

ENRICHMENT: Build a Tree

Objectives and Summary: By acting out the parts of a tree, students will learn about tree structure and function. Students will then combine their roles to model a fully functional tree as a series of connected systems. Trees do many important jobs necessary for animals, people and the environment. Some animals spend their entire lives in trees or rely on them for food. Birds, squirrels, opossums, raccoons and insects find shelter from the weather and predators in the trees. Even dead or dying trees provide shelter and food for insects. Trees provide the air we rely on for life. Tree roots keep soil from washing away which makes streams and lakes cleaner. (This lesson was adapted with permission from Joseph Cornell, author of *Sharing Nature with Children*, Ananda Publications, Nevada City, California 95959.)

Materials: Build A Tree cards (in your Tool box)

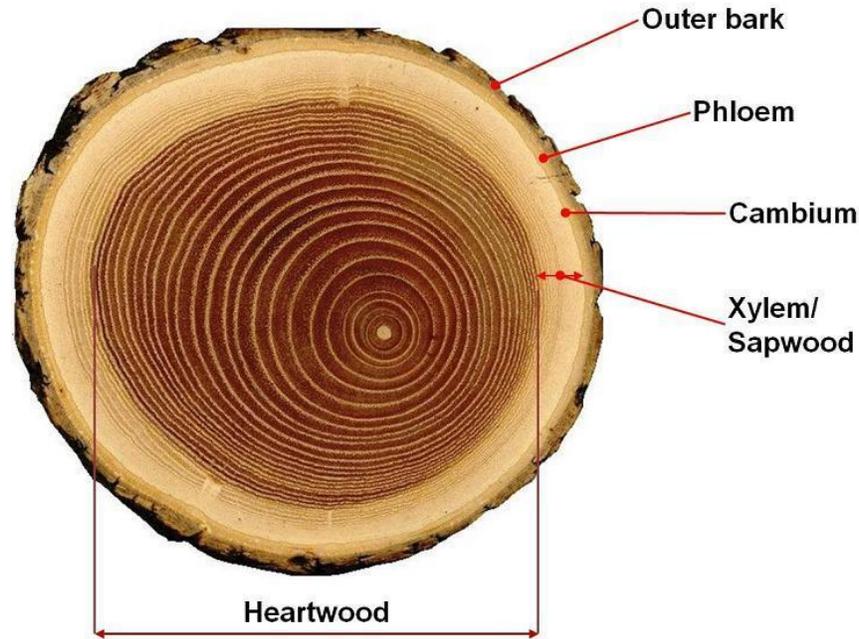
Location and Duration: An open flat surface area is best for this activity. The lesson can take 20-30 minutes.

HS Leader Role: Leaders can role model the actions or sounds for the students. Leaders can also hold the role cards and coach a few groups of students through the activity.

Background

- **Heartwood:** Heartwood forms the central core of the tree. It is made of dense dead wood and provides strength.
- **Roots:** Tree roots are like underground branches that spread out to help anchor the tree and absorb water and nutrients from the soil. **Large taproots** and **lateral roots** branch into smaller and smaller roots. An average tree has millions of these small rootlets, each covered with thousands of fine root hairs. The root hairs make it easier to soak up water and dissolved minerals from the soil.
- **Xylem:** Also known as sapwood, is a network of thick-walled cells that form tiny pipelines carrying water and minerals up the tree from the roots to the leaves. Xylem also stores nutrients and fuel reserves.
- **Cambium:** Cambium is a layer of the tree that makes new cells during the growing season. These cells become part of the phloem, xylem, or more cambium. The cambium layer can be very thin to microscopic. Sometimes it is only a few cells thick.
- **Phloem:** The phloem is a thin layer that acts as a food supply line from the leaves to the rest of the tree. The sugar produced in the leaves as a result of photosynthesis travels down from the leaves through channels in the phloem to the branches, trunk, and roots, supplying all the living parts of the tree with food.
- **Outer Bark:** Although bark looks different from tree to tree, it serves the same purpose—to protect the tree from injury and disease. Some trees have very thick bark that helps prevent damage from fires. Others have bad-tasting chemicals that discourage hungry insects. The bark of large Douglas firs may be more than two feet (.6 m) thick.





Procedure

Introduction: Ask your students what trees need for survival (food, sun, water, air and space). After students brainstorm answers, ask them how trees obtain these things since trees cannot move the way animals can. Observe a tree and discuss what parts of a tree can be seen and consider what other parts there might be that are unseen. Tell them they will be creating a tree by acting out tree parts.

Lesson/Activity: Take students to a large open area and explain that everyone will work together to “build” a tree. Assign students to be parts of a tree using the “Build A Tree” laminated role cards that will describe how to model the different parts of a tree using a variety of motions and actions. Students will arrange themselves to make a complete tree, and will act out their parts together.

Conclusion

Break into small groups to discuss:

- Which part of the tree were you? What role does that part have in the functioning of the tree? What other parts can you remember? What did those parts do?
- What do you think might happen if one of the parts of the tree wasn't able to do its job?
- In what ways do trees support other living things?

Discuss what factors threaten trees (pests, climate change, flooding, logging, fire). Consider some steps that we could take to contribute to a sustainable future for the trees in our area.

Notes:



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