

FOREST PRODUCTS AND HISTORY

Overview

Every part of a tree can be used to make something. From wood to extracts from leaves, roots and bark, comes more than 5,000 products. In this class, students will gain an appreciation of the value of trees as the provider of many raw materials, learn about the many wood products they use every day, learn which parts of a tree are used to make these products and how trees have been used throughout history.



Background

World history is marked by important technological advances involving new uses of natural resources, including trees. Egyptians were the first people to use a plant instead of stone as a writing medium in 3500 B.C. In 3000 B.C., they found that by boiling the bark and roots of a willow tree they could create a medicine that would relieve pain. This was the first type of aspirin.

The Chinese were the first people to create the process of tearing down a plant (rice hull) to its fiber level and reconstituting the material into a paperlike substance for writing and art in 105 A.D. And in 1840, the Germans were the first to make paper from trees.

Throughout American history, humans have used trees for many purposes, including shelter, food, protection and fuel. In prehistoric times, people used wood for cooking and heating. In ancient civilizations, trees were used to build primitive shelters as well as for food and medicine. Explorers used wood to build ships and wagons, and the Wright Brothers used wood as the major component of the first airplane.

Many or all of these uses are still valid today. In fact, cooking and heating are still the main uses of wood worldwide today. Hundreds of wood products are used in the construction or furnishing of homes. Extracts from roots, bark and leaves are used to make more than 5,000 products including medicines, cosmetics, explosives, photographic film, plastics, food additives and adhesives. Both bark and pine needles are commonly used as a landscaping mulch.

Wood production and products are particularly important to North Carolina. From 1720 to 1870, North Carolina was the world's leading producer of naval stores. This is how the state got its nick-

name the Tar Heel State. During Colonial times, naval store products such as turpentine, pitch and tar were more valuable than gold and were used to buy goods and services.

Today, 144,100 North Carolinians work in the forest products industry with an annual payroll of \$3 billion. Forestry is the second leading manufacturing industry in North Carolina. It leads the nation in furniture, hardwood veneer and plywood production, and is second in the production of hardwood pulpwood. And with the average American using more than 700 pounds of paper products annually, this continued production is essential.

With proper management, we can continue to have all of these products as well as all of the many other benefits we get from a forest. The primary reason for this is that wood is a renewable resource. Even though trees die naturally or are harvested, new trees reseed or sprout from stumps on their own or are planted. This property makes wood one of our most unique and valuable natural resources.

Vocabulary

- **Bark:** The tough exterior covering of a woody root or stem
- **Cellulose:** The scientific name for wood fiber
- **Naval Stores:** Products such as turpentine, pitch and rosin that come from pine trees and are used in the construction and maintenance of wooden sailing vessels.
- **Renewable resource:** Material that can be replenished through natural and/or human processes.
- **Tar:** A sticky saplike substance that results from cooking pine trees.
- **Turpentine:** A distilled chemical produced from tapping into a living pine tree and harvesting the sap.
- **Wood:** The solid interior of a tree.

Subjects

History, science, social studies

Concepts

All humans consume products and thereby affect the availability of renewable and nonrenewable natural resources.

The extracting, processing, transporting and marketing of natural resources provide employment opportunities for many people.

Humans use tools and technologies to adapt and alter environments and resources to meet their physical, social and cultural needs.

Objectives

Students will: (1) learn the parts of a tree that are used to make more than 5,000 products, (2) learn to identify names of ingredients found in food products made from trees, (3) learn how important trees were to ancient civilizations as well as modern cultures, (4) learn that trees are a unique resource because they are renewable, (5) learn how to make wood into paper and how to recycle paper into paper.

Materials Needed

Class may be taught in a classroom or an outdoor shelter

List of products made from trees

An assortment of forest products (see list on next page)

For paper making: Scrap paper torn into 1" X 1" pieces, a large bowl or tub, a wooden frame with screen, staples, a plastic basin of at least 2.5 gallons capacity, cloth dish towels, blender, sponge, household iron, strainer, colored paper, colored thread, dried flowers or herbs

Time Required

Class may be taught in 45 to 60 minutes, depending on how detailed you get. Allow several hours to gather tree products. Paper-making demonstration takes about 15 minutes

■ *Wood Chemicals:* Chemicals that are found naturally in the various parts of a tree.

Doing the Activity

1. Let the students look at a tree and name all the parts of a tree they know, i.e. bark, foliage, wood, etc.

2. Get the students to tell you the different things made from trees.

3. Discuss the concept of renewability and a tree's uniqueness in this capacity.

4. Start the historical sequence of tree products as outlined in the *Background* section.

5. Get a volunteer from the class to stand up front with you. Walk him or her through a typical school day pointing out all the forest products he or she uses during the day, starting from the time he or she wakes up until he or she goes to bed at night. Ask the class to consider what life would be like without some of these products.

6. Put some unusual forest products out on a table. (See list of products in next column for ideas.) See if the students can name the different parts of the products that are made from trees and what part of the tree each product came from, ex. paper comes from wood fiber.

Helpful Hints

■ Humor the students by asking them if they have ever slept with a tree, eaten a tree, driven a tree, bathed with a tree, etc.

■ If students are falling asleep, particularly after lunch, get them to stand up, jump and shout to get their blood flowing again.

Forest Products

More than 5,000 wood and paper products make our lives better each day. Chances are you ate some wood today, wore it and brushed your teeth with it. Everything from baby food to rayon to toothpaste to football helmets and diapers are made from trees. Chemists have unlocked the secrets of converting tree fibers and paper-pulping residues into a wealth of products. See how many of these products you would guess came from trees, and prepare to be amazed:

Paper Products:

computer paper - library books - coffee filters - tissues - disposable diapers - postage stamps - paper towels - milk cartons - paper plates - movie tickets - newspapers - animal bedding - grocery bags - building insulation - playing cards

Solid Wood Products:

lumber and plywood to build new homes - furniture - toothpicks - baseball bats - canoe paddles - guitars - backyard play sets - ax handles - charcoal - wood blocks - rulers - birdhouses - crutches - fences - sleds

Bark:

cork - the cancer-fighting drug Taxol - shoe polish - cosmetics - poultry bedding - oil spill control agents - garden mulch - cinnamon

Wood Alcohols:

colognes - solvents

Torula Yeast:

baby foods - imitation bacon - cereals - vegetarian foods - baked goods - beverages

Cellulose:

rayon clothing - sanding sealers - pressure sensitive adhesives - floor tiles - toothpaste - carpeting and upholstery backing - food additives and thickeners - handles for screw drivers and other tools - football helmets and hardhats - carbon papers - cigarette filters - piping for irrigation systems - plastic twines - computer casings - luggage - placemats - sandwich bags

Lignosulfates:

cleaning compounds - ceramics - treatments for hypertension and Parkinson's disease - insecticides - hair spray - deodorants - fungicides - grouting - laundry stain remover - artificial vanilla flavoring