
Environmental Scientist

Overview:

This lesson and activity are designed to give students hands-on experience analyzing and identifying local trees.

Grade: 4

TEKS

Scientific processes
4.2(B, D, E)
4.4 (A, B)
Science Concept
4.5 (A, B)

Literature

A Tree's Tale

Vocabulary

Disperse
Deciduous
Simple Leaf
Compound Leaf
Margin
Lobed
Serrate

Materials

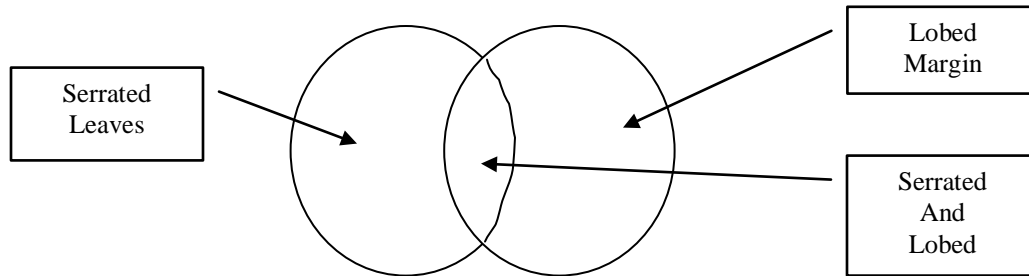
Discovery Book
Compass
Thermometer
Field Guides
Ziploc Baggies

Our Native Plants

Classroom Activity

1. Make a transparency of the "Leaf Identification" page. Before your students enter the classroom place the transparency on the overhead projector and turn on the overhead. Do not say a word as your students enter the classroom. Just listen to your students' comments. What kinds of background knowledge do your students have with trees?
2. Resist the temptation of cutting off your students' discussion of the leaf identification transparency. You want to collect information about their background knowledge about trees. Take notes as students comment on the overhead transparency. Forestry terminology is included at the website:
<http://www.eastman.com/EastmanOutdoors/trail.htm>
3. Explain the leaves of deciduous trees generally fall into the patterns represented on the "Leaf Identification" transparency. Leaves either grow on opposite or alternating sides of a stem. Simple leaves have a single leaf blade and compound leaves have 2 or more leaflets.
4. Take your class on a walk around your school's campus and look closely at the plants. How many plants have alternating leaf patterns? How many have compound leaves? Are the leaves smooth, serrated, or lobed? Are there any plants with compound leaves and opposite too?

5. After your "leaf hike", have your students create a pie chart or bar graph from the data collected on your leaf hike. Plus, Venn Diagrams are also another excellent way to organize information. All students should have the collected basically the same information. Therefore, discuss with your students the reliability of the results and how scientists use numerous investigations to draw conclusions.



6. The leaf key at <http://www.fw.vt.edu/dendro/forsite/key/intro.htm> is an excellent resource to help your students identify trees. This key is based on trees in the state of Virginia, however many of the trees in Virginia are in Texas too. Also, visit the Eastman Nature and Wildlife Habitat Center at <http://www.eastman.com/EastmanOutdoors/trail.htm> to preview the plants your students will observe along the trail.
7. Close the classroom lesson of "Our Native Plants" by reading Lark Carrier's *A Tree's Tale*. Lead your class in a discussion about trees and the role they play in our lives. Are there any big trees in your community? The Texas Forest Service sponsors a program called "Texas Big Tree Program". Now, that your students are "tree conscious", go to the Texas Forest Service's Big Tree Registry at <http://txforestservicetamu.edu/main/article.aspx?id=1336> For a homework assignment, have your students look over the "Big Tree" data to see if there is a "Big tree" in your county.

In the Field

Our Native Plants

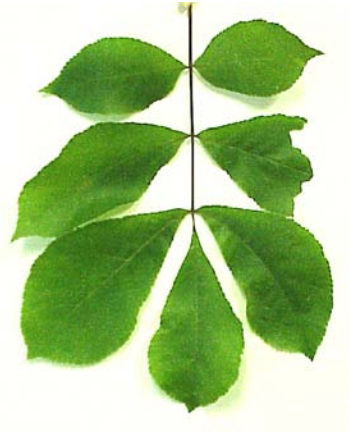
1. Prior to leaving your school make sure you have the following items.
 - Ziploc Baggies (1 gallon size)
 - Pencils (inexpensive mechanical pencils are excellent)
 - Compass
 - Thermometer
 - Water
 - First Aid Kit
 - Sack Lunch or light snack
 - Camera
 - Backpack
2. Before getting on the trail, remind students their observations and data collected will be used back in the classroom to create charts and graphs of their observations.
3. Set your behavior expectations before leaving the parking lot. Explain how students are to behave along the trail and in small groups. State specifically what behaviors you want to see along the trail. Remind students the higher their voices are the less likely they will see wildlife along the trail.
4. Distribute Discovery Books to students and record weather data observations. Teachers a gallon size ziploc baggie make an excellent container for pencils and Discovery Books during lunch or at the end of the day.
5. Walk through the gate and follow the trail. Remember to go slow and listen to your students' observations along the trail.
6. If you have enough adult supervision, divide your class into two groups. Have each group go in opposite directions along the trail. This will help reduce the noise level and also give your students an opportunity to share their observations when the class comes together at the halfway point. This is a good opportunity reinforce the idea that scientists share data too.

Post Eastman Activities

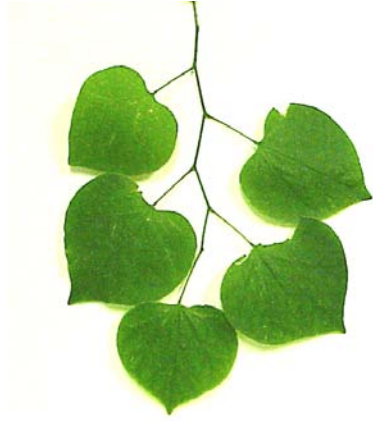
Our Native Plants

- Ask your students to bring a pair of old socks to class. Have your students slip the socks over their shoes and go for a hike through the fields and in any nearby woods. Return to the classroom and remove seeds from socks. Plant the seeds.
- Build a PowerPoint presentation about the life cycle of a tree.
- Write a narrative about their experiences at the Eastman Nature and Wildlife Habitat Center.
- Bring 2 potted plants to school and conduct a leaf experiment. Take one plant and remove 50% of the leaves and compare its growth against a plant with all of its leaves. How much taller will the one with all its leaves grow than the one with 50% of its leaves? Predictions?
- Make a leaf collection of the trees around your school.
- Write a Haiku about the life cycle of a tree.
- Create bar graphs at home or in the Computer Lab. Use the data collected in the field to compare and contrast your school's trees with those at the Eastman Nature and Wildlife Habitat Center.
- Maintain an Environmental Journal about the 1 tree for 1 school year.
- Keep a photo journal of one tree. Photograph the tree once every month. Display pictures on poster board or on a PowerPoint presentation.
- Make a leaf mobile.

Leaf Key



Opposite



Alternate



Simple Leaf



Compound Leaf



Serrate Margin



Smooth Margin



Lobed

Leaf Hike Data Sheet

Date: _____ Time: _____

Location: _____

Present

Weather: _____
(Clear, Cloudy, Overcast or Raining)

Air Temperature: _____ Celsius

Air Temperature: _____ Fahrenheit

Wind: _____
(Which direction is the wind coming from?)

I observed _____ plants with alternating leaves.

I observed _____ plants with opposite leaves.

I observed _____ plants with simple leaves.

I observed _____ plants with compound leaves.

I observed _____ plants with serrated leaves.

I observed _____ plants with smooth margin leaves.

I observed _____ plants with lobed leaves.

Resources

Publications

A Tree's Tale by Lark Carrier

Trees: Trees Identification by Leaf, Bark, and Seed by Steven M.L. Aronson

The Important Book by Margaret Wise Brown

A Log's Life by Wendy Pfeffer

The Gardner by Sarah Stewart

The Giving Tree by Shel Silverstein

The Lorax by Dr. Seuss

Field Guide for the Eastman Nature Trail by Eric L. Taylor, Ph.D

All Falling Down by Gene Zion (HarperCollins)

Frederick by Leo Lionni (Pantheon)

The Wonderful Tree by Adelaide Holl (Golden Press)

Web Pages

Field Guide for the Eastman Nature Trail

<http://www.eastman.com/EastmanOutdoors/trail.htm>

National Wildlife Federation

<http://www.nwf.org/wildlifewatch/>

Common East Texas Trees, Shrubs and Vines

<http://www.eastman.com/EastmanOutdoors/trail.htm>

The Great Plant Escape

<http://urbanext.illinois.edu/gpe/gpe.html>

The Plant Life of Texas

http://www.tpwd.state.tx.us/learning/junior_naturalists/plantlife.phtml

Trees From Space

<http://spaceplace.nasa.gov/trees-from-space/redirected/>

Tree Identification

<http://www.fw.vt.edu/dendro/forsite/key/intro.htm>

Texas Big Tree Registry

<http://txforestservicetamu.edu/main/article.aspx?id=1336&terms=tree+registry>

Texas Forestry Museum

<http://www.treetexas.com/>

Tree Identification

<http://www.arboday.org/trees/treeID.html>

Tree Key

<http://www.dnr.state.wi.us/org/caer/ce/eeek/veg/treekey/index.htm>