

The Forest Foundation

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Lesson Plan: Forest Products Game

Students (and adults!) are often surprised by how many products are made with parts of trees. Playing this game helps students understand the impact forestry has on their daily lives.

Objectives:

1. To understand and appreciate the value of natural and human resources.
2. To understand and appreciate the multitude of products used in our daily lives that come from trees.
3. To understand how all parts of the trees and the processes used to make various products.

Skills:

1. Tree physiology
2. Ecology
3. Associations in forest and human ecosystems.
4. Associations with natural resources and consumer products.
5. Critical thinking.
6. Consumer awareness.
7. Research skills.

Focus

1. Establish the value of trees in their natural environment. The discussion should produce a list that includes shade, soil stabilization (roots & mulch), cleaning the air (using carbon dioxide and producing oxygen, soil enrichment, habitat, the beauty of the forest and recreational activities).
2. Establish the value of the products of trees in our daily lives. Have students list products they readily think of like lumber, wood toys, paper, fuel, etc.
3. Discuss the definitions and examples of renewable and non-renewable resources.

Procedure

1. Have students review a group of items selected from the lists on attachment A. (If enough items are not available pictures of the items can be substituted.) To make the game more effective make sure items are chosen from several of the grouping to make sure that the discussion covers chemicals, cellulose, etc. Also adapt the choices for grade level. The students should readily recognize items from their lives.

2. Have students try to identify three items from the list that DO NOT come from trees. This can be done with volunteers, having them come up one at a time, writing them down or many other ways. As each guess is made either explain what part of the tree or byproduct that it comes from, or if it is correct, where that particular item does come from. It actually works the best if students take a while to find the correct item, as the discussion is more involved.

Notes: Cellulose is the fibrous or structural unit of the wood and is used to make paper and added to many plastics. If the plastic is formed with heat (i.e. packaging), stretchy (i.e. cellophane wrap) or very flexible (i.e. photographic film). The chemicals that come from cellulose and/or the breakdown of the pulp such as acetates and lignins are in almost all cosmetics, cleaning products, etc. For more technical explanations see the publications listed at the end of this lesson available online.

3. Have students discuss possible alternatives to the items on the table that are from tree and any other items you discussed earlier. Explore the issue of whether the replacements come from renewable or non-renewable resources.

Closure

Discuss with students how ALL of the value of natural resources must be determined before making decisions on how best to manage them for the future.

Additional challenges for older students.

Have students research how much material is recycled in several categories, i.e. paper, wood, glass, aluminum, tin, the amount of energy consumed to convert each of those resources into product, the amount of pollution generated in that conversion process and the population projections for the United States over the next 20-50 years. In small groups or individually, have them come up with a plan to provide a commodity for the increased population.

For further information please see:

www.forestinfo.org - The Temperate Forest Foundation newsletter titled Eco-Link, 1st quarter 2003 covers "Technology in the Mill," and includes a good explanation of how all parts of the tree are used to make the kinds of products covered in this lesson. The issue is available for download on the website under "Teacher Resources."

<http://wood.orst.edu/teachers.htm> - Oregon State University Extension agent, Scott Leavengood prepared an excellent paper on this subject titled "What a Tree Done for You Lately?" and it is available for download online.

www.calforests.org - The California Forest Products Commission and The Forest Foundation

Attachment A-The Forest Products Game

Category 1-Solid Wood Products

Structural lumber pieces

Furniture

Baseball bat

Small wooden building supplies

Musical Instruments

Small wooden toys or game

Category 2-Paper Products

Paper

Kites

Product labels

Postage stamps

Books

Newspaper

Toilet Paper

Milk/food cartons

Category 3-Bark of Trees

Cork

Shoe Polish

Candle & crayon wax

Cinnamon

Cosmetics

Torula Yeast (harder to find in U.S.!)

Baby cereals

Commercial baked goods

Bread

Imitation bacon

Category 4-Cellulose and Related chemicals

Rayon

Toothpaste (& formed plastic toothbrush)

Photographic film

Artificial vanilla flavoring

Hair spray

Cellophane (“Saran”) wrap

Plastic packaging

Nail polish

Artificial sponges

Artificial grated cheese

Sausage casings

Category 5-Wood Derived Chemicals

Pine Oil

Turpentine (**many cleaning products**)

Category 6-Other Products

Fruit

Mistletoe

For discussion: Electricity generated from the burning of biomass

Nuts (not peanuts!)

Caranuba wax

Category 7-PRODUCTS NOT FROM TREES

Sea Shell-to represent animal

Chalk-to represent mineral

Peanuts in shell-to represent plant

NOTE-Items designated with **bold** are suggested as good discussion generators and good mix of items.