

***READY,
SET,
GROW!***

3-5

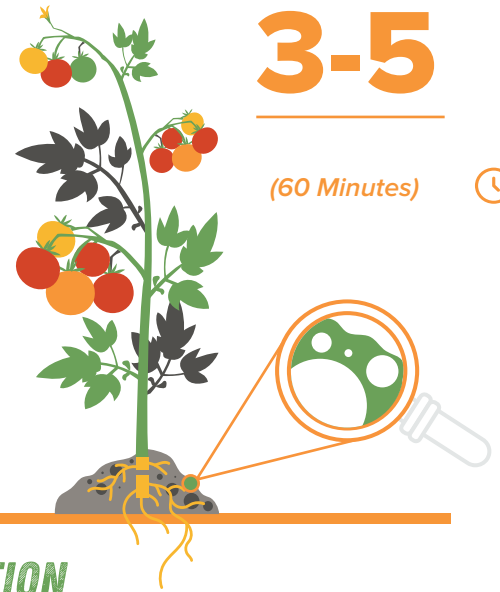


READY,
SET,
GROW!

MAKING
OBSERVATIONS

3-5

(60 Minutes)



Essential Question

WHAT CAN WE LEARN FROM THE GARDEN?

Learning Targets

- **I can** explain the benefits of a Learning Garden. ([ELA SL.5.1.A and B](#))
- **I can** describe/diagram parts of the garden and show how they work together. ([NGSS 5-LS2-1](#))

SCIENTIFIC PRACTICE: Scientists use diagrams and sketches to understand the natural world.



SPROUT ⌚ (5-15 Minutes depending on source)

THINKING PROMPT: Select a story or video as the source for the question, “What living and nonliving things can be found in a garden?” Record brainstorm in the Garden Journal.



Video Options:

- [Garden Tour: What’s Growing and Where?](#)



- [Gardening With the Kids!](#)

Book Options:

- [Little Green Thumbs: 12 Garden-Filled Picture Books for Spring](#)



GARDEN INVESTIGATION

What is in the garden and how do those parts work together?



- Group students into pairs or triads for the investigation.
- Review/Create garden expectations with students. Reference the [Rule-Making Activity](#) for suggestions on building expectations in the garden environment.
- Determine a gathering spot and depart for the garden.



- Use an **attention signal** to focus students (ex: **Teacher:** “Real Food”; **Students:** “Grows Here.” Or: “**I say ‘veggies,’ you say ‘fruits’—veggies.**” “Fruits!” “**Veggies.**” “Fruits!”)
- Conduct a walk-through of the garden area:

- Determine boundaries
- Identify areas, plants, or structures that are off-limits



- Refer to Garden Journal for the lesson.
- Highlight the task: Take notes and draw sketches of things you see in the garden, living or nonliving. There will be things outside of the categories.



- **Allow 10 minutes for students to explore the garden for their evidence collection task. Technology enhancement: Students could take photos as evidence.**



- Gather students with the **attention signal**.
- Students will share evidence with a partner or triad.
- Call on each group of four to share one piece of evidence they found for each category.



- Ask if anyone found something they did not know how to categorize or that they could not understand its purpose. Allow students to offer and make suggestions.



HARVESTING (15-20 Minutes)



- In partner groups, students will be assigned something to harvest. If [Harvest Cards](#) are available, provide them to students to assist with proper harvesting technique.



Harvest Cards are a resource in development for teachers and students that can be used during harvesting. Cards will have information about the plant part and life cycle, as well as instructions for care and harvesting.



Vegetables for snacking or dipping:

- Carrots
- Broccoli
- Cauliflower
- Cucumber
- Radish
- Peppers

FOR EXTENSION LESSON: SALSA

- Leaves: Cilantro
 - Fruits: Tomato and peppers
 - Roots: Radish
 - Stems: Celery, green onions, garlic, chives
- Provide appropriate harvest tools to harvest the necessary amount of the plant.
 - Use additional adults or older students to make sure plants are properly harvested.
 - Record harvests in the [Harvest Record](#).



CLOSURE/ASSESSMENT (15-20 Minutes)

- Return to the classroom.
- Form groups of four or five from the students' pairs/triads to discuss the prompt: How do the parts of the garden work together? (2-3 minutes)
- Ask each group to share their conclusion.
- Individually, students will complete the summary in their notes.
- Ask students to do a Musical Shares (see Instructional Strategies):
- Round 1: How can I benefit from the Learning Garden at our school?
- Round 2: What can I do to help our garden grow?



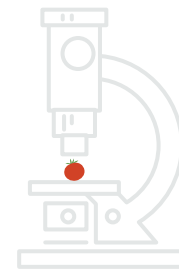
**Essential
Question**

**WHAT CAN WE LEARN
FROM THE GARDEN?**



Parts/Categories of the Garden	Living Y or N	Illustration/Sketch/ Example	Role/Job in the Garden
AIR			Provides carbon that plants take in as a source of energy.
SOIL			Provides protection and nutrients.
PLANTS - FIND 3			Stabilize soil; provide food to animals.
ANIMALS- FIND 2			Spread seeds, make space for roots, and release carbon.
STRUCTURES			Contain roots/growth or allow plants to spread out.
WATER			Provides hydrogen.
SUN			Provides energy that plants use to grow and make nutrients.

SUMMARY: How do the parts of the garden work together?



Essential Question

HOW DO SCIENTISTS LEARN FROM PLANTS?

Learning Targets

- **I can** explain how plants have life cycles that include birth, growth, reproduction, and death. ([NGSS 3-LS 1.1](#))
- **I can** explain that plants have structures that have a function. ([NGSS 4 - LS1.1](#))
- **I can** conduct and present research about plants in the garden.
- **I can** practice like a scientist:
 - Scientists use diagrams and sketches to understand the natural world.
 - Investigations begin with questions.
 - Scientists look for patterns and order in observations



MATERIALS & PREPARATION

Create lab stations for each plant part:



- Variety of plant edible parts (seed, root, stem, leaf, fruit/flower)
- Magnifying glasses or microscopes as needed
- Garden Journals for notes and sketches
- Stopwatch



SPROUT (10-15 Minutes)

Scientists engage in investigations and observations to draw conclusions.



- Gather students with an attention signal.



- Ask students to turn to their Garden Journals for the **Lab Investigation**.



- Tell students:

- All plants have the same parts that function in the same way to help plants during their whole lifecycle. **Today we are going to investigate each of those plant parts to find out how they function and how they are similar and different.**



SCIENCE INVESTIGATION (30 Minutes)

Procedure:



- Group students into lab groups of three to five students and guide introductions with sentence stems: “**Hello, I am _____ . I am glad to be working with you today in the lab.**”








- Determine lab roles: Materials manager, data manager (keeps the master data template), timekeeper, etc.
- Gather appropriate materials.
- Instruct students to complete the beginning of their notes as a class for vocabulary and plant parts/stages.



- Explain the lab process:
 - All students will visit stations for each part of the plant.
 - Students will sketch each plant part.
 - Students will identify which stage of life the sample is at (germination, growth, reproduction, death).
 - Students will hypothesize how the plant structure supports its function.

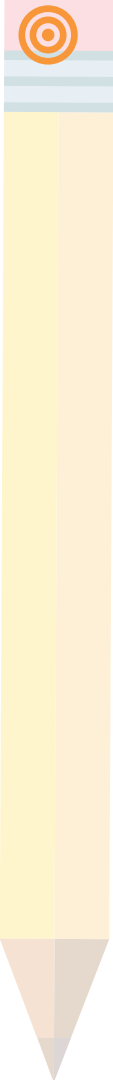
 **CLOSURE/ASSESSMENT** (15-20 Minutes)

-  • Students collaborate with lab groups to be sure all students have data recorded in their journals.
-  • Determine the process to check hypotheses about plant structure and function. (Possibly allow students access to online sources to check their guesses.) Use ratings to determine how much evidence they have to support their conclusions.
-  • Allow lab groups to compare responses to lab data. Identify with a highlighter if groups have different ideas.
-  • Ask for responses from each group for each plant part and build a solution station of correct responses and questions to be answered.
-  • Affirm that science is a process of trial and error. **Most scientists have many wrong answers before they can be confident their ideas may be accurate.** This lab allows students to be scientists and collect evidence to draw a conclusion. Throughout Garden Bites they will have many more opportunities to collect evidence and test hypotheses.
- Collect Garden Journals.



**Essential
Question**

**HOW DO SCIENTISTS
LEARN FROM PLANTS?**



Vocabulary	Illustration/Sketch/ Example	Definition
ORGANISM <i>ORG-AN-ISM</i>		An individual living thing: Animal, plant, or single-celled being.
STRUCTURE <i>STRUC-TURE</i>		The way a plant part is shaped. Describes how it looks.
FUNCTION <i>FUNC-TION</i>		The job a plant part has in the survival of that organism.
PARTS OF A PLANT		
LIFE CYCLE OF A PLANT		
Lab Station 1: Seeds		
Plant Part Sketch	Part of Plant Life Cycle	Evidence of how the plant structure supports its function. Strength of my evidence: _1 _2 _3 _4 _5
Lab Station 2: Roots		
Plant Part Sketch	Part of Plant Life Cycle	Evidence of how the plant structure supports its function. Strength of my evidence: _1 _2 _3 _4 _5



**Essential
Question**

**HOW DO SCIENTISTS
LEARN FROM PLANTS? (CONTINUED)**



Lab Station 3: Stems

Plant Part Sketch	Part of Plant Life Cycle	Evidence of how the plant structure supports its function. Strength of my evidence: _1 _2 _3 _4 _5
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Lab Station 4: Leaves

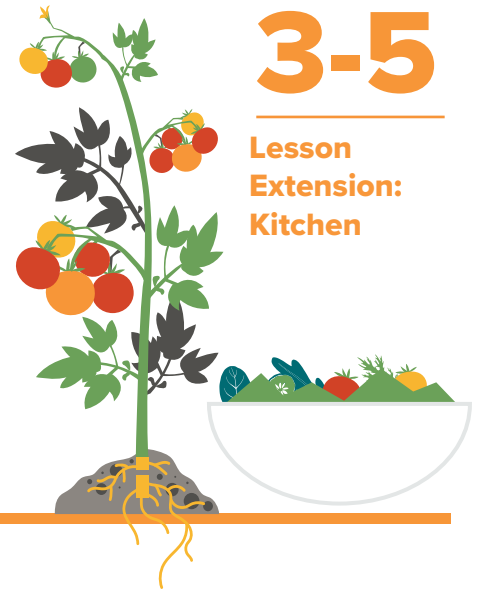
Plant Part Sketch	Part of Plant Life Cycle	Evidence of how the plant structure supports its function. Strength of my evidence: _1 _2 _3 _4 _5
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Lab Station 5: Flowers and Fruits

Plant Part Sketch	Part of Plant Life Cycle	Evidence of how the plant structure supports its function. Strength of my evidence: _1 _2 _3 _4 _5
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SUMMARY: What evidence did I collect that supports or counters my hypothesis?

Blank space for student summary.



Essential Question

HOW CAN WE USE THE GARDEN AS FOOD?

Learning Targets

- **I can** describe the benefits of healthy eating including foods that grow in the Learning Garden. (NHES 7.5.1)
- **I can** demonstrate how to prepare food safely. (HBO 10)
- **I can** demonstrate how to make healthy serving sizes of foods we eat. (NHES 7.5.2)
- **I can** explain how a food we made is similar or different from foods my family eats. (NHES 2.5.1)
- **I can** explain how food is part of culture. (HE: 2.5.2)
- **I can** show how I will eat healthy foods this week. (HBO 12)
- Sample food: Chips, crackers, veggies to sample salsas
- Other ingredients as called for by the recipe (ex: salt, pepper, other spices)
- Appropriate sampling items such as cups, plates, forks/spoons
- Nutrition labels for the ingredients selected in the recipe (available with the resource material)



This is a great experience to invite in families of students who might have great salsa recipes, costumes, dances, or stories.



MATERIALS & PREPARATION

- A recipe (or several with small variations) that uses all parts of a plant, such as for homemade salsa:

- Leaves: Cilantro
- Fruits: Tomato and peppers
- Roots: Radish
- Stems: Celery, green onions, garlic, chives
- Seeds: Celery seed/black pepper corn, corn, beans



SPROUT (10-15 Minutes)

Scientists engage in investigations and observations to draw conclusions.



- Use attention signal to focus students.
- Ask students if they have ever had salsa. Where do they eat salsa today?



- **Discussion prompts:** What are some different ways people use the word “salsa”? What are common ingredients of salsa? Why might salsa be a healthier alternative to other toppings like ketchup or ranch dressing?

- View the video: [Salsa: A History!](#)



- In pairs or triads, have students discuss the prompts.
- Use a **Whip Around** protocol with sentence stems:



- “One way I eat salsa is...”
 - “My friend told me ____ about eating salsa.”
 - “The salsa is also a dance...”
 - “Salsa from Central and South America reminds me of...”

KITCHEN INVESTIGATION

How can we use all parts of the plant to make a delicious salsa?



- Select and print one or more recipes for students to prepare or reference as a mentor recipe:

For young chefs, omit the jalapeno or hot peppers or buy canned. The ribs and seeds of fresh peppers can feel hot on anything that they touch (hands, eyes, etc.).



- [A Homemade Salsa Recipe](#) (Cooking Classy)
- [Pico de Gallo](#) (Mexican Food Journal)
- [Black Bean](#) and Corn Salsa Recipe (She Wears Many Hats)

PROCEDURE:



- Make groups of four.
- Students will select plant parts to make a salsa recipe.
- Students will wash hands and work surface prior to preparing food.
- Students can use technology to decide how much of each ingredient to use.
- Student groups will record how much of each ingredient they use to in their recipe.
- Students will determine the sample size and calories of the dipping options they offer.
- Sampling: Students will prepare one serving sample of their salsa based on the mentor recipe and offer options for others to sample it with: chips, vegetables, crackers.
- Rubric: Students will rate each salsa/scoop option for health benefits and taste.



CLOSURE/ASSESSMENT (15-20 Minutes)



- Ask students to discuss the following prompts with a partner:
 - How can food be an important part of our culture?
 - How can I use what I learned today to eat healthy this week?



- Individually or with a partner, have students complete the summary in their Garden Journals.
- Collect Garden Journals.



**Essential
Question**

**HOW CAN WE USE THE
GARDEN AS FOOD?**

Kitchen Procedure:

Plant Part Salsa

1. Wash hands.
2. Identify the plant parts that will be used to make a salsa.
3. Collect nutrition labels for the ingredients selected.
4. Identify which plant part will be used to make the salsa.

Seeds:

Leaves:

Roots:

Stems:

Flowers/Fruits:

5. Create a salsa using safe food preparation skills.
6. Prepare eight samples (four for the group, four for other students).
7. Proceed to sample salsa as directed by your teacher.
8. Complete the sampling rubric for each sample tasted.
9. Return to your station and clean the area.
10. Review the feedback to your group in the tasting rubrics.

Data Gathering What should be elements of a tasty salsa dish:

Experimentation What is the serving size and nutrition of your salsa dipping ingredient?

Experimentation Salsa ingredients and proportions:

Observation What does the salsa look like, taste like, smell like to you?



TASTING RUBRIC:

Observation	How do samplers evaluate your salsa?			
SUMMARY: How can we use the garden as food?				
TASTING RUBRIC:				
Criteria	Beginning (1)	Acceptable (2)	Recommended (3)	Award-Winning (4)
NUTRITION VALUE	Recipe has some plants that are healthy, but may include things that are not as healthy to eat.	Recipe has some plants that are healthy to eat.	Recipe uses ingredients from the Chef's Plate that are healthy for me to eat.	Recipe meets all the recommendations from the Chef's Plate.
TASTE AND PRESENTATION	The recipe was good to try but not something I would choose again.	The recipe is good. I would eat it again, but it could be improved.	This recipe is something I would select again.	The recipe is delicious and presented well. I would recommend or make it for others.
TOTALS				

READY,
SET,
GROW!

MAKING
OBSERVATIONS

GARDENERS
TAKE
ACTION

3-5

Lesson
Extension:
ELA



Essential Question

HOW CAN I SHARE WHAT WE LEARNED IN THE GARDEN?

Learning Targets

- **I can** produce a piece of informational writing about food in the garden. ([CCSS ELA W 5.2](#))
- **I can** present research orally and using technology. ([CCSS ELA SL.5.2 and 5.4](#))



SPROUT (10 Minutes)

How can we inform others?

- Introduce the “Know, Share, How” graphic organizer in the Garden Journal.
- Ask students how they could inform others about what they have learned in the garden (probes: in writing, in live presentations, using media).
- Introduce the idea of *Our Food Chronicles*.



Our Food Chronicles is the name given to the collection of products created by students during Garden Bites. It will be different in each classroom or school. Students and teachers should determine what can be submitted to the publication and the criteria for publishing.



INVESTIGATION - GARDENERS TAKE ACTION

(60-100 minutes depending on product outcome expectations)

PLANNING: (20 Minutes)

- Allow students to talk with an Elbow Partner about the prompts in the Garden Journal.
- Remind students to reference their notes from previous lessons for ideas about the plants and garden.
- Allow students time to complete the organizer.

DRAFTING: (30 Minutes)

- Begin drafting the informational piece.
- Remind students they are just creating a draft so they should focus on developing the content and design.
- Ensure students have reviewed the Writer’s Checklist and have it available as they craft their work.
- Allow students time to work independently.
- Cue students at appropriate times to manage their pacing.

The remaining parts of this process could be extended to the full writing process as determined by the teacher. It can also end as a less formal writing piece. It is recommended that all writing be archived. Students can submit writing products to a classroom collection called: ***Our Food Chronicles***.



REVISING: ⌚ (20 Minutes)

- ⌚ • Provide students with time to make revisions to their work and cross-check it to the Writer's Checklist.
- ✍️ • Allow students to make edits.
- 👤👤 • Group students into pairs for a peer feedback opportunity.
- Students will use **Praise, Question, Suggest** to offer feedback on the piece thus far. **Partner A begins** and **Partner B listens** and **offers feedback**. Then they switch roles.

PUBLISHING: ⌚ (20 Minutes)

- ⌚ • Allow remaining time for students to create a publish-ready piece. Ensure students have the **Writer's Checklist**.



**Essential
Question**

**HOW CAN I SHARE WHAT I
LEARNED IN THE GARDEN?**



What do I KNOW ?	What do I want to SHARE ?
<i>ABOUT THE PLANT:</i>	
<i>ABOUT THE NUTRIENTS IT PROVIDES:</i>	
<i>ABOUT HOW IT CAN BE PREPARED OR WHAT RECIPES COULD BE MADE WITH THIS FOOD?</i>	
<i>HOW MUCH OF THE FOOD MAKES A SERVING?</i>	
HOW will I share what I know? What format will I choose to publish my research?	
WHAT is my timeline for completing the project?	



WRITERS CHECKLIST:

Students should complete this checklist for their reporting.

MY WRITING INCLUDES:

- A description or illustration of a plant with all its parts (seeds, roots, stems, leaves, flowers, fruit)
- The nutritional value of the plant or edible plant part
- Ways the plant or plant part can be prepared or consumed
- A recipe
- Final draft meets the expectations for publication in *Our Food Chronicles*

MY WRITING IS READY FOR SUBMISSION TO OUR FOOD CHRONICLES WHEN IT:

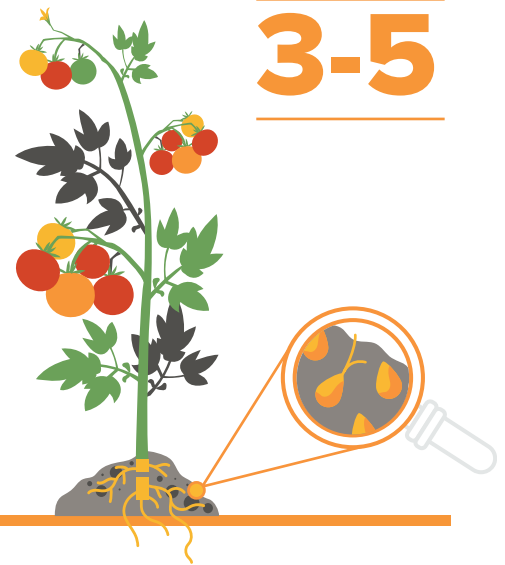
- Uses proper punctuation including:
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- Uses complete and high-quality sentences which have:
 -
 -
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- Uses correct vocabulary and definitions.
- Other criteria our class established including:
 -
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Essential Question

WHAT CAN OUR GARDEN TEACH ME ABOUT SEEDS?



Learning Targets

- **I can** explain the important parts of a seed. ([NGSS LS1.A](#))
- **I can** explain how seeds are similar and different. ([NGSS LS3.A](#); [LS3.B](#))

entered in their Garden Journals onto chart paper or white board.

(3-4 Minutes)

- Together, record/review the vocabulary needed for the lesson in the Garden Journal.



SPROUT (15-20 Minutes)



- Use attention signal to focus attention (Teacher: “Real food.” Students: “Grows here.”).
- Use one of the following resources to set the learning intention for the day:
- **What can our garden teach me about seeds?**
 - [10 books about seeds for kids](#)
 - [Sid the Seed](#)
 - [How Does A Seed Become A Plant?](#)
 - [Seed Germination \(Cartoon\)](#)
 - [Time Lapse of Seed Germination](#)



- Students talk with an Elbow Partner and discuss the question:
- What did the story or video tell us about seeds?



- Have students take out their Garden Journals and review the essential question and learning targets.



- Select volunteers from several pairs and record responses that students



GARDEN INVESTIGATION (40 Minutes)

PREPARATION AND MATERIALS:

- Group students into pairs or triads
- Ensure students have the Garden Journals and something to write with.

STEP 1: EXPLORATION AND OBSERVATION

- Describe the task and show where evidence can be recorded in the journal. Students will explore the garden to locate seeds in plants for about 5 minutes.
- Gather the group. Ask students what they noticed and where they found seeds. Allow groups to share their findings.

STEP 2: EVIDENCE GATHERING

- Describe that students will now begin to harvest seeds and some other items in preparation for the lab and kitchen experiences.
 - Provide Harvest Cards and harvest tools to each group. Items to be harvested include:
 - For Lesson extensions: Seeds available in the garden at harvest time
- Allow teams to harvest in the garden. Once teams have completed their harvest, students can return to the classroom


and deposit their harvests into the appropriate location based on the Harvest Cards.

- Each group enters harvests into the [Harvest Record](#).

STEP 3: ORGANIZING DATA  (15 Minutes)

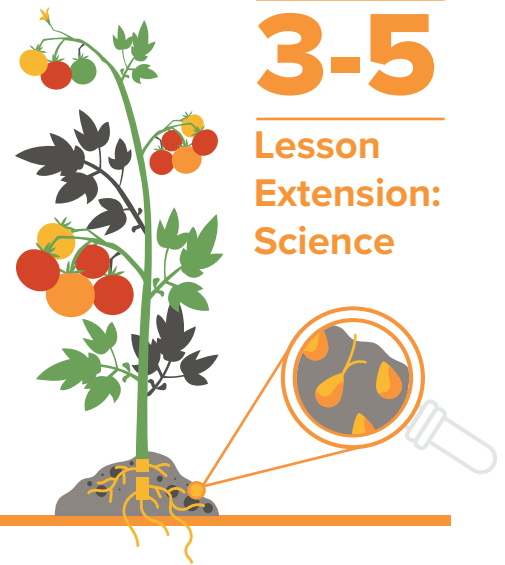
- Students should sit with garden pairs/triads.
- Teacher should review the investigation questions from the Garden Journal. Using one prompt at a time, allow teams to complete their observations and record findings.
- Using a Give One, Get One, Move Along, students will compare results from other groups.
- Teacher will call the group together to create a final data wall (chart paper or board) to answer the key investigation questions. Students can finalize their notes.

 **CLOSURE/ASSESSMENT** (10 Minutes)

-  • Students will complete the summary and submit Garden Journals.



What are some things we learned about seeds in the story/video?		
Vocabulary	Diagram/Example	Definition
SEED		Seeds are a part of the plant that contains everything needed for plant life.
GERMINATION GER-MI-NA-TION		The process of sprouting from a seed into a plant.
EMBRYO EM-BRY-O		The baby plant inside of the seed.
COTYLEDON COT-Y-LE-DON		The food source within the seed.
SEED COAT		Layer on the outside of the seed that protects it from insects, disease, and moisture.
What observations did you make about seeds in our garden?		
What are some ways seeds are similar and different?		
SUMMARY: What did we learn about how seeds support the life of a plant?		



Essential Question

WHAT CAN I LEARN ABOUT SEEDS IN THE GARDEN?

Learning Targets

- **I can** create an argument or model that shows how the structure of seeds help plants reproduce. ([NGSS 4-LS1-1](#))
- **I can** use evidence to support a claim that all seeds have similar structures but are different depending on the plant's needs. ([NGSS 3-LS4-2](#))
- **I can** practice like a scientist: ([NGSS 3-LS4-2](#))
 - Scientists use diagrams and sketches to understand the natural world.
 - Investigations begin with questions.
 - Scientists look for patterns and order in observations.



MATERIALS & PREPARATION

- Hard seeds should be soaked to soften several hours prior to the lab (ex: most beans, corn, etc.) or use canned versions.
- Set up stations with a variety of suggested seeds:



- Soaked and hard corn
- Soaked and hard beans
- Soaked and hard rice
- Peas
- Edamame
- Pumpkin seeds
- Peanuts
- Pistachios

- Older students may be able to hand a tool such as a butter knife to split soft seeds. If not, split soaked or soft seeds ahead of time. Hard seeds will serve as an example of a seed coat and will not be split.



SPROUT (10-15 Minutes)

Scientists engage in investigations and observations to draw conclusions.

- Ask students to review their Garden Journals from the previous lesson:
 - Review how to pronounce each part of the seed and review its function in the seed.
 - Cue students to turn to an elbow partner and share their observations from the garden about seeds.
 - Ask for volunteers to share their observations.
 - Explain that the lab activity today will allow students to further investigate seed structures and allow them to explore how and why seeds are similar and different.

 **SCIENCE INVESTIGATION**  (30-35 Minutes)





ORGANIZING:  (5 Minutes)

- Group students into lab groups of 3-5 students.
- Ensure each group conducts introductions with sentence stems: “Hello, I am _____. I am glad to be working with you today in the lab.”
- Allow groups to assume lab roles: Materials manager, data manager (keeps a master data template), timekeeper, etc.
- Materials manager will get materials and review the procedure in the Garden Journal with the group.

READING TO LEARN:  (10 Minutes)

- Instruct each student to read *The Garden Thymes: Seeds*.
- Using highlighters or pencils, students should highlight information that supports the claim(s):
 - Seeds support the beginning of the plant's life.
 - Seeds have structures that support their function (job).
 - Seeds can be a part of a healthy diet.
- Students should work in pairs or triads to compare evidence and record in the Garden Journal.

 **CLOSURE/ASSESSMENT** (10 Minutes)

-  • Students will collaborate with their group to be sure all students have data recorded in their journals.
-  • Determine the process to check hypotheses about plant structure and function (possibly allow students access to online sources to check their guesses or use this as a way to build a solution station about seeds over time as students have extra time in other lessons).
-  • Allow lab groups to compare responses to lab data. Identify with a highlighter if groups have different ideas.
-  • Teacher will ask each group to share one observation or hypothesis about their seeds.
- Affirm that science is a process of trial and error. Most scientists have many wrong answers before they can be confident their ideas may be accurate. This lab allows students to be scientists and collect evidence to draw a conclusion.
- Collect Garden Journals.



Essential Question

WHAT CAN I LEARN ABOUT SEEDS IN THE GARDEN?



<p>How do the structures of seeds help them support the germination, or start of a new plant?</p>	
<p>How can seeds be part of a healthy diet?</p>	
<p>Lab Procedure:</p> <ul style="list-style-type: none"> • Visit stations for three to four seeds. • Sketch and label each seed to identify its seed coat, cotyledon, and embryo. • Hypothesize how the seed structure supports its function. • Hypothesize how the seed's environment might be related to its structure (where it grows, how long it takes to germinate, likely risks for a particular seed, how it spreads). 	
<p>NAME OF SEED 1:</p>	<p>Sketch of Seed</p> <p>How might this seed's structure help it survive and grow?</p>
<p>NAME OF SEED 2:</p>	<p>Sketch of Seed</p> <p>How might this seed's structure help it survive and grow?</p>
<p>NAME OF SEED 3:</p>	<p>Sketch of Seed</p> <p>How might this seed's structure help it survive and grow?</p>



**Essential
Question**

**WHAT CAN I LEARN ABOUT
SEEDS IN THE GARDEN?**

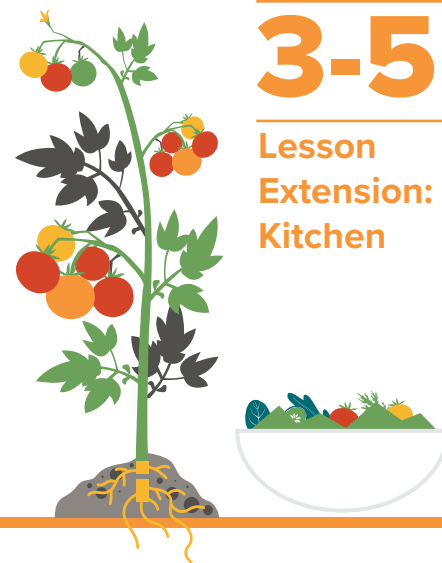


What do all seeds have in common?

What ways are seeds different from each other?

What is your hypothesis (educated guess) about how a seed's structure is related to how and where it grows?

SUMMARY: How are seeds important to a plant and to our healthy diet?



Essential Question

HOW CAN THE GARDEN HELP ME BE HEALTHY?

Learning Targets

- **I can** describe how seeds are part of a healthy diet. ([NHES 7.5.1](#))
- **I can** prepare a healthy snack using a variety of seeds. ([NHES 7.5.2](#))
- **I can** demonstrate how to prepare food safely. ([NHES 7.5.2/HBO 10](#))
- **I can** demonstrate how to make healthy serving sizes of foods we eat. ([NHES 7.5.2](#))
- **I can** explain how food we made is similar or different from foods my family eats. ([NHES 7.5.2](#))
- **I can** show how I will eat healthy foods this week. ([NHES 7.5.2](#))



MATERIALS & PREPARATION

- Select one or several recipes that include seeds as the main element:



- [Chickpea and Raisin Salad \(Real Simple\)](#)
- [Hummus \(Inspired Taste\)](#)
- [Nut Butter \(Life Made Sweeter\)](#) *Be aware of allergies!
- [Trail Mix \(Elizabeth Rider\)](#) *Be aware of allergies!

- A sampling food if appropriate: Chips, crackers, or vegetables
- Nutrition Cards for the ingredients selected in the recipe (available with the Garden Bites curriculum)
- Serving materials may be needed: Plates, small cups, napkins, forks, toothpicks, etc.



This is a great experience to invite families of students who might have recipes or customs related to seed production or consumption.



SPROUT (10 Minutes)






- Use attention signal to focus attention.
- Use a discussion prompt to respond to:
 - What seeds do you eat regularly?
 - What are some seeds you have tried?



Tell students they will be trying a variety of seeds for the kitchen investigation.


 **KITCHEN INVESTIGATION**  (Up to 40 Minutes)

Allow students time to choose from a variety of recipes available for seeds.




-  • Make a selection of a seed-based recipe.
- Wash hands and work surface prior to preparing food.
-  • Record how much of each ingredient they use to create a recipe (based on mentor texts: recipes).
- Prepare the recipe as directed.
-  • Divide their sample into equal parts and therefore determine a serving size for their snack. This may also depend on the number of students in the class and how many groups are preparing the same recipe.
- Display Nutrition Cards for the ingredients available in their recipe.
- Prepare eight 1-serving samples of their seed-based recipe to offer to students in the class. Students will sample their own and offer four samples to others.

Availability of ingredients will determine how many groups and how many recipes can be prepared.



-  • Sample their own recipe and rate it.
- Sample at least two other recipes and rate them.

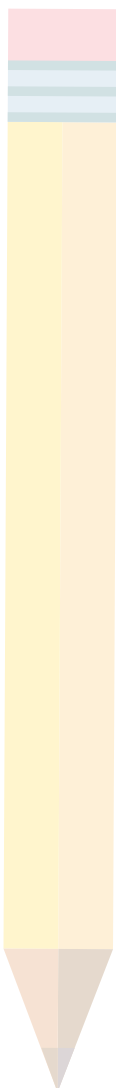
 **CLOSURE/ASSESSMENT** (10 Minutes)

-  • At the conclusion of the lab, ask students to discuss the following prompt with a partner (see Options for Making Pairs):
 - How can food be an important part of our culture?
 - How can I use what I learned today to eat healthy options this week?
-  • Individually or with a partner, have students complete their Garden Journals.
-  • Collect Garden Journals.



Essential Question

HOW CAN THE GARDEN HELP ME BE HEALTHY?



What are the key ingredients of the recipe we chose:	
What health benefits are part of this recipe? *Nutrition Cards	
What do I like about this recipe?	
What could be improved in this recipe?	
What did I learn from other kitchen groups?	
How are the recipes I tried similar or different from those I eat at home?	
<p>SUMMARY: Using your experience in the lab and/or kitchen, describe ways that you can eat seeds to promote health for you and/or your family.</p>	

TASTING RUBRIC:

Criteria	Beginning (1)	Acceptable (2)	Recommended (3)	Award-Winning (4)
NUTRITION VALUE	Recipe has some plants that are healthy, but may include things that are not as healthy to eat.	Recipe has some plants that are healthy to eat.	Recipe uses ingredients from the Chef's Plate that are healthy for me to eat.	Recipe meets all the recommendations from the Chef's Plate.
TASTE AND PRESENTATION	The recipe is good to try but not something I would choose again.	The recipe is good. I would eat it again, but it could be improved.	This recipe is something I would select again.	The recipe is delicious and presented well. I would recommend or make it for others.
TOTALS				



READY,
SET,
GROW!

SEEDS
WE EAT

GARDENERS
TAKE
ACTION

(recommended
two 60-minute
lessons)

3-5

Extension
Lesson:
ELA



Essential Question

WHAT CAN I SHARE ABOUT SEEDS IN OUR GARDEN?

Learning Targets

- **I can** use resources to create characters.
- **I can** place events in a sequence using words like “first”, “then”, or “finally”.
- **I can** use illustrations to make my story interesting and informative.
- **I can** use details and dialogue to improve my story. ([CCSS-ELA Writing 3-5.3](#); [CCSS - ELA Language 3-5.5/3-5.6](#))
- Reorganize students so they are seated with other students in the expert group.
- Ask students to open their Garden Journals.
- Use a narrative text/picture book as a thinking prompt. Examples include:
 - *Oh Say Can You Seed* by Bonnie Worth
 - *The Dandelion Seed* by Joseph Anthony
 - *A Seed is Sleepy* by Dianna Aston
 - *The Curious Garden* by Peter Brown
- Instruct students to listen and take notes on the assigned focus for this story. Note the graphic organizer and remind students what they are listening for.



SPROUT (20 minutes depending on the selected story)



- Attention signal: Call and Response: “Real food” “Grows here”



- Form groups of five students for a jigsaw activity and assign roles.
 - (A) How does the author use ordering words (first, second, next, then, after/before)?
 - (B) Who are the characters and what emotions do they show?
 - (C) What kind of dialogue happens among the characters?
 - (D) What similes or metaphors are there in this story?
 - (E) What are the key events that happen in the story?



- Students in topic alike groups will compare notes.
- Form jigsaw groups (one student from each topic A, B, C, D, E).



- Use **Stand, Share, Sit**, allowing each student 1 minute to share their ideas (group members record). When the student has finished sharing, they sit.
- Tell students they will create a story that focuses on one seed from the garden.



DRAFTING (30 minutes)

- Students will begin drafting their actual stories.
- Remind students they are just creating a draft. They should focus on developing the story and characters.
- Ensure students have reviewed the Writer’s Checklist and have it available as they craft their work.
- Allow students time to work independently.
- Cue students at appropriate times to manage their pacing.



The remaining parts of this process could be extended to the full writing process as determined by the teacher. It can also end as a less formal writing piece. It is recommended that all writing be archived. Students can submit writing products to a classroom collection called *Our Food Chronicles*, which is a locally created archive that can be built to showcase all the learning that has come from the garden. Teachers can think broadly about what the *Chronicles* should look like based on available resources and technology. The teacher and class should determine the criteria needed to be considered “publish-ready” for any writing project and for submission to *Our Food Chronicles*.

CLOSURE/ASSESSMENT (5 Minutes)



- Collect student projects or establish a due date for projects if more time will be permitted.
- Determine the process and timeline for submitting to *Our Food Chronicles* if appropriate.



Published works create an excellent opportunity to create a gallery walk for students in the class (or other classes) while they sample food in a future lesson, as part of a reading block, or during a community/family food event.



REVISING (10 minutes)

- Provide students with time to make revisions to their work and cross-check it to the **Writer’s Checklist**.
- Allow students to make edits.



PUBLISHING (35 minutes)



- Group students into partners for a peer feedback opportunity.
- Students will use Praise, Question, Suggest to offer feedback on the story thus far. Partner A begins and Partner B listens and offers feedback. Then they switch roles.
- Allow remaining time for students to create a publish-ready piece. Ensure students have their **Writer’s Checklists** at hand.

READY,
SET,
GROW!

SEEDS
WE EAT

GARDENERS
TAKE
ACTION

3-5



**Essential
Question**

**WHAT CAN I SHARE ABOUT
SEEDS IN OUR GARDEN?**



Mentor Story Title

ORDERING WORDS

SIMILE OR METAPHOR

CHARACTERS

DIALOGUE

KEY EVENTS

What seed do I want to use for my story?	
What will my seed be like?	

**READY,
SET,
GROW!**

**SEEDS
WE EAT**

**GARDENERS
TAKE
ACTION**

3-5



My Seed Story Board



• **WRITERS CHECKLIST: MY SEED STORY**


- Introduction helps the reader know the situation.
- I compare things using similes or metaphors.
- I have at least one character that is a seed.
- At least three events occur with the seed and I use ordering words like “first”, “next”, “then”, “after”, or “later”.
- The events my seed has are related to how seeds function in the life of a plant.
- I described the character’s emotion in some events.
- I use some dialogue to help the reader understand what is happening.
- I have at least three illustrations to make the story more interesting.

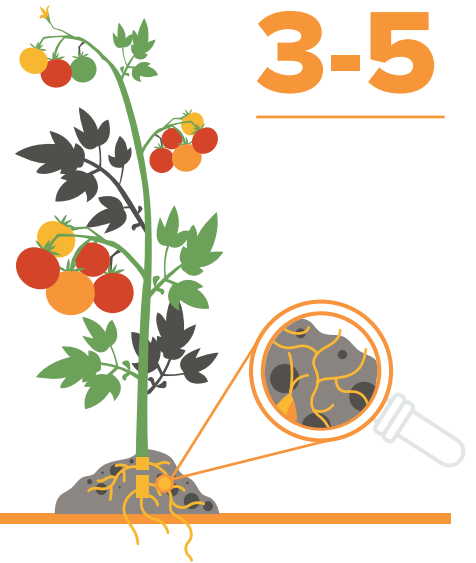
My writing is ready to be submitted for publishing in Our Food Chronicles when I:

- Use proper punctuation including:
 - commas
 - periods
 - apostrophes
 - exclamation points
 - question marks
 - quotation marks

 - Use complete and high-quality sentences which have:
 - a subject
 - a verb
 - a complete thought

 - Uses correct vocabulary and definitions when appropriate.

 - Meet other criteria our class established including:
- 



Essential Question

WHAT CAN THE GARDEN TEACH ME ABOUT ROOTS?

Learning Targets

- **I can** explain the important parts of a plant's root system. ([NGSS LS1.A](#))
- **I can** explain how roots are similar and different. ([NGSS LS3.A](#); [LS3.B](#))
- **I can** create a diagram of how roots work with other parts of the plant. ([NGSS Practice](#))



Tell students:

- Today you will be investigating your hypotheses by harvesting in our garden. Your job will be to find evidence about the function and structure of roots.



GARDEN INVESTIGATION ⌚ (50 Minutes)

READING TO LEARN: ROOTS ⌚ (15 Minutes)

One text option is video content, but could be replaced with other media forms as available or with *The Garden Thymes: Roots*.



Video/Text Options:

- [Parts of a Plant: Roots](#)
- [Time Lapse: Pea Shoots/Root Growth](#)
- The Garden Thymes: Roots



SPROUT ⌚ (5 Minutes)



- Use attention signal to focus students (Teacher: “**Real Food.**” Students: “**Grows Here.**”).
- Set the learning intention for the day: What can the garden teach me about roots?



- Respond with an **Elbow Partner** to the prompt:
 - What do you know about roots?
 - What hypotheses do you have about the root's function (job) for the plant?
 - What structures might the root have that will help it to complete its function?



- Use a **Whip Around** and **T-Chart** to record the hypothesis about each prompt.



- With an elbow partner, students will discuss the question:
- What did the video/text tell us about roots?
- Call on students from several pairs and record responses on chart paper or board.
- Using the Garden Journal, review the essential question and learning targets.
- Together, students should record/review the vocabulary needed for the lesson in the Garden Journal.

INVESTIGATION (35 Minutes)

|STEP 1: EXPLORATION AND OBSERVATION



- Group students into pairs or triads.
- Students need the Garden Journal and something to write with.



- Describe the task and show where evidence can be recorded in the journal. Students will explore the garden to locate roots of plants. Allow students to explore with their teams for 5 minutes.



- Gather the group back together. Ask students what they noticed and where they found roots. Allow groups to share their findings.

|STEP 2: EVIDENCE GATHERING

- Describe that students will now begin to harvest roots and some other items in preparation for the lab and kitchen experiences.
- Provide [Harvest Cards](#) and harvest tools to each group. Items to be harvested today include:
- For Lesson Extensions:
 - Taproots such as carrots, beets, radishes, turnips, parsnips
 - Fibrous roots that are found on plants like onions, corn, marigold, many grassy weeds in the garden (double duty!)
- Harvest in the garden.
- Return to the classroom and deposit harvests into the appropriate stations or a central location.
- Each group enters harvests into [Harvest Record](#).



|STEP 3: ORGANIZING DATA



- Students should sit with garden pairs/triads.
- Teacher should review the investigation questions from the Garden Journal. Using one prompt at a time, allow teams to complete their observations and record findings.
- Using a **Give One, Get One, Move Along**, students will compare results from other groups.
- Teacher will call the group together to create a final data wall (chart paper or board) to answer the key research questions. Students can finalize their notes.



CLOSURE/ASSESSMENT (5 Minutes)



- Students will complete summary and submit Garden Journal.



**Essential
Question**

**WHAT CAN THE GARDEN
TEACH ME ABOUT ROOTS?**



What hypotheses do I have about what roots do for a plant?

Vocabulary Word	Diagram/Example	Definition
<i>ROOT</i>		
<i>ABSORPTION</i>		
<i>SOIL</i>		
<i>TAPROOT</i>		
<i>FIBROUS ROOT FI-BROUS</i>		

What observations did you make about roots in our garden?

What are some ways roots are similar and different?

SUMMARY: What did you learn about how roots support the life of a plant?
(Germination, Growth, Reproduction, Death)



Essential Question

WHAT CAN I LEARN ABOUT ROOTS IN THE GARDEN?

Learning Targets

- **I can** describe where roots fit in the life cycle of a plant. [\(3-LS 1-1\)](#)
- **I can** analyze roots from the garden to see how roots are similar and different. [\(3-LS3-1\)](#)
- **I can** describe how root structures are related to their function. [\(4-LS1-1, 5-LS1-1\)](#)
- **I can** use clues, contexts, and word parts to determine the meaning of words. [\(ELA Language 3-5.6\)](#)

- Ensure each all students has a Garden Journal.
- Ensure each group has appropriate roles assigned.

SPROUT (10 Minutes)

- Group students into lab groups of three or four students.
- Determine and assign lab roles (data recorder, materials manager, timekeeper, project manager, etc.).
- Use attention signal to gather attention: **Real Food/Grows Here** or other.
- Ask students to turn to their Garden Journals for this lesson.
- Develop key vocabulary for this lesson: Tap Root/Fibrous Root
- Ask students to think about the word “tap”.
 - With elbow partners, discuss:
 - How is a tap used?
 - Where else have you heard the word “tap” used?
- Call on volunteers: This should elicit how “**tap**” is a homophone (one word with two meanings). Tap means to draw something from a source; ex: tap a tree, tap a well, drink from the tap, etc., or to repeatedly strike gently, usually making a sound.
- For this lesson, we will consider the first definition of “**tap**”.
- Repeat the process for “fibrous” (root word is “fiber”, a thread or thread-like material). Fibrous is a web of fibers. Examples might be cloth, some vegetables, or dietary fiber.





MATERIALS & PREPARATION






- Create stations displaying a variety of tap and fibrous roots gathered in the harvest. The class size should determine the number of stations. For 30 students, you would want six to eight stations with two of samples of the root type present. (ex: Station 1: carrots and beets, Station 2: corn and grass, 12-16 plants in total).
- Provide nutrition labels for each plant type as an additional source of information.



 **LAB INVESTIGATION**  (30 Minutes)

-  • Instruct students that the purpose of the lab is to draw conclusions about how the structure of the root helps the plant grow.
- Students will also make a hypothesis about what type of environment each type of root system thrives in (wet/dry; sandy/compacted soil; hot/cold; windy/calm).
- Students will work through four lab stations (two taproots, two fibrous roots) spending about 5 minutes at each.
-  • Ask students to clean up the last lab station as needed. Leave roots out if using for the kitchen extension. If not, allow students to clean the edible roots so they can sample the edible roots as a snack during the analysis, later in the day, or at home.

 **CLOSURE/ASSESSMENT** (20 Minutes)

-  • Students will return to their tables/desks.
- With their lab groups, students should complete the analysis and hypothesis sections of the Garden Journal.
-  • Once completed, call on various lab groups and record their analyses and hypotheses on the board. Students can add to their notes if needed.
- Have students turn to The Garden Thymes: **Roots**.
-  • Read aloud (or take student volunteers). As the article is read, put a + or - next to each hypothesis if the article affirms or refutes their guesses. Remind students that scientific discovery is a process of trial and error and that scientist have many incorrect ideas before developing accurate ones..
- Collect Garden Journals.



**Essential
Question**

**WHAT CAN THE GARDEN
TEACH ME ABOUT ROOTS?**

PROCEDURE:

1. Form groups of four students and greet each other.
2. Visit four lab stations in total. Two stations will be tap roots; two stations will be fibrous roots.
3. At each lab station, observe each of the plants.
4. Use words or sketches to record data.
5. Work with your lab members to be sure all students in the group are recording similar data.
6. Clean up stations if directed to do so by your teacher.

Vocabulary Word	Diagram/Example	Definition
TAPROOT		
FIBROUS ROOT FI-BROUS		
LAB STATION	Observations/Data: What do you observe about this plant? You may use words and sketches.	
LAB STATION 1 ROOT TYPE:	<p>What does the root look like?</p> <p>What does the plant look like?</p> <p>Other observations:</p>	





LAB STATION 2 ROOT TYPE:	What does the root look like? What does the plant look like? Other observations:
LAB STATION 3 ROOT TYPE:	What does the root look like? What does the plant look like? Other observations:
LAB STATION 4 ROOT TYPE:	What does the root look like? What does the plant look like? Other observations:
SUMMARY: After reviewing your data and that of your classmates, what hypothesis can you draw about tap and fibrous roots and how they help the plant to grow? How does the structure of the root specifically help the plant?	

- **HYPOTHESIS:** What type of environment would be best for taproots versus fibrous roots?



Essential Question

HOW CAN THE GARDEN HELP ME BE HEALTHY?

Learning Targets

- **I can** describe how roots are part of a healthy diet. ([NHES: 7.5.1](#), HBO 3)
- **I can** prepare a healthy snack using a variety of roots. (HBO 2,3; [NHES: 7.5.2](#))
- **I can** demonstrate how to prepare food safely.
- **I can** demonstrate how to make healthy serving sizes of foods we eat. ([NHES: 7.5.2](#))
- **I can** explain how roots prepared at school are similar to or different from roots I eat at home. ([NHES 2.5.1](#))
- **I can** show how I will eat healthy foods this week. ([NHES 2.5.1](#))

humans too.



- Ask students:
- What is a root vegetable?
- Students will give various answers such as carrot, beet, radish, rutabaga, parsnips, jicama. Students will also give answers such as potato, sweet potato, and onion which are actually stems.



Scientifically speaking, potatoes, sweet potatoes, and onions are actually stems that grow underground. The others are true tap roots we can eat, and that are good for us because they take in nutrients and store food for the plant that we benefit from. In the kitchen, chefs may call all of these root vegetables.



SPROUT (5-10 Minutes)



- Use attention signal to focus students.
- With an elbow partner, students will brainstorm the question:
- **Why are most of the roots we eat tap roots?**
- Solicit various answers. Responses should include: the function of taproots is to store nutrients for the plant and take in nutrients from the soil. Because they store nutrients, they have offer more nutrition as to



MATERIALS & PREPARATION:



If concerns exist around students slicing vegetables, they can be sliced ahead of time. Likewise, if the vegetables need to be boiled, that can be done ahead of time.



- Form teams of four students.
- Variety of root vegetables, herbs, onions, garlic, and other ingredients depending on the recipe selected.
- Nutrition Cards (as many sets of Nutrition Cards as cooking stations).
- Hot plate may be needed for some recipes.

- Other kitchen utensils as directed for the recipe.
- Sampling cups/plates/utensils, if appropriate.
- Review recipes to ensure you have enough kitchen utensils.
- Print recipes for students to select from or one the whole class will make:



- [Shaved Root Vegetable Salad](#) (Epicurious)
- [Root Vegetable Salad](#) (Jamie Oliver)
- [Raw Root Bowls with Zesty Orange Dressing](#) (The Roasted Root; this would be better done as a whole class)
- [Root Vegetable Saute](#) (Don't Waste the Crumbs)
- [Sautéed Root Vegetables with Soy Sauce and Honey](#) (Serious Eats)



KITCHEN INVESTIGATION

 (35-45 minutes including sampling)

- Wash hands as instructed for safe food handling.
- When selecting ingredients, students should also select a Nutrition Card.
- Teams will have 20-25 minutes to prepare the recipe as directed.



- Students should prepare tasting samples for the class if appropriate (even when doing a whole class recipe, teams could be challenged to add one seasoning/herb as a way to experiment or differentiate and still offer a tasting).
- Using the cooking rubric, teams should sample the recipe offered by all groups and rate the recipe for the team.



- Students will clean their prep area and cooking materials.



CLOSURE/ASSESSMENT (20 Minutes)



- At the conclusion of the lab, ask students to discuss the following prompts with a partner:

- How can food be an important part of our culture?
- How can I use what I learned today to eat healthy options this week?



- Individually or with a partner, have students complete their Garden Journals.
- Collect Garden Journals.



Essential Question

HOW CAN THE GARDEN HELP ME BE HEALTHY?

PROCEDURE:

1. Wash hands and prep area as instructed for safe food handling.
2. Select a Nutrition Card for as many ingredients as possible from your recipe.
3. Use 20-25 minutes to prepare the recipe as directed.
4. Prepare eight tasting samples for the class. Four samples are for your group; four samples are for other students.
5. Sample two recipes offered by other groups and rate the recipe using the rubric.
6. Clean prep area and cooking materials.
7. Compost any remaining plant material if possible.

What are the key ingredients of the recipe we chose?

What health benefits are part of this recipe?
*Nutrition Cards

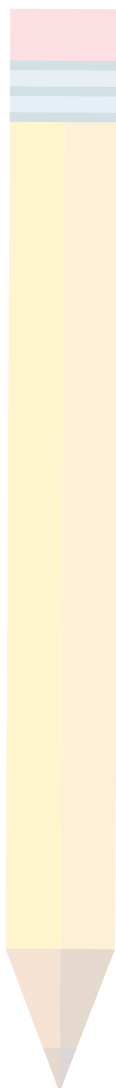
What do I like about this recipe?

What could be improved in this recipe?

What did I learn from other kitchen groups?

How are the recipes I tried similar to or different from those I eat at home?

SUMMARY: Using your experience in the lab and/or kitchen, describe ways that you can eat roots to promote health for you and/or your family.



TASTING RUBRIC:

Criteria	Beginning (1)	Acceptable (2)	Recommended (3)	Award-Winning (4)
NUTRITION VALUE	Recipe has some plants that are healthy, but may include things that are not as healthy to eat.	Recipe has some plants that are healthy to eat.	Recipe uses ingredients from the Chef's Plate that are healthy for me to eat.	Recipe meets all the recommendations from the Chef's Plate.
TASTE AND PRESENTATION	The recipe is good to try but not something I would choose again.	The recipe is good. I would eat it again, but it could be improved.	This recipe is something I would select again.	The recipe is delicious and presented well. I would recommend or make it for others.
TOTALS				



READY,
SET,
GROW!

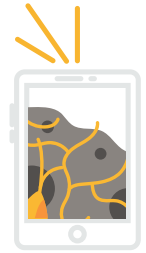
ROOTS
WE EAT

GARDENERS
TAKE
ACTION

(recommended
two 60 minute
lessons)

3-5

Lesson
Extension:
ELA



Essential Question

HOW CAN I SHARE WHAT I LEARNED ABOUT ROOTS?

Learning Targets

- **I can** write to inform about the function of roots and why they are healthy to eat.
- **I can** organize my ideas into categories or sections that include transitions.
- **I can** use headings, illustrations, or other strategies to make it easy and fun to read.
- **I can** use facts, quotes, definitions, and details so readers learn about roots.
- **I can** write a conclusion for my piece so readers know what to do next. ([ELA - Writing 3-5.2, Language 3-5.2A,C,E,G](#))



- What makes the information interesting and easy to understand?
- Answers should refer to text features such as headings, diagrams, illustrations, sections, and bold text.
- Allow students the option to consider what structure or layout they like best and share why.
- Tell students:
- Today you will create an informational writing piece about roots. Some submissions could go into *Our Food Chronicles*.



INVESTIGATION: INFORMING OTHERS (60-100 Minutes)

PLANNING: (20 Minutes)



- Use Garden Journal Roots - Gardeners Take Action.
- Review and ensure understanding of the elements of the organizer provided.
- Students will review the Garden Journal for information previously collected.



SPROUT (15 Minutes)



- Call students' attention with an attention signal: **Real Food/Grows Here** or other.




- Provide samples of informational text (ex: Time for Kids, textbooks, nonfiction samples from the library).




- Ask students to review the samples.
- With a partner or triad, use the discussion prompts:
- What do you like about how the author presented this information?


Student resources will vary depending on how many extension lessons were completed. The Garden Journal will provide notes, text, lab data and analysis, nutrition labels, personal experience, and a tasting critique.



-  • Students may highlight material they wish to include rather than rewriting it during the planning phase.
-  • Students should determine their topic sentence or provide one based on the needs of the class and available time. Ex: Roots do important things for plants and people. Or: Roots are important because they help plants to grow and people to be healthy.
-  • If time is a constraint, the graphic organizer may serve as a Quick Write or One-Pager and be sufficient to conclude the lesson series.





The remaining parts of this lesson extend into the full writing process and allow students to reach the level of the CCSS-ELA standard. It is recommended that all writing be archived. Students can submit writing products to a classroom collection called *Our Food Chronicles*, which is a locally created archive that can be built to showcase all the learning that has come from the garden. Teachers can think broadly about what the *Chronicles* should look like based on available resources and technology. The teacher and class should determine the criteria needed to be considered “publish-ready” for any writing project and for submission to *Our Food Chronicles*.





DRAFTING (30 minutes)

- Review the Writer’s Checklist for this task with students and ensure they have access to it before beginning to write.
- Students will use their graphic organizers to create a short informational piece about roots.
- Ideally students could use an editing program that allows for columns, images, and text boxes so they can reach the level in the standard.
- Allow time for students to complete the task, referring to the Writer’s Checklist and the *Our Food Chronicles* criteria for submission.


REVISING (10 minutes)

-  • Provide students with time to make revisions to their work and cross-check to the Writer’s Checklist.
-  • Allow students to make edits.

PUBLISHING (40 minutes)

-  • Group students into partners for a peer feedback opportunity.
- Students will use **Praise, Question, Suggest** to offer feedback on the story thus far. Partner A begins and Partner B listens and offers feedback. Then switch roles.
-  • Allow remaining time for students to create a publish-ready piece. Ensure students have their Writer’s Checklists at hand.

CLOSURE/ASSESSMENT (5 Minutes)

-  • Collect student projects or establish a due date for projects if more time will be permitted.
- Determine process and timeline to submit to *Our Food Chronicles* if appropriate.



**Essential
Question**

**HOW CAN I SHARE WHAT
I LEARNED ABOUT ROOTS?**

What should I share about the function of roots for plants and people? Record the source.

Illustrations/Diagrams that help people understand the topic.

Topic Sentence or Thesis

Concluding Sentence

Headings or sections I need to include to organize the content.

Transition words or phrases I will use to make the writing clear.

SUMMARY: What do you want people to do after learning about the function of roots for plants and people?



- MY WRITING INCLUDES:

- Important facts about the function of roots in the growth of a plant
- Important facts about the benefits of roots in a healthy diet
- Quotes, definitions, or other details that help explain the topic
- Illustrations or diagrams that help the reader understand the information
- Headings, sections, or categories to organize the information
- A conclusion that helps people know what to do with the information I have provided

My writing is ready to be submitted for publishing in Our Food Chronicles when I:

- Use proper punctuation including:
 - Use complete and high-quality sentences which have:
 - Uses correct vocabulary and definitions when appropriate.
- Meet other criteria our class established including:



Essential Question

WHAT CAN THE GARDEN TEACH US ABOUT STEMS?

Learning Targets

- **I can** explain the important parts of a plant's stem. ([NGSS LS1.A](#))
- **I can** explain how stems are similar and different. ([NGSS LS3.A](#); [LS3.B](#))
- **I can** create a diagram of how stems work with other parts of the plant. ([NGSS Practice](#))



- stem and ask students to make a hypothesis about what the stem's function (job) is for a plant. List on chart paper or board.
- In pairs, students create a hypothesis about the stem's job for the plant and/or what stem structures might help it do for the plant.
- Teacher will use a Whip Around and T-Chart to record the hypotheses about each prompt.
- Tell students:
- Today you will be investigating your hypotheses by harvesting in the garden. Your job will be to find evidence about the function and structure of stems.



SPROUT ⌚ (5-10 Minutes)



- Use attention signal to focus students.
- Set the learning intention for the day:



- What can the garden teach me about stems?
- Show students a plant of your choosing.
- With an elbow partner, allow discussion of the following prompts (if needed, students could also reference their notes in the Garden Journals):
- Describe the function of each plant part and where it fits in the lifecycle.
- Describe ways the structure supports its function.
- List roots and seeds we can eat.
- Using the plant, point to the plant's



GARDEN INVESTIGATION:

READING TO LEARN: ⌚ (10 Minutes)





- Students will be in garden groups of three or four for this activity.
- Open Garden Journals to *The Garden Thymes: Stems*.
- Seek volunteers to read from the text or independently, students will read the text and highlight evidence that supports the claims:
 - Stems represent the growth phase of a plant's life cycle.

- Stems have important structures that allow them to survive and grow.
- Once complete, students will compare evidence with their garden groups.
- In teams or with guidance from the teacher, students should record vocabulary and hypotheses in their Garden Journals.



Potatoes, garlic, rhubarb, celery, kale, asparagus, etc. Students can also take stems from the plants needed for lesson nine below.

 **INVESTIGATION** ⌚ (5-10 Minutes)

-  • Ensure students have their Garden Journals and something to write with.
-  • Gather student attention with an attention signal.
- Review norms (particularly about what to touch or not) and garden boundaries with students.

STEP 1: EXPLORATION AND OBSERVATION ⌚ (10 Minutes)

- Describe the task and show where evidence can be recorded in the journal. Students will explore the garden to locate stems in plants. Allow students to explore with their groups for 5 minutes.
- Gather the groups back together. Ask students what they noticed and where they found stems. Allow groups to share their findings.

STEP 2: EVIDENCE GATHERING ⌚ (15 Minutes)



- Students will harvest stems and some other items in preparation for the lab and kitchen experiences.
- Provide Harvest Cards and harvest tools to each group:
 - For Lesson Extensions: Stems:

- Once teams have completed their harvests, students return to the classroom and deposit their harvests into the appropriate location.
- Each group will enter harvests into the [Harvest Record](#).

STEP 3: ORGANIZING DATA ⌚ (15 Minutes)

- Students should sit with garden pairs/triads.
- Teacher should review the investigation questions from the Garden Journal. Using one prompt at a time, allow teams to complete their observations and record findings.
- Once their data are recorded, use Musical Shares to allow students to compare data with other groups.
- Teacher will call the group together to create a final data wall (chart paper or board) to answer the key research questions. Students can finalize their notes.

 **CLOSURE/ASSESSMENT** ⌚ (5 Minutes)

-  • Using the Garden Journal, students will complete the Summary in the Garden Journal.
-  • Call on students to share their responses. (3-4 minutes)



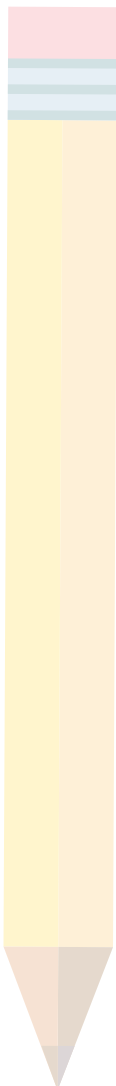
Essential Question

WHAT CAN THE GARDEN TEACH ME ABOUT STEMS?

What hypotheses do I have about what stems do for a plant?

Vocabulary Word	Diagram/Example	Definition
STEM		The part of the plant that transports water, nutrients, and food to
XYLEM		Tissue in the plant stem that transports water and nutrients from the plant roots to the leaves.
PHLOEM		Tissue that transports food from the leaves to the rest of the plant.
TRANSPORTATION		The way water, nutrients, and food are moved within a plant.
What observations did you make about stems in our garden?		
What are some ways stems are similar and different? (Words, sketches, or diagrams may be used.)		

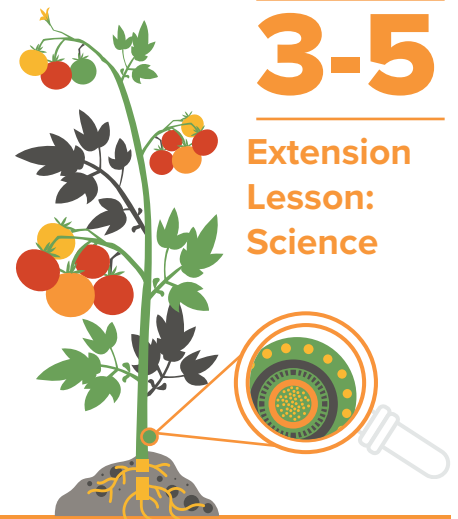
SUMMARY: What did we learn about how stems support the life of a plant? (Germination, Growth, Reproduction, Death)



This lab will take multiple days to complete.

Essential Question

WHAT CAN I LEARN ABOUT STEMS FROM THE GARDEN?



Learning Targets

- **I can** explain the role stems play in the lifecycle of a plant. ([NGSS LS1.A](#))
- **I can** make predictions about how stems contribute to the growth and survival of the plant. ([NGSS LS4.B](#))
- **I can** use observations to predict the type of environment that would help the plant thrive. ([Scientific Practice/LS4.C](#))
- **I can** defend my opinion with evidence. ([Scientific Practice/CCSS-ELA Writing W3-5.1](#))

MATERIALS AND PREPARATION (50 Minutes)



- Gather the following materials for each lab station:
 - One stalk of celery with leaves
 - Various other stems (flowering, tuber/bulb) *The stem on a bulb is usually right above the root
 - Magnifying glass/microscope
 - Gloves if stems have thorns or other hard-to-handle structures
 - Four cups or beakers
 - Water
 - Food coloring (one per station)
 - Ruler if no beakers are available
 - Masking tape
 - Pen



- Assign roles and ensure students introduce themselves to lab partners with sentence stems (ex: I am Julianna. I am glad to be working with you today).



- Garden Journal

SPROUT (5 Minutes)

- Call attention with an attention signal: Real Food/Grows Here or other.
- Refer to the Garden Journal and review previous observations from the garden with a partner. Students may add to their notes in a different color.
- Solicit responses from students about prior learning related to seeds and roots.
- Set the learning intention for the day:
- We will investigate the structures that allow stems to support plant growth.








SCIENCE INVESTIGATION (30 Minutes)

This is a variation on the traditional celery experiment. Data collection will need to be collected over a series of days before students can draw conclusions.



- Students will open their Garden Journals Stems -Garden to Lab.
- Read aloud or have students read the procedure and data collection section, highlighting any words that are important and circling words that need explanation.
- Have students turn to their lab groups and confirm the process and review roles.
- Students will complete the procedure in the Garden Journal.

CLOSURE/ASSESSMENT *(5 Minutes)*

-  • Once all the data are collected, provide students time to compare data with other students using a discussion protocol such as a Check-In Circle. The prompt is the summary questions:
-  • How might the changes in the water level relate to the needs of the plant and the kind of environment in which the plant will survive?
-  • One thing I do not understand is... Or, one question I now have is...
-  • Call on various groups with the prompt:
-  • What did you hear someone say about...
-  • Ask students:
-  • How could you confirm whether your opinion or hypothesis is accurate?



This activity could inform a solution station about the needs of various plants over time.

-  • Collect and review Garden Journals.



**Essential
Question**

**WHAT CAN I LEARN ABOUT
STEMS FROM THE GARDEN?**

PROCEDURE:

DAY 1

- Place equal amounts of water in four glasses or beakers.
- Measure water levels with a ruler.
- Record the amount of water for each cup under Day 1.
- Use a piece of masking tape to label each cup//beaker with numbers one through four.
- Cut the bottom of the celery stem with scissors or a knife.
- Using a magnifying glass or microscope, observe the vascular bundle containing the xylem and phloem.
- Record “Yes” if you can see it, “No” if you cannot.
- Record the color of the celery stalk.
- Record any other observations you make.
- Repeat steps for the stem with a flower and the other stem.

DAY 2

- Measure the water in each cup and record.
- Observe any color changes for each plant and record.
- Pick up the stem and determine if you can see the vascular bundle and record.
- Note any other changes to the plant and record.

Sample 1: Water Only (Control Sample)	Water Measurements	Color of Plant Parts	Vascular Bundle Visible?	Other Observations
Day 1			Yes No	
Day 2			Yes No	
Sample 2: Celery	Water Measurements	Color of Plant Parts	Vascular Bundle Visible?	Other Observations
Day 1			Yes No	
Day 2			Yes No	
Sample 3: Flower	Water Measurements	Color of Plant Parts	Vascular Bundle Visible?	Other Observations
Day 1			Yes No	
Day 2			Yes No	





Data Collection					
Sample 4: Tuber or Bulb	Water Measurements	Color of Plant Parts	Vascular Bundle Visible?		Other Observations
Day 1			Yes	No	
Day 2			Yes	No	

ANALYSIS/HYPOTHESIS: How might the changes in the water level relate to the needs of the plant and the kind of environment in which the plant will survive?

- **DIGGING DEEPER:**
- [Celery Lab Video](#)
- [Images of vascular bundles for many plants](#)
- [Images of vascular bundles in celery](#)



Essential Question

HOW CAN THE GARDEN HELP ME BE HEALTHY?

Learning Targets

- **I can** describe how stems are part of a healthy diet. ([NHES: 7.5.1](#), HBO 3)
- **I can** prepare a healthy snack using a variety of stems. (HBO 2,3, [NHES: 7.5.2](#))
- **I can** demonstrate how to prepare food safely.
- **I can** demonstrate how to make healthy serving sizes of foods we eat. ([NHES: 7.5.2](#))
- **I can** explain how stems prepared at school are similar to or different from roots I eat at home. ([NHES 2.5.1](#))
- **I can** show how I will eat healthy foods this week. ([NHES: 7.5.2](#))

(Student responses might note that underground stems are going to be more calorically dense because they also store food for the plant.)

- Solicit answers from a variety of students and make a list on the board/chart paper. Let students know they are going to make recipes using stems today.



MATERIALS & PREPARATION

(50 Minutes)

If concerns exist around students slicing the vegetables, they can be sliced ahead of time. Likewise, if the vegetable needs to be boiled, that can be done ahead of time.



- Form teams of four students.
- Gather a variety of stems and herbs from the garden and other ingredients as determined by the selected recipe(s).
- Have as many sets of Nutrition Cards out as cooking stations.
- A hot plate may be needed for some recipes.
- Assemble other kitchen utensils as directed for the recipe.
- Sampling cups/utensils if appropriate.
- Review recipes to ensure there are enough kitchen utensils.
- Print recipes for student groups to select from or one the whole class can make:
 - [Raw Rhubarb Compote](#) (Clean Eating; rhubarb leaves cannot be eaten and should be removed prior to offering the rhubarb to students)
 - [Strawberry-Rhubarb with Mint and Hazelnuts](#) (Bon



SPROUT (5-10 Minutes)



- Gather attention of students using attention signal.
- With an elbow partner, ask students to discuss:
 - What stems people eat or which ones people eat in their families.
 - Which stems grow above ground and which ones grow below ground.
 - What predictions do you have about which stems have more calories or more nutrients? Explain why.



Appetit; note any nut allergies)

- [Clumpy Granola with Stewed Rhubarb/Honey Roasted Rhubarb with Power Greens](#) (Shape)
- [Sautéed Asparagus](#) (All Recipes)
- [Sautéed Sweet Potato with Spinach](#) (Martha Stewart)

KITCHEN INVESTIGATION: (35-45 Minutes)



- Wash hands and preparation area as instructed for safe food handling.



- When selecting ingredients, students should also select a Nutrition Card.



- Teams will have 20-30 minutes to prepare the recipe as directed.
- Students should prepare tasting samples for the class if appropriate (even when doing a whole class recipe, teams could be challenged to add one seasoning/herb as a way to experiment or differentiate and still offer a tasting).
- Using the cooking rubric, teams should sample the recipes offered by other groups and rate the recipe of the team.
- Students will clean their prep area and cooking materials.

CLOSURE/ASSESSMENT (5-10 Minutes)



- At the conclusion of the lab, ask students to discuss the following prompts with a partner.



- How can food be an important part of our culture?
- How can I use what I learned today to eat healthy options this week?



- Individually or with a partner, have students complete their Garden Journals.



- Collect Garden Journals.



**Essential
Question**

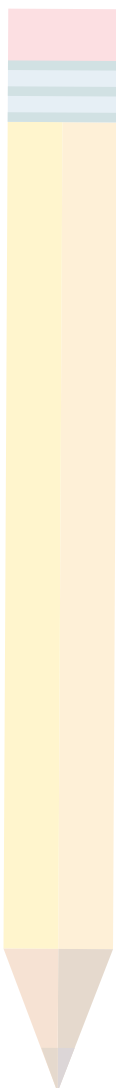
**HOW CAN THE GARDEN
HELP ME BE HEALTHY?**



What are the key ingredients of the recipe we chose?	
What health benefits are part of this recipe? *Nutrition Cards	
What do I like about this recipe?	
What could be improved in this recipe?	
What did I learn from other kitchen groups?	
How are the recipes I tried similar to or different from those I eat at home?	
SUMMARY: Using your experience in the lab and/or kitchen, describe ways that you can eat stems to promote health for you and/or your family.	

TASTING RUBRIC:

Criteria	Beginning (1)	Acceptable (2)	Recommended (3)	Award-Winning (4)
NUTRITION VALUE	Recipe has some plants that are healthy, but may include things that are not as healthy to eat.	Recipe has some plants that are healthy to eat.	Recipe uses ingredients from the Chef's Plate that are healthy for me to eat.	Recipe meets all the recommendations from the Chef's Plate.
TASTE AND PRESENTATION	The recipe is good to try but not something I would choose again.	The recipe is good. I would eat it again, but it could be improved.	This recipe is something I would select again.	The recipe is delicious and presented well. I would recommend or make it for others.
TOTALS				





Essential Question

WHAT CAN I SHARE WITH OTHERS ABOUT HOW STEMS HELP PLANTS AND PEOPLE?

Learning Targets

- **I can** make a video or give a speech that shows how to prepare stem vegetables.
- **I can** speak clearly and in a way that is appropriate for my audience.
- **I can** use a story or experience to add interest to the demonstration in the video/speech. ([CCSS ELA Speaking/Listening 3-5.4, 3-5.5, 3-5.6](#))
- **I can** help others make healthy food choices by creating a helpful video. (HBO 10, 13; [NHES 8.5.1, 2.5.2](#))

- [Ruby](#)
- [Cooking with Briena and Briteny](#)
- [Chopped Junior Championship](#)
- Show video and have students record observations in their Garden Journals.
- Extend into a Pair-Square for the prompt above.
- Solicit examples from students to generate a criteria for what should be included in their demonstration videos/speeches.
- Students will record their own version of the checklist in their Garden Journals. Suggestions to consider:



- Adding a personal story
- Interesting facts about stems
- Health benefits of eating stem vegetables
- Examples of stems we can eat
- Cooking safety (washing hands and prep area, handling of equipment, etc.)
- Talking in a clear, slow tone of voice
- Using language that is appropriate for a cooking show



SPROUT (10-15 Minutes)



- Prior to showing the video, tell students:



- You are looking for examples that make the video informative, personalized, and useful. Specifically, what do they do or say that helps the viewer learn how to make the dish, and learn something about the speaker(s) and their story?







- Select a sample video featuring children cooking (if students have devices, they could select their own, creating a jigsaw opportunity):



- Tell students:
- You will be making a demonstration video/speech about how to prepare Ants on a Log, or a variation of that recipe.
- See options: [Ants on a Log](#) (Healthy Little Foodies)

MATERIALS & PREPARATION

-  Recipe for Ants on a Log (noted previous page)
- Ingredients to make a sample for the video
-  • Video equipment: Camera, tripod, memory card
- Poster board or paper for cue cards
- Simple cooking equipment such as a butter knife or spoon, cutting board, plates
-  • Software to edit video such as Movie Maker or iMovie
- Location to film that is appropriate for a food preparation demo
-  • Group students into pairs (join pairs when it is time to record)



INVESTIGATION: GARDENERS TAKE ACTION

 (60-100 Minutes)

PLANNING: (10 Minutes)

- Direct students to review their notes from the previous investigations: garden, lab, and kitchen. They will highlight things to go into their video that will be informative and help people understand the function of stems for plants and why they are healthy for people.
- Students will create a storyboard and/or script for their demonstrations using a sample from the Garden Journal (videos should be 3-4 minutes long).
- Students should review their checklists to ensure they have included all of the necessary elements.

REVISING (15 Minutes)


-  • 7 minutes: Use the Praise, Question, Suggest protocol to have each pair explain their storyboard or read their script to the other pair. One partner is presenting; the other provides feedback. Then the roles switch.
-  • 8 minutes: Students make revisions to their scripts/storyboards as needed.

PRODUCING (35-45 Minutes)





This can occur in groups if needed as students are working on other projects/subjects.



-  • Each group will take turns filming their demonstration.
- Then pairs will edit their videos, adding in visual features that create interest and clarify the message/demonstration.

CLOSURE/ASSESSMENT (5 Minutes)

Extensions could be long-term goals/opportunities.

-  • Have students complete the summary in their Garden Journals with their partners.
- Classrooms can determine the best way to share their work. Some ideas include:
 - Hosting a screening.
 - Sharing at a family/community garden celebration.
-  • Creating a webpage section of *Our Food Chronicles* and posting videos that people all over the world can view and learn from.



**Essential
Question**

**WHAT CAN I SHARE WITH OTHERS
ABOUT HOW STEMS HELP PLANTS
AND PEOPLE?**

What about the video makes it useful and interesting?

What criteria should be used to publish our own videos/speeches?

Storyboard: Each square represents a section of the video. Be sure to review the criteria for production.

SUMMARY: Why is it important to share what we know about eating healthy food?





**Essential
Question**

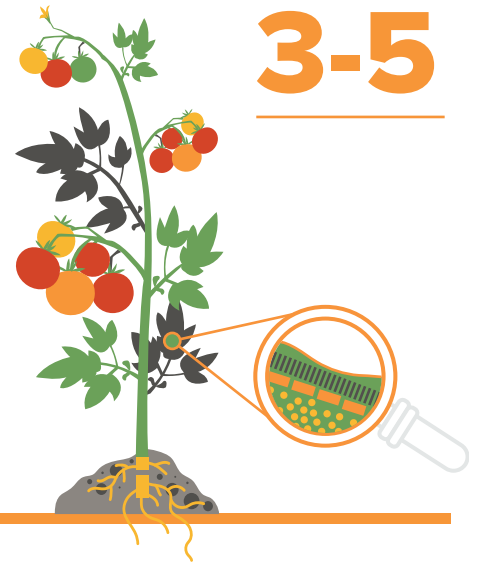
**WHAT CAN I SHARE WITH OTHERS
ABOUT HOW STEMS HELP PLANTS
AND PEOPLE?**

- What about the video makes it useful and interesting?
- What criteria should be used to publish our own videos/speeches?

Script Frame: Answer the questions using the actual words you will say in the video/speech in the journal or on another piece of paper. Be sure to review the criteria for production.

- 1. Introduction: Who you are and what is something interesting about you?
- 2. What are you making and why is it a good choice?
- 3. What are the ingredients?
- 4. What are the steps to prepare this recipe?
- 5. How does this recipe remind you of something in your life or another recipe you like that is similar?
- Other ideas?
- **SUMMARY:** Why is it important to share what we know about eating healthy food?





Essential Question

WHAT CAN THE GARDEN TEACH ME ABOUT LEAVES?

Learning Targets

- **I can** explain the important parts of a plant's leaves. [\(NGSS LS1.A\)](#)
- **I can** explain how leaves are similar and different. [\(NGSS LS3.A; LS3.B\)](#)
- **I can** create a diagram of how leaves work with other parts of the plant. [\(NGSS Practice\)](#)



SPROUT ⌚ (5-10 Minutes)



- Use an attention signal to focus students.



- Set the learning intention for the day:
- What can the garden teach me about leaves?
- Show students a plant of your choosing and ask them to identify plant parts they have already studied (Seeds, Roots, and Stems).



- Ask them to talk with an elbow partner to identify what they have learned about seeds, roots, and stems. (If needed, students can also reference their notes in the Garden Journal.)
- Describe the function of each and what part of the life cycle it fits into.
- Describe ways the plant part structure supports its function.
- List roots, seeds, and stems we can



eat.

- Using the plant, point to its leaves and ask students to make a hypothesis about what the leaf's function (job) is and also how the leaf's shape or structure supports that claim.
- Teacher will use a Whip Around and T-Chart to record the hypotheses about each prompt.
- Tell students that they will be investigating their hypotheses today by harvesting in the garden. Their job will be to find evidence about the function and structure of leaves.



GARDEN INVESTIGATION ⌚ (40 Minutes)



- Group students into pairs or triads for the Garden Investigation.
- Ensure students have the Garden Journal and something to write with.
- Gather student attention with an attention signal.
- Review Garden Expectations.

STEP 1: EXPLORATION AND OBSERVATION ⌚ (10 Minutes)

- Describe the task and show where evidence can be recorded in the journal. Students will explore the garden to locate leaves in plants.
- Gather the group back together. Ask students what they noticed and where they found leaves. Allow groups to share their findings.

STEP 2: EVIDENCE GATHERING ⌚ (15 Minutes)

- Describe that students will now begin to harvest leaves and some other items in preparation for the lab and kitchen experiences.

- Provide Harvest Cards and harvest tools for each group. Items to be harvested today include various types of lettuce, spinach, kale, cabbage, arugula, herbs, and beets.
- Once teams have completed their harvests, students can return to the classroom and deposit their harvests into the appropriate location.
- Each group enters harvests into the [Harvest Record](#).

STEP 3: ORGANIZING DATA  (15 Minutes)


- Students should sit with garden pairs/triads.
- Review investigation questions from the Garden Journal. Using one prompt at a time, allow teams to complete their observations and record findings.
- Once their data are recorded, use Musical Shares to allow students to compare data with other groups.
- Call the group together to create a final data wall (chart paper or board) to answer the key investigation questions. Students can finalize their notes.



If not using Extension Lesson: Garden to Lab, students should read The Garden Thymes and complete the Garden Journal for that text. If using the extension lesson, students should move onto the Closure/Assessment.



 **CLOSURE/ASSESSMENT** (10 Minutes)

-  • Gather attention of students and return focus to the hypotheses created at the beginning of the class.
- Review the hypotheses and ask if any group wants to change their hypothesis and/or add evidence in support of a hypothesis.
- Exit Ticket: Critical Question: On a note card or sticky note, have each student formulate one question about leaves that they want the answer to. They should note if the question is a:
 - Level 1: Right there answer (could be looked up)
 - Level 2: An investigation question (could be answered in an experiment/observation)
 - Level 3: Answer requires using many sources to answer

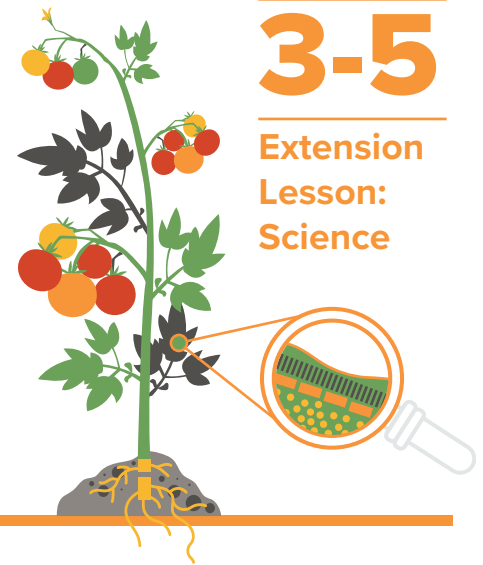


**Essential
Question**

**WHAT CAN THE GARDEN
TEACH ME ABOUT LEAVES?**



What hypotheses do I have about what leaves do for a plant?	
Create a diagram or rubbing of two leaves you harvested in the garden.	
What are some ways leaves are similar and different? (Words, sketches, or diagrams may be used.)	
SUMMARY: What did we learn about how leaves support the life of a plant? (Germination, Growth, Reproduction, Death)	



Essential Question

WHAT CAN I LEARN ABOUT LEAVES IN THE GARDEN?

Learning Targets

- **I can** explain the role leaves play in the lifecycle of a plant. ([NGSS LS1.A](#))
- **I can** make a prediction about why leaves have different shapes and sizes but similar parts. ([NGSS LS4.B](#))
- **I can** use observations to predict the type of environment that would help the plant thrive. ([NGSS Scientific Practice/LS4.C](#))
- **I can** defend my opinion with evidence. ([Scientific Practice/CCSS-ELA Writing W3-5.1](#))

SCIENTIFIC PRACTICE

- **I can** use diagrams and sketches to understand the natural world.
- Investigations begin with questions.
- Scientists look for patterns and order in observations.



- Read some questions students generated in the Exit Ticket in Lesson: Leaves We Eat.
- Review the hypotheses and evidence presented.
- Review the essential question and learning targets for the day in the Garden Journal.
- Tell students:
- Today you will be investigating your hypotheses through observation and research. Your job will be to find evidence about the function and structure of leaves.



MATERIALS & PREPARATION:

- Four to six leaves from various plants at each station. (Be sure to have some with branching veins like kale, lettuce, beet leaves, and some with parallel veins like corn, ginger, or even some grasses.)
- Paper and crayons for making rubbings.
- Assign roles and ensure students introduce themselves to lab partners with sentence stems (ex: I am Julianna. I am glad to be working with you today.).
- Garden Journal



SPROUT (10 Minutes)

- Gather student attention with attention signal (ex: Teacher: “Real Food.” Students: “Grows Here.”).
- Set the learning intention for the day:
- What can I learn about leaves in the garden?



LAB INVESTIGATION (35 Minutes)

READING TO LEARN: MARKING THE TEXT/GATHERING FACTS (10-Minutes)

- Locate The Garden Thymes: Leaves or distribute.

Video or other text sources could supplement this text due to the complexity of the concept of photosynthesis, which is an introductory concept.



Video Options:

- [Photosynthesis](#)
- [Mosa Mack](#)

- Have students mark the text with a highlighter or pen when they find information about:
- How does the leaf support the growth of the plant?
- What structures or parts do leaves have that help the plant live?
- What benefits do edible leaves have that make them part of a healthy diet?
- Once students have read the text one time, they can compare notes with a partner or triad.
- Students can transfer important details into Garden Journal Leaves - Garden to Lab Part A.



INVESTIGATION ⌚ (20 Minutes)



- Guide students to Garden Journal - Leaves Garden to Lab Part B.
- Review the procedure and materials with students.



- Have students complete the investigation with lab groups.



CLOSURE/ASSESSMENT ⌚ (15 Minutes)



- Students will complete summary and submit Garden Journals individually.
- Use **Musical Shares** or **Give One, Get One** to allow students to share their analyses about plant environments. If they have similar hypotheses, they remain together and continue as a pair (eventually a triad, quad, etc.).



- After several rounds, observe what trends are emerging.
- Ask students to share their hypotheses and record their ideas on the board.
- Teacher should read each one, ask students to vote based on whether they agree or disagree, and record a tally of the votes.
- Determine a process to confirm or refute the hypotheses. Students or the teacher should use reliable internet sources or other information to determine if the hypotheses are true. This could also be done as a class or extended over several days as solution stations are created. Students can put a + or - next to their hypotheses as more evidence is found.



- Remind students that scientists use trial and error and have many incorrect ideas before finding enough evidence to be sure.



- Collect and review Garden Journals.



Essential Question

WHAT CAN I LEARN ABOUT LEAVES IN THE GARDEN?



Vocabulary Word	Diagram/Example	Definition
LEAF		Part of the plant that makes food needed for it to survive.
PHOTOSYNTHESIS		The process plants use to change carbon dioxide and sunlight into sugar (food for the plant). This happens in the leaves of plants.
CARBON DIOXIDE		Compound from the air used to make food.
ABSORPTION		To take something in or soak it up. Leaves absorb sunlight and carbon dioxide.
BLADE		The broad, flat part of the leaf.
VEIN		The part of the leaf that carries food and water.
How does the leaf support the growth of the plant?		
What structures or parts do leaves have that help them do their job?		
How can edible leaves be part of a healthy diet?		



Essential Question

WHAT CAN I LEARN ABOUT LEAVES IN THE GARDEN?

PROCEDURE:

1. Select three different leaves available at your lab station.
2. Observe each leaf and record observations in the section below.

Leaf Sample 1: Name of Plant

Diagram/Rubbing of the leaf	Describe the blade	Describe the veins

Leaf Sample 2: Name of Plant

Diagram/Rubbing of the leaf	Describe the blade	Describe the veins

Leaf Sample 3: Name of Plant

Diagram/Rubbing of the leaf	Describe the blade	Describe the veins

ANALYSIS: Based on the size and shape of the leaves, what predictions do you have about the type of environment the plant needs to survive?



READY,
SET,
GROW!

LEAVES
WE EAT | GARDEN
TO KITCHEN

3-5

Extension
Lesson:
Kitchen



Essential Question

HOW CAN OUR GARDEN
HELP ME BE HEALTHY?



Learning Targets

- **I can** describe how leaves are part of a healthy diet. ([NHES: 7.5.1](#), HBO 3)
- **I can** prepare a healthy snack using a variety of leaves. (HBO 2,3, [NHES: 7.5.2](#))
- **I can** demonstrate how to prepare food safely.
- **I can** demonstrate how to make healthy serving sizes of foods we eat. ([NHES: 7.5.2](#))
- **I can** explain how leaves prepared at school are similar to or different from roots I eat at home. ([NHES 2.5.1](#))
- **I can** show how I will eat healthy foods this week. ([NHES: 7.5.2](#))



directed for the recipe (salad spinner).

- Sample cups/utensils if appropriate.
- Review recipes to ensure you have enough kitchen utensils.
- Print recipes for student groups to can select from or one the whole class can make:
 - [Favorite Green Salad Recipe](#) (Cookie and Kate)
 - [Dandelion Smoothies or Pesto](#) (Wide Open Eats)
 - [How to Make a Lettuce Wrap Sandwich](#) (Lexi's Clean Kitchen)
 - [Mint Chocolate Chip Protein Ice Cream](#) (The Nutritionist)



KITCHEN INVESTIGATION: (35-45 Minutes including sampling)




MATERIALS & PREPARATION:

- Form teams of four students.
- Gather a variety of leaves and herbs from the garden and other ingredients as determined by the selected recipe(s).
- Provide as many sets of Nutrition Cards out as cooking stations.
- A hot plate may be needed for some recipes.
- Assemble other kitchen utensils as






Careful attention should be paid to cleaning leaves because they often hold dirt. Use the salad spinner for one or two cycles. Depending on the age and experience of the students, an adult may need to ensure the leaves are fully clean before preparing.

- Wash hands as instructed for safe food handling.
- Wash vegetables as directed in the Harvest Card.
- When selecting ingredients, students should also select a Nutrition Card.
- Teams will have 20-30 minutes to prepare the recipe as directed.

-  • Students should prepare tasting samples for the class if appropriate (even when doing a whole class recipe, teams could be challenged to add one seasoning/herb as a way to experiment or differentiate and still offer a tasting).
- Students should display as many Nutrition Cards they can collect for their recipe and place them out for other students to view during sampling.
- Using the cooking rubric, teams should sample the recipes offered by all groups and rate the recipe for the team.
- Students will clean their prep area and cooking materials.

 **CLOSURE/ASSESSMENT**  (15 Minutes)

-  • At the conclusion of the lab, ask students to discuss the following prompt with a partner (see Options for Making Pairs):
 - How can food be an important part of our culture?
 - How can I use what I learned today to eat healthy options this week?
-  • Individually or with a partner, have students complete their Garden Journals.
-  • Collect Garden Journals.



**Essential
Question**

**HOW CAN THE GARDEN
HELP ME BE HEALTHY?**

PROCEDURE:

1. Wash hands and preparation area as instructed for safe food handling.
2. Wash vegetables as directed in the Harvest Card.
3. Select a Nutrition Card for as many ingredients as possible.
4. You will have 20-30 minutes to prepare the recipe as directed.
5. Prepare eight tasting samples. Your group will sample four, and four are for other students.
6. Place Nutrition Cards out for students to view during the tasting.
7. Sample your own recipe and complete a rubric.
8. Sample one or two other recipes and complete the rubric for each.
9. Clean the prep area and cooking materials.

What are the key ingredients of the recipe we chose?

What health benefits are part of this recipe?
*Nutrition Cards

What do I like about this recipe?

What could be improved in this recipe?

What did I learn from other kitchen groups?

How are the recipes I tried similar to or different from those I eat at home?

SUMMARY: Using your experience in the lab and/or kitchen, describe ways that you can eat leaves to promote health for you and/or your family.



TASTING RUBRIC:

Criteria	Beginning (1)	Acceptable (2)	Recommended (3)	Award-Winning (4)
NUTRITION VALUE	Recipe has some plants that are healthy, but may include things that are not as healthy to eat.	Recipe has some plants that are healthy to eat.	Recipe uses ingredients from the Chef's Plate that are healthy for me to eat.	Recipe meets all the recommendations from the Chef's Plate.
TASTE AND PRESENTATION	The recipe is good to try but not something I would choose again.	The recipe is good. I would eat it again, but it could be improved.	This recipe is something I would select again.	The recipe is delicious and presented well. I would recommend or make it for others.
TOTALS				



READY,
SET,
GROW!

LEAVES
WE EAT

GARDENERS
TAKE
ACTION

(2-60 Class
Periods)

3-5

Extension
Lesson:
ELA



Essential Question

WHAT CAN I SHARE ABOUT LEAVES IN OUR GARDEN?

Learning Targets

- **I can** create poetry with images to convey a message about the importance of leaves.
- **I can** select details that add to the meaning.
- **I can** use vocabulary in a way that helps the reader understand.
[\(CCSS-ELA Writing 3-5.3; CCSS - ELA Language 3-5.5/3-5.6\)](#)



- What images of leaves could show how important they are to the plant or to people?



- Follow up with a Paper Toss to expand on ideas. From this, students should have several starting points for an image. Record their best ideas in the Garden Journal.
- Review some simple poem structures in the Garden Journal:

- [Acrostic](#)
- [Diamonte](#)
- [Haiku](#)
- [Rhyming](#)

- Consider having students add to the Criteria for Publication to ensure high-quality work.



SPROUT ⌚ (20 Minutes)



- Use an attention signal to focus the class: Real Food/Grows Here.
- Tell students that art can be a way for people to take action or share an important message. Poetry is an art; so are photography, painting, and drawing.



- Ask students to open their Garden Journals to this lesson.
- Open the link to [Big Green's Photo Library](#).



- Cue students to jot down their thoughts of pictures they like (use five to seven photos) and answers to the following prompts. Follow up with a discussion with an **Elbow Partner**.



- What message is the picture sending?
- What makes it more or less powerful than others?



INVESTIGATION: COMMUNICATING WITH ART

⌚ (90-100 Minutes)

PLANNING: ⌚ (30 Minutes)



- Students should choose from available media: Camera, paint, pencils, crayons, markers, pen, watercolor, etc.
- Students will create a draft/sketch of the image or take several photographs from various perspectives.
- Students will also create drafts of their poems on separate paper. Some students may do a few formats until they find the one they like best.



- Remind students to reference their notes from previous lessons for ideas about the function of leaves and ways humans eat leaves.

REVISING/EDITING:  (15 Minutes)

- Provide students with time to make revisions to their work and cross-check to the Writer’s Checklist.
- Group students into partners for peer feedback. Students will use Praise, Question, Suggest to offer feedback on the story thus far. Partner A begins and Partner B listens and offers feedback. Then they switch roles.
- Allow students time to consider the feedback and make notes.

PRODUCTION/PUBLISHING:  (45 Minutes)

- Allow students time to work independently on creating their final products for production.
- Cue students at appropriate times to manage their pacing.

 **CLOSURE/ASSESSMENT** (5 Minutes)

- Collect student projects or establish due dates for projects if more time will be permitted.
- Determine process and timeline to submit to *Our Food Chronicles* if appropriate.



Published works create an excellent opportunity to create a gallery walk for students in the class (or other classes) while they sample food either in a future lesson, as part of a reading block, or during a community/family food event.





Essential Question

WHAT CAN I SHARE ABOUT LEAVES IN OUR GARDEN?

What are the photos saying?	
What makes some more powerful than others?	
What are some ideas for images that represent the power of leaves for plants and people?	

ACROSTIC

Always
Consider
Respecting
Other
Students'
Thoughts
Ideas
Concerns

Diamante

Noun
Adjective, Adjective
Verb, Verb, Verb
Noun, Noun, Noun, Noun
Verb, Verb, Verb
Adjective, Adjective
Noun

Opposite ends can be synonyms or antonyms

Haiku

5 Syllables
7 Syllables
5 Syllables

Rhyming poems repeat a pattern of rhyming words:

Today we all went to the fair
In hopes we could play all day there
When the rain came so quickly, we had to think fast
Our umbrella we all had to share



ARTIST'S CRITERIA FOR PUBLICATION IN OUR FOOD CHRONICLE:

- My pieces tell about the importance of leaves.
- My pieces use words and images that make the message powerful and clear.
- My pieces use vocabulary from the lessons about leaves.
- My pieces use correct spelling and are in final draft form.
- I am ready to share the work I created.
- Others:

SUMMARY: Using your experience in the lab and/or kitchen, describe ways that you can eat leaves to promote health for you and/or your family.

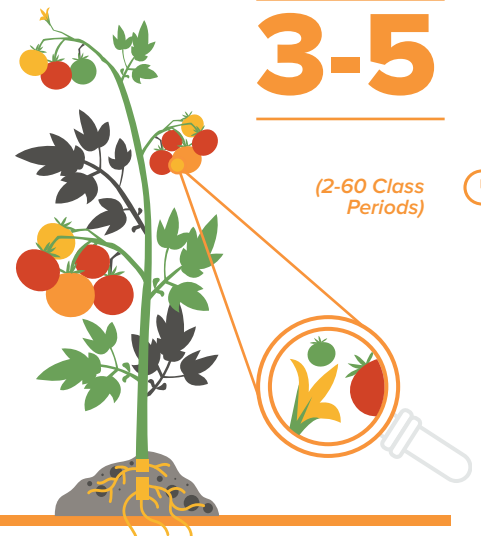


READY,
SET,
GROW!

FRUITS AND
FLOWERS WE EAT

3-5

(2-60 Class
Periods)



Essential Question

WHAT CAN THE GARDEN TEACH ME ABOUT FRUITS AND FLOWERS?

Learning Targets

- **I can** explain the important parts of a plant's fruits and flowers. ([NGSS LS1.A](#))
- **I can** explain how fruits and flowers are similar and different. ([NGSS LS3.A](#); [LS3.B](#))
- **I can** create a diagram of how fruits and flowers work with other parts of the plant. ([NGSS Practice](#))

SCIENCE PRACTICE:

- **I can** use diagrams and sketches to understand the natural world.



SPROUT (15-20 Minutes)



- Gather students to attention with attention signal (Teacher: “**Real Food.**” Students: “**Grows Here.**”).

- Set the learning intention for the day:






- What can our garden teach me about fruits and flowers?

- Show students a plant of your choosing and ask them to identify plant parts they have already studied (Seeds, Roots, Stems, Leaves).



- Ask them to talk with an elbow partner to identify what they have learned about seeds, roots, stems, and leaves using the following prompts. (If needed, students could





- also reference their notes in the Garden Journal.)
 - Describe the function in the plant and in its lifecycle.
 - Describe ways the structure supports its function.
 - Review the seeds, roots, stems, and leaves we can eat.
- 
- Ask students to brainstorm characteristics of flowers and fruits with a new partner.
 - Give students five sticky notes and ask them to write the name of one fruit or flower they have eaten on each sticky note.
 - Use Musical Shares as a way for students to find others that have something similar. When the music starts, they should ask others to share their notes and if they find a pair, stop. When the music stops, students with pairs bring their sticky notes to the teacher who will start to make a graph with sticky notes on the board or wall. Not all students will find pairs in each round. Repeat this five times. After the fifth round, any students with sticky notes remaining should bring them to the teacher who will place them on the board.
 - The teacher will draw the X (fruits and flowers) axis and Y (# of flowers or fruits eaten in our class) axis for this bar graph. Teacher should number the Y axis using an interval of two.
- 
- Gather student attention and ask for observations about which fruits and flowers students eat. Record the responses.
- 
- Use a **Think, Pair, Share** to have students discuss the prompt:
 - How do fruits or flowers taste or smell in comparison to other plant parts such as seeds, roots, stems, or leaves?
 - What might be the reason that fruits and flowers taste and smell different than other parts of the plant?
 - Use a **Whip Around** to each group and record hypotheses

on the board or chart paper.

- Tell students:
- Today you will be going to the garden to make observations about flowers and fruits and to gather a harvest for the lab and kitchen.



 **GARDEN INVESTIGATION**

 (15-20 Minutes)

-  • Gather student attention with a garden attention signal.
-  • Group students into pairs or triads for the Garden Investigation.
- Ensure students have their Garden Journals and something to write with.
- Review Garden Expectations.



STEP 1: EXPLORATION AND OBSERVATION

 (10 Minutes)

-  • Describe the task and show where evidence can be recorded in the journal. Students will explore the garden to locate fruits/flowers.
-  • Gather the group back together. Ask students what they noticed and where they found leaves.
- Allow groups to share their findings.

STEP 2: EVIDENCE GATHERING




 (15 Minutes)

-  • Describe that students will now begin to harvest edible fruits and flowers and some other items in preparation for the lab and kitchen experiences.
- Provide Harvest Cards and harvest tools to each group. Items to be harvested today include strawberries, blackberries, tomatoes, cucumbers, broccoli, nasturtium flowers, peppers, green beans, zucchini, and squash.
-  • Students can return to the classroom

and deposit their harvests into the appropriate location.

- Each group enters harvests into the [Harvest Record](#).




STEP 3: ORGANIZING DATA  (15 Minutes)

-  • Students should sit with garden pairs/triads.
-  • Teacher should review the investigation questions from the Garden Journal. Using one prompt at a time, allow teams to complete their observations and record findings.
- Once their data are recorded, use **Give One, Get One, Move Along** to allow students to compare data with other groups.
-  • Teacher will call the group together to create a final data wall (chart paper or board) to answer the key investigation questions. Students can finalize their notes.

If not using Extension Lesson: Garden to Lab, students should read *The Garden Thymes* and complete the Garden Journal for that text. If using the extension lesson, students should move onto the Closure/Assessment.



 **CLOSURE/ASSESSMENT** (5 Minutes)

-  • Gather attention of students and return focus to the hypotheses created at the beginning of the class.
-  • Review the hypotheses and ask if any group wants to change their hypothesis and/or add evidence in support of a hypothesis.
-  • Collect Garden Journals.

READY,
SET,
GROW!

FRUITS AND
FLOWERS WE EAT

3-5



**Essential
Question**

**WHAT CAN THE GARDEN
TEACH ME ABOUT FRUITS
AND FLOWERS?**



What hypotheses do I have about what fruits and flowers do for a plant?	
Create a sketch of one fruit and one flower you observed or harvested in the garden.	
What are some ways fruits and flowers are similar and different? (Words, sketches, or diagrams may be used.)	
<p>SUMMARY: What evidence did you find that supports your hypothesis and how fruits and flowers function in the plant's life cycle? (Birth, Growth, Reproduction, Death)</p>	



Essential
Question

WHAT CAN I LEARN ABOUT
FRUITS AND FLOWERS FROM
THE GARDEN?

Learning Targets

- **I can** explain the role fruits and flowers play in the lifecycle of a plant. ([NGSS LS1.A](#))
- **I can** make predictions about how the flowers and fruit contribute to the growth and survival of the plant. ([NGSS LS4.B](#))
- **I can** use observations to predict how the environment affects fruits produced by plants. ([NGSS Practice](#))
- **I can** defend my opinion with evidence. ([Scientific Practice/CCSS-ELA Writing W3-5.1](#))

Good flowers to use include both male and female parts such as lily, hibiscus, rose, peas, radish, tomato. Having a few imperfect flowers, such as squash, asparagus, and spinach, would create a challenge for lab groups to investigate.



MATERIALS &
PREPARATION:



Gather the following materials for each lab station:

- Various flowers and fruits harvested from the garden, two to four per lab group
- Magnifying glass/microscope
- Gloves if plants have thorns or other hard-to-handle structures
- Scissors
- Butter knife (or pre-sliced fruits)



Assign roles and ensure students introduce themselves to lab partners with sentence stems (ex: I am Julianna. I am glad to be working with you today.).



Garden Journals.



SPROUT (10 Minutes)



Call attention with an attention signal: I say flowers, you say fruit, or other.



Students should review Fruit and Flower notes in the Garden Journal with a partner.



Solicit answers from many students about their observations from the garden investigation. Answer the question: What did we observe about fruits and flowers in the garden?



LAB INVESTIGATION (40 Minutes)

READING TO LEARN: MARKING THE TEXT/GATHERING FACTS (15 Minutes)

- Students locate The Garden Thymes: Fruits and Flowers.
- Using a highlighter or pen students will mark the text for:
- How do the flowers and fruit support the reproduction of the plant?
- What structures or parts do flowers and fruit have that help the plant reproduce?
- What benefits do edible fruits and flowers have as part of

a healthy diet?

- After an independent read, students can compare notes with a partner or triad.
- Transfer important details into Garden Journal notes.

LAB EXPLORATION: DISSECTING FRUITS AND FLOWERS  (25 Minutes)

• **First:**



- Use [this video](#) as a guide for a whole class dissection of flowers..

OR



- Preview the video and then allow the students to work at their own pace.

OR



- If technology allows, do both, allowing students to use their own devices during the lab.



- Have students confirm the process and review roles with the group.



- Complete the procedure in the Garden Journal.



CLOSURE/ASSESSMENT (10-15 Minutes)



- Once all the data are collected, allow students time to compare data with other students using a discussion protocol such as a Check-In Circle. Use the summary questions as prompts:



- What do flowers and fruits need from their environment to do their job?

- One thing I do not understand is... Or, one question I now have is...



- Call on various groups with the prompt:

- What did you hear someone say about...?

- Ask students how they could confirm whether their opinions or hypotheses are accurate (this could form a solution station about the needs of various plants over time).



- Collect and review Garden Journals.



**Essential
Question**

**WHAT CAN I LEARN ABOUT
FRUITS AND FLOWERS FROM
THE GARDEN?**



Vocabulary	Illustration/Diagram	Definition
FLOWER		Showy part of the plant that supports reproduction.
STAMEN		The male reproductive part of a flower includes anther and filament.
PISTIL		The female reproductive part of a flower includes stigma, style, ovary, and ovules.
SEPAL		The part of the flower that protects the bud.
PETALS		Brightly colored part of the flower that attracts insects.
FRUIT		The ripened ovary of a flower that protects seeds from the surrounding environment.
SEED		Remember?
How does the flower support reproduction of the plant?		
How does the fruit support reproduction of the plant?		
How can edible fruits and flowers be part of a healthy diet?		



**Essential
Question**

**WHAT CAN I LEARN ABOUT
FRUITS AND FLOWERS FROM
THE GARDEN?**

PROCEDURE:

1. Split lab group into two pairs. One person will do the flower dissection, the other the fruit dissection.
2. Each pair selects one flower from the lab station.
3. Slowly remove the sepals from the flower. Create a sketch or a drawing of your sample.
4. Record its function during reproduction.
5. Slowly remove each part as directed in the video. Create a sketch or a drawing of your sample. Record its function during reproduction.
6. Switch roles in the pair.
7. Use a butter knife to slice the fruit from the top to the bottom at the leaves or stem.
8. Slice one half of the fruit from side to side to view both ways.
8. Make observations of what you find when looking from both views.
9. Create a sketch or drawing from your sample of both views. Record its function during reproduction.
10. Clean up your lab area as directed by your teacher. Compost plant parts that were used for the lab or throw away if no compost is available.

SEPAL	Illustration/Diagram	Function
PETAL	Illustration/Diagram	Function
STAMEN	Illustration/Diagram (label the anther and filament)	Function
PISTIL	Illustration/Diagram (label the stigma, style, ovary, and ovules)	Function





FRUIT	Illustration/Diagram	Function
SEED	Illustration/Diagram	Function
<p>ANALYSIS/HYPOTHESIS : Fruits and flowers all have similar parts. Why might they be different in other ways? Based on your evidence, what might that mean about the type of environment that the plant needs?</p> <p>Solution Station Evidence:</p>		

READY,
SET,
GROW!

FRUITS AND
FLOWERS WE EAT | GARDEN
TO KITCHEN

3-5

Extension
Lesson:
Kitchen



Essential Question

HOW CAN THE GARDEN
HELP ME BE HEALTHY?

Learning Targets

- **I can** describe how fruits and flowers are part of a healthy diet. (NHES: 7.5.1, HBO 3)
- **I can** prepare a healthy snack using a variety of fruits and flowers. (HBO 2,3, NHES: 7.5.2)
- **I can** demonstrate how to prepare food safely.
- **I can** demonstrate how to make healthy serving sizes of foods we eat. (NHES: 7.5.2)
- **I can** explain how fruits and flowers prepared at school are similar to or different from those I eat at home. (NHES 2.5.1)
- **I can** show how I will eat healthy foods this week. (NHES: 7.5.2)



MATERIALS & PREPARATION:



- Form teams of four students.
- Gather a variety of fruits and flowers from the garden and other ingredients as determined by the selected recipe(s).



Edible flower harvest will vary by region and season. Here is a collection of edible flowers in the Learning Garden that classrooms may come across during a year from most likely to less likely: Pea flowers, nasturtiums, squash blossoms, calendula, arugula flowers, lavender, borage, chives, bachelor buttons, zinnias, pansies/violas.



- Have as many sets of Nutrition Cards out as cooking stations.
- A hot plate may be needed for some recipes.
- Assemble other kitchen utensils as directed for the recipe.
- Sample cups/utensils if appropriate. (A noodler is a great tool for this session.)
- Review recipes to ensure you have enough kitchen utensils.
- Print recipes for student groups to select from or one the whole class can make:




- [Edible Flower Ice Cubes](#) - (The View from Great Island)
- [Granola with Lemon Yogurt and Edible Flowers](#) - (What should I eat for breakfast today?)
- [Cauliflower Mashers](#) - (Allrecipes)
- [Cucumber /Tomato Salad](#) - (Dinner at the Zoo)
- [Easy Lemony Zucchini Noodles with Avocado Pesto](#)-(E.A. Stewart)

 **SPROUT**  (5-10 Minutes)


-  • Gather attention of students using attention signal.
-  • With an elbow partner, ask students to discuss the following prompts. Solicit answers from a variety of students and make a list on the board/chart paper. (Students will name many more fruits than flowers.)

-  • What are some flowers and fruits people eat or which ones does your family eat?
-  • What predictions do you have about the nutrients we might find in fruits and flowers?
- Why do fruits and flowers have different tastes?

This is a good time to discuss the misconceptions about fruits and vegetables, much like roots and stems. In the kitchen, we often call tomatoes, squash, and cucumbers vegetables, but they are actually fruits. Fruits bear seeds; vegetables do not.

- Tell students:
-  • Today you are going to make recipes with fruits and flowers.




 **KITCHEN INVESTIGATION**  (35-45 Minutes including sampling)

-  • Wash hands and preparation area as instructed for safe food handling.
- When selecting ingredients, students should also select a Nutrition Card.
- Teams will have 20-30 minutes to prepare the recipe as directed.
- Students should prepare eight tasting

samples (four for the group, four for other students). Even when doing a whole class recipe, teams could be challenged to add one seasoning/herb as a way to experiment or differentiate and still offer a tasting.

- Using the cooking rubric, teams should sample their recipe and one or two offered by other groups. Rate each recipe with the tasting rubric.
- Students will clean their prep areas and cooking materials.

 **CLOSURE/ASSESSMENT** (5-10 Minutes)

-  • At the conclusion of the lab, ask students to discuss the following prompt with a partner (see Options for Making Pairs):
- How can food be an important part of our culture?
- How can I use what I learned today to eat healthy options this week?
-  • Individually or with a partner, have students complete their Garden Journals.
-  • Collect Garden Journals.



**Essential
Question**

**HOW CAN THE GARDEN
HELP ME BE HEALTHY?**

PROCEDURE:

1. Wash hands and preparation area as instructed for safe food handling.
2. Select Nutrition Cards for as many ingredients as possible.
3. Use 20-30 minutes to prepare the recipe as directed.
4. Prepare eight tasting samples (four for the group, four for other students).
5. Sample your recipe and one or two offered by other groups. Rate each recipe with the tasting rubric.
6. Clean their prep area and cooking materials.
7. Compost food material if possible.

What are the key ingredients of the recipe we chose?

What health benefits are part of this recipe?
*Nutrition Cards

What do I like about this recipe?

What could be improved in this recipe?

What did I learn from other kitchen groups?

How are the recipes I tried similar to or different from those I eat at home?

SUMMARY: Using your experience in the lab and/or kitchen, describe ways that you can eat fruits or flowers to promote health for you and/or your family.



TASTING RUBRIC:

Criteria	Beginning (1)	Acceptable (2)	Recommended (3)	Award-Winning (4)
NUTRITION VALUE	Recipe has some plants that are healthy, but may include things that are not as healthy to eat.	Recipe has some plants that are healthy to eat.	Recipe uses ingredients from the Chef's Plate that are healthy for me to eat.	Recipe meets all the recommendations from the Chef's Plate.
TASTE AND PRESENTATION	The recipe is good to try but not something I would choose again.	The recipe is good. I would eat it again, but it could be improved.	This recipe is something I would select again.	The recipe is delicious and presented well. I would recommend or make it for others.
TOTALS				



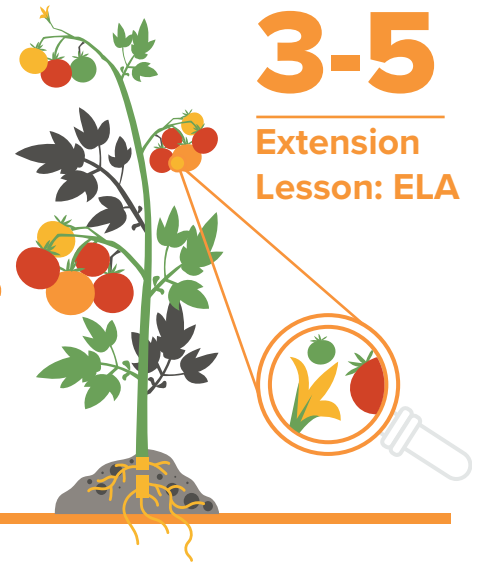
READY,
SET,
GROW!

FRUITS AND
FLOWERS WE EAT

GARDENERS
TAKE
ACTION

3-5

Extension
Lesson: ELA



Essential Question

WHAT CAN I SHARE WITH OTHERS ABOUT HOW FRUITS AND FLOWERS HELP PLANTS AND PEOPLE?

Learning Targets

- **I can** prepare and participate in a discussion about which fruits and flowers are best for people to eat.
 - **I can** speak clearly and in a way that is appropriate for my audience.
 - **I can** use reliable and relevant information to support my claim. ([CCSS ELA - Speaking/Listening 3-5.1A-D, 3-5.3, 3-5.6](#))
 - **I can** help others make healthy food choices by telling others what I learned at school today. ([HBO 10, 13, NHES 2.5.1, NHES 3.8.1, 3.8.2](#))
- is informative and respectful. It is a game and the goal will be to convince others that your position is the best one for today.
- Determine if students have participated in Philosophical Chairs to see how much instruction/facilitation will be needed. If this is the first time for the strategy, teachers may want to do a sample model with a simple topic like: Cats are better pets than dogs.
 - If appropriate, you could show a model to students to see it in action:
 - [4th Grade Example](#)
 - [Other Elementary Example](#)
 - [Edutopia Overview of Philosophical Chairs](#)



SPROUT (10-15 Minutes)

- Have students think about the following prompt:
 - Have you ever had a disagreement with a friend or family member?
 - (Teacher could provide an example about two siblings wanting the same game or toy.)
 - Use 1-Minute Story for partners to share the experience with the prompt:
 - What was the disagreement about?
 - Why did you think you were correct?
 - Tell students:
 - Today you are going to have a debate with other students in a way that
- Direct students to their Garden Journals for this lesson, Fruits and Flowers - Gardeners Take Action, and record the question for debate:
 - Should we eat savory fruits and flowers instead of sweet ones?
 - Allow students to talk to their elbow partners about the meaning of savory and sweet and examples of both.



LAB INVESTIGATION

(35-45 Minutes)

PLANNING: (15 Minutes)

- This part of the process should be done in heterogeneous pairs or triads selected by the teacher.
- Direct students to review their notes from the previous investigations (garden, lab, and kitchen). They will highlight things that will go into the argument for both sides, savory in one color, sweet in the other.
- Each student should then complete the T-Chart in the Garden Journal.

DEBATING: (15-20 Minutes)



- Display and review the rules for philosophical chairs with all students:
 - Be sure you understand the statement before deciding if you agree or disagree.
 - Move to the line on the side of the argument you support and face the people across from you.
 - Think before you speak and organize your thoughts.
 - Briefly summarize a previous speaker's point before starting your own.
 - Address the idea, not the person.
 - After your turn, allow at least two other people to speak before speaking again.
 - Only one speaker is allowed at a time and the facilitator may help students take turns.
 - Every student should offer at least one thought.
 - You may switch sides at any time

during the discussion and can switch more than one time.



- Ensure students have their Garden Journals with them opened to the T-Chart.



- Begin the round by stating the question again and allow students 1 minute to decide where they will line up.



- Begin the discussion by calling on a volunteer from each side.
- Ensure that all students participate. You can use tokens as a way to mark participation if needed. Students toss in their token when they have made a comment.



- Determine which side was more persuasive today and congratulate them on winning this round. Students can shake hands.



CLOSURE/ASSESSMENT (10 Minutes)



- In the Garden Journals, students should use another color to add arguments from the activity to their own notes. This can be done in their pairs or triad groups.



- Students should complete the summary in their Garden Journals.



- Collect Garden Journals.



- If you are videotaping the session, it could be uploaded into *Our Food Chronicles*.



**Essential
Question**

**WHAT CAN I SHARE WITH
OTHERS ABOUT HOW FRUITS
AND FLOWERS HELP PLANTS
AND PEOPLE?**



<p>SAVORY: Salty or spicy Fruit/Flower Examples:</p>	<p>SWEET: Tasting like sugar or honey Fruit/Flower Examples:</p>
Reasons to eat savory fruits and flowers	Reasons to eat sweet fruits and flowers
<p>SUMMARY: Who in my family or neighborhood can I share this information with this week? What are the most important things for me to tell them?</p>	

**READY,
SET,
GROW!**

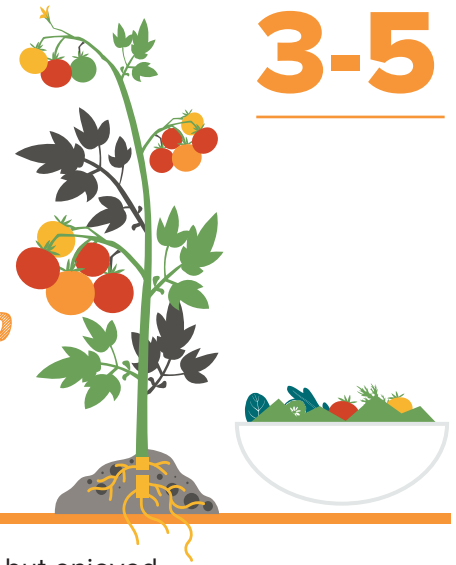
**I CAN EAT A
WHOLE PLANT**

3-5



Essential Question

**WHAT DID THE GARDEN
TEACH ME ABOUT PLANTS
AND HOW PLANTS CAN HELP
US EAT A HEALTHY DIET?**



Learning Targets

- **I can** describe the life cycle of a plant using correct vocabulary and diagrams.
- **I can** identify a variety of plant foods I can eat and place them into correct categories.
- **I can** work with my peers to design a Plant Part Sandwich that is nutritious and good to eat.

(ex: did not love arugula, but enjoyed cabbage)?



REVIEW AND APPLICATION

(25 Minutes)

- Have students open their Garden Journals to The Lifecycle of a Plant.
- Students will work in pairs or triads to complete the chart (Seeds, Roots, Stems, Leaves, Flowers, Fruits) and list food items in the boxes they have tried and would/could eat. Students should star or highlight at least one food from the list that they enjoyed eating. (Edible Plant Parts Handout could be substituted for this activity if more appropriate for a student.)
- Working in pairs or triads, students will complete the Plant Part Sandwich activity using plants that grow in the Learning Garden or that their family eats at home.
- Have each group take turns sharing their proposed recipes with the class. If time allows, students could create a poster for their recipes to hang in the class.
- Guide students to create and prepare a plant part sandwich or a recipe from their family or community tradition that uses all the parts of a plant.



SPROUT (10 Minutes)



- Gather students to attention with attention signal (Teacher: “Real Food.” Students: “Grows Here.”).








- Set the learning intention for the day:
- What did the garden teach me about plants and how they are part of a healthy diet?



- Ask students to turn to their elbow partners and discuss one or more prompts:
- Which food(s) did you like the best in our garden?
- What was an example of a food you tried for the first time in our garden?
- What food did you try that was a “no, thank you” food for you? Was there something else with the same plant part that you enjoyed more

 **CLOSURE/ASSESSMENT** (10 Minutes)

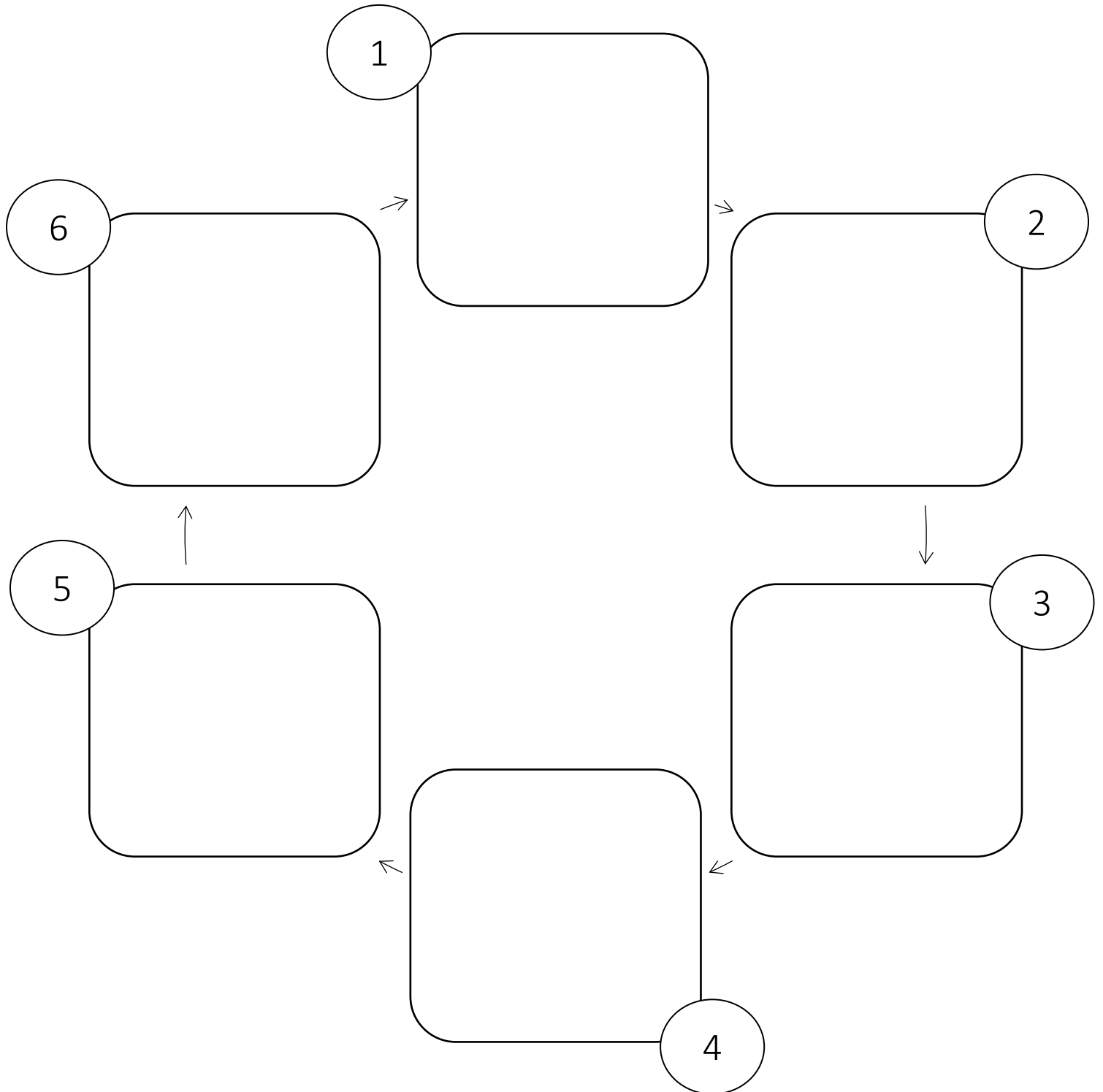
-  • Commitment Circles (**Stand/Share/Sit**):
- Gather students in a circle and gain their attention with Real Food/Grows Here.
-  • Ask each student to consider everything he/she has learned about plants and healthy foods.
-  • Explain the word “commitment”, a dedication to putting time or energy into something or a promise to do something. Ask students to think of one commitment they are willing to make related to plants and healthy eating.
-  • Students will then be instructed to stand in circles with their groups. Identify one person to begin. They will share their commitment with the group and why they feel it is important (the teacher could model this to provide an example). When a group member is finished, they will sit down and another person will share. This will continue until all group members are sitting.
-  • If time allows:
- Share or record commitments on a classroom wall.
- Use sentence stems to facilitate sharing their commitments with others: I commit to_____ and will share my knowledge with _____.

Name: _____

Date: _____

Lifecycle of: _____

Write the name of the plant you will be sketching above. Below sketch out the different stages of the lifecycle. If you are finished early you can start to color in your lifecycle stages.



Name:

Date:




Edible plant parts

Step 1: Look at the images below and identify each plant part.

Step 2: Describe the plant part's function.

Step 3: In your school's garden, take an inventory of plants that have the same edible plant part!






		
Plant Part:	Plant Part:	Plant Part:
Plant Part Function:	Plant Part Function:	Plant Part Function:
Garden Inventory:	Garden Inventory:	Garden Inventory:

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