Tree Identification

Program Purpose:
The purpose of this program is to introduce students to characteristics of trees and different techniques to identify them, as well as different uses of different trees and the importance of identifying them.

Length of Program: 1.5-2 hours

Objectives:
After the completion of all activities, students will be able to:

- Distinguish between a deciduous and a coniferous tree.
- Describe at least four characteristics used to identify trees.
- Use a dichotomous key to identify trees.
- Discuss the importance of learning to identify trees.
- Describe products derived from at least three native Wisconsin tree species.

Wisconsin Standards:
F.8.1 Understand the structure and function of cells, organs, tissues, organ systems, and whole organisms
C.8.1 Identify questions they can investigate using resources and equipment they have available
C.8.3 Design and safely conduct investigations that provide reliable quantitative or qualitative data, as appropriate, to answer their questions
C.8.4 Use inferences to help decide possible results of their investigations, use observations to check their inferences

Preparation:
Review the lesson procedure and any background information as needed. Grab the Tree ID tub and sample branches. Decide which trees on the course will be assigned to students and make sure that all the tree number signs are visible and on appropriate trees. Approximate time needed for preparation is 20 minutes.

Basic Outline:
I. Introduction (5 minutes)
II. Characteristics of a tree (15 minutes)
III. Differences between a deciduous and coniferous tree (20 minutes)
IV. Dichotomous key explanation and practice samples (20 minutes)
V. Tree I.D. Route (5 minutes)
VI. Tree I.D. Course (30 minutes)
VII. Answers (10 minutes)
VIII. Conclusion (10 minutes)

Introduction:
Ask the students to say their first name, and one way they've used trees today, either directly or indirectly (paper, beds, homes, toothpaste, etc.). You should not have anyone repeat answers. This is a good way to introduce the topic and get familiar with the student's names. Trees are vital to our everyday lifestyle. Ask why it may be important to identify trees, and what jobs need to have knowledge of tree identification.

Characteristics of a Tree:
Have the students brainstorm characteristics that can be used to identify a tree. Record answers on the board. When the students have exhausted all of their ideas, add any characteristics that were missed that you feel are important. Point out any examples of the characteristics that you have on hand. For example, if a student suggests bark as a tree characteristic you could show a sample of birch bark as a tree that is easily identified by its bark.

Differences between a Deciduous Tree and a Coniferous Tree:
Draw the two kinds of trees on the board, have the students tell you what the two kinds are, write these names next to the correct tree. Then have the students brainstorm some differences between the trees (needles vs. broad leaves, cones vs. samaras, etc.), make a list under each tree to compare the differences.

Using a Dichotomous Key:
Explain to the kids that they will be using a special tool called a dichotomous key to identify trees. Ask the students what the prefix "di" means (two—you can just explain this to the students if younger than 5th grade). How many choices do they think the dichotomous key will give them (two)?

To show the students how a dichotomous key works, you'll "key" out some family pets using the family pet key. Distribute one family pet key to each student (or you can direct them to work in pairs). Another option, especially for older students or students who have worked with dichotomous keys before, is to skip straight to the full Tree ID.

Have the students look at a sample key. (Make sure to specify which one.) As they move their eyes to the end of the lines describing the appropriate choice, there will either be a name (indicating they have "keyed" out the unknown plant, animal, mushroom, et.), or a number (which tell them the next set of characteristics to look at.)

Emphasize that they need to read and consider BOTH questions before choosing the most correct one. Review the procedure, making sure everyone understands. Practice keying out 2 or 3 examples.

Next, go through the tree keys and make sure that the students understand all the words or terms used. You may want to point out a few of the terms you anticipate the students having trouble comprehending. After the students have been introduced to a dichotomous key and how it is used, give them time in the classroom to practice.

Tree ID Course

Divide the students into small groups, two or three students per group works best. Give each group an ID key clipboard, pencil and blank answer sheet. Give them instructions on using the tree ID key and that they are to proceed to the next tree in numbered order when they have come up with an answer for the tree they are currently working on.

Take the group to the bottom of the cabin hill stairs. Orient them to the course so they have an idea of how the tree map relates to actual tree position. Send out individual groups to start the course. Space them out so that each group has one tree number in between (send the first group to start at tree #1, the second to start at tree #3, the third to start at tree #5, etc.) to reduce bunching and any temptation to cheat. Ask any adults in the group to wander around the course helping the students.

Once they have completed the first half of the course, walk to the Ranger Mac benches for the second half of the course.

Conclusion

When every group is finished or you are nearly out of time gather all the small groups back together. Go over the answers and field any questions they may have. Correct answers aren't nearly as important as understanding. Take your group back to your starting location to conclude class and help you in carrying the many clipboards. Conclude class with processing questions or activities. Some examples:

- Why is it important to know how to use identification keys?
- What other types of ID keys could they use? Show them some examples.
- What did you notice was different between the two forest areas that we explored today?
- How do trees impact the ecosystem as a whole?

Vocabulary:

Alternate branching – A branching pattern where branches are arranged singly at intervals along with the main branch (also refers to leaf and bud arrangement).

Compound leaf – A leaf blade that is divided into separate parts known as leaflets.

Conifer (Coniferous) – A tree that bears its seeds in cones and has needle-like leaves.

Deciduous – A tree that annually sheds all of its leaves; most broadleaf trees are deciduous. A few conifers, such as the tamarack are also deciduous.

Dichotomous key – A tool to help identify an object such as a tree using the process of elimination. The key consists of pairs of choices of differing characteristics in sequence so that ultimately each object is distinguished from all the others.

Hardwood – A term commonly given to a deciduous or broadleaf tree or the wood from such trees.

Leaf scar – The scar left on a twig when the leaf falls off.

Needle bundle – When the needles on a tree are clumped in bundles instead of singly attached to the twig. This is found in pine trees.

Needle stem – The stem that attaches the needle to the twig of the tree; found on hemlock needles.

Opposite branching – A branching pattern where branches occur in opposing pairs along the main branch (also refers to leaf and bud arrangement).

Palmate leaf – A leaf where the principle veins radiate from a central point.

Scaly needles – Needles that look like overlapping scales; found on cedar trees.

Simple leaf – A single leaf blade that is attached to a woody twig by its stem.

Softwood – A term commonly given to conifer trees; interestingly, the wood on many conifers is harder than that of some so-called hardwood trees.

Spur branch – A branch on which the leaves or needles are densely clustered. The structure where the needles are found on a tamarack.

Terminal buds – Buds that are located at the end of the branch.

Family Pet Key

1a. animal has fur or feathers………….. go to 2
1b. animal has no fur or feathers………. go to 5

2a. animal has fur……………………… go to 3
2b. animal has feathers………………… bird

3a. animal is less than 6 inches long…… hamster
3b. animal is longer than 6 inches……… go to 4

4a. animal purrs………………………… cat
4b. animal barks………………………… dog

5a. animal has no legs and no shell…….. snake
5b. animal has legs and a shell………… turtle

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