

TEACHER'S MANUAL

This Suitcase Program provides the materials and lesson plans for teachers of grades 6-8 with content and activities increasing in difficulty by grade level. Activities in this Suitcase Exhibit may assist in meeting the Tennessee State Standards.

ACTIVITIES

ACTIVITY I: Build a Tree	2
ACTIVITY II: Carrying Objects, Activities One, Two and Three	3
ACTIVITY III: Tree Lifecycle	4
ACTIVITY IV: Tree Cookies	5
ACTIVITY V: How Big is Your Tree?	6
INVENTORY CHECKLIST	7

TENNESSEE STATE STANDARDS FOR 6-8

- 7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.
- 7.LS1.9 Construct a scientific explanation based on compiled evidence for the processes of photosynthesis of cellular respiration, and anaerobic respiration in the cycling of matter and flow of energy into and out of organisms.
- 7.LS3.3 Predict the probability of individual dominant and recessive alleles to be transmitted from each parent to offspring during sexual reproduction and represent the genotypic and phenotypic patterns using ratios.

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY I: Build a Tree! (from Project Learning Tree)

DURATION OF ACTIVITY: approximately 50 minutes

LESSON OBJECTIVES

By acting out the parts of a tree, students will learn about the general structure of a tree and how the different parts of a tree help the tree to function.

GUIDING QUESTIONS

What are the different parts of a tree? What are their functions?

TENNESSEE STATE STANDARDS

7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

MATERIALS INCLUDED

Tree labels
Yarn for branches
Master copy of "Parts of a Tree" labels
(make a copy to cut up into 30 labels)
Magnifiers
"Parts of A Tree" poster from Nature
Watch "Understanding Trees" 4-poster set
"Parts of a Tree" small Crown poster
"How a Tree Eats, Drinks and Breathes" large IP poster
Book, **Project Learning Tree Environmental Education
Activity Guide 2006**
Book, **The Life Cycle of a Tree**
Booklet, IP's The Life of the Forest
*Video, DK Eyewitness, Tree (on order)

MATERIALS PROVIDED BY TEACHER

Open space in your classroom, or a grass
area outside
Bag to put tree labels in for students to pull
Tape
Art supplies

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY II: Classifying Objects, Activities One, Two and Three (from Project Learning Tree)

DURATION OF ACTIVITY: approximately 50 minutes for each activity

LESSON OBJECTIVES

Using the “What Leaf Is It?” handbook, students will learn to classify objects, design a Student Key (to classify students), and to use a dichotomous leaf key to classify leaves.

GUIDING QUESTIONS

Why is it useful to classify plants? How is a dichotomous key constructed?

TENNESSEE STATE STANDARDS

7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

MATERIALS INCLUDED

Young Naturalist Company, “What Leaf Is It?, A Hands-On Classroom Project,” instruction booklet
Riker mounts of 13 leaves, 3 of each leaf
“Types of Trees” and “Parts of a Tree” posters from “Understanding Trees” (4 poster set)
“Do You Recognize These Leaves...” large IP poster
Book, **DK Eyewitness Books, Tree**
Book, Kalman, **The Life Cycle of a Tree**
Book, Lawrence & Fitzsimons, **An Instant Guide to Trees**
Book, St. Martin’s Press, **A Golden Guide, Trees**
Booklet, Peterson, Flash Guide to Trees
Booklet, IP, The Life of the Forest
Booklet, Watts, Tree Finder
Booklet, TN Dept. of Ag., Common Upland Hardwoods of Tennessee
Booklet, UT Extension, Identifying Common Tennessee Trees
Booklet, US Dept. of Ag., Important Forest Trees of the Eastern U.S.

MATERIALS PROVIDED BY TEACHER

None

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY III: Tree Lifecycle (from Project Learning Tree)

DURATION OF ACTIVITY: approximately 50 minutes

LESSON OBJECTIVES

Students will diagram the lifecycle of a tree; compare a tree lifecycle to a human lifecycle; and learn the role that each stage of a tree's life plays in the forest (or other) ecosystem.

GUIDING QUESTIONS

What are the stages of a tree's lifecycle? What events can happen to affect a tree's lifecycle?

TENNESSEE STATE STANDARDS

7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

MATERIALS INCLUDED

Large "tree cookie"
Cut-away log
Master copy of "Tree Lifecycle Worksheet"
(from Project Learning Tree)
Master copy of "Tree Lifecycle" diagram
(from Project Learning Tree)
"Parts of a Tree" and "Tree Growth and Development" posters
from "Understanding Trees" (4 poster set)
"This Pine Lived..." and "The Bounce Back Forest" large IP posters
Book, **Project Learning Tree Environmental Education
Activity Guide 2006**
Book, **The Life Cycle of a Tree**
Book, Lawrence & Fitzsimmons, **An Instant Guide to Trees**
Book, **A Golden Guide to Trees**
Book, UT Ext., **The All Season Pocket Guide to Identifying
Common TN Trees**
Book, USDA, **Important Forest Trees of the Eastern U.S.**
Book, **Eyewitness, Tree**
Booklet, IP, **The Life of the Forest**
Booklet, Peterson Flash Guide, **Trees**
Video, **Eyewitness, Tree**

MATERIALS PROVIDED BY TEACHER

Books for "Tree Source" center
Paper and pencils
Crayons and/or markers

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY IV: Tree Cookies (from Project Learning Tree)

DURATION OF ACTIVITY: approximately 50 minutes each for Part A and Part B

LESSON OBJECTIVES

Students will use a cross section of a tree trunk (a “tree cookie”) to figure out (by counting the rings) how old that tree was. They will learn to identify bark, heartwood, sapwood, xylem, phloem and cambium and their functions; to infer from a tree’s rings what damage or stress might have occurred in its life; and to make a timeline of human history that coincides with a tree’s rings.

GUIDING QUESTION

What can you learn by counting and interpreting a tree’s rings?

TENNESSEE STATE STANDARDS

7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

MATERIALS INCLUDED

Large tree cookie
Cut-away log
Sets of 3 small tree cookies (one each: oak, pine and walnut)
Magnifiers
Make copies for each student:
 Master copy of PLT “Tree Rings”
 Master copy of PLT “Tree Slice”
 Master copy of PLT “Tree Rings with Damage”
 Master copy of NatureWatch “Tree Ring Diagram”
 Master copy of “Tree Growth Study Kit” worksheet
 Master copy of “Tree Growth Study Kit” Student Guide
“Parts of a Tree” poster from “Understanding Trees” (4 poster set)
Large “This Pine Lived Through...” and “How a Tree Eats...” IP posters
Book, **Project Learning Tree Environmental Education Activity Guide 2006**
Book, **The Life Cycle of a Tree**
Book, Lawrence & Fitzsimmons, **An Instant Guide to Trees**
Book, **A Golden Guide to Trees**
Book, UT Ext., **The All Season Pocket Guide to Identifying Common TN Trees**
Book, USDA, **Important Forest Trees of the Eastern U.S.**
Book, **Eyewitness, Tree**
Booklet, IP, The Life of the Forest
Booklet, Peterson Flash Guide, Trees
Video, Eyewitness, Tree

MATERIALS PROVIDED BY TEACHER

Different colored push pins
Different colored stick-on labels to write on
Pencils and drawing paper for students
Large sheet of butcher paper

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY V: How Big is Your Tree (from Project Learning Tree)

DURATION OF ACTIVITY: one or two 50-minute periods

LESSON OBJECTIVES

Students will measure and compare trees and tree parts; learn how and why people measure things, including trees; learn different units of measurement; and learn the need for consistency in measuring.

GUIDING QUESTIONS

How can trees be measured?
Why is measuring trees important?

TENNESSEE STATE STANDARDS

7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

MATERIALS INCLUDED

Master copy of “How Big Is That Tree?” handout
(make copies for each student)
Measuring tape
“Tree Growth and Development” poster from
“Understanding Trees” (4 poster set)
Book, **Project Learning Tree Pre K-8 Environmental
Education Activity Guide**

MATERIALS PROVIDED BY TEACHER

Butcher or large sheet of paper
Multi-colored markers
Scratch paper
Metric ruler or yardstick
Rulers for each pair of students

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

SUITCASE EXHIBIT INVENTORY CHECKLIST

School: _____

Check Out: _____

Return Date: _____

MoSH Check In:	Teacher Check In:	Item	Books/Videos/Posters	Teacher Return:
		A	Teacher's Manual	
		B	Poster: "Why Are Trees Necessary"	
		C	Poster: "Parts of a Tree"	
		D	Poster: "Tree Growth and Development"	
		E	Poster: "Types of Trees"	
		F	Poster: "This Pine Lived Through a Fire, a Drought, and a Major Bug Attack"	
		G	Poster: "Ever Hear of Waste Not Want Not"	
		H	Poster: "A Well Managed Forest Keeps Giving"	
		I	Poster: "You Can Tell a Tree By Its Bark"	
		J	Poster: "Do You Recognize These Leaves and Needles?"	
		K	Poster: "Giving Our Endangered Species a Second Chance"	
		L	Poster: "Seeds Come in Every Shape and Size You Can Imagine!"	
		M	Poster: "Special Places, Special Care"	
		N	Poster: "The Bounce-Back Forest"	
		O	Poster: "How a Tree Eats, Drinks and Breathes"	
		P	Booklet: Peterson, Flash Guide to Trees	
		Q	Booklet: TN Dept. of Agriculture, Common Upland Hardwoods of Tennessee	
		R	Booklet: UT Extension, Identifying Common TN Trees	
		S	Booklet: US Dept. of Agriculture, Important Forest Trees of the Eastern U.S.	
		T	Book: An Instant Guide to Trees	
		U	Book: A Golden Guide, Trees	
		V	Book: DK Eye Know, Tree	
		W	Book: The Life Cycle of a Tree	
		X	Book: The Great Kapok Tree	
		Y	Book: DK Eyewitness Books, Tree	
		Z	Book: Milliken Plants	
		A.1	Book: Project Learning Tree	
		B.1- B.10	10 Books: The Life of the Forest	

SUITCASE EXHIBIT INVENTORY CHECKLIST

MoSH Check In:	Teacher Check In:	Item	Materials	Teacher Return:
		1	Leaf and Seed Display Mount-Leaf Venation	
		2	Leaf and Seed Display Mount-Black Tupelo	
		3	Leaf and Seed Display Mount-Black Cherry	
		4	Leaf and Seed Display Mount-Sugarberry	
		5	Leaf and Seed Display Mount-Yellow Poplar	
		6	Leaf and Seed Display Mount-Sweet Gum	
		7	Leaf and Seed Display Mount-Red Mulberry	
		8	Leaf and Seed Display Mount-Flowering Dogwood	
		9	Leaf and Seed Display Mount-Box Elder	
		10	Leaf and Seed Display Mount-American Beech	
		11	Leaf and Seed Display Mount-Eastern Redbud	
		12	Leaf and Seed Display Mount-Bald Cypress	
		13	Leaf and Seed Display Mount-Sassafrass	
		14	Leaf and Seed Display Mount-White Oak	
		15	Leaf and Seed Display Mount-Eastern Red Cedar	
		16	Leaf and Seed Display Mount-American Elm	
		17	Leaf and Seed Display Mount-Shortleaf Pine	
		18	Large Tree	
		19	Nature Press for Pressing Leaves and Flowers	
		20	Piece of Wood	
		21	Bag of Pine Cone Variety	
		22	Tree Finder Booklet with 39 Real Tree Leaves (see attached page for sample identification)	
		23	16 Leaf Rubbing Plates	
		24	Small Tree Cookie-Red Oak	
		25	Small Tree Cookie-Walnut	
		26	Small Tree Cookie-Pine	
		27	Small Tree Cookie-Basswood	
		28	Small Tree Cookie-Red Pine	
		29	Small Tree Cookie-Ash	
		30	Tape Measure	
		31	Set of Nature Watch "Tree-Mendous" Leaf Cards (65)	
		32	Ink Pad for stamping	
		33	Leaf Stamp Set containing 10 stamps: [Ginkgo (33.0), Red Mulberry (33.1), Willow (33.2), Fir (33.3), Red Elm (33.4), Aspen (33.5), Sugar Maple (33.6), White Oak (33.7), Longleaf Pine (33.8), Sycamore (33.9)]	

SUITCASE EXHIBIT INVENTORY CHECKLIST

Samples Identification

Item #	Materials	
22	Tree Finder Booklet with 39 Real Tree Leaves	
	Red Cedar Black Willow Green Ash Red Bud Scotch Pine Osage Orange Bur Oak Silver Maple Sycamore Honey Locust Cottonwood American Elm Black Walnut	
	Alternate #1, #1; #2, #2; #4, #4; #5, #5; #6, #6; #7, #7; #9, #9; #11, #11; #12, #12	
	Opposite #3, #3; #13, #13	
	Unknown #8, #8; #10, #10	
31	Set of Nature Watch "Tree-Mendous" Leaf Cards (65)	
	1 Directions Card 4 Fir 4 Aspen 4 Buckeye 4 Elm 4 Spruce 4 Ponderosa Pine 4 Ash 4 Live Oak 4 Maple 4 Sycamore 4 Birch 4 Cedar 4 Willow 4 Cottonwood 4 Deciduous Oak 4 Walnut	