Classification of Trees and Leaves

Investigative Question: How do scientists classify trees? What are examples of native trees in Virginia?

Goal: Students will use tools and observations to identify trees.

Objectives
Knowledge: Students learn that different trees have different forms and structures that help them meet life needs.
Skills: Students learn how to use a Dichotomous Key to identify leaves and trees. Students practice using classification techniques and develop skill in describing tree and leaf characteristics.
Values: Students appreciate the diversity of trees in Virginia.

Virginia SOL: Science (2018): 3.1 Math (2016): 3.1

Materials
> -Journal pages: a single sheet of 8 ½ x 11 paper folded in half to make four writing surfaces. Page "2" (first inside surface when folded) should have a 1cm grid printed on it.
> -Flags
> -Clipboards
> - Pencils
> -Crayons

Special Safety

Instructional Strategy

Setup: Mark trees with flags before the programs.

Journal (folded piece of paper like a book)
1. **Page 1 (cover of a book)** Ask students to draw a leaf and tree from memory (including drawing the leaf on the tree.)
   - Leave this very open ended to determine what students can draw from memory. Try not to allow them to look at surrounding leaves.
2. **Page 2** Find a leaf under a tree and make a rubbing on the graph paper (1cm squares) section of their journal.
   - Ask students to select a leaf to observe.
   - Model use of hand lenses, then distribute these among students, then students make observations with their lens.
   - Have the student share and expand upon some of their observations. Ask students why some scientists may want to make leaf rubbings? Why do scientists want to know the differences between two or more trees?
     - Try to get the students to conclude that trees require different things to survive. Some common needs are sunlight, water, soil nutrients etc.
     - When students observe leaves, suggest they compare and contrast the leaves using descriptive words (adjectives) as they observe. (Think shape, size, Deciduous vs. Conifer, texture etc.)
   - Place the leaf under the piece of paper and use crayons to lightly rub over the leaf.
   - Write down observations that have changed from when they were observing before and after the rubbing. What did we notice before we made the rubbing? After? What do we conclude? Why might a scientist want to look closely at a leaf?

3. **Page 3** Identify leaf and tree using a simplified dichotomous key
    - Explain why scientists identify and classify trees. Explain how scientists identify and classify.
        - Demonstrate how to use a dichotomous key by keying out a sample leaf.
    - Use rubbings and leaf sample to help identify/classify tree.
    - Have student explore the trees in the picnic area and see if they can identify a leaf that is similar to their own leaf.
4. **Page 4** Instruct students to draw the tree from which the student's leaf originated.
    - Ask students how scientist can quickly and easily record the things they see in their field notes. Have them think back to their observations, what kind of details did they note?
        - Remind students it is not about the best drawing. It is about accurately taking down detailed information to help identify/classify for further use.
        - Use shapes to help start the outline/framework of a drawing a tree.
        - Ask students why different trees need different leaves?
        - Why does the shape of the leaf matter?
    - Make a new drawing of leaf and tree which they identified/classified.
    - Have students compare the first leaf to their new identified leaf and tree. What is similar, what is different?

Extensions:

- Have students estimate the number of leaves on the tree.
- Students can take the rubbings that are located on the graph paper to use to find area/perimeter and fraction studies in math.
- Have laminated journals or a laminated page in journal for different observations or for any dry erase activities.

BLANDY FARM PICNIC GROVE TREE ID
Does the leaf's edge have small teeth?

YES → Is the leaf's shape oval or a star?

- **OVAL** → **CHERRY TREE LEAF**

- **STAR** → **SWEET GUM LEAF**

NO → Does the leaf have a smooth edge or does it have lobes?

- **Smooth** → Is the leaf shaped like a heart?
  - **YES** → **RED BUD LEAF**

  - **NO** → **DOGWOOD**

- **LOBES** → Are the leaf lobes pointy or rounded?
  - **POINTY** → **RED OAK**

  - **ROUND** → **WHITE OAK**

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