

Role-Play a Tree



Section 1 FOREST ACTIVITIES

Grade Level: K - 4

Subject: Science

Skills: Role-playing, modeling, applying

Duration: 30-90 minutes

Group Size: 17 or more

Setting: Outdoors or indoors

Vocabulary: Bark, beetles, branches, cambium, heartwood, leaves, phloem, photosynthesis, roots, sapwood, tree, trunk, xylem

Objectives:

Students will identify and describe the parts of a tree.

Teaching Strategy:

Students role-play parts of a tree and pantomime the functions of the various parts.

Complementary Activity:

OUTDOOR or INDOOR: "Trees to Imagine" in this section.

Materials:

OPTIONAL: large ball or circle of paper painted yellow to represent the sun; twigs and elastic headbands to represent beetle antennae.

Background:

See **INSIGHTS Section 1, Elements that Create Forests, "Tree Basics" and "Inner Workings –Tree Trunks" Fact Sheets.**

Procedure:

1. Introduce the background of the activity. Draw a diagram of the **tree** on the board and name the parts.

2. Depending on group size, pick 1-3 strong, tall students to be the **heartwood**. These students stand at the center of the space allotted with their backs to each other. *Explain to the class that these students make the tree tall and strong, and that it is their job to hold up the **branches** and **trunk** so the leaves get lots of sunshine. Although the heartwood used to carry water and food, its tubes are now dead.*

3. Choose at least four students to be the **roots**. Some should have long hair to represent the millions of hairs at the end of each root. These students lie down with their feet next to the heartwood, their bodies pointing away from the center, and their hair spread out from their heads.

Explain to the class that Alaska trees have strong roots not very far underground which stretch out from the trunk sideways and help the tree drink water quickly, even in areas that are dry in summer. Roots also help the tree absorb oxygen; too much soil on top of the roots suffocates the tree. Roots serve as an anchor, keeping the tree solidly on the ground even in windy places.



Tell the roots to imagine themselves holding the tree to the ground and taking in water and oxygen. Then have all the roots perform their job: taking in water and oxygen. When you give the signal, “Let’s slurp,” all the roots suck in “water.”

4. Pick several students to be the **sapwood**, or **xylem**. Select enough children to make a circle all the way around the heartwood. These students stand facing the heartwood and hold hands (*and do not step on any of the roots!*). Their job is to take water from the roots all the way up to the tips of the branches. *Acting as an efficient pump, the xylem carries many gallons of water every day from the roots to the leaves.* When the leader gives the signal, “Carry the water up,” the sapwood takes the water from the roots by raising their hands high in the air and saying “Wheeeeeee!”

5. Choose several more students to be the **cambium/phloem** layer, forming a circle outside the xylem. They stand facing in, or alternating in and out, not holding hands. *Tell the students that the functions of the cambium/phloem are the growing layer of the tree and taking food made by photosynthesis in the leaves down to all parts of the tree.*

These students pretend their hands are leaves, stretch their hands toward the sun, and make food by wiggling their fingers and hands. Tell the group that their *first* signal is “Let’s make food” – students raise their hands and move their “leaves” to take in light energy from the sun and make food. After the leaves make food, the leader gives a *second* signal to “Bring the food down” – students drop the top of their bodies toward the ground and say “Whoooo.”

6. After all the students know their signals and their roles, they practice living like a tree. Give the signals: “Let’s slurp!” “Let’s make food!” “Carry the water up!” “Bring the food down!”

7. Designate 1 or 2 students to wait on the side. Whisper to them that they will become the attacking **beetles** in the next step, and they should go “behind a shrub” and wait.

8. All remaining students should then take the role of the **bark**. These students form a circle around the

other parts of the tree and face out. Ask the students to protect the tree. Show the bark a football-blocking stance to use for protecting the tree. Ask students if they hear a distant *whine*, and tell them it is a spruce bark beetle about to attack the tree.

9. Students waiting “behind a shrub” form their fingers into a “drill.” They return to the tree as *spruce bark beetles, which drill through the bark to lay eggs in the cambium layer. There the eggs hatch, and the larvae eat tunnels for a year before emerging as adults.*

10. Student beetles circle the tree, attempting to break through the bark’s defenses. The bark should try to protect the inner part of the tree.

11. While the beetles circle the tree, the teacher calls out the commands so that the tree people act the parts of the tree. Review the parts of the tree the first time by calling the name of the part and the action signal. Eventually, just give the signals.

VARIATIONS:

A. Have a golden “sun” signal food making instead of the commands. Use a paper cutout or a big ball spray-painted yellow. Walk around the tree raising or lowering the sun over your head. When raised, the sun triggers photosynthesis, and the “tree” wiggles its leaves. When the sun is lowered, the tree doesn’t make food.

B. Use twigs to represent antennae on the spruce bark beetle. Hold twigs in place with an elastic headband.

Evaluation:

Students build a tree using these materials: straws, sponges, tiles, sticks, small pieces of green paper, glue, tape, scissors and clay (for a stand).

Credit:

Adapted from Joseph Cornell, “Build a Tree,” *Sharing the Joy of Nature: Nature Activities for All Ages*, 1989.



Curriculum Connections:

(See appendix for full citations)

Books:

Bark (Chambers)

Big Tree (Hiscock)

Outside and Inside Trees (Markle)

The Tree (Jeunesse)

A Tree is Growing (Dorros)

Trees (Eyewitness Explorer) (Gamlin)

Media:

Dirt Made My Lunch (Audio Tape or CD) (Banana Slug String Band)

Teacher Resources:

(See appendix)

