TREE TRAILS

★ TREE IDENTIFICATION ★

Tree identification is a critical first step towards an understanding of 'diversity.' By learning the names of trees, we come to appreciate them.

Goal & Objectives

Goal: Students will identify their trail trees and explain how identification relates to tree knowledge.

Objectives: Students will

1. Demonstrate how to use the internet to identify trees.
2. Apply a method to identify a tree.
3. Identify their trail tree on the Tree Trail website: texasforestinfo.tamu.edu/treetrails/.
4. Describe how the tree identification process develops observation skills basic to the scientific process.
5. Explain how tree identification is important to acquisition of tree knowledge.
6. Evaluate their *Tree Identification* experience.

Content Area TEKS/STAAR

Language Arts: 5.8 (A) evaluate the impact of sensory details, imagery, and figurative language in literary text.

5.29 Students work productively with others in teams.

Mathematics: 5.14 (C) select or develop an appropriate problem-solving plan or strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a similar problem, or working backwards to solve a problem.

Science: 5.2 (C) collect information by detailed observations and accurate measuring.

5.2 (E) demonstrate that repeated investigations may increase the reliability of results.

5.2 (F) communicate valid conclusions in written and verbal forms.

5.4 (B) use safety equipment, including safety goggles and gloves.

Social Studies: 5.6 (B) translate geographic data into a variety of formats such as raw data to graphs and maps.

Technology Applications: (b) (1) (C) use virtual environments to explore systems and issues.

Materials

- Tablet(s) or computer(s) with internet access
- Projector and screen
- Whiteboard or chart paper and markers
- Chart paper and markers for small groups
- Plastic closure bags (one per Tree Trail group)
- Tree Trails Portfolio, Tree Trails Data Sheet
- Student Learning Log/Journal
- (Optional) Paper and crayons for leaf rubbings
- (Optional) Cameras or camera phones

Time & Resources

Preparation Time: 2-3 hours
Instructional Time: 2-3 sessions, 45 minutes each

- Instructional Strategies, Think,Pair,Share Groups
  http://schools.spsd.sk.ca/curriculum/instructionalstrategies/
- Poems about Trees handout
- Getting Started with Leaf Characteristics handout
- Trees of Texas
  http://texastreeid.tamu.edu/
- Tree Trails
  http://texasforestinfo.tamu.edu/treetrails/

Instructional Procedures

I. Engage/Excite

A. Large Group Discussion: Lead a discussion about what students will learn in Module Two, i.e. tree identification and knowledge. They will be learning why identification is an important skill and how the process increases their knowledge about trees. Explain that before they begin the identification process, they will learn vocabulary words that tell others about trees. Select a poem or poems about trees from the Poems About Trees resource list.

Teacher Tip: "Learning the Trees" by Howard Nemerov contains some of the vocabulary they will use in the tree identification process. You may want to read this one first and/or read other poems also.

B. Large Group Discussion continued: Develop a KWL with the word "Imagery." Ask students what this word means to them. Compile their responses on the chart/whiteboard. Ask students to think of ways words create pictures in our minds. Add to the list of their responses. Explain that poems about trees can create images in our minds about tree characteristics. Ask students to close their eyes and listen to a poem about trees. Ask them to visualize or imagine the descriptions and characteristics of trees as the poem is read. Have students write words that describe what they hear in the poem and/or draw a picture of what they hear in the poem.

C. Large Group Discussion continued: After listening to the poem, ask students what they visualized from words in the poem. Ask them to analyze their list and add additional responses. Keep their responses visible. Ask "What do we *Know*" about why descriptive words are important for identifying trees. Then ask why they think it is important to know how to identify trees. List these responses under the *Know* portion of the KWL chart.

E. (Optional) Individual Activity: Have the students take the *Tree Identification* pretest.

Teacher Tip: Explain that the test is only to make sure the learning activities are appropriate and not something they already know. The pretest will help them know more about what they will be learning.

To administer the tests by paper, copy from the teacher lesson module. To administer the test electronically, recreate the test in an online survey program. Free programs allow the creator to see results from a class set.

II. Explore

A. Large Group Discussion: Brainstorm why it is important for the vocabulary used to identify trees to be descriptive and specific. Guide them to conclude that trees can be distinguished by observing their characteristics. Make a list of what we need to observe about trees to identify them: size, shape, color, bark, leaves, etc. Ask them to consider other traits their tree might have such as whether it looked healthy or old. Keep the list visible to use later in the evaluation section. Remind students that all these attributes help in the identification of trees which helps us know more about tree growth, tree health, tree environments, etc.

B. Large Group Discussion continued: Lead a question and answer discussion about how and why scientists must use very accurate, specific words and pictures to identify all living and non-living

II. Explore continued

things. Discuss how the observation skills used to identify trees applies to other scientific investigations. Encourage students to conclude that identification is a first step for discussing and learning about and protecting our world. List responses.

C. (Optional) Small Group Activity: Write "Tree" on a chart or white board and let students move into small groups and decide on a tree to describe from a photo or campus tree, but not the one selected as their trail tree. Provide chart paper and markers for each group to write a tree description. Have each group trade their chart with another group. The groups use the chart traded to draw a picture of the tree as it was described. Then each group returns the chart with their drawing to the original group.

D. (Optional continued) Large Group Discussion: Have each group share their charts and discuss what words contributed to make the drawing look like the tree that was described and what they would change to make the description more accurate.

E. Large Group Discussion continued: Return to the KWL chart and ask students "What we *Want* to Know." Record responses on the chart/whiteboard.

III. Explain

A. Large Group Discussion: Project the Trees of Texas website for students. Choose How to ID and have the students look at the different identification techniques listed. Ask them to observe the information available to learn more about trees. Ask them to notice the section on leaves and to observe the different leaf characteristics important to the identification process. Let students know that in the process of identification, they will learn more about trees than just the name. This site is a good source for gaining important knowledge about all trees.

   Teacher Tip: This site is useful in assisting students with terminology and tree identification.

B. Large Group Discussion continued: Next, choose ID by Leaf. Let students know this is their primary tree identification site. Choose Leaf Collecting and Safety. Have students read the safety section. Discuss what cautions they must take when they collect any leaves. Develop a safety plan before going outside to collect, photograph or make rubbings of leaves. Post the Safety Plan.

IV. Extend/Elaborate

A. Large Group Discussion: Lead a large group discussion about collecting their leaves. List the steps they will take.

B. Small Group Activity: Move the students into their small groups. Provide each group with a plastic closure bag to collect leaves from their tree. Have the group label the bag with their Group Name and Tree Number. Example: The Investigators, Tree #, Tree ID_____ (fill in ID when name of the tree is identified.) Take the groups outside with their collection tools to collect leaves and/or photograph them. Remind the students to collect leaves from the ground and on a small branch if possible.

   Teacher Tip: As necessary, get permission to collect samples from the trees.

IV. Extend/Elaborate continued

C. Large Group Discussion: Return to the classroom with each group's collection. Conduct a discussion about why the tree identification site lists common and scientific names. Common names are often used for multiple species but scientific names refer to only one species. Example: A live oak's common name may be applied to a number of different kinds of oaks. However, the scientific names for a live oak applies only to one species.

D. Large Group Discussion continued: Have students follow a projection of the resource handout Getting Started on Leaf Characteristics or use the How to ID section of the Trees of Texas website and demonstrate leaf characteristics by showing a leaf sample.

Teacher Tip: You may provide students with a handout of the characteristics and have them watch as you project it or you may want to have them follow with their tablets/laptops. The characteristics handout is in the resources section of the Tree Trails website.

Ask students to observe the characteristics of leaves: leaf tips and bases (heart shaped, rounded, tapered), leaf margins (serrated & lobed), leaf textures (hairy, smooth, thick, thin, rough or waxy), leaf structure (simple and compound) and leaf arrangements (opposite, alternate and whorled).

E. (Optional) Small Group Activity: Provide the students with one or more leaf samples from trees that are not part of the tree trail to practice identification. You can gather leaves from other trees on campus or use the Practice Identifying Leaves handout. Have each group draw (or use a leaf rubbing) of their practice leaf and write a short description of the practice leaf and its characteristics next to the drawing. Then go to the Trees of Texas website then ID by Leaf to find the tree that matches their practice leaf characteristics and its description. Repeat as needed or wanted with other practice leaves.

Teacher Tip: Students will need to understand the vocabulary for leaf characteristics to use the key. Drawings are shown in each step of the key to illustrate the characteristics. A dictionary is also available on the Trees of Texas website.

F. Small Group Activity: Have each group draw (or use a leaf rubbing) of their trail tree leaf and write a short description of the leaf and its characteristics next to the drawing. Then go to the Trees of Texas website then ID by Leaf to find the tree that matches their leaf characteristics and its description. If needed, the students may want to refer to their leaf and make needed changes in their description.

G. Small Group Activity continued: Have each group write the scientific and common name for their leaf. Once the group has determined their tree's identification and moved to the end of the key, their specific tree information will be shown. Have them review the tree information and description to verify their tree identification. They should write the common and scientific name on the collection bag.

H. Large Group Discussion: Allow each group to present and display their leaves, and/or rubbings and photos with their collection bag to the whole class. Each group should share how they came to the conclusion they made to identify their tree (common and scientific name) and why they are sure of their decision. (Optional) Encourage all students to be careful listeners so they may challenge a group's identification. Provide time to have a "Challenge" session and debate.

I. Small Group Activity: Project the Tree Trails mapping application and demonstrate how to enter the tree name. Provide the small groups with a computer and have them follow along as each step is

IV. Extend/Elaborate continued

demonstrated. Open Tree Trails, then choose Search By, choose Trail Name, then type the class trail name in the search box. Once they see the trail onscreen, find their tree and select it. Ask each group to provide the common name of their tree by using the arrow and drop down box. Have them search for their tree name in the list. Tell

IV. Extend/Elaborate continued

them that if the name of the tree cannot be found, select "Other Coniferous" or "Other Broadleaf" and type their species name into the Comment box. Save the tree information. At any time, you may go back to a tree you have saved and edit it.

Teacher Tip: Coniferous trees have needles or scales instead of leaves and are usually evergreen. Broadleaf trees have wide flat leaves rather than needlelike or scalelike leaves.

J. Large Group Discussion continued: Discuss how listening to each group's identification helped other students know more about different trees. Their learning becomes expanded when they are involved in the identification of more than one tree. The group discussion helps everyone become more comfortable and confident with the identification task. Lead the students to conclude that repeating their research with other groups and with other trees is an important process for any scientific investigation. Include in the conclusion a discussion about the observation process used to identify the different kinds of trees. Ask how they can use this process for other scientific tasks and how the knowledge acquired will be useful to them in other tasks. List their responses.

V. Evaluate

A. Individual Activity: Have students write a short list of ways: a) identification is an important scientific process and b) how the identification process contributes to their overall knowledge. Let students share in Think, Pair, Share groups of four. They may add ideas to their lists. Have students label their list as Module Two and place in their Portfolios.

B. Have the students fill in their Tree Trails Data Sheet with the common and scientific name of their tree. They can keep it in their Tree Trails Portfolio. They will use it again in the next module to enter the tree measurements and condition.

C. (Optional) Individual Activity: Have students take the *Tree Identification* posttest. Have them compare their results to self-evaluate what they learned and what they did not know.

Teacher Tip: You may use the results to determine the need for Extra Mileage/Attention.

D. Large Group: Ask the students to contribute to the KWL chart and record on White Board or class chart to complete with "What we *Learned*."

VI. Extra Mileage/Attention

Extra Mileage: Have students compose simple poems about their tree of choice, preferrably sitting outside under a tree. This may be a group or individual project. Encourage them to use words that create imagery, feelings and distinguish their tree. They may use different techniques like alliteration, onomatopoeia, Haiku, free verse, etc.

Extra Attention: Have students revisit the website to discover additional important characteristics of their class Tree Trails. Have students make a compare and contrast Venn diagram (two circles overlapping in the middle) to compare two different leaves they collected. List like attributes in the overlapping section of the diagram and the different attributes for each leaf in circle one and two.

TEXAS A&M
FOREST SERVICE

Tree Identification

Directions: Answer the following questions by rating your response 1-5, with 5 being the highest.

Key: 1 = Not Sure   2 = Poor   3 = OK   4 = Good   5 = Great

1.   I can name four steps to identify my trail tree.   1   2   3   4   5

2.   I can name three ways to be safe when I collect leaves.   1   2   3   4   5

3.   I can use five vocabulary words to describe leaves.   1   2   3   4   5

4.   I can find the common and scientific name of trees.   1   2   3   4   5

5.   The process of identifying different trees helps me become a better scientist.   1   2   3   4   5

6.   I know how to use the internet to identify trees.   1   2   3   4   5

7.   I can identify three different trees.   1   2   3   4   5

8.   I enjoy writing about the trees.   1   2   3   4   5

9.   I am interested in learning more about different trees.   1   2   3   4   5

Comments:

Learning the Trees
By Howard Nemerov
http://www.poetryfoundation.org/poetrymagazine/poem/22392

Trees
By Joyce Kilmer
http://www.poetryfoundation.org/poetrymagazine/poem/1947

Native Trees
By W. S. Merwin
http://www.poetryfoundation.org/poem/171876

Winter Trees
By William Carlos Williams
http://www.poetryfoundation.org/poem/174773

Banana Trees
By Joseph Stanton
http://www.poetryfoundation.org/poem/179889

[little tree]
By E. E. Cummings
http://www.poetryfoundation.org/poem/176724

where you are planted
By Evie Shockley
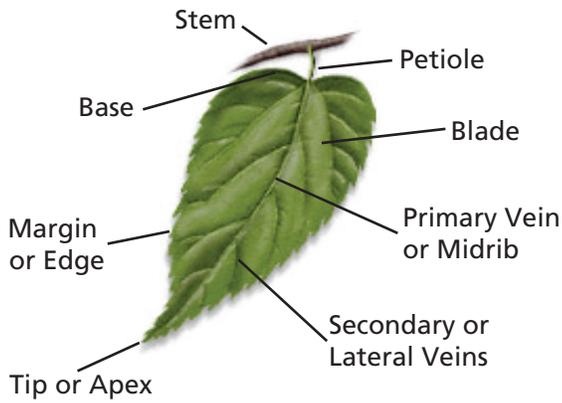http://www.poetryfoundation.org/poem/244260

LIFE
by Misty Woods

Little baby leaf, green and new
Coming into the world with millions of others
Warm sunshine gently urging the little leaf to grow
New life, so happy and joyous you are
Sweet little leaf still growing strong
Sun still gentle as a robin makes her nest
Little leaf reaching up for joy.
Still young, Still new.
Green leaf, young you are no more
Proudly taking care of your mother tree
The sun grows harsher as the days grow longer
Still you stand tall with your siblings.
Old leaf, your time has come
Cold winds raise from the north
Tugged and pulled but still you are stubborn
Finally, as death slowly comes, you fall into the oblivion.

Misty Woods wrote this poem at age 13. She is enrolled at First Baptist Christian Academy in Pasadena, Texas. She has provided permission to use her poem in Tree Trails.

Parts of a Leaf

Stem

Petiole

Base

Blade

Margin or Edge

Primary Vein or Midrib

Secondary or Lateral Veins

Tip or Apex

Leaf Margins

Entire - Having a smooth edge

Lobed - Rounded segment not divided all the way to the midrib

Dentate - Having triangular, tooth-like teeth

Serrate or Toothed - Having sharp, saw-like teeth
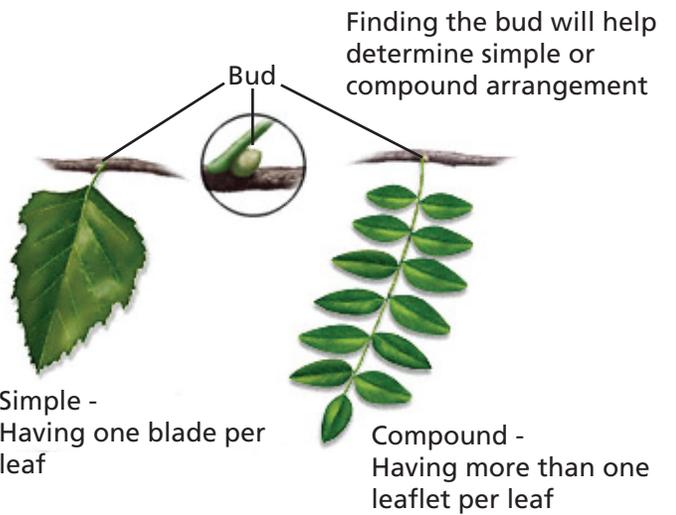
Leaf Arrangement

Alternate - Leaves are attached alternately along the stem

Opposite - Leaves are attached opposite each other on the stem

Whorled - 3 or more leaves are attached at the same point on the stem

Finding the bud will help determine simple or compound arrangement

Bud

Simple - Having one blade per leaf

Compound - Having more than one leaflet per leaf

Leaf Tips and Bases

Acuminate - long tapered point

Bristle Pointed

Rounded

Acute

Rounded

Cuneate - wedge-shaped

Inequalateral - Not same on both sides

Truncate - squared off

Leaf Shapes

Deltoid

Oval

Lanceolate

Star

To find more Leaf Characteristics, visit the Trees of Texas website's How to ID section: http://texastreeid.tamu.edu/content/howToID/

★ TREE TRAILS ★