

Rain-Making Partners

Section 1 FOREST ACTIVITIES



Grade Level: K - 12

State Standards: S A-14, S B-1, Geo E-5

NGSS: 2-ESS2-3,5-LS1-1,5-LS2-1
5-ESS2-1, MS-LS1-6, MS-ESS2-4
HS-LS2-5

Subjects: Science, language arts

Skills: Observing, note-taking, applying, analyzing, writing

Duration: 60 minutes and periodic observation

Group Size: 2-3

Setting: Indoors

Vocabulary: Recycle, transpiration, water cycle

Objectives:

Students will learn the role plants play in the water cycle.

Teaching Strategy:

Students will conduct an experiment to demonstrate the process of transpiration.

Complementary Activities:

Any water cycle discussion. *OUTDOOR:* “Forests and Air” in this section; “Forests and Sunlight” and “Forests and Soils,” both in Section 4, *Succession, comparing forested and non-forested sites.* *INDOOR:* “Breath of Life” in this section. “Watershed Guardians” in Section 5, *Human Uses and Impacts.*

Materials:

For every 2-3 students: 2 plastic bags, a live plant with leaves and branches, a branch from a dead plant, rubber bands or twist-ties.

Background:

See *INSIGHTS, Section 1, Elements that Create Forests: “The Giving Forests.”*

Procedure:

1. Students keep a daily log of the experiment. Each page should include the date, the subject, a drawing of it, and/ or 2 to 3 sentences describing changes.
2. Each group puts a plastic bag around one branch of a live plant (recently watered), and another bag over the dead branch. Seal the bags around the branches using rubber bands or twist-ties. Place both the live plant and the dead branch in the sun.
3. Ask students to predict what they believe will happen over the next several days. As students record their observations, *they should note that water will appear inside the bag on the branch of the living plant, but none will appear inside the bag on the dead branch.*
4. Students compare their experiments to the world around them. If the single branch of the live plant put water droplets into the air, imagine the 80 gallons per day that a tree **transpires** into the air! How much water might a large forest **recycle** into the air? What happens to the water that forests recycle into the air? What would happen if all the forests were lost? How would that affect the **water cycle**?



Evaluation:

1. Depending on grade, pairs or groups of students write an analysis of the experiment and the question discussions.
2. Students compare their experiment to real forest issues such as reforestation of beetle-killed or logged forest land. Students present their experiment and their comparisons to another class.
3. Students design other experiments to demonstrate the possible complications of deforestation.

Credits:

Adapted from American Forest Foundation, “Snow Use,” and “Nature’s Air Conditioners,” *Project Learning Tree Supplementary Activity Guide for Grades 7-12*. 1987.

Curriculum Connections:

(See appendix for full citations)

Books:

Be a Friend to a Tree (Lauber) K-3

How Leaves Change (Johnson)

A Tree is Growing (Dorros)

Water Up, Water Down (Walker)

Water, Water Everywhere: A Book About the Water Cycle (Berger) K-3

Website:

<https://www.gi.alaska.edu/AlaskaScienceForum/administration>

Teacher Resources:

(See appendix)

