



Local Plant Studies

Grade Level: 2-5
Length: 60-90 Minutes
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Adapted from a lesson by Katie Bryson

NGSS Standards

4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Crosscutting Concepts

Patterns Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.

Structure & Function The way an object is shaped or structured determines many of its properties and functions.

Related Resources

Pair With Meet a Tree Lesson; Microhike Lesson; Sprouting Lesson

Overview

It is important to use all of your senses when observing the natural world. Observing plant structures can help us to understand how plants function and survive in a habitat.

Objectives

- Students will use all of their senses to observe and describe leafy plants.
- Students will describe how plant structures support the plant functions and help plants survive in a habitat.

Materials

- 4-5 Leafy Edible Plants (Kale, Mint, Parsley, Lettuce, Spinach, etc.)
- Paper or Science Notebooks
- Pencils
- Jars
- Water
- Magnifying Glasses
- Gloves (optional)
- Camera

Background

This activity is meant to foster sensory exploration of the natural world and encourage students to use all of their senses to increase their awareness of the environments around them. They will also explore local plants and view a simple demonstration that plants do indeed “breathe” out oxygen.

Notes

Preparation

1. Assemble the materials you need for the plant-oxygen lab.
2. Determine an outdoor location where students can safely do the field studies and where there are plenty of interesting plants. Identify any potentially dangerous plants in the area so you can inform students.
3. Write vocabulary words on the board, but leave definitions blank for now:
 - Senses: our body's ability to take in information of the world around us in different ways
 - Observe: to notice small, significant details
 - Classify: to arrange (put) items into groups based on similar characteristics/qualities/traits

Introducing the Lesson

Begin by asking students to help you define the three vocabulary words. Then explain that they are going to use all of their senses to observe and classify plants!

Activity

1. Provide the following prompts to students by either having them create a data sheet in their notebook or by providing a printed copy they can glue into their notebooks. Have students title the next page in the science notebooks "Leafy Plant Observations" and make with six columns:
 1. Plant name
 2. Observations made by sight
 3. Observations made by touch
 4. Observations made by hearing
 5. Observations made by smell
 6. Observations made by taste
2. Reveal one leafy plant at a time and provide students 1-2 minutes to fully observe using all five senses, filling in their chart as they go. Ask pointed questions to spur on inquiry and more specific language:
 - Is this the same shade of green?
 - Does it taste similar to anything you've ever tasted before?
 - How does this feel different than the first plant?
 - How could we change our notes to make our data more accurate?
3. Save the "taste" sense for the last observation before passing out a new plant sample. Continue through all five plant samples. If time

allows, add a page with simple sketches of each plant. Explain that these are some of the techniques scientists use when classifying plants.

4. Tell students that all of these plants are important foods for people, as well as animals. However, food isn't the only thing we get from plants! Explain that plants produce oxygen when they photosynthesize. This is a big deal and really important for all animal life on Earth!
5. Run a simple experiment to demonstrate this. Place a healthy, green leaf into a jar of water. Submerge the leaf in the water, put the lid on, and set the leaf in a window with at least some sunlight. After the field studies, return to the experiment to see if there are bubbles on the surface of the leaf from the oxygen it "breathes" out.
6. Next, have students prepare their science notebooks for the field study portion of the class.
7. Explain that they will be going out in pairs to make a close observation of a local plant. You will be examining all of the major parts of a plant (its structure).
8. Provide the following prompts to students by either having them create a data sheet in their notebook or by provided a printed copy they can glue into their notebooks.

Plant Part	Description & Close-up Sketch	Questions
Roots		
Stem		
Leaves		
Flowers		
Fruits		
Seeds		

- What habitat is your plant growing in?
- List one other habitat you think it would grow well in. Why do you think this?
- List one other habitat you think it would NOT grow well in. Why do you think this?

>> *Educator tip: Simplify or target the reflection as needed for your class.*

9. Ask students to draw their entire plant on the opposite page of their science notebook, labeling the key parts. Instruct students to also consider how the parts of the plant might help it to survive, grow, or reproduce. Also ask students to observe the habitat the plant is growing in, and list one habitat they think the plant might grow well in and one habitat they think it would not grow well in. Remind them to come up with at least one question per plant part.
10. Before heading outside, inform students that while most plants are harmless or beneficial, some plants could be toxic to eat or touch. Teach the students to practice caution and inform them of any plants in the area that could be problematic.
11. Remind students we are stepping into our outdoors classroom (not recess) and our behavior needs to match the activity. This is not a playing time outside. We have task and a purpose.
12. Provide students with 15 minutes to work with their partner as a team (not dividing up the tasks), making observations of a plant specimen in the outdoor area. Try to set students at different plants to have a variety of subjects. Take a camera for photo documentation.

Wrap-up

Ask each plant team to present to another plant team, describing:

- What observations did you make about the structure of your plant?
- What was the most interesting part about your plant's structure?
- What part of the plant do you think helps it grow? Reproduce? Spread seeds?
- What adaptations (or tricks) does your plant use to survive in this habitat?

Facilitate a brief whole-group discussion about:

- Similarities between all the plants
- Differences between the plants
- How these different plant structures support survival, growth, and reproduction
- How certain structures allow the plants to survive well in their habitat

Head back inside and check the leaf for oxygen bubbles!

Assessment

Returning to their science notebooks, ask students to turn the page and do another quick sketch of the plant specimen they observed outside BUT instruct them to add one specialized structure or change part of the plant structure so that the plant could survive better in a different habitat. For example, what structures could they change for a plant to be able to survive in a shady habitat compared to a sunny habitat? (One possibility is larger leaves to catch more sunlight).

Students who meet the performance expectation will clearly demonstrate understanding that (1) external structures in plants support survival, growth, and reproduction and (2) that in a specific environment, some organisms can survive more or less well than others.

Pair With

- Meet a Tree Lesson Plan
- Microhike Lesson Plan
- Sprouting Lesson Plan