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TEACHER'S MANUAL

This Suitcase Program provides the materials and lesson plans for teachers of grades 3-5 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: Looking at Leaves 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 3-5

3.LS1.1	Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
3.LS4.2	Infer that plant and animal adaptations help them survive in land and aquatic biomes.
4.LS2.1	Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use carbon dioxide from the air, water, and energy from the sun to produce sugars, plant materials, and waste (oxygen); and that this process is called photosynthesis.
5.LS3.1	Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment.
5.LS3.2	Provide evidence and analyze data that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.

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

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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

3.LS1.1	Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
3.LS4.2	Infer that plant and animal adaptations help them survive in land and aquatic biomes.
4.LS2.1	Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use carbon dioxide from the air, water, and energy from the sun to produce sugars, plant materials, and waste (oxygen); and that this process is called photosynthesis.
4.ETS2.1	Use appropriate tools and measurements to build a model.

MATERIALS INCLUDED
Tree labels
Yarn for branches
Master copy of “Parts of a Tree” labels (make one copy, 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 Pre-K - 8 Environmental Education Activity Guide
Book, The Life Cycle of a Tree
Booklet, IP’s The Life of the Forest
Video, DK Eyewitness, Tree

MATERIALS PROVIDED BY TEACHER
Open space in your classroom or a grassy area outside
Bag to put tree labels in for students to pull
Tape
Art Supplies
Trees and leaves

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

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ACTIVITY II: Looking at Leaves (from Project Learning Tree)

DURATION OF ACTIVITY: 50 minutes

LESSON OBJECTIVES

Students will collect and examine leaves, using a set of questions to help them make observations. They will learn how leaf shapes, sizes and other characteristics vary from tree to tree and how to identify trees by their leaves.

GUIDING QUESTIONS

What are ways that leaves are different and ways they are similar? How can examining its leaves help you to identify a tree?

TENNESSEE STATE STANDARDS

3.PS1.3	Describe and compare the physical properties of matter including color, texture, shape, length, mass, temperature, volume, state, hardness, and flexibility.
3.LS4.2	Infer that plant and animal adaptations help them survive in land and aquatic biomes.
5.LS3.2	Provide evidence and analyze data that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.

MATERIALS INCLUDED

Master copy of Project Learning Tree handout "A Look at Leaves"
Magnifiers
Leaf Riker mounts (17)
Leaf Venation Riker mount
Rubbing crayons
Leaf rubbing plates, for Enrichment activities
Leaf press for pressed leaves Enrichment activity
Nature Watch "Parts of a Tree" poster
Nature Watch "Types of Trees" poster
Large IP "Do You Recognize These Leaves and Needles?" poster
Book, Project Learning Tree Pre K-8 Environmental Education Activity Guide
Book, DK Eyewitness Books, 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.
Video, DK Eyewitness, Tree

MATERIALS PROVIDED BY TEACHER

An open area where students can find and collect tree leaves
Pencils
Leaf rubbing supplies for Enrichment Activity:
- Thin, plain paper – manuscript paper works best
- Fat crayons
- Waterproof markers

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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

3.LS1.1	Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
3.LS4.1	Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.
3.LS4.2	Infer that plant and animal adaptations help them survive in land and aquatic biomes.
4.LS2.1	Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use carbon dioxide from the air, water, and energy from the sun to produce sugars, plant materials, and waste (oxygen); and that this process is called photosynthesis.

MATERIALS INCLUDED

Large "tree cookie"
Master copy of "Tree Lifecycle Worksheet" (from Project Learning Tree)
"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 Pre K-8 Environmental Education Activity Guide
Book, UT Ext., The All Season Pocket Guide to Identifying Common TN Trees
Book, Lawrence & Fitzsimmons, An Instant Guide to Trees
Book, A Golden Guide to Trees
Book, Life Cycle of a Tree
Book, USDA, Important Forest Trees of the Eastern U.S.
Book, Eyewitness, Tree
Booklet, IP, The Life of the Forest
Booklet, Peterson FlashGuide, Trees
Video, Eyewitness, Tree

MATERIALS PROVIDED BY TEACHER

Books for "Tree Source" center
Paper, pencils, crayons or markers

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

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ACTIVITY IV: Tree Cookies (from Project Learning Tree)

DURATION OF ACTIVITY: approximately 50 minutes for each, 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

3.LS1.1 Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.

3.LS4.1 Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.

MATERIALS INCLUDED

Large tree cookie
Log cross-section cut-away
Sets of 3 small tree cookies (one each of oak, pine and walnut)
Magnifiers
Master copies of the following (make copies for each student):
PLT “Tree Rings”
PLT “Tree Slice”
PLT “Tree Rings with Damage”
NatureWatch “Tree Ring Diagram”
“Tree Growth Study Kit” worksheet
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 Pre K-8 Environmental Education Activity Guide
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 FlashGuide, Trees
Video, Eyewitness, Tree

MATERIALS PROVIDED BY TEACHER

Different colored push pins
Different colored stick-on labels
Pencils
Large sheet of butcher paper
Drawing paper for students

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

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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

3.LS1.1	Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
3.LS4.1	Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.
3.LS4.2	Infer that plant and animal adaptations help them survive in land and aquatic biomes.
4.LS2.1	Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use carbon dioxide from the air, water, and energy from the sun to produce sugars, plant materials, and waste (oxygen); and that this process is called photosynthesis.

MATERIALS INCLUDED

Measuring tape
Master copy of “How Big Is That Tree?” handout (make copies for each student)
“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.

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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**	

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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-Sassafras	
		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

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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	