

Plant Parts - Roots

Lesson Description

In this lesson, students will learn more about the roots of a plant. They review all 6 plant parts and then focus on the purpose of roots. Students dissect a radish and learn how to make observations and predictions through this activity. Students taste different examples of root vegetables. The lesson concludes with 1 of 2 optional activities: learning how to sprout a sweet potato or looking at root vegetables in the garden.

- Time required: 60 minutes
- Location of lesson: Garden or classroom

Learning Objectives

- Identify the roots on a plant.
- Describe the purpose of the roots.
- Learn how to make observations and predictions.
- Taste root vegetables.

Attitude and Behavior Goals

- Like the taste of root vegetables.
- Eat a wide variety of root vegetables.

Materials and Preparation

- A garden plant with roots showing
- Radishes, 1 for every 2 students
- Plastic knives, 1 for every 2 students
- Magnifying glasses, 1 for every 2 students
- Crayons
- Root vegetables for tasting (suggestions: carrots, parsnips, potatoes, radishes, beets, turnips, ginger)
- Sweet potato (for optional activity)
- Mason jar with water (for optional activity)
- 8-10 toothpicks (for optional activity)
- Computer with speakers or other device to play the MP3 file
-  **Parts of a Plant (from Lesson 2)**
-  **Root Discovery**
-  **Sweet Potato Experiment**

- 🖐️ **Plant Parts Song MP3**
- Water to drink during the Class Warm-up – water dispenser in the classroom and 1 cup or a water bottle for each student
*If you do not plan on doing the Root Tasting activity, prepare vegetable snack of the week – 1 for each student

Class Warm-up: Champion Cheer (5 minutes)

- Give each student a cup of water or ensure that they have a filled water bottle in front of them.
- Lead the students in enthusiastically reciting the 📖 **Champion Cheer**.
- At the end of the cheer, drink water together (*If you do not plan on doing the Root Tasting activity, eat the veggie snack and have students complete their 📖 **Taste Test Observations**)

Review of Last Lesson (2-3 minutes)

- Review the evaluation questions from last week’s lesson. Evaluation questions from all lessons are listed at the end of the workbook 📖.

Class Discussion (10 minutes)

Refer the students to the 📖 **Parts of a Plant** page in their workbooks, which was completed during lesson 2 earlier this semester. Hold up your own workbook page as a reference to point to while explaining the plant parts.

Who remembers learning about the 6 parts of a plant? What are the 6 parts? (Answer: roots, stems, leaves, flower, fruit, seeds)

Today we are going to focus on one very important plant part – the roots. Before we talk more about roots, let’s review the 6 parts of a plant by singing the Plant Parts Song.

Play the 🖐️ **Plant Parts Song** MP3 and have everyone sing along, doing body movements to help connect the part of the plant (for example: for the roots, point to their feet; for the stem, point to their legs; etc.).

Hold up the garden plant with roots showing. Point out the roots to the class. *Let’s think more about roots. Why are roots so important? What is the job of the roots? (Answer: support the plant and take in water and food for the plant)*

Activities (25 minutes)

- 📖 **“Root Discovery” (20 minutes)**
 1. *Remember that we are all plant scientists. What do we call plant scientists? (Answer: botanists)*
 2. *As botanists, what are some of the ways we can discover something new about plant roots? One way is by dissecting or cutting open something to see*

what it looks like inside. Today we are going to dissect a root, taste a root and color with a root.

3. Divide students into pairs. Direct them to look at the  **Root Discovery** page in the workbook.
4. Hold up a radish. *Raise your hand if you have seen this before. What is it called?*
5. Give each pair of students 1 radish to work with, a magnifying glass and crayons. Have them complete # 1 (draw the outside of the radish), # 2 (write down observations of the outside of the radish), and # 3 (predict what they will see inside) on the  **Root Discovery** page. For # 3 (predictions), guide them by asking:
 - *What do you think is inside?*
 - *What color do you think the inside is?*
 - *Will it be wet or dry?*
 - *Will it be smooth or rough?*
6. Review safety rules for using plastic knives.
 - *Hold the point away from yourself and others.*
 - *Only make cuts when using a stable surface.*
 - *Keep your fingers away from the area that you are cutting.*
 - *Make a steady cut straight down and not at a slant or toward you.*
 - *Set the knife aside in a safe place once you are done making your cut.*
7. Pass out plastic knives. Demonstrate how you would like them to safely cut their radish into 2 parts, and then have them cut their radishes.
8. Show the students how you closely observe the inside of the radish – look closely at it and tell the students out loud all the things that you see.
9. *Now examine your radish. How does it smell, feel, and look?*
10. *Draw the inside of your radish. Use lots of detail.* Have students complete # 4 (draw the inside of the radish) on the  **Root Discovery** page.
11. *Color in your drawing using the skin and greens from your radish.*
12. *What did you observe on the inside of the radish? Was this what you predicted?*
13. *Why do you think the radish was wet inside?* (Answer: water was absorbed through the roots)
14. *How did water get inside the radish?* (Answer: through the roots)
15. *Why do you think root vegetables have little hairs on them?* (Answer: they are the little roots that are growing out of the big root – they are the major site for water and food uptake)

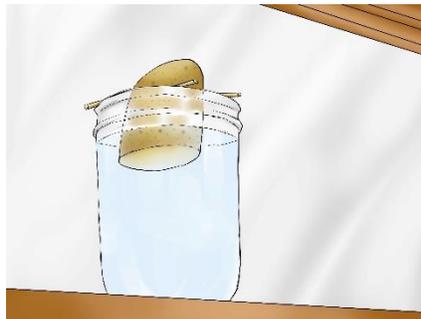
- **“Root Tasting” (5 minutes)**

1. *Raise your hand if you have ever eaten a root vegetable before. What kinds of roots do we eat? (Answers: carrots, parsnips, sweet potatoes, potatoes, radishes, beets, turnips, ginger)*
2. Pass out different root vegetables for tasting. Students may write some observations about which ones they liked in the **Notes** section of their workbook.

Optional Activities (30 minutes)

-  **Optional Activity # 1: “Sweet Potato Experiment” (15 minutes)**

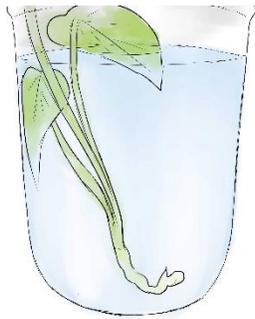
1. Show the sweet potato you brought to class. *Have you seen this vegetable before? What is it?*
2. *Today I’m going to show you how to sprout a sweet potato.*
3. Cut the sweet potato in half.
4. Fill a mason jar with water.
5. Stick toothpicks into the top part of the sweet potato, like spokes of a wheel so that you rest them on the mouth of the jar and the potato will be suspended half in the water and half out. Place the cut side of the sweet potato in the water.



6. Refer students to the  **Sweet Potato Experiment** page in their workbooks. Have them complete their predictions (# 1 and # 2) and drawing (# 3). Do not tell them that in about a week a stem will begin to grow out of the top and root hairs will begin to grow from the bottom.
7. Place the jar in a bright area close to the window. Find a place where students can watch it over the next few weeks. Tell the students they need to refill the jar with water when the water level gets low.
8. After a few weeks the sweet potato will start sprouting:



9. The sprouts are called slips. When the top of your potato is covered in slips, carefully twist each one off. They will resemble small leaves with a short stem. Put your slips into another jar of water and watch the roots start to grow. After a few days, you can plant the slips in soil from the garden.



• **Optional Activity # 2: “Roots in the Garden” (15 minutes)**

1. Bring students into the garden and have them observe different root vegetables that are growing.
2. Ask a volunteer student to pick a root vegetable from the garden, if any are ready.
3. Ask all students to observe how it was growing in the ground. Point out all of the hairs (roots) that grow on the vegetables.

Evaluation Questions (5 minutes)

1. *What are the 6 parts of a plant?* (Answers: roots, stems, leaves, flowers, fruit, seeds)
2. *What does the root do for a plant?* (Answer: supports the plant, takes in water and food)
3. *We were all plant scientists today. What is the name of a plant scientist?* (Answer: botanist)
4. *What are some roots that we eat?* (Answers: potatoes, carrots, radishes, parsnip, turnip, beets, ginger)
5. *Why do root vegetables have little hairs on them?* (Answer: they are the little roots that are growing out of the big root – they are the major site for water and food uptake)

6. *How much water should you drink every day?* (Answer: at least 6 cups of water a day)
7. *How many fruits and vegetables should you eat every day?* (Answer: at least 5 fruits and vegetables a day)
8. *Does gardening connect you to your culture and help you learn new words in your language?* (Answer: yes)
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Preparation for Future Lessons – Reminder for the Instructor

- Review the materials and preparation needed for the next lesson.
- Remember that an Elder guest instructor is needed for these Fall lessons: Lesson 2 (What is a Plant?), Lesson 4 (Seed Exploration), Lesson 6 (Preserving the Harvest), and Lesson 10 (Companion Planting and Traditional Cooking).

Notes
