

Level 3 Grades 4-5



Booklet Objectives

Students will:

- Realize that humans and animals have dependence upon trees in common.
- Recognize the advantages of agroforestry.
- Appreciate the history and longevity of trees.
- Identify classifications of forest types.
- Become aware of the benefit of trees to their daily lives.
- Relate the carbon and water cycles to tree functions.



Next Generation Science Standards

4. Structure, Function, and Information Processing

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

5. Matter and Energy in Organisms and Ecosystems

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Vocabulary Words

agroforestry—agriculture incorporating the cultivation and conservation of trees.

arboreal—living in trees.

carbon dioxide—a colorless, odorless gas produced by burning carbon and organic compounds and by respiration. It is naturally present in air (about 0.03 percent) and is absorbed by plants in photosynthesis.

cellulose—an insoluble substance that is the main constituent of plant cell walls and of vegetable fibers such as cotton.

coniferous—a tree that bears cones and evergreen needlelike or scale like leaves.

deciduous—(of a tree or shrub) shedding its leaves annually.

deforestation—the action or process of clearing of forests.

germination—the process by which a plant grows from a seed.

groundwater—water held underground in the soil or in pores and crevices in rock.

lignin—a complex organic polymer deposited in the cell walls of many plants, making them rigid and woody.

nutrient—a substance that provides nourishment essential for growth and the maintenance of life.

organic—of, relating to, or derived from living matter.

oxygen—a colorless, odorless reactive gas, the chemical element of atomic number 8 and the life-supporting component of the air.



Taking Trees to Class

Activity Objectives

Students will:

- Investigate the value of classification.
- Evaluate their use of trees.
- Develop a tree classification system based on their use of trees.

Materials

- "Taking Trees to Class" worksheet (pages 3 & 4)



Discussion

Discuss how classification is used in many areas of life to organize information we use daily.

1. Classification groups both living and nonliving things based on characteristics they have in common. Give an example using items found in the classroom such as;
 - edible items are classified as foods, and then further broken down and classified into smaller groups like vegetables, dairy, etc.
 - books can be classified as fiction or nonfiction.
 - clothing can be classified by what it is fabricated from; cotton, nylon, etc. Then grouped into shirts, pants, jackets, etc.
2. Introduce students to the Linnaeus system commonly used by scientists in the classification of plants and animals, based upon physical characteristics. Use an apple tree as an example.

Kingdom: Plantae—plants

Division: Magnoliophyta—flowering plants

Class: Magnoliopsida—dicots (seeds typically have two embryonic leaves)

Family: Annonaceae—custard apple family

Genus: Annona L—annona (one fruit per flower)

Species: Annona squamosa (sugar apple)

Activity

1. Divide students into groups and direct them to choose a tree common to your geographical location and research the scientific classification and explain what physical characteristics were used in the classification. Each group should complete the "Taking Trees to Class" worksheet.
2. Give each group of students the assignment of developing their own classification system for trees based on how they use trees. For example:

Wood: Hardwood

Location: Eastern United States

Part used: Trunk

Function: Strength & support

Availability: Renewable resource (harvesting/replanting)

Daily use: headboard



Other classification category possibilities: indoor/outdoor, wearable/non-wearable, method of harvest, production/processing requirements, used daily/weekly/monthly, etc.





Taking Trees to Class

Members of your group:

Tree classification

Tree chosen by your group: _____

Kingdom: _____

What physical characteristics place your tree in this group? _____

Division: _____

What physical characteristics place your tree in this group? _____

Class: _____

What physical characteristics place your tree in this group? _____

Family: _____

What physical characteristics place your tree in this group? _____

Genus: _____

What physical characteristics place your tree in this group? _____

Species: _____

What physical characteristics place your tree in this group? _____

List 10 ways in which the members of your group uses trees:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____





Develop your own four level classification system based on how you use trees.

Remember that each level of your classification system represents a group of things (living or non-living) that have certain characteristics in common. For example; one of the levels in your classification system could be “wearable”, meaning that all of the items placed in that level are things that you can wear. One item in this “wearable” level might be tennis shoes. Some of the rubber used to manufacture tennis shoes could come from latex that comes from trees.

Name each of the four levels in your classification system and what characteristics the items in each level have in common. Give an example of an item that belongs in each group.



1. Name of this level: _____

characteristics of this group: _____

items that belong in this group: _____

2. Name of this level: _____

characteristics of this group: _____

items that belong in this group: _____

3. Name of this level: _____

characteristics of this group: _____

items that belong in this group: _____

4. Name of this level: _____

characteristics of this group: _____

items that belong in this group: _____

