

An Easy-to-Make Model that Explains the Inner Parts of a Tree

By Rob Beadel

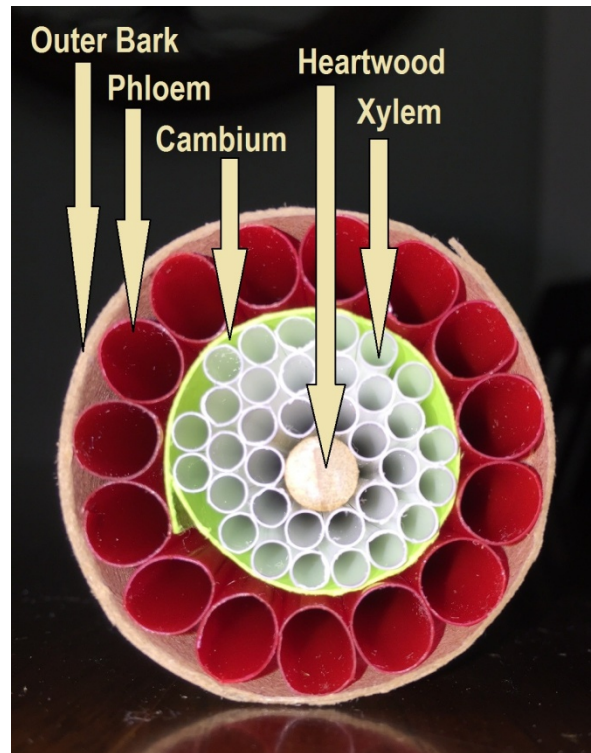
Summary: Help students visualize the inner layers of a tree trunk and better understand the function of its different parts by creating this easy-to-make visual aid – a cross-section of a tree trunk.

When I would present to a group of students and talk about cambium, xylem, and phloem I would always say “picture me holding a handful of straws”. Well that gave me an idea to create this easy-to-make model of a cross-section of a tree trunk to help students visualize the inner layers of a tree.

Materials List

Here is a list of the materials you will need to make this model to represent a tree’s component parts:

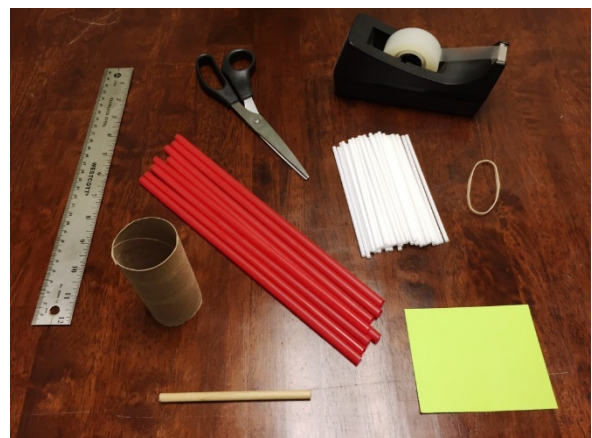
- 1 toilet tissue tube (or half of a paper towel roll tube) (**Outer Bark**)
- ¼-inch wooden dowel rod cut to 4-inch length (**Heartwood**)
- 15 plastic drinking straws cut to 4-inch lengths (**Phloem**)
- 34 plastic coffee stirrers (or small straws) cut to 4-inch lengths (**Xylem**)
- 1 piece of colored card stock paper (**Cambium**)
- 1 rubber band
- Ruler
- Scissors
- Scotch tape



The cambium layer is extremely thin. An adaptation for your own model might be to use a thinner layer of paper or fabric (such as tissue paper or mesh tights) in between the layers of the two different sized straws (xylem and phloem).

Instructions

1. Cut the ¼-inch dowel into a 4-inch piece (the length of the toilet tissue tube or paper towel roll tube)
2. Cut the card stock paper to measure 3 ¼ inches by 4 inches
3. Cut the plastic drinking straws into 4-inch lengths
4. Cut the plastic coffee stirrers into 4-inch lengths
5. Grip the coffee stirrers in your hand and wrap the rubber band around them



6. Insert the wooden dowel into center of the coffee stirrers
7. Wrap card stock paper around the coffee stirrers and tape the edge tightly
8. Slide the toilet tissue tube over the paper and stirrers
9. Place one row of drinking straws between the card stock paper and the toilet tissue tube
10. Make adjustments where needed to get the appropriate look

Parts of a Tree

Use your model to explain how xylem and phloem transport water and food. More specifically, these are the functions of each tree part depicted in the model:

- Heartwood - forms the central core of the tree. It is made up of dense dead wood, and it provides strength.
- Xylem - brings water and nutrients up from the roots to the leaves. Older xylem cells become part of the heartwood.
- Cambium - a very thin layer of growing tree tissue. It makes cells that become new xylem, phloem, or cambium.
- Phloem - carries sap from the leaves to the rest of the tree. At certain times of the year, phloem may also move stored sugars from the roots up to the rest of the tree.
- Outer Bark - protects the tree from injury caused by insects, animals, plants, diseases, and fire.



PLT Activity Suggestions

Try coupling this model with the following Project Learning Tree lessons:

- #61 – The Closer You Look
- #62 – To Be a Tree
- #63 – Tree Factory
- #76 – Tree Cookies

For more teacher tips to help make sure students can identify the parts, structures, and functions of a tree or other plant, see [Tree Factory Activity Cards](#).