

Tree Talk- An introduction to the world of trees

Activity #1

Part 1: Why should we care about Trees?

Discuss with the students how trees are used in our everyday lives and how they are important to the environment. When students are doing this activity have them think what values do trees have. On the dry erase board have the students list reasons why trees are important: Questions to ask them:

1. How do trees benefit people? (*Oxygen, fruit, nuts, shade*)
2. What kind of recreational use could this forest be managed for? (*Hiking, cross country skiing, bird watching, and hunting.*)
3. What lumber products could you manage it for? (*Pulpwood for paper or cardboard, lumber for construction, matches, furniture.*)
4. What kind of soil and water conservation practice could be put to use? (*Erosion control*)
5. If used for agriculture what practice would be used? (*Windbreak and/or soil erosion control.*)

Part 2: Tree Treasures (Optional)

See Appendix #3 for directions

Activity #2- Tree Anatomy

This activity will help students learn the anatomy of a tree by acting out the various parts. Begin with the first layer. Choose a student to the heartwood. Tell students what the job is of the heartwood. Have the student practice their part. Add the next layer. Have the students perform their part. Then have the heartwood repeat their job. Keep adding layers and acting out until the tree is “made.”

Order of Layers: Each layer makes a circle around each other

1. **Heartwood- 1** (“I Support, I Support”, arms above head)- gives tree strength and support.
2. **Sapwood- 3** (“Transport Water!”, circle heartwood, pumping arms up)- transports water to all parts of the tree
3. **Phloem- 4** (“Food to the Tree!”, pumping action with arms down)- Transports food from the leaves to the rest of the tree.
4. **Cambium- 5** (“We make new cells!”, make a circle around sapwood with hands above head and turn in circles)- produces new sapwood and phloem to keep tree growing and healthy
5. **Bark- 2 or 3** (“We Protect!”, make a ring around cambium facing out, looking tough) -protects tree from bugs, weather, etc.
6. **Leaves- whoever is left** (“Making Food!”, standing outside the group, dancing in circles)- make food for tree through photosynthesis)

Definitions of tree parts:

A The **outer bark** is the tree's protection from the outside world. Continually renewed from within, it helps keep out moisture in the rain, and prevents the tree from losing moisture when the air is dry. It insulates against cold and heat and wards off insect enemies.

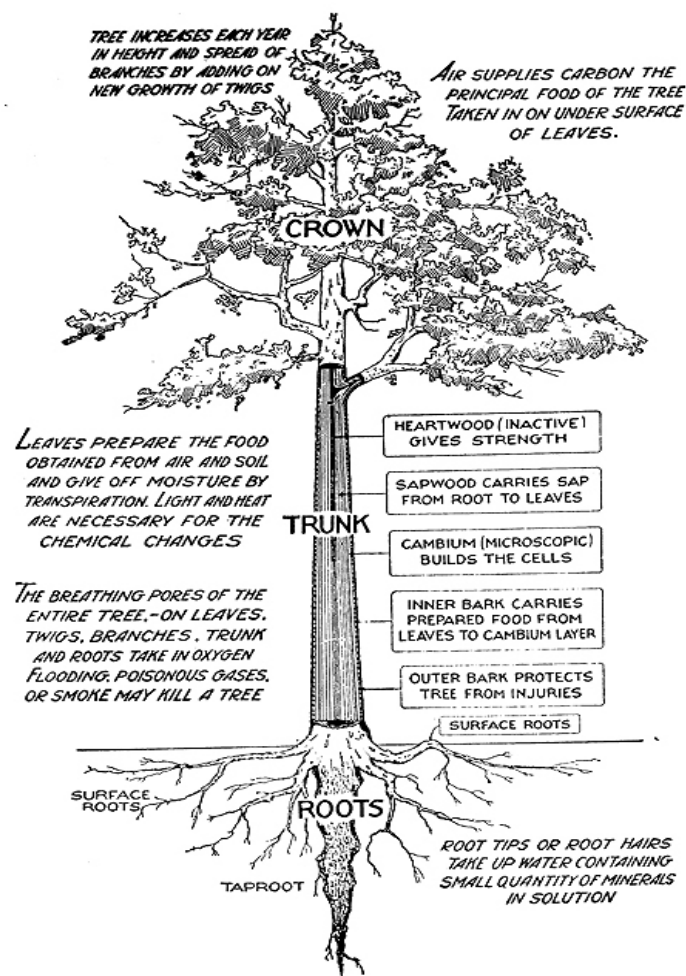
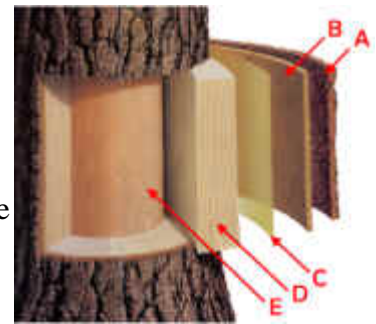
B The **phloem (inner bark)**, is pipeline through which food is passed to the rest of the tree. It lives for only a short time, then dies and turns to cork to become part of the protective outer bark.

C The **cambium cell layer** is the growing part of the trunk. It annually produces new bark and new wood in response to hormones that pass down through the phloem with food from the leaves. These hormones, called "auxins", stimulate growth in cells. Auxins are produced by leaf buds at the ends of branches as soon as they start growing in spring.

D **Sapwood** is the tree's pipeline for water moving up to the leaves. Sapwood is new wood. As newer rings of sapwood are laid down, inner cells lose their vitality and turn to heartwood.

E **Heartwood** is the central, supporting pillar of the tree.

Although dead, it will not decay or lose strength while the outer layers are intact. A composite of hollow, needlelike cellulose fibers bound together by a chemical glue called lignin, it is in many ways as strong as steel. A piece 12" long and 1" by 2" in cross section set vertically can support a weight of twenty tons!



Activity #3- Tree Identification Activities

Characteristics of a Tree

A tree has certain characteristics that help identify it from other trees. Some of the main distinctive characteristics are:

- branching and buds are opposite, alternate, or whirled
- leaves are needle or broad leaf
- Broad leaves come in a variety of identifying shapes: simple, compound, doubly compound, smooth, toothed (serrate), doubly serrate, or lobed.

The Great Leaf Grab Game

Having gone over the characteristics of a tree, test the students' understanding with this game of knowledge. Have students line up in two lines facing each other, 20 feet apart. Place the laminated leaves and pictures of tree branching spread out on the ground between the two lines. Number both lines of students 1 thru however many students. Now call out a number and a tree characteristic from the ones on the ground. The students with that number then run to the middle and the first one to pick up the matching characteristic wins. If they both get the card at the same time, both teams get a point. Keep going until you have reviewed the characteristics several times. You can keep track of points if you want or not.

Using A Dichotomous Key

A Dichotomous Key is a series of statements that helps to identify objects. The key moves from general to specific by listing pairs of descriptions. Each description lists characteristics of a certain object. If the object is similar to the description, move to the next set of statements. As characteristics become more specific to your object, an answer is provided. If not, go on to the preferred set of statements.

There are many different types of dichotomous keys. The ones that students will be using will be a "road map" layout and an "if true...go to" key. Use your own discretion on which key to use.

Take the group on a hike to practice identifying several trees. Divide the students into pairs. Have the students pick out 2-3 trees to identify with the keys and the characteristics learned above. Try to get the students to identify the tree down to exact species, ie. sugar maple, instead of just maple. After all of the trees have been identified, have the students tell the other students what species of tree they found.

Tree or Leaf Tag

After the students have learned to identify several species of trees and leaves, play this memory game. Call out a type of tree or leaf type. The students then have 10 seconds to walk fast and touch that type of tree or find that particular leaf. Fun way to learn the help the kids use the information they have learned.

Adopt a Tree (optional, if time)

See attached sheet for this activity. Good activity to give the students some quiet time and creativity in the forest.

Wrap Up

Ask students if they can see the forest through the trees by posing the following questions:

- Recall any difficulties in managing the forest.
- List ways in which forests are important.
- Examine how your use of forests affects other things.
- Name 3 characteristics to help identify trees
- Name 3 species of tree they found today

We are very dependent upon forest, from camping to wood products. Forests are part of our lives, which we need to take care of. Our actions have a direct effect on all other natural systems in the world, so if we destroy one thing we will lose another.

Appendix #1:

TREE PRODUCT LIST

Here is just a short list of the many ways we use trees.

houses	plastic for toys	drugs and medicines	polishes
athletic equipment	photographic films	vitamins	chewing gum
crates	cellophane	plywood adhesives	mouthwash
furniture	luggage	plastic fillers	peppermint candies
tool handles	fishing floats	tannins	toothpaste
wooden toys	toothbrushes	resins	detergents
sleds	plastic pens	animal bedding	aftershave
art	football helmets	lacquers	shampoo
cabinets	hard hats	mulches	allspice
picture frames	electrical tape	soil enhancers	almonds
desks	rayon fibers	insecticides	apples
books	clothing	cements	apricots
boxes	drapes	artificial vanilla	avocados
candy wrappers	rugs	cosmetics	chocolate
magazines	straws	gummed tape	cashews
milk containers	sausage casings	pharmaceuticals	cloves
newspapers	cereals	fungicides	dates
paper towels	cattle supplements	fertilizers	figs
writing paper	hog supplements	fabric softener	lemons
baking cups	chicken supplements	paint	limes
toilet paper	mink supplements	varnish	mangos
coffee filter papers	fish supplements	adhesives	maple syrup
post cards	imitation bacon	asphalt	olives
posters	vegetarian food	menthol	nutmeg
ballpoint pen tubes	beverages	camphor	peaches
buttons	corks	printing inks	fuel
countertops	bulletin boards	carbon paper	turpentine
eyeglass frames	inner core of	rubber and latex	charcoal
floor tiles	baseballs	soaps	particle board
insulation		disinfectants	playing cards

Appendix # 2: Glossary

- Deciduous:* Not persistent; falling away, as the leaves of a tree in autumn.
- Diameter:* The length of a straight line through the center of an object.
- Dichotomous:* Branching regularly in pairs.
- Conifer:* A cone-bearing tree that sometimes has needles for leaves.
- Edge Forest:* Edges are areas where one ecosystem type meets another. In this case, a hardwood forest meets abandoned field. The benefits of edges form the rationale for much of forest management. Numbers of wildlife species can increase or decrease. Clear-cutting patches in continuous forests creates a lot of edge. This can benefit a specific type of wildlife, at the expense of other rarer species.
- Girdling:* Mechanical, insect or disease damage that completely encircles the tree trunk, severs the bark and cambium (active growing layer of cells), and usually penetrates the sapwood to kill the tree by preventing the conduction of nutrients.
- Hardwood Forest:* Hardwoods grow in areas with moderate, average temperature that changes significantly during four distinct seasons. These forests are dominated by broadleaf species such as Maple, Oak, Hickory, and Ash. These forests have nutrient rich soil. The layering of vegetation supplies a diversity of ecological niches for animal life.
- Midrib:* The central vein of a leaf or leaflet.
- Pine Forest:* Dominated by pines, spruces, and other conifers. Beneath the dense stands of trees, a carpet of fallen needles and leaf litter covers the nutrient poor soil, making the soil acidic and preventing most other plants from growing on the forest floor.
- Riparian Forest:* Water is the blood of this system, carrying nutrients, sediment, and organic debris from the forest into the aquatic system. While water drives the system, forest vegetation regulates and controls the dynamics of the water's influence. Riparian vegetation provides numerous important functions for the aquatic ecosystem including: shading to regulate water temperature, filtering pollutants, and delivering nutrients by organic debris. Riparian zones are equally as important to the terrestrial ecosystem. They provide corridors for wildlife and plant migration.
- Wildlife:* Is any living thing (plants, reptiles, etc.) that is not domesticated by humans.