

Students are often surprised to learn how many different products we get from trees. Use this activity to help students learn just how much we depend on trees in our daily lives.

# WE ALL NEED TREES



## SUBJECTS

Science, English Language Arts, Social Studies

## PLT CONCEPTS

1.4, 2.5

## STEM SKILLS

Collaboration, Leadership, Nature-based Design

## DIFFERENTIATED INSTRUCTION

Cooperative Learning, Hands-on Learning, Personal Connections, Student Voice

## MATERIALS

Small branch, wooden product, tree cookie (a cross-section from a tree trunk or branch), photos of tree products, three chart paper sheets. Optional: Tape or glue.

*Variation:* A variety of products from trees (see Getting Ready).

## TIME CONSIDERATIONS

*Preparation:* 1 hour

*Activity:* 30 minutes

*Variation:* 40 minutes

## OBJECTIVES

### Students will

- Examine various products and determine which ones are made from trees.
- Classify products that come from trees.

## BACKGROUND

Many products that we use are derived from trees. Wood is the most obvious. It provides lumber for houses, furniture, picture frames, paintbrush handles, and many more items. **Cellulose** is the major component of wood and most other plant fiber. Cellulose is used to make paper and paper products, including books, wrappers, cereal boxes, newspapers, and so on. It is also an ingredient in many other products.

Many other products come from trees in a less obvious way. For example, baseballs are made with a cork core surrounded by rubber. See the “*Wood*” *You Believe It Comes from Trees?* box for more examples.

**Sustainably managed forests** are a renewable source of raw materials. As trees regenerate and grow, they provide new wood, bark, sap, and other materials. They also provide services such as clean water and air, wildlife habitat, and carbon storage. Sustainable forestry involves a renewable cycle of planting after harvest and ensuring that forests are healthy, productive, and provide multiple benefits throughout their lifetime.

## GETTING READY

- Collect photos of example tree products, one per student. Aim to get approximately equal numbers of three product categories: wood, food, and paper.
- In different parts of the room, display a large picture (or actual product) to represent each of the three categories. For example, a chair could represent wood products, an apple could represent food products, and a newspaper could represent paper products.
- Make a chart for each of the three categories, with a label and a picture to go along with it. Leave room for students to add their photos, if desired. Post charts around the room.
- For the Variation, collect 5–10 products from trees, using the “*Wood*” *You Believe It Comes from Trees?* list for ideas. You may want to include a few products that are not from trees, such as bamboo chopsticks, cotton balls, a plastic water bottle, peanuts, or raisins, to show your students. Make copies of the Tree Treasures student page.

# FOREST FACT

According to the U.S. Forest Service, forests and forest products in the United States offset nearly 16% of the country's carbon dioxide emissions by storing over 850 million metric tons of carbon per year.



## “WOOD” YOU BELIEVE IT COMES FROM TREES?

### Wood Products

- Fuel: Wood and charcoal
- Furniture
- Lumber
- Packaging
- Particle board
- Planks
- Plywood
- Wood panel veneers

### Bark Products

- Cinnamon
- Cork
- Drugs and oils
- Dye
- Tannin (used for curing leather)

### Cellulose Products

- Carpeting
- Cellophane
- Fiber board
- Imitation leather
- Paper products:
  - » Books
  - » Building paper
  - » Industrial paper
  - » Magazines
  - » Newspaper
  - » Toilet paper
  - » Wrapping paper
  - » Writing paper
- Rayon and other fabrics
- Shatterproof glass
- Sunscreen lotion
- Thickening agent (in shampoo)

### Sap Products (Gums and Resins)

- Adhesives
- Chewing gum
- Cleaning fluids
- Cosmetics
- Crayons
- Electrical insulation
- Flavoring
- Paint thinner
- Perfumes
- Printing ink
- Rubber products
- Shoe polish
- Soap
- Sugar and syrup
- Varnishes
- Waxes

### Fruit, Leaves, and Seed Products

- Cider
- Dye
- Fruits (apples, mangoes, oranges, etc.)
- Nuts (almonds, pine nuts, cola nuts, etc.)
- Spices (bay leaves, nutmeg, mace, etc.)

Note: Some of the products listed aren't always—or exclusively—made from trees.



## DOING THE ACTIVITY



- 1**  **PERSONAL CONNECTIONS** Ask students whether they've used anything today that comes from trees.
- 2** Hold up a small branch and a wooden object. Ask where each of these comes from. If you have one, show students a tree cookie (cross section), and explain that it also comes from a tree. Have students see and feel the texture of the wood. Can they identify similar texture and grain patterns in various wood products? Do they recognize that those products come from trees?
- 3** Ask students if they know where paper comes from. Describe in simple terms how trees become paper. (Paper is made by cutting down trees and chopping the wood into very small pieces, which are boiled in water until they turn into a mushy pulp. The pulp is then poured onto a wire mesh and squeezed with rollers to press out all the water.) Ask students if they can think of other things that come from trees.
- 4** Explain that wood, food, and paper are three of the main kinds of products people get from trees. Hand out the photos you collected. Explain that each photo shows one of these three important types of tree products. Tell the students to decide what type of tree product they have: wood, food, or paper. Then give them time to stand under the picture representing the appropriate category.
- 5** Have students look at the objects in each category and describe what properties the objects have in common. For example, the food items taste good, can be chewed, and provide nutrition.
- 6**  **STUDENT VOICE** Invite students to come up with other ways to categorize the products, and then sort the products by those other ways.
- 7** Optional: If you want to keep the charts with wood, food, and paper products for later use, have students tape or glue their photos to these charts.
- 8** Ask if anybody can think of other products that come from trees. Then refer to "*Wood" You Believe It Comes from Trees?*" to discuss some unusual tree products.

## TAKE IT OUTSIDE



Challenge students to go on an outdoor scavenger hunt for tree products. In advance, scout the area to determine what students might find. Then, put together a list of objects for them to look for, including a few challenging items. Divide the group into pairs or small teams. Be sure to identify and communicate boundaries for the exercise before encouraging students to find as many items as they can. Inspire some friendly competition by offering a tree product reward to the team that finds the most!

## VARIATION: GRADES 3-5

- 1 Designate four different stations around the room (or more, depending on the size of your group). Distribute the tree products you collected at various stations and label each one with a number.
- 2 Divide the group into four teams and tell them that each team will work together to determine which of the products are made from trees. All team members must agree and be able to explain why.
- 3  **COOPERATIVE LEARNING** Assign the following roles to the students in each group:
  - Leader: Make sure that everyone in the team has an opportunity to speak as they try to reach decisions.
  - Recorder: Record the team's decisions.
  - Timekeeper: Make sure the team stays on track and gets everything accomplished in the time allowed.
  - Reporter: Report their team's findings to the rest of the group.
- 4  **HANDS-ON LEARNING** Have the teams move around to the different stations and examine the products. After they have decided if an item comes from trees, they should record it on the Tree Treasures student page. Everyone on their team must agree with the decision and should be able to explain why each item is on their list.



**SAFETY CHECK!** Do not let students open any of the product containers.

- 5 Have Reporters share their lists with the rest of the group. Discuss the diversity of tree products. Ask students to explain why they included (or did not include) certain products. Students should realize by the end of the discussion that most (or all) of the products shared come from trees.





## ACADEMIC STANDARDS

SCIENCE	ENGLISH LANGUAGE ARTS	SOCIAL STUDIES
<p><b>Practices</b></p> <ul style="list-style-type: none"><li>Analyzing and interpreting data</li></ul> <p><b>Concepts</b></p> <ul style="list-style-type: none"><li>Natural resources</li><li>Structure and properties of matter</li><li>Patterns</li></ul>	<p><b>Practices</b></p> <ul style="list-style-type: none"><li>Speaking and listening: presentation of knowledge and ideas</li></ul> <p><b>Concepts</b></p> <ul style="list-style-type: none"><li>Reading informational text: key ideas and details</li></ul>	<p><b>Practices</b></p> <ul style="list-style-type: none"><li>Applying disciplinary concepts</li></ul> <p><b>Concepts</b></p> <ul style="list-style-type: none"><li>Economics: exchange and markets</li></ul>

## ASSESSMENT

Ask students to

- Sort pictures of objects into three groups: wood, food, and paper.
- Identify two items (at school or home) from each category: wood, food, and paper.
- Write their responses to a question related to tree products, such as “What is something in our classroom that comes from trees, and how do you know?”

See Appendix K: Making a Scientific Argument for a sample template for sharing their responses.

## ENRICHMENT

- Using self-stick notes or nametags, write the names of a variety of different tree products and attach one to each student’s back. Tell students they must figure out the product on their backs by asking each other “yes” or “no” questions. Each student can ask another person only two questions about their own product before they must move on to another person. For example, “Is my product used at school?”
- Bring in a pruned tree limb with lots of branches, a discarded Christmas tree, or a small potted tree. Have the students decorate it with pictures of tree products. They can draw their own pictures, use the pictures from the activity, or find pictures on the internet or in magazines. They can also use actual small tree products, such as pencils, paper towel rolls, nuts, fruit, cellophane, etc. to decorate the tree.
- Discuss how a new awareness of tree products might affect students’ behavior. For example, how might students and their families choose more sustainably harvested forest products to use at home?
- Try papermaking. See the activity Make Your Own Paper.



NAME \_\_\_\_\_ DATE \_\_\_\_\_

Look at each object and decide whether it comes from a tree. In the chart below, write the item number and your team's answer (yes, no, partly, or maybe). Explain your answer.

ITEM NUMBER	FROM A TREE?	EXPLAIN



## CAREER CORNER

**LUMBERMILL WORKERS** cut logs into lumber for building materials such as flooring, windows, and doors. These workers may use computers to figure out the best way to cut each log and how to reduce wood waste.

