzle with olive oil and sprinkle with salt. Toss to fully coat each leaf.
4. Bake until the edges are brown, but not burnt, about 10-15 minutes.

Serves: 6-8

REFRIGERATOR PICKLES

INGREDIENTS

- 1 cup distilled white vinegar
- 1 tablespoon salt
- 2 cups white sugar
- 6 cups sliced cucumbers
- 1 cup sliced onions
- 1 cup sliced green bell peppers

DIRECTIONS

1. In a medium saucepan over medium heat, bring vinegar, salt and sugar to a boil. Boil until the sugar has dissolved, about 10 minutes.
2. Place the cucumbers, onions and green bell peppers in a large bowl. Pour the vinegar mixture over the vegetables. Transfer to sterile containers and store in the refrigerator.

Yields 8 cups.

REFRIGERATOR PICKLED GREEN BEANS

INGREDIENTS

2 lbs fresh straight green beans
6 cups white vinegar
2 cups water
¼ cup kosher or pickling salt (do not use iodized table salt)
¼ cup granulated sugar
2 heads of garlic, peeled
whole dried or flaked cayenne or Thai peppers (if desired)
fresh dill tops or sprigs
black peppercorns

DIRECTIONS

1. In very hot water or dishwasher wash 4 pint or 3 quart jars with lids.
2. Cut stems from green beans.
3. In the bottom of each jar place 2 cloves of garlic, a dill sprig, ½ teaspoon peppercorns and a whole cayenne pepper (if using).
4. Tightly pack green beans into jars and set aside while bringing the vinegar, water, salt & sugar to a boil.
5. Pour hot vinegar liquid over the beans and screw lids on. Set aside to cool.
6. When jars are cool place in the refrigerator.
7. Ready to eat in a day or two. Will keep refrigerated for several weeks.

WHAT I COOKED TODAY

Write the name of your recipe and list the ingredients you used. Then, draw a picture underneath.

Name of recipe: _____

Ingredients

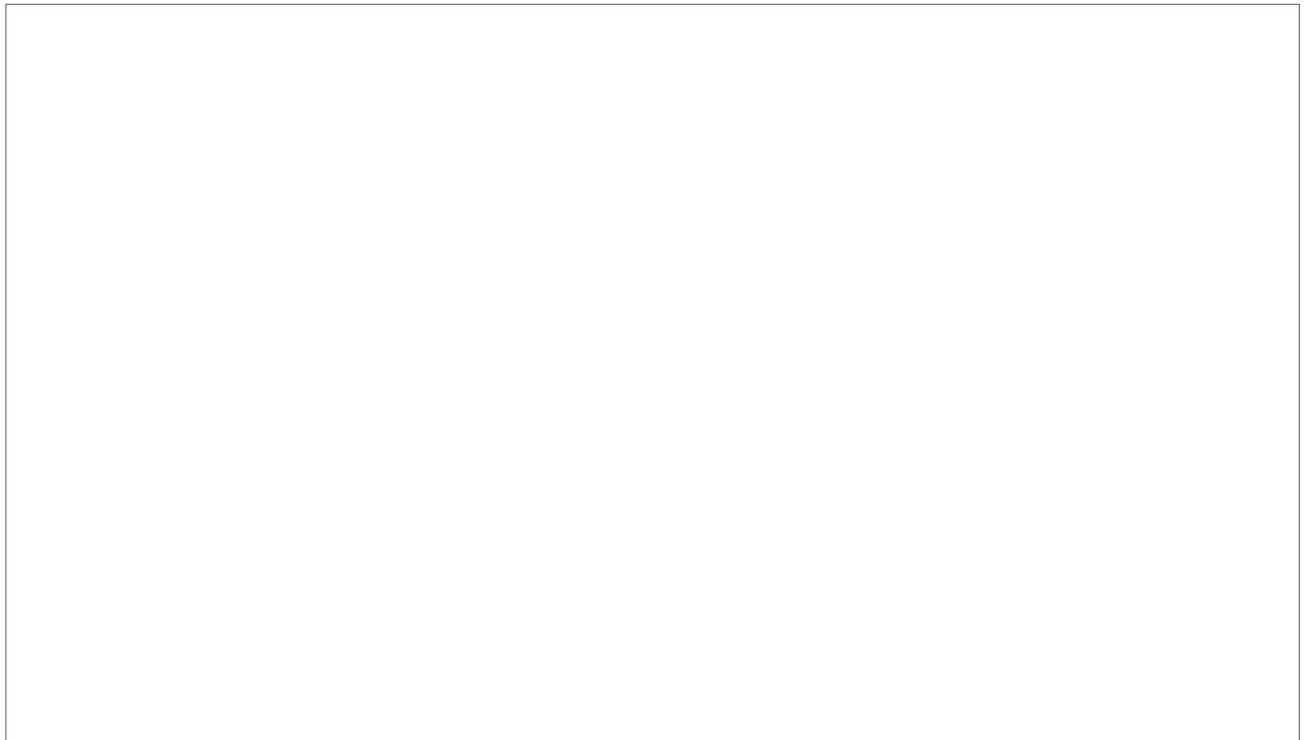
1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

7. _____ 8. _____

9. _____ 10. _____



LESSON EIGHT

GROWING GREAT GARLIC

SUMMARY

Students prepare the garden for the winter by cleaning up any remaining debris and then by planting garlic.

MATERIALS:

Book:

Oliver's Vegetables

Garden measuring sticks

Garden plating guide sticks

Garden rakes and hoes

Garlic Bulb Seed

Garlic Seed

Hay bales

Garlic Bulb Drawing

Journal Sheet

Garlic Bread Recipe for
students to take home

Recipe in page protectors
for students to use while
cooking

1 loaf of French bread

2 Garlic Presses

Aluminum Foil

2 Wooden Spoons

2 Small Mixing Bowls

Kitchen Tub

Garlic for eating

Butter

Adult Bread Knife

Cutting Board

Butter Spreader or Butter Knife

Napkins

Baggies

GUIDING QUESTIONS:

1. What do we do in our garden after the fall harvest?
2. How should we prepare our garden for winter?
3. What is one plant we seed in the Fall?

GOAL:

1. Students will plant garlic in the garden.

OUTLINE:

- Welcome Circle
- Oliver's Vegetables by Vivian French
- Beautiful Bulbs
- Planting Garlic
- Filler Activity: Making Garlic Bread
- Wrap-Up

***Arrive early to the school in order to prepare a section of the garden for the garlic bed. It should be at least 3x4 to start and near an edge of the garden (so the tiller can easily till around it in the spring). We recommend planting 1 pound of garlic in the school garden.

WELCOME CIRCLE – 5 MINUTES

Greeting: What is garlic? What kind of food is it in?

Today's Plan: Today we are going to finish any final garden cleanup and plant garlic.

BOOK – 10 MINUTES

Oliver's Vegetables by Vivian French

Follow Oliver's Grandfather as he grows all of his own vegetables and as he soon convinces Oliver that growing and eating your own vegetables is more fun than eating just plain old French fries!

Listening Question: What season did this book start in? Was there anything being planted then?

While reading, what plants do students recognize in the paintings? What vegetables are also in our garden? What predictions do students have as seasons change in the book?

Reflect: We join Oliver's grandfather's garden in a similar season- Autumn. A plants life, and gardening is cyclical; it happens every year. Certain tasks need to be done at certain times in order to be successful. We are going to help clean up our garden to prepare for Winter, while planting our first plant of the new year! We are also going to make a great snack from that plant.

BEAUTIFUL BULBS – 10 MINUTES

***This can also be done first thing to introduce garlic planting while students are breaking open the bulbs to plant. Answer the questions as a group before planting. Drawings can be done individually later in the lesson as an alternative activity during planting or at the end of day if needed.

1. Pass out a few heads of garlic for each student to be able to see them. Explain that we are going to learn about garlic as a plant.
2. Review and record on the board the following notes about garlic:
 - a. Planting time (Fall, mid-October)
 - b. Planting depth (1-2" deep)
 - c. Plant spacing (4-6" apart)
 - d. Special Care (Mulch with straw)

3. Ask the students to complete an observational drawing of a garlic bulb in their journal and complete the questions about planting. Drawing should include the following plant part labels:

- a. Stem
- b. Tunic
- c. Roots
- d. Clove

Reflect: How is garlic similar to other plants we have planted in the garden? How is garlic different?

PLANTING GARLIC – 30 MINUTES

Head out to the garden to plant the garlic and prepare the garden for winter. Students can take their worksheets with them to work on if needed.

1. Inform the students that in the fall, many plants put all their energy into making seeds. But some plants, like bulbs, store enough energy for next year in the plant itself. Bulbs need a long period of cold weather in order to rest. When the soil warms in the spring, they begin to grow.
2. Explain the following notes about garlic (this information matches the journal sheet and that can be done at this time if you choose):
 - a. Planting time (Fall, mid-October)
 - b. Planting depth (1-2" deep)
 - c. Plant spacing (4-6" apart)
 - d. Plant with point up, flatter plate facing down
 - e. Cover with hay/straw mulch
3. Divide students into groups or do all together (depending on group):
 - a. Bulb separating: Break bulbs apart into cloves and place in cup. Teach the group to leave the tunics (skin) on each clove for planting. They will take the tunic (skin) off the garlic for eating later.
 - b. Pick up any leftover refuse, dead plants, large roots (sunflowers) in garden and place in compost.
 - c. Bed preparation: prepare a bed for planting garlic by removing any weeds and raking soil into a raised bed. The length of the two rows needed for planting garlic can be done by this equation: $(\text{number of bulbs} / 4) = \text{Length needed for one row}$. Space your second row 6 inches apart from the first.
 - d. Clean-up garlic harvested from the summer. Cut off tops and roots. Wipe off any dirt. Put into a bag and weigh before giving it food service directors.

4. Gather students together.
5. Use two string lines or drag a line with the hoe end across the soil to help make two rows for planting.
6. Have two students work together with a garden ruler and stick to make holes for the bulbs.
7. Ask students which direction they think they should plant the garlic. Show students the roots on the bottom and demonstration how to plant the bulb root side down and point side up.
8. If you have garlic seeds, talk about how they are different than the bulbs. You can plant them the same way as the bulbs. Plant the seeds on one side so you can compare the garlic bulb seeds to the garlic seed in the spring.
9. Have students either form a line and take turns planting the cloves in the pre-made holes or have them all sit around the space and plant together.
10. Have two more students cover and lightly pat all of the holes once planted.
11. Mulch the raised bed with 2"-4" of straw

Reflect: Why do you think garlic needs to be planted this time of year? When will the garlic be ready to eat?

FILLER ACTIVITY: MAKING GARLIC BREAD – 30 MINUTES

Before students plant garlic in the garden, they are going to prepare food using garlic.

*Re-check with schools about kitchen use, having the kitchens available, ovens, trays, children's safety etc.

*Turn on electric ovens earlier, turn on convection ovens later.

*Have helper or staff if available monitor bread in oven.

*Have educator or older student cut bread with real bread knife before or during prep.

1. Ask the students what they know about garlic as food (taste, food, ward off colds, pest control).
2. Ask all of the students to wash their hands, and then sit at a table together.
3. Pass out garlic bulbs and make sure each student gets a clove.
4. Ask all students to take the skin off the cloves.
5. Have each student crush a bulb with the garlic press into small bowl.
6. Have a volunteer mix the crushed garlic with some butter in the small bowl with a wooden spoon.
7. An adult or older student should cut the bread into two pieces: top and bottom.
8. Have half of the students take turns spreading the mixture on the bread while the other half continues to press garlic into a new bowl.

9. Have a volunteer mix the second batch of garlic and butter.
10. Stack bread slices together and wrap the loaf in foil, leaving the top open a bit in order to allow the bread to get crispy.
11. Bake in oven at 350° until the butter is melted (5 minutes-15 minutes is fine).
12. While the bread is in the oven, have the students clean up the table and wash any dishes.
13. Explain that the pan will be very hot after coming out of the oven and the educator or helper will serve them. Cut the pieces for them as the students pass out napkins.

Reflect: Ask if they are excited to try the garlic bread.

WRAP-UP

Reflect: Great job preparing the garden for winter. The garlic will be one of the first things to come up in the spring!

Take Home: Garlic Bread & Recipe

BEAUTIFUL BULBS

Draw your garlic bulb. Then draw a line from the name of each garlic bulb part to the part of the bulb in your drawing.

Name: _____

PARTS OF THE GARLIC BULB:

Stem

Tunic

Roots

Clove

In what month do you plant garlic? _____

How deep do you plant it? _____

How far apart do you plant it? _____

Special Care? _____

GREAT GARLIC BREAD!

INGREDIENTS & MATERIALS

1 stick (8 Tablespoons)
Softened Butter
1-2 Bulbs of Garlic
1 Loaf of Italian Bread
sliced in half
Cutting Board
Bread Knife
Small Mixing Bowl
Mixing Spoon
Butter spreader or Butter Knife
Garlic press or chopping knife
Aluminum Foil
Baking Pan

DIRECTIONS

1. Preheat oven to 350 degrees.
2. Have an adult cut bread in half. You can help if they show you how.
3. Put sliced bread onto a baking pan, arranged for easy butter spreading.
4. Break up your head of garlic into cloves. Remove the skins from the cloves. Crush as many cloves of garlic as you want into a small mixing bowl. Use your garlic press to crush them. If you do not have a garlic press, have your adult cube the garlic into tiny pieces. Remember the more garlic you use, the stronger your bread will taste.
5. Mix in 1 stick of softened butter into the small mixing bowl. Mix garlic and butter together well.
6. Use a butter knife or butter spreader to spread the garlic butter mixture evenly onto your pieces of bread.
7. Put the top piece of bread onto the bottom piece. Wrap it in aluminum foil. Place the bread on a baking sheet.
8. Place your garlic bread in the oven at 350 degrees until the butter is melted, usually 10 minutes.
9. Let your garlic bread cool for 5 minutes! You want to be able to taste it, not burn your tongue! Enjoy!

LESSON NINE

GARDEN CRAFTS

SUMMARY

Using items from the garden (or a garden), students will make a craft object, showing the multiple functions a garden can serve.

MATERIALS:

Seed Photo Frame:

Seeds

Cardboard squares/card stock

Glue

Group garden photo
(one for each student)

Pencils/markers

Corn Husk Dolls

Corn husks & silks

String

Scissors

Vegetable Stamps Art

Paper or card stock

Various vegetables to stamp:
potato, carrot, apple

Stamp pads

Knives to cut vegetables

Pumpkin Seed Necklace

Pumpkin seeds
(rinsed and dried that
morning)

Needles

Beading string

GUIDING QUESTION:

1. What can we do with things grown in the garden other than eat them?

GOAL:

1. Students will create garden crafts using materials from the garden.

OUTLINE:

- Welcome Circle
- Craft Activity
 - Seed Art Photo Frame
 - Corn Husk Dolls
 - Vegetable Stamp Art
 - Pumpkin Seed Necklace
- Wrap-Up

WELCOME CIRCLE – 5 MINUTES

Greeting: What was your favorite thing to harvest and eat in the program?

Today's Plan: Today you will celebrate the garden making crafts with things from the garden.

CRAFTS – 30-40 MINUTES

Set up 1 or 2 of the following craft stations. Go over the directions at each station before craft time begins.

1. Seed Art Frame

Print the group harvest photo or individual photos of students throughout the session. Prepare cardboard squares for them to glue the photo onto. Create an example for the students to see.

- a. Pass out pictures and cardboard. Have students use a glue stick to attach picture to cardboard.
- b. Encourage students to place seeds in a pattern or sketch out their plan before passing out the glue to attach seeds. Have many different seed colors, sizes, and textures. Pour seeds into a shallow container to control the mess.
- c. Fold small pieces of cardboard to glue on the back so the frame can stand up.
- d. Set frames aside to dry and make sure they have names on them.
- e. If there is extra time, allow students to decorate their journal cover with seeds.

2. Corn Husk Dolls

Students will create dolls out using corn husks from the garden. (See directions attached.)

3. Vegetable Prints

Students will make an artful print using vegetables and stamp pads.

- a. Pass out a piece of cardboard or cardstock to each student.
- b. Have an example of a cut vegetable that they could make (a potato cut in half with a star cut out) and have a few already made (carrot "circles," the star when you cut an apple in half across). Potatoes can be difficult to cut, so make sure to assist the students.
- c. Remind students how to cut safely and tell them how many "stampers" they are allowed to make. They will be making them for everyone to use.
- d. Show students how to place the stamper onto the stamp pad, then how to place it on the paper to leave a mark.
- e. Suggestions: broccoli, cabbage, gourds, beets.

4. Pumpkin Necklace

Students will get to make pumpkin seed jewelry.



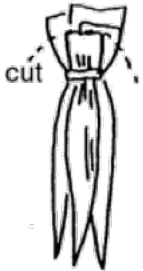
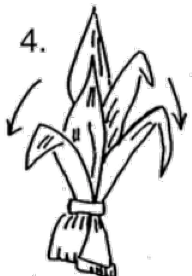
- a. Scoop out a pumpkin and place the seeds and pulp in a bowl of water. After the seeds separate from the fibers, they will float to the top. Remove the seeds and rinse. Place in a single layer to dry for a few minutes.
- b. Thread a big-eyed sewing needle with beading cord and pierce seeds stringing in patterns (shown on picture attached). Tie knots in between seeds for spaces. If using yarn, make sure the yarn is not too thick.
- c. Knot cord and wear!





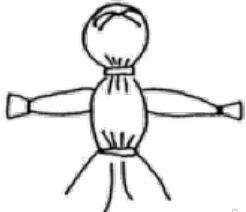

WRAP-UP – 5 MINUTES

Reflect: What is your favorite way to use the garden?

Take Home: Crafts

CORN HUSK DOLL INSTRUCTIONS

<p>1.</p> 	<p>Take four corn husks and arrange them as shown</p>
<p>2.</p> 	<p>Using a small piece of string, tie the straight ends together tightly.</p>
<p>3.</p> 	<p>Trim and round the edges with scissors.</p>
<p>4.</p> 	<p>Turn upside down and pull long ends of husks down over the trimmed edges.</p>

<p>5.</p> 	<p>Tie with string to form the “head.”</p>
<p>6.</p> 	<p>Take another husk, flatten it, and roll into a tight cylinder.</p>
<p>7.</p> 	<p>Tie each end with string. This forms the doll’s arms.</p>
<p>8.</p> 	<p>Fit the arms inside of the long husks, just below the “neck.”</p>
<p>9.</p> 	<p>Tie with string, as shown, to form a “waist.”</p>
<p>10.</p> 	<p>Drape a husk around the arms and upper body in a criss-cross pattern to form “shoulders.”</p>

11.



Take four or five husks,
straight edges together,
and arrange around waist.

12.



These form a “skirt” for
the doll. Tie with string.

13.



If desired, follow the diagram
to form legs for the doll.
Tie legs with small strips
of husks as indicated.

PUMPKIN SEED NECKLACE EXAMPLE



STAMP IDEAS

POTATO STAMP

Take a big potato. Cut it into two halves and draw (with a ball pen) any design (e.g. a star, triangle, the alphabet or your name) on the cut surface. Cut off the unmarked portions very carefully with the help of a knife to retain only the desired shape. The carved end of the potato will show a colorful pattern when stamped on paper.

MULTIPLE STAMPS

Most vegetables can give rise to interesting patterns. Even a cauliflower or radish can play wonders. For interesting and exciting color play, stamp different vegetables at different places on a piece paper. The collage can yield great results.

To make the activity more colorful, use more than one color.

Compare paper impressions of different vegetables on a sheet of paper.

COMPOST

SUMMARY

Students will learn what compost is and the importance of decomposers in nature and in the garden.

MATERIALS:

Book:

Compost Stew
by Mary McKenna Siddals
and Ashley Wolf

Ball for Compost Tag

White Board

Play Props

Shovels

Spades

Materials for Trash Barrel Sort

Materials for Compost Cake

Water can

Recipe worksheet

Markers

Pencils

Scissors

Sort items

GUIDING QUESTION:

1. Why do we need decomposers?

GOALS:

1. Students will be able to talk about how compost happens in nature and the roles of decomposers.
2. They will also be able to distinguish biodegradable items from non-biodegradables.

OUTLINE:

- Welcome Circle
- Compost Stew by Mary McKenna Siddals and Ashley Wolff
- Compost Play
- Trash Barrel Sort
- To Compost or Not To Compost
- Compost Recipe
- Compost Cake
- Decomposer Tag
- Closing Circle
- Song
- Wrap-Up

BACKGROUND INFORMATION

The word compost came from Latin origin, the root word being composites, to compose or put together.

“com” = together + “ponere” = to place = to place together

WHY COMPOST?

- We are recycling!
- We are ecologically reusing waste that would otherwise be crowding landfills. According to the EPA, 23% of the U.S. waste stream is composed of yard trimmings and food waste. Making your own compost helps extend the life of landfills by diverting organic materials to a higher use!
- Due to lack of oxygen in landfills, biodegradable materials break down anaerobically, producing methane gas, a substance that contributes 20 times more to climate change than carbon dioxide.
- Home composting of those biodegradable materials is an aerobic process that avoids the production of methane and other greenhouse gas emissions.
- Composting builds healthy soil, improve soil structure, and improve plant and animal health
- Composting potentially reduces chemical fertilizer, pesticide and herbicide use by using compost to fertilize plants and keep soil and plants healthy
- Landfills do not have enough oxygen to house aerobic decomposition (which takes place in most home composting systems), rather anaerobic decomposition takes place which produces methane gas, a greenhouse gas that contributes to global warming.
- We are recycling precious nutrients back into the soil.
- When we remove a plant from the earth's surface we are removing nutrients by composting and adding the compost back to the soil, we are replacing nutrients that we removed.

WELCOME CIRCLE – 5 MINUTES

Greeting: Who has ever made compost?

Today's Plan: Today we will learn about how compost is made and why it is important for our soil.

BOOK – 10 MINUTES

Compost Stew by Mary McKenna Siddals and Ashley Wolf

This book teaches students about what is compostable.

Listening Question: What are things that you can compost at your house? At school?

Reflect: If we have these things to put in a compost pile, how do we do it? What do we do next? How can we take care of it? Why should we compost?

COMPOST PLAY – 10 MINUTES

Mother Nature composts too, not just gardeners.

1. Ask the students if they can list what some of Mother Nature's litter might be.
 - Dead animals
 - Scat
 - Dead plants/plant parts
2. What does Mother Nature do with all of her trash?
3. Explain that we are going to explore the process of recycling in nature through a play performance.
4. Ask for volunteers and assign roles for each part (assign most students micro-organism role 80-90% of decomposition is done by them). Pass out the props for each role:

ROLE	PROP
Tree	Branch and paper leaves
Seed	Big seed (avocado or paper)
Rain/snow/moisture	Water Can
Fungi	Straws
Lichens	Spray bottle
Trash	Plastic Bottle
Macro-Organisms	Bib, forks and knives
Earthworms	Trowel
Oxygen	Paper oxygen molecules
Micro-organisms	Hawaiian leis, forks and knives

5. Explain that this will be a silent play and that you will read the script. They will need to listen closely to hear your narration and know when to enter and what their role will be.

Begin play:

- i. ENTER TREE: It is summer and the leaves are standing tall soaking up the sun-shine. The tree grows a seed.
- ii. ENTER SEED: Stand under tree branch (arm).
- iii. ENTER RAIN: Sprinkle everything with water.
- iv. Leaves begin to fall slowly and the seed falls from the tree and lays on the ground. Rain now turns to snow. It is winter.
- v. The tree, who is very old and tired, decides it is time to fall and collapses to the ground.
- vi. This is spring and everything begins to warm.
- vii. The spring rains have arrived and the water sprinkles rain everywhere.
- viii. ENTER FUNGI: They suck food from the fallen down log with their straws
- ix. ENTER LICHEN: They spray chemicals from their spray bottle to break down the log.
- x. ENTER TRASH: The trash keeps approaching different decomposers to see if they will help break it down and no one will talk to it (it is non-biodegradable)!
- xi. ENTER MACRO ORGANISMS: Use fork and knife to eat the leaf pieces.
- xii. ENTER EARTHWORMS: The earthworms use their little trowels to dig tunnels throughout the log and soil/ground, so that air can get in.
- xiii. ENTER OXYGEN: Oxygen follows worms through the tunnels in a flowing motion and disperses oxygen molecules.
- xiv. ENTER MICRO ORGANISMS: They are eating leaves after they have been eaten by macro-organisms (they eat small pieces of matter) but they need to also find and pick up oxygen molecules. The more oxygen they pick up the faster that they can eat leaf pieces.
- xv. Seed: Sits and waits for particles to be broken down by all decomposers making the nutrients small enough to be absorbed. Once the micro-organisms have picked up a lot of food, then the seed can grow.
- xvi. Curtain closes, applause, standing ovation, bravo!

Reflect: Review individual actors and their roles. Why it is important that Mother Nature recycles? Can you identify some items in the process that were not able to be broken down and why? What makes the items that did not break down different?

TRASH BARREL SORT – 10 MINUTES

Now that students understand composting, they need to use their knowledge to sort out organic, biodegradable items from non-biodegradable items.

1. Explain that many waste products of either humans or nature can be broken down by Mother Nature as we observed in the play. These waste products are called BIODEGRADABLE. Other items that we throw away cannot be broken down and recycled by nature, these are called NON-biodegradable.
2. Explain that you have brought a bag of things that are commonly thrown away.
3. Have the students pull an item out of the bag and sort it into biodegradable or non-biodegradable piles.

Reflect: Does everyone agree? Consider what will happen over time for the biodegradable and non-biodegradable items. What are the long term implications for items that are non-biodegradable?

TO COMPOST OR NOT TO COMPOST – 5 MINUTES

1. Gather students in a circle or in front of a chalkboard.
2. What are some things that we throw away at home?
3. Explain that some of these things are biodegradable, meaning that they will decompose or break down over time. Once these objects have completely decomposed, they will become compost. Compost gets added to the soil so that the nutrients that were in the original item will be available to plants. Ask the students to guess what things that they listed are biodegradable (paper, food scraps, napkins, etc.). These things were all living at one time.
4. Explain that some things are non-biodegradable. While they may break into smaller pieces, they will never decompose or break down completely. What did they list that is non-biodegradable? (plastic bags, cans and bottles, Styrofoam, toothbrushes, etc.) Fortunately, many of these non-biodegradable items can be recycled. But some of them go into the landfill.

COMPOST RECIPE – 15 MINUTES

This activity will introduce students to composting and why it is important by making connections between Mother Nature's decomposition process and composting.

1. Ask the students if they can recall what some of the things were that Mother Nature needed to break down the tree into soil. Including:
 - a. Moisture
 - b. Oxygen
 - c. Biodegradable material
 - d. Decomposers, living organisms

2. Ask students how we might create a similar environment to break down biodegradable waste that we have.
3. Example to students that you have put together a recipe card outlining the different types of ingredients we need to create a compost pile. Have students find the recipe card journal sheet.
4. As you review the recipe with students explain that:
 - a. Compost material ratio: Microorganisms that eat the biodegradable materials require the correct proportion of carbon for energy and nitrogen for protein production; we can achieve this by adding the correct amount of carbon rich items to the compost pile, along with the correct amount of nitrogen rich items. The organisms like a C:N ratio of 30:1 which means you should add 30 times more carbon to the compost than nitrogen
 - b. Oxygen: All of the organisms that eat the biodegradable materials need oxygen to survive in the compost pile, and the more oxygen that the microorganisms get the faster they can work and the faster the materials will be broken down.
 - c. Moisture: you need the right balance, not too wet or too dry, about the consistency of a sponge that has been wrung out. Just like people, compost organisms need water to live. High moisture content must be avoided because water displaces air from the interstices between the particles causing microbes to die (aerobic microbes to die), however, when the pile dried out biological activity stops when the pile dries out.
 - d. Living organisms: you will need to introduce living organisms, decomposers, into your compost pile to ensure that they are there!

Reflect: What is compost? Why does knowing about the way Mother Nature recycles help teach us how to compost?

COMPOST CAKE – 20 MINUTES

Now that we have reviewed the recipe, let's make compost!

1. Review the different compost ingredients with the students:
 - a. Browns; include some items from the students' classroom that are biodegradable
 - b. Greens; include some items from the students' school lunches
 - c. Water in watering can
 - d. Soil that contains living organisms
2. Ask students if they can think of any ingredients that should not be added to the compost pile. Including:

Colored paper: Some papers with colored inks (including newsprint) contain heavy metals or other toxic materials and should not be added to the compost pile.

Diseased plants: It takes an efficient composting system and ideal conditions (extreme heat) to destroy many plant diseases. If the disease organisms are not destroyed they can be spread later when the compost is applied. Avoid questionable plant materials.

Inorganic/non-biodegradable materials: This stuff won't break down and includes aluminum foil, glass, plastics and metals.

Pressure-treated lumber: should also be avoided because it's treated with chemicals that could be toxic in compost

3. Divide students into the following groups:

- a. Brown
- b. Green
- c. Water
- d. Micro-organisms
- e. And a group to monitor size and shape of compost pile

4. Have each group gather their compost pile ingredients and work together to follow the recipe to build a pile.

5. Monitor their ratio and moisture content carefully!

Reflect: How do you think the compost pile will change over time? What kinds of things do you think you will have to do to monitor to ensure that it is composting or working well? What are some things that might go wrong with your pile? What can we do with compost?

FILLER GAME: DECOMPOSER TAG – 10-15 MINUTES

This game reinforces the conditions needed for decomposition to happen. The goal is to get all of the organic matter pieces on one side to the compost pile on the other without getting tagged or slowed down by the cold winter.

Round 1

1. Set boundaries in which to play with one end being the "Forest" and the other the "Compost Pile."
2. Scatter all of the Organic Matter in the Forest and place an empty box as the Compost Pile.
3. Ask for a volunteer to be the Winter tagger and one to be the Warmth tagger.
4. Have everyone else choose what kind of decomposer they will be (worm, beetle, bacteria, fungi, etc.)
5. The decomposers must retrieve the Organic Matter, one piece at a time, and place it in the Compost Pile.
6. If a decomposer gets tagged by Winter, he/she must freeze. In order to move again, he/she must be tagged by Warmth.

7. Once all of the Organic Matter is in the Compost Pile, the decomposers have a party!

Round 2

1. Either play again, or freeze everyone and add in a new component.
2. The Warmth tagger now becomes a decomposer.
3. In order for decomposers to move after being tagged by Winter, three decomposers must form a ring around the frozen student and chant: Bacteria, Fungi, Earthworms!

Round 3

1. Either play again, or freeze everyone and add in a new component.
2. Unfortunately, humans have been visiting the forest and have left litter. Now add some items to the Forest that are not compostable. Decomposers must decide what to bring back to the Compost Pile.

CLOSING CIRCLE – 3 MINUTES

Reflect: Review the difference between biodegradable and non-biodegradable materials. What do we need in order for biodegradable materials to break down into compost?

1. Fresh (freshly cut grass, food scraps, manure)
2. Old (dried leaves, tree branches)
3. Rain, water, moisture
4. Micro-organisms (bacteria, fungi)
5. Macro-organisms (worms, beetles, mites, millipede, slugs, earwigs)
6. Air, oxygen

FILLER SONG – 5 MINUTES

“Take Me Out to the Compost Pile” (Take Me Out to the Ball Game).

Take me out to the compost

Take me out to the pile.

Add some soil and a few good worms

I don't care if I'm turned or I'm churned

'Cause it's root, root, root for the microbes;

If they don't live it's a shame.

For in two, four, six weeks, I'm out

In the old garden!

WRAP-UP

Reflect: Review the difference between biodegradable and non-biodegradable materials. What do we need in order for biodegradable materials to break down into compost?

1. Fresh (freshly cut grass, food scraps, manure)
2. Old (dried leaves, tree branches)
3. Rain, water, moisture
4. Micro-organisms (bacteria, fungi)
5. Macro-organisms (worms, beetles, mites, millipede, slugs, earwigs)
6. Air, oxygen

COMPOST CAKE RECIPE

INGREDIENTS & MATERIALS

(3) Browns: High carbon/dried materials such as straw, hay, leaves, wood ashes, saw dust

Green: High in nitrogen, wet/moist materials such as food scraps, grass clippings, coffee grounds, garden waste, manure

Oxygen/Air: To get oxygen/air throughout the pile build the first layer out of large stalky items, and then turn or stir the pile often.

Water/Moisture: Add water to each layer until each layer is about the consistency of a sponge that has been wrung out.

Decomposers/Living Organisms: By adding soils from your garden or ground you can introduce the decomposers.

Temperature of 100-150° Ensuring the correct balance between greens, browns, moisture and air in the compost pile will help the pile reach the optimum temperature.

DIRECTIONS

1. Choose Location: level, good drainage, partial sun, convenient, discourage animal rummaging.
2. Break up ground and layer large brown materials on bottom to encourage air flow
3. Introduce nitrogen: add a layer of green materials
4. Introduce decomposers: add a layer of soil
5. Add water, to consistency of wrung out sponge
6. Introduce carbon: add a layer of brown (should be 3x as thick as green layers)
7. Repeat layers of green and brown
8. Finish with a layer of brown on top
9. Continue to monitor moisture and temperature
10. Compost is finished when it looks like dark fine soil!

GARDEN CLEAN UP

SUMMARY

Students will finish cleaning up the garden and celebrate their hard work as a team. Students will also take the Post Survey to show how much they learned.

MATERIALS:

Pencils
Markers
Jars with seeds inside
as “buzzers”
Journals sheets
Washing Basin
Knife
Cutting Board
Paper Plates and/or napkins
Harvest Baskets and bags
Bags and boxes for FSD
Scale for weighing veggies
Final Survey
Graduation Certificates

GUIDING QUESTION:

1. How do people celebrate when the fall harvest is complete?

GOAL:

1. Students will celebrate a great fall harvest in their garden!

OUTLINE:

- Welcome Circle and Attendance
- Garden Harvest Trivia
- Post Test Survey
- Garden Clean Up
- Snack: Kale Chips
- Filler, Active Game: Garden Tag
- Filler, Journal: My Favorite Thing About Fall Gardening...
- Graduation Certificate
- Wrap-Up

WELCOME CIRCLE AND ATTENDANCE – 5 MINUTES

Greeting: Welcome! Today is our last Fall Garden Club meeting. We have a few things we need to wrap up, but then we will celebrate all of our hard work.

Today's Questions: How do people celebrate when the fall harvest is complete? (This is an open-ended, no-right-or-wrong-answers, question. Revisit this at the end of class and see if their answers have changed.)

GARDEN TRIVIA GAME – 10-15 MINUTES

Students will play a game-show style trivia game to review garden lessons and to “prepare” them for the final survey.

1. Split into two teams, have the students create a team name.
2. Have each team make a line in front of a desk. Explain “I will read a question. If the two team members first in line know the answer, they will shake the jar/hit the table/raise their hand. The first one will have to answer the question in 10 seconds. If you know the answer, your team will win a prize. If someone else on the team knows the answer, keep it to yourself! If you say it out loud, the other team could hear it and they might get your prize.”
3. Ask questions related to the garden program. There is a sheet of example questions for you to use if you'd like.
4. Assign silly prizes to keep the game less competitive (ex. bucket of worms, pile of compost, packet of seeds, a bucket of beans, a rain storm, etc.)

FINAL SURVEY – 10 MINUTES

Post Survey will test the student's knowledge and help gauge the program's success. The data gained will be used in future reports, grants, etc. After, students will complete a memory journal and should draw and write their favorite experiences (you can brainstorm a list ahead of time).

1. Say to students “Do you remember on the first day you had to complete a survey? You are going to take the exact same one and it will help me see what you have learned. It's okay if you don't know all the answers. Afterwards, you can fill out a ‘My favorite Thing about Fall Gardening Club...’ journal sheet. Who remembers all of the things we did this season?” (read out the lesson titles from the attendance sheet and see if it sparks memories. This helps students pick out their favorite activity instead of the last thing they did.)
2. Pass out surveys with pencils. Advise the students to complete the surveys on their own, and reiterate that it is okay if they don't know an answer.
3. Read the questions one at a time. Older students can go ahead if they want. Help fill out written answers for students who need help.

When they are finished, collect them.

MEMORY JOURNAL SHEET – 10 MINUTES

Students will record one of their favorite memories from the past session. Make sure to give them enough time to properly complete this page.

1. Hand students the Memory Journal Sheet. (It helps save time if you pass out the memory sheet when each child finishes his or her final survey.)
2. Ask students to recall one of their favorite memories from the sessions.
3. Encourage the students to draw their memory, capturing the image in color and in detail.
4. Students should also write a sentence or two or more about their drawing using descriptive words.
5. Collect.

GARDEN CLEAN UP – 30-60 MINUTES

Pick up any leftover refuse, dead plants, large roots (sunflowers) in garden and place in compost.

SNACK: KALE CHIPS – 30-60 MINUTES

Note: This can be prepared and left to cook during another activity

Kale Chips Serves 6-8

- 1 bunch kale (about 8-10 big leaves)
- 1 tablespoon olive oil
- 1/2 teaspoon salt

Preheat oven to 275 degrees. Wash kale and have students rip into small pieces. Toss in a bowl with oil and salt. Spread a single layer on a baking sheet and bake until crispy, about 20 mins. Check frequently, it can burn easily!

FILLER: GARDEN TAG – 10-15 MINUTES

In this tag game, students go through the plant cycle as they get tagged.

1. Set up the boundaries of the game and start with one person as “it.” When the person who is “It” tries to tag people, the people become “frozen” and can’t move. The person who is “it” cannot tag someone again while they are frozen.
2. The first time a student gets tagged, they kneel down and pretend to be a seed. They stay in that position until they are freed, or when someone who is not “it” tags them.
3. The second time a student gets tagged, they stand up straight with their arms above their heads (palms touching) to become a sprout.
4. The third time, they stand straight with their arms out to represent leaves, a seedling.

5. The fourth time they get tagged, they become a flower, standing upright with their arms in a circle above their heads.
6. The fifth time they get tagged, they become a fruit, standing upright with their arms in a circle in front of them.
7. The sixth time a kid gets tagged, they become "it"!

Variations:

- Try using different body positions to represent different stages of plant growth. See if the kids can come up with any!
- Also, for a faster-paced game, try having more than one person be it at a time.

WRAP-UP

Reflect: What happens to food between the garden and the plate? What are some examples of other foods that you eat that have been processed or preserved?

FALL GARDEN CLUB SURVEY

Name: _____ Grade: _____ School: _____

1. Two foods we grow in our garden are _____ and _____ .

2. Draw or name 2 insects you find in the garden.

3. Pumpkins and squash grow on _____.

4. What are two ways to save or store food from the garden?

1. _____

2. _____

5. How far apart do you plant garlic cloves?

2 feet

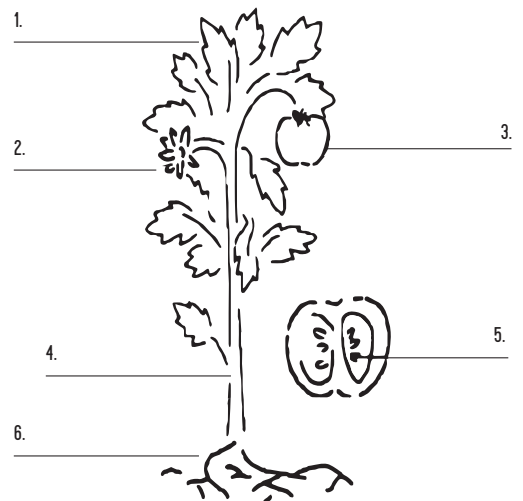
2 inches

1 foot

4-6 inches

6. What does it mean to “clean up” a garden or
“put the garden to bed?”

7. Label or name three plant parts.



JUNIOR CHEF CLUB SURVEY

ANSWER KEY

1. Two foods we grow in our garden are:

Multiple answers can include: carrots, potatoes, kale, sunflowers, beets, lettuce, tomatoes

2. Draw or name 2 insects you find in the garden.

Multiple answers can include: worms, ladybugs, cabbage worms, wasps, bees, beetles, tomato horn worms

3. Pumpkins and squash grow on vines.

4. What are two ways to save or store food from the garden?

1. pickle
2. freeze, dehydrate

5. How far apart do you plant garlic cloves?

2 feet

2 inches

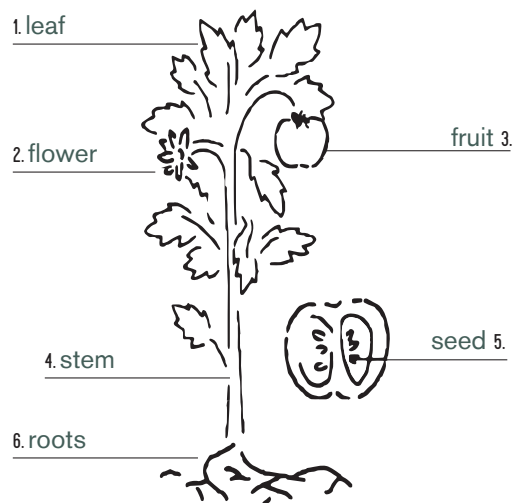
1 foot

4-6 inches

6. What does it mean to “clean up” a garden or “put the garden to bed?”

Answers can include: harvest crops, pull out debris, rake, clean, compost, get ready for winter, etc

7. Label or name three plant parts.



MY FAVORITE THING ABOUT FALL GARDENING WAS...

Name: _____ Grade: _____ School: _____

My favorite thing about Fall Gardening Club was: _____

CONGRATULATIONS

GARDEN GRADUATE!

Has successfully completed the Sprouts Fall Garden Program
& harvested and preserved foods from the school garden!

Garden Teacher

TRIVIA

1. What was your favorite part of Fall Garden Club?
Crafts, harvesting, etc.
2. What did we grow in the garden this year?
Carrots, beets, pumpkins, beans, sunflowers, etc.
3. What couldn't we grow in the garden this year?
Mangoes, bananas, papaya, etc.
4. What is the first thing you do when you want to harvest food?
Harvest it.
5. What is the second thing you do when you want to harvest food?
Wash it.
6. What is the third thing you do when you want to harvest food?
Weigh it.
7. What is the forth thing you do when you want to harvest food?
Package it.
8. What did we find in the garden that was using it besides us?
Insects, worms, birds etc.
9. What kinds of insects did we find in the garden?
Cucumber beetles, potato beetles, etc.
10. What do you do to the garden to get it ready for winter? What is that process called? Harvest everything that's ready, pull all the plants out, maybe cover the garlic with hay... It's called putting the garden to bed or cleaning up the garden.
11. Name some plants that grow on vines.
Pumpkins, tomatoes, etc.
12. How far apart do you plant garlic?
4-6 inches
13. Name three plant parts.
Stem, leaf, fruit, etc.
14. Draw three plant parts on the board.

FUN FILLERS

RUN AROUND/MOVING GAMES

VEGETABLE FREEZE TAG

In this game, the tagger tries to “freeze” other players. But, like in TV tag, if the player sits down and names a fruit or vegetable, they are safe.

CORN, CORN, SQUASH

Like Duck, Duck, Goose...play with cups of water if it's hot!

ROOTS AND LEAVES

In this activity, students will play a physically active game using vegetables as a theme.

1. Divide the group into two vegetables--e.g., carrots and spinach. Have the “root” group stand together and the “leaves” group stand together.
2. Have each group line up facing each other on opposite sides of a field or a large room. Create a goal line behind each group.
3. The object of the game is to have one group catch every member of the other team. The instructor will call out a group name and all the leaves will try to run past the roots without being tagged. If they are tagged, they become a member of the team that caught them (a spinach who is tagged by a carrot becomes a carrot).
4. Finish the activity with a short discussion of favorite roots and leaves to eat.

GO ON A WORM OR BUG HUNT

ALPHABET SCAVENGER HUNT

Assign a student or groups of students with a letter of the alphabet. Set a time limit and challenge students to find as many items as possible that begin with the assigned letter.

CIRCLE GAMES

GUESS WHAT I'M THINKING

I'm thinking of a _____. Guess what it is! [Students ask yes or no questions to find answer.]

Farmer " _____ " Says

Like "Simon Says," but the speaker is the farmer and s/he is asking the crowd to do farming related actions (pulling up carrots, planting garlic, saving sunflower seeds).

GARDEN CHARADES

In this activity, students will act out different events in the garden and have others guess what they are.

1. Have the students write down on a strip of paper a gardening activity. Put all of the strips of paper in a bowl. Let the children pick one and then act it out to the group. OR Have the students think of a word they can act out and remember that word and think of an action.
2. Pick a student based on a random criteria—they won a previous game, their birthday is next, they are the oldest, etc.
3. The student will stand in front of the group and act out their word without talking.
4. The student that guesses correctly gets to go next.

CATCH MY CLAP

This is a good transition activity. There is no talking in this game. One player is the leader. All players rub their hands together. They watch the leader and when she claps, they try to clap in unison.

NAME & VEGETABLE

Sit in a circle. The first person tells their name and their favorite fruit or veggie. The second person has to say the name and veggie of player 1 then their own name and veggie. The third person says player 1's name and veggie, player 2's name and veggie, and then their own. This continues until everyone has said their name and favorite vegetable.

Challenge the kids at the end to see who can do everyone's! Who can do it with their eyes closed? Backwards?

MIRRORS

One person plays the role of a mirror and copies the movements that the other person looking into the mirror makes. After a short period, ask the partners to switch roles.

GESTURE NAME GAME

Stand in a circle. The first person in the group says their name and does a movement with their body. It has to be simple, quick, and one foot must remain on the ground. Everyone in the group will repeat the name and movement. The next person in the circle will say their name and do a movement and the class will repeat it. Continue until everyone has had a turn.

WHO'S MISSING?

The children sit in a circle. One child is selected to be in the middle with their eyes closed. The leader points to one of the children to leave the circle and hide close by. The rest of the children switch places and remake the circle. The child in the center is instructed to open their eyes and guess who is missing. The missing child then becomes the new center child.

THE WIND BLOWS FOR...

Big Wind Blows is a good icebreaker that helps people get to know each other better. Players sit in a circle, with one person in the center as "the big wind." This person identifies a characteristic that is true about themselves and then all players who share the same characteristic must find a new seat.

LOOK UP

Players stand in a circle, all with their heads looking down. The facilitator yells "look up". All players look up at someone else (they cannot change who they are looking at after they look up). If two people happen to be looking at each other (i.e. make eye contact), they both have to scream. Whoever screams last is eliminated from the circle. If someone screams when they are not making eye contact with anyone, they are also eliminated. The facilitator then says "look down" and everyone looks down. The facilitator then says "look up" and the process continues. The game continues until there are only two players left.

JOKES

Knock, Knock who's there? Lettuce... Lettuce who?
Lettuce in and we'll tell you!

Why did the girl go out with the mushroom?
He was a fungi!

How does a flower ride a bike?
By using its petals!

Why do potatoes make good detectives?
Because they keep their eyes peeled.

How do you lead a horse to water?
With lots of carrots.

What vegetable can tie your stomach in knots?
String beans.

What did the carrot say to the wheat?
Lettuce rest, I'm feeling beet.

What kind of socks does a gardener wear?
Garden hose.

What do you call two young married spiders?
Newly webs.

What does the letter "A" have in common with a flower?
They both have bees coming after them.

What lives in the winter, dies in the summer, and grows with its roots upward?
An icicle.

APPENDIX

HARVEST INVENTORY

School: _____

Date	Type of Produce	Quantity	Destination

GARDEN PRODUCE PRICE LIST

School: _____

Vegetable	Size/Quantity	Customer Price	Amount Harvested	Total
Basil	per pound	\$6		\$
Beets	per pound	\$1.50		\$
Broccoli	per pound	\$2		\$
Brussels Sprouts	per pound	\$4		\$
Cabbage	per pound	\$0.75		\$
Carrots	per pound	\$1.50		\$
Cauliflower	per pound	\$2		\$
Chard	per pound	\$3		\$
Cherry Tomatoes	per pint	\$3		\$
Cilantro	per bunch	\$1.50		\$
Corn	per dozen	\$7		\$
Cucumbers	per pound	\$2		\$
Dill	per bunch	\$1.50		\$
Eggplant	per pound	\$2		\$
Garlic (4 bulbs equals 1#)	per pound	\$8		\$
Green Beans	per pound	\$4		\$
Greens	per pound	\$8		\$
Kale	per pound	\$3		\$

Pricing based on UVM Extension 2012 conventional retail averages.

Vegetable	Size/Quantity	Customer Price	Amount Harvested	Total
Onion	per pound	\$1.50		\$
Oregano	per pound	\$1.50		\$
Parsley	per pound	\$2		\$
Peas - in the pod	per pound	\$4		\$
Peppers	per pound	\$2.50		\$
Potatoes	per pound	\$1		\$
Pumpkins, Large	per pound	\$0.50		\$
Pumpkins, Mini & Gourds	per pound	\$0.75		\$
Pumpkins, Small	per pound	\$0.50		\$
Radish	per pound	\$2		\$
Spinach	per pound	\$4		\$
Summer Squash - Yellow	per pound	\$2		\$
Summer Squash - Zucchini	per pound	\$2		\$
Thyme	per bunch	\$1.50		\$
Tomatoes	per pound	\$2.50		\$
Watermelon	per pound	\$0.50		\$
Wheat	per pound			\$
Winter Squash	per pound	\$1		\$
Winter Squash - Acorn	per pound	\$1		\$
Winter Squash - Buttercup	per pound	\$1		\$
Winter Squash - Butternut	per pound	\$1		\$
Winter Squash - Delicata	per pound	\$1		\$
Winter Squash - Hubbard	per pound	\$1		\$
Winter Squash - Spaghetti	per pound	\$1		\$

TOTAL

SUGGESTED BOOK LIST

Richards, Jean. *A Fruit Is A Suitcase For Seeds.* Millbrook Press. PreSchool-Grade 2

Richards's carefully worded information provides an excellent introduction to seeds, their purpose, and growth that should be easy for young children to grasp. On each page, one or two short lines of text appear beneath a large painting. Hariton's use of bright watercolors adds sensual appeal to her illustrations of various fruits, vegetables, animals, and habitats. This cleverly presented book can be used as a read-aloud discussion starter, as a prelude to planting seeds and observing their growth, or in preparation for dissecting fruits and vegetables in order to find the seeds inside.

Balian, Lorna. *A Garden For A Groundhog.* Star Bright Books. Kindergarten–Grade 3.

During the winter, the O'Learys feast on the bounty from their summer garden, and Groundhog hibernates in his burrow home beneath the apple tree. The O'Learys know that the groundhog does not come forth on February 2 to forecast the weather but rather to check if the O'Leary garden is planted. Mr. O'Leary's plan to keep the groundhog out of their vegetables has one flaw, though, which is humorously revealed on the final page.

Henderson, Kathy. *And The Good Brown Earth.* Candlewick Press.

Throughout the seasons, Gram and little Joe work independently but side-by-side on their gardens, planning, planting, watering, weeding, and waiting. At harvest time, both have grown beautiful vegetables—Gram's in neat rows; Joe's "higgledy-piggledy, tangly, FANTASTIC!" Henderson writes in simple, musical poetry that evokes the delicious, "squashy," "squelching" physicality of garden work, and the mixed-media illustrations of a garden teeming with plants and creatures have a waxy texture that, while sometimes indistinct, nicely extends the awe and mystery in the refrain: "The good brown earth got on with doing what the good brown earth does best." Best, though, is Joe's freedom to discover, follow his instincts, and create something wonderful on his own.

Creasy, Rosalind. *Blue Potatoes, Orange Tomatoes.* Sierra Club.

An introduction to organic gardening which explains how to grow a cornucopia of fruits and vegetables in unexpected colors, outlining simple guidelines for planning, planting, caring for, and troubleshooting a rainbow garden. Also includes some special recipes.

McCloskey, Robert. *Blueberries For Sal.* Penguin Group.

This simple story of a mother and daughter picking blueberries, and a mother bear and baby bear eating blueberries, does a perfect job depicting the sweetness of the mother/child relationship. It shows the protective nature of loving mothers and the security a child feels when with his/her mother. And it's a great example of two little families preparing for winter by picking (or eating, as the case may be) blueberries.

Siddals, Mary McKenns. *Compost Stew.* Crown Publishing Group.

From eggshells to wiggly worms, this delightful recipe in bouncy verse features items—some familiar and some not so—that are fit for the home compost bin and will nourish Mother Earth. Vibrant collage illustrations use recycled and found materials to further a timely message. And to keep young environmental chefs fully informed about composting do's and don'ts, there's a note in the back about what's not fit for the bin.

Koontz, Robin. *Composting Nature's Recyclers.* Picture Window Books Publication.

Dead leaves, food scraps, and grass clippings for lunch? Small animals, fungi, and bacteria called decomposers turn trash into a tasty compost treat. Learn more about compost and how you can use it in your garden or yard.

Gibbons, Gail. *Farming.*
Holiday House Inc.

Gibbons depicts aspects of that life with her characteristic bright colors and stylized forms in a conceptual space that is intended to portray not one particular farm but a universal one. Every season brings its own specific chores, indoors and out, its own crops and its own food. There are the forces of nature, and the ways the farmer harnesses or copes with the elements using mechanical devices. Despite an overuse of the passive voice ("The vegetable garden is planted . . . water is lugged . . . fields are fertilized") this is a good addition to the author's energetic how-to books. Ages 4-8.

Gibbons, Gail. *From Seed to Plant.*
Holiday House, Inc.

The cover of this book has the title written in large, green font and it's not too wordy for kids. The illustration on the front cover is very colorful and would be appealing to young children. The content of this book is excellent. Gail Gibbons provides accurate information about plants in this book in a manner that is suitable for children. She researched the topic and worked with Bob Welch of Shearer's Greenhouses in Bradford, Vermont. At the end of the book she presents an exciting project for kids called A "From Seed to Plant" Project that ties in directly with the book. Additionally, she lists fun facts about seeds and plants. For example, did you know that some plants eat insects? Kids will love the end sections. The illustrations in this book are outstanding.

Rockwell, Lizzy. *Good Enough To Eat.*
Harper Collins Publishers.

Kindergarten-Grade 3 – This picture book about healthy eating begins at the beginning: food is necessary for one's well-being and it tastes good, too. Six categories of nutrients are introduced: carbohydrates, protein, fat, water, vitamins, and minerals. Digestion is described, as is the Food Guide Pyramid. Five recipes are given at the end. Every bit of information is illustrated with a large or small picture, sometimes accompanied by labels or dialogue balloons.

Ehlert, Lois. *Growing Vegetable Soup.* Reed Business Information, Inc.
Pre-School-Grade 1

This is the boldest, brassiest garden book to hit the market, and what a delight. Intensely colored graphics capture the complete growing process from seed to cooking pot, with the focus on the plants. The unseen narrator describes the process of growing vegetable soup, from preparing the tools and digging holes for the seeds to weeding plants; picking vegetables; washing, chopping, and cooking them and finally enjoying the homemade soup while planning to grow more next year. It's a fresh presentation of the gardening cycle with a joyful conclusion, and the added attraction of an easy and tasty recipe for vegetable soup on the flyleaf. A book to help nourish healthy readers.

Hooper, Meredith. *Honey Cookies.*
Frances Lincoln Children's Books.

For young Ben, nothing is better than his grandmother's honey biscuits. But what exactly goes into making this special treat? Grandma decides it's a good time for Ben to find out. When he learns how to make honey biscuits, he doesn't just find out how to bake biscuits, he also discovers where all the ingredients in the recipe come from and whose help he really needs. Alison Bartlett's warm, vibrant illustrations accentuate Meredith Hooper's simple, lively text. Including an easy recipe for honey biscuits, this is a perfect introduction to food and cooking for very young readers.

Priceman, Marjorie. *How to Make an Apple Pie and See The World.*
Dragonfly Books.

An apple pie is easy to make... if the market is open. But if the market is closed, the world becomes your grocery store. This deliciously silly recipe for apple pie takes readers around the globe to gather ingredients. First hop a steamboat to Italy for the finest semolina wheat. Then hitch a ride to England and hijack a cow for the freshest possible milk. And, oh yes! Don't forget to go apple picking in Vermont! A simple recipe for apple pie is included.

Tomecek, Steve. *"The Dirtmeister".*
Jump Into Science – Dirt.
National Geographic Society.

What is soil? Who lives in dirt? How does earth help things grow? The answers are within this fun – and fact-filled picture book. Just follow the gardening star-nosed mole in the colorful outfits... and dig in!

French, Vivian. *Oliver's Vegetables.* Hodder Children's Books.

On a visit to his grandparents' house, Oliver wants to eat only French fries. Grandpa tells him that he may look in the garden for potatoes, but that he must eat what he finds, whatever it may be. On the first evening, Oliver pulls up carrots and discovers that he likes them. On successive days he discovers spinach, rhubarb, cabbage, beets, and peas all of which he eats with unexpected enjoyment. On the last evening, he finds the potatoes at last and as he is sitting down to supper his mother arrives. Oh dear! Too bad! She thinks Oliver is still eating only fried potatoes. Oliver and his grandparents laugh delightedly at the irony, and so will small listeners.

Naslund, Gorel Kristina. *Our Apple Tree.* Roaring Brook Press.

Here's a whimsical and very useful look at the life cycle of the apple tree. With two helpful tree sprites as guides, readers travel from spring, when the apple tree blossoms, through summer, when the fruit grows, to fall and the harvest. Along the way, you'll learn about the life of the tree and the animals that visit – from insects that pollinate the flowers to deer that eat the fallen fruit.

Carle, Eric. *Pancakes, Pancakes.* Aladdin Paperbacks.

Here's a whimsical and very useful look at the life cycle of the apple tree. With two helpful tree sprites as guides, readers travel from spring, when the apple tree blossoms, through summer, when the fruit grows, to fall and the harvest. Along the way, you'll learn about the life of the tree and the animals that visit – from insects that pollinate the flowers to deer that eat the fallen fruit.

Titherington, Jeanne. *Pumpkin Pumpkin.* Greenwillow Books.

Jamie plants a pumpkin seed in the spring and, after watching it grow all summer, carves a face in it for Halloween! But best of all, he saves some seeds that he will plant again next spring.

McKy, Katie. *Pumpkin Town.* Houghton Mifflin Harcourt Publishing Company.

What happens when a town has an accidental abundance of pumpkins? What do José and his well-intentioned brothers do with a mountain of pumpkins? An EXPLOSION of pumpkins? Step into Pumpkin Town and see!

Bunting, Eve. *Sunflower House.* Harcourt Books.

A young boy plants the seeds in a large circle. He waters them and waits patiently until they grow taller than with huge nodding blossoms that form a perfect "sunflower house." He and two friends play in the "house" all summer, even sleeping in it one night, until the leaves turn brown and the stems fall down. Then they fill their pockets with the seeds, the birds eat some, and the rest are left on the ground to grow again next summer.

De Paola, Tomie. *The Popcorn Book.* Holdiay House Inc.

Tomie dePaola seldom fails to delight and this offering is no exception. Kids get together to pop up some pop corn and the little story of their "adventure" is quite funny. Along with the story though, we get a great mini-lesson in the history of popcorn along with some wonderful scientific facts, i.e. why does popcorn pop, how do you store popcorn, etc. It tells us how the early Native Americans cooked and used popcorn as well as those in Central America. There are dozens of lessons that can be created from this little book, great handouts and projects can be made with just a touch of creativity on the teachers part. I use this one in the class room, but it would be great for the home school folks also.

Gibbons, Gail. *The Seasons of Arnold's Apple Tree.* Harcourt Books.

This book is a must-have for any elementary teacher. I used this book in my Kindergarten class to teach the seasons and the growth of apples. My students loved the pictures and really learned the material from the story and reviewing after. I kept coming back to this book day after day to reinforce the content and my students were excited each time. One activity I did to teach the seasons was make a "The Seasons of (students name) Apple Tree" book. There were four pages with a bare tree. At the top the students would write It is summer, It is fall, etc. Then we would look at our story and describe the picture. Then the students would add orange and red leaves for fall, etc. I love this book and would recommend it to all.

Hall, Zoe. *The Surprise Garden.* The Blue Sky Press.

We're planting the seeds for a surprise garden. Can you guess what we will grow?" Trace the progress of three small children (and various and sundry dogs, ladybugs, spiders, worms, and butterflies) as they loosen the soil, poke seeds in one by one, water the garden, and watch the small green shoots grow. Surprise! The gardeners find carrots and radishes, broccoli and cauliflower, peas, beans, squash, and even a sunflower. When it's harvest time, the children have a garden party to eat all their delicious produce.

Carle, Eric. *The Tiny Seed.* Children's Publishing Division.

This picture book admirably conveys the miracle of a seed. Flower pods burst and dispatch their seeds on the wind; the air-borne seeds are subject to myriad disasters; and the ones that make it through the perils of the seasons to become mature flowering plants are still susceptible to being picked, trod upon and otherwise damaged. But nature allows for survivors, and so the tiny seed grows into a giant flower, releasing its seeds and continuing the cycle. As he has demonstrated with *The Very Hungry Caterpillar* and other books, Carle has an extraordinary kinship with nature. Here we have not just the explanation of the life of a flower, but drama, lessons of life and a lovely spirituality.

Lin, Grace. *The Ugly Vegetables.* Charlesbridge Publishing.

The neighbor's gardens look so much prettier and so much more inviting to the young gardener than the garden of black-purple-green vines, fuzzy wrinkled leaves, prickly stems, and a few little yellow flowers that she and her mother grow. Nevertheless, mother assures her that these are better than flowers. Come harvest time, everyone agrees as those ugly Chinese vegetables become the tastiest, most aromatic soup they have ever known. As the neighborhood comes together to share flowers and ugly vegetable soup, the young gardener learns that regardless of appearances, everything has its own beauty and purpose.

Stevens, Janet. *Tops & Bottoms.* Harcourt Books.

Hare solves his family's problems by tricking rich and lazy Bear in this funny, energetic version of an old slave story. With roots in American slave tales, *Tops & Bottoms* celebrates the trickster tradition of using one's wits to overcome hardship. "As usual, Stevens' animal characters, bold and colorful, are delightful. . . . It's all wonderful fun, and the book opens, fittingly, from top to bottom instead of from side to side, making it perfect for story-time sharing."

Hoberman, Mary Ann. *Whose Garden Is It.* Houghton Mifflin Harcourt.

The gardener says the garden belongs to him. But the woodchuck insists that it's his. And so do the rabbit, the butterfly, the squash bug, and the bumblebee. Even the tiny seeds and whistling weeds think the garden just couldn't grow without them. As they stroll through the exquisite plants and flowers, Mrs. McGee and her child listen and wonder: Whose garden is it?