

Exploring Roots and Leaves

NGS Standard:

SC.3.L.14.1: Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.

Lesson: In this lesson, students will examine the functions of roots and leaves through hands-on experiments and observation.

Objective:

- Examine roots and leaves of different plants to understand their functions in absorption, anchoring, and transpiration.
 - Conduct experiments to observe the absorption of water and transpiration in leaves.
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Materials:

- Variety of plant roots (e.g., carrot, radish, or bean)
 - Clear containers with water
 - White flowers (e.g., carnations)
 - Colored water (food coloring in red, blue, or green)
 - Ziplock bags
 - Access to STEMScholarsHub.net for interactive quizzes
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Safety Precautions:

1. Ensure clean hands before handling plant roots.
 2. Be careful with food coloring to avoid staining surfaces.
 3. Supervise children to avoid them accidentally ingesting plants or water.
 4. Ensure tools and containers are washed thoroughly.
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Procedures:

1. **Introduction:**
 - Start with a PowerPoint presentation or video introducing the functions of roots and leaves in plants, focusing on their roles in absorption, anchoring, and transpiration.
2. **Experiment:**
 - Fill clear containers with water and add food coloring.
 - Place white flowers in the containers and observe how the colored water travels up the stems over time.
 - For leaves, place leaves inside clear Ziplock bags and observe the condensation that forms, which represents transpiration.
3. **Observation:**
 - Observe how water is absorbed by the roots and travels through the stem to the flowers.
 - Check the leaves inside the bag after 1-2 hours to see the condensation.
 - Record these observations in a notebook or on a chart.
4. **Generalization:**
 - Discuss how roots absorb water from the soil and how leaves release water through transpiration.

- Explain the importance of these functions in plant survival and growth.
 - 5. **Assessment:**
 - After the experiment, students will visit STEMScholarsHub.net to take an interactive quiz on roots and leaves.
 - The quiz will test their understanding of water absorption and transpiration in plants.
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Note: Clean-up

- Dispose of used plant materials and colored water.
- Wash and dry containers, tools, and surfaces thoroughly.
- Store materials neatly for future use.