



TREE TRAILS

1-2
★ SECONDARY ★

★ 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 and Objectives

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

Objectives: Students will

1. Choose a method to identify trees, determine the tree species of each tree, and enter the identification of their trees on the Tree Trail website.
2. Describe how the tree identification process develops observation skills basic to the scientific process.

Materials

General

- Tablet(s) or computer(s) with internet access
- Projector and screen
- GPS unit or phone/tablet with location application
- White board or chart paper and markers
- Tree Trails Portfolio, Student Learning Log/Journal

Handouts

- Tree Trails Data Sheet
- Getting Started on Leaf Characteristics
- Dichotomous Key Practice Activity

Activity Materials

- Variety of leaves to use for demonstration
- Plastic closure bags and markers (one bag and marker for each tree trail group)
- (Optional) Cameras or camera phones

Time and Internet Links

Instructional Time: 2-3 sessions, 45 minutes each

- Instructional Strategies, Think, Pair, Share, Venn Diagram
<http://schools.spsd.sk.ca/curriculum/instructionalstrategies/>
- Poem
<https://www.poetryfoundation.org/poetrymagazine/poems/detail/33182#poem>
- Trees of Texas, How to ID
<http://texasreeid.tamu.edu/content/howToID/>
- Trees of Texas, ID by Leaf
<http://http://texasreeid.tamu.edu/content/idByLeaf/>
- Trees of Texas, Leaf Collecting & Safety
<http://texasreeid.tamu.edu/content/leafCollectingSafety/>
- Tree Trails
www.treetrails.org



Instructional Procedures

I. Engage/Excite

1. Move students into their Tree Trail groups and have them choose a subject and write its description: a favorite personality, car, dress, animal, pet, etc. Ask the groups to keep the subject of their description a secret and exchange it with another group. Each group receiving the written descriptions should draw a picture of that description. Next, ask each group to return the drawing and its description to the groups who wrote it. Have the groups discuss what words helped with drawing. Let students determine what other words would have helped create a more complete picture.
2. Project the poem: "Learning the Trees" by Howard Nemerov. Have students follow along on their computers/laptops. Ask what the author meant when he referred to the "language of trees" used in this poem. Students should open their computers/tablets and go to the How to ID trees section to explore the vernacular of foresters.

II. Explore

1. Conduct a discussion about how foresters use words to create images of trees with vocabulary. Ask how and why scientists must use exact, accurate, specific language and images to identify all living and non-living things. Discuss how the observation skills used to identify trees applies to other scientific investigations. Identification is a first step in the scientific method and is used for discussing and learning about and protecting our world.
2. Continue the discussion by asking what traits they think foresters observe to identify trees. List what they *Know* on a chart/whiteboard or have them add to their Learning Logs.
3. Move students into their Tree Trails groups and to complete the Dichotomous Key Practice Activity. Provide each student with the Getting Started on Leaf Characteristics handout to use as a reference and keep in their Portfolio.

III. Explain

1. Project Trees of Texas How to ID section and/or have students follow on their computers/tablets. Lead students to observe the different identification techniques and all the other information available about identifying trees. Divide the class into three groups to read and report on Classification/Nomenclature, Identification Techniques and Leaves (not arrangement and other information about leaves). Provide chart paper and markers for each group. Each group should



III. Explain continued

choose a recorder and spokesperson and present their findings to the class.

2. Regroup students into their Tree Trail groups and have them use their computers/tablets and go to the next section of Trees of Texas and choose ID by Leaf.

Teacher Tip: Students 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. The dictionary is also valuable for tree identification.

3. Exhibit a variety of leaves. Ask students to watch as you or student volunteers demonstrate how to determine identification using the leaf characteristics: leaf apexes and bases (heart shaped, rounded, tapered), leaf margins (serrated, lobed), leaf textures (hairy, smooth, thick, thin, rough, waxy), leaf structure (simple, compound) and leaf arrangements (opposite, alternate, whorled).
4. (Optional) Next let the students practice tree identification with real leaves by giving each group one or two leaf samples. Have each group create a list of characteristics and label a leaf sketch. Then identify the tree that matches the practice leaf characteristics using the Trees of Texas ID by Leaf key.

Teacher Tip: Instead of using real leaves, demonstrate how to use the Trees of Texas ID by Leaf key by using the samples from the Dichotomous Key Practice Activity. This can show how using a larger key becomes more complicated and that recognizing and knowing leaf characteristics is important.

5. Next, discuss the need to develop a safety plan before collecting leaves from their tree trail trees. Have students go to the Trees of Texas Leaf Collecting & Safety section. Have students read the safety section and discuss cautions to take while collecting leaves. Develop a Safety Plan before going outside to collect, photograph and study leaves. Post the Safety Plan.

IV. Extend/Elaborate

1. Move the students into their Tree Trail groups. Provide each group with plastic closure bags and a marker, one per tree, to collect leaves from each of their trees. Instruct each pair to label the bags with their Group Name and the tree number/order on the trail. Go outside and collect their tree's leaves and/or photograph them. Remind the students to collect leaves from the ground and on a small branch if possible.

Teacher Tip: If necessary, get permission to collect samples from the trees particularly if it is a park.

2. When the students return, have each group use a laptop or tablet and go to the Trees of Texas ID by Leaf section to determine the identification of their trees. Once each group has reviewed the information and verified their tree identification, they should write the common and scientific name on the collection bags.



IV. Extend/Elaborate continued

Another online tool for tree identification is the National Arbor Day Foundation What Tree is That?

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 scale like leaves.

3. Allow each group to display their leaves and photos with their collection bags to the whole class. After they have shared their trees, have them list the common name of trees on a whiteboard or chart. Next mark a tally for the 1st time the tree is identified. Then each student should enter the tree species in the Tree Name column their Tree Trail Data Sheet. The next group shares their trees and lists their trees with a tally mark for each new tree and a second tally for a tree that has already been listed. Then each student completes their Tree Trail Data Sheet name column. Continue until all groups have shared and listed their trees. Each group should go to their laptop to create a Bar Graph to chart their trees, showing the diversity of trees on their trail.
4. Project the Tree Trails mapping application. Demonstrate how to enter the tree name on the class tree trail and then have each group enter their tree name. Once all the tree species are entered, select the green trail line to redefine the program for the computer. The Top 10 Most Occurring Species graph below the map will repopulate showing their Tree Trail data. Have students compare to the graph they created.

V. Evaluate

1. Have each tree trail group create a dichotomous key for all the trail trees using leaf characteristics. Students would decide what characteristics to use at each level of the key and include enough levels to be able to identify to their individual tree species. Depending on the number of different trees, the key could end up with three levels or many more. Have students compare how the different groups accomplished the key. Then have the class work together to create one class key. After creating the key, have another class use it to identify the Tree Trail trees. Publish a print copy of the key or add a digital version to your school website.
2. Have students write, in their Learning Logs, a short list of ways: a) identification is an important scientific process and b) how the identification process contributes to their overall knowledge. Ask students to share in Think, Pair, Share groups of four. They may add to their lists new ideas they *Learned* during the tree identification activities.

VI. Extra Mileage/Attention

Extra Mileage: Have each Tree Trail group create a skit, video, or compose a poem about their tree's leaves - "The Road My Leaf Travels" - preferably sitting outside under their trail trees. This may be



VI. Extra Mileage/Attention continued

a group or individual project. Encourage them to use words that create imagery, feelings and distinguishes their tree. If they choose a poem, they may use different poem techniques like alliteration, onomatopoeia, Haiku, free verse, etc.

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

Tree Trails curriculum was developed by Texas A&M Forest Service in cooperation with Texas Urban Forestry Council and was supported by grants from the USDA Forest Service and Keep America Beautiful.

