



Observation Exercises for Everyone

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~ Leaf Comparison – Part A ~

(Best as an activity for late spring or early fall classes.)

Purpose: This exercise provides an opportunity to compare simple, familiar objects from nature. The challenge in using familiar objects is to overcome the temptation to draw what one *knows*, not what one sees. The point of this exercise is to record observations through drawing and taking careful notes. Taking “field notes” is a useful additional way to record valuable data about your specimens. Together, these sketches and field notes should provide enough good information to identify the tree from which the specimen was collected.

Trees make a good leaf “specimen” source. If there are no trees readily available, try shrubs, or any other leafy plant with medium-to-large leaves. You might suggest that participants treat each leaf as a “new species,” something they’ve never seen before. (Even if your leaf pair is from the same species of tree or shrub, the details of each leaf will differ, even if it is from the same plant!)

Crosscutting Concepts: Pattern; Scale, Proportion, and Quantity (differences in shape, size, color); Structure and Function (leaf characteristics from different plant sources)

Techniques and Application: Shape, form, color, texture, value, pattern, size, proportion

If you want to continue to **Part B**, try selecting leaves from hardwood trees such as oak, maple, cherry, locust, or ash. **Part B** will test the thoroughness and accuracy of the students’ drawings and field notes made in this part of the exercise.

In the classroom:

Materials:

1. Gather leaves from trees in your neighborhood. You can collect leaves from different tree

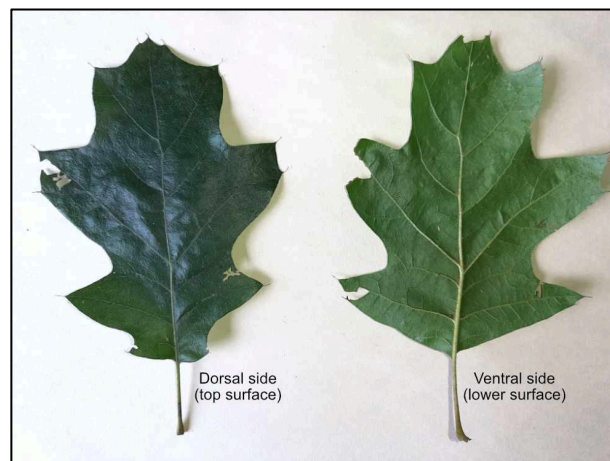
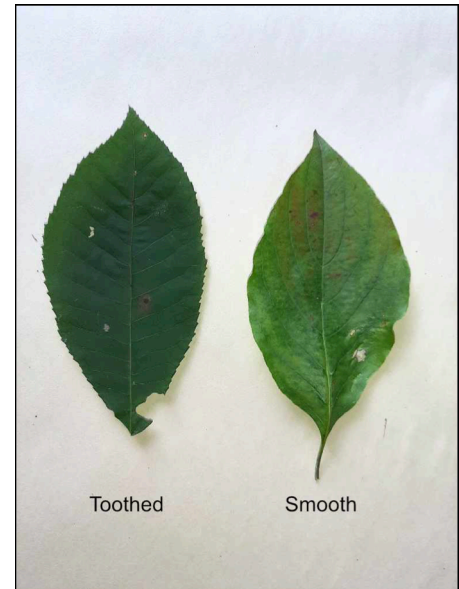
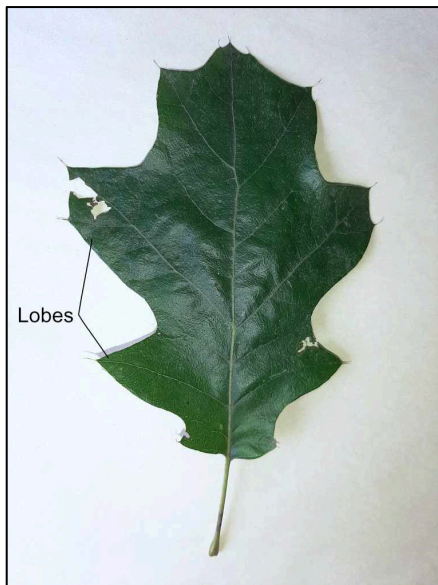
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species, for instance, a Norway maple and a sugar maple. Have enough leaves so that each student will ultimately have 2 leaves, each from a different species of tree.

2. Sheets of paper for drawing
3. Pencils, erasers
4. A timer

Method:

1. Hand out to each student 2 leaves, each from a different tree or shrub species. (Consider choosing a couple of students to whom you hand out “trick” pairs of leaves using 2 leaves from the same tree!)
2. Have the students draw their 2 leaf specimens. This is not about making beautiful works of art. Drawing in this case is a method for recording *accurate* visual information. Also instruct them to write down detailed “field” notes, describing any features they notice.



Note: You may want to prompt your students by asking them things like:

- a. Do the leaves have hairs?
 - b. Does each leaf have a different number of lobes? (Leaves may be divided into deeply indented margins such as maples and most oaks; or leaves may be simple [no lobes] such as those of dogwoods, beech trees, and many fruit trees.)
 - c. Are the leaves toothed? Or smooth?
 - d. Is there any variation in color? (Compare the dorsal [upper] and ventral [lower] leaf surfaces.)
 - e. Is there any difference in texture between leaf's dorsal and ventral surfaces?
 - f. How is the venation (vein pattern) similar or different between the 2 leaf specimens?
3. Have them do this for about 10 minutes.

Questions:

1. Do some students draw what they *think* a leaf looks like, rather than observing the actual leaves they've been given?
2. Did the students pay attention to the differences in the number or pattern of the veins, the number of lobes, variation in color, hairs, and any other details?
3. How many students counted the number of lobes on each leaf?
4. How many noticed any differences between the top surface of the leaf (dorsal) and the "underside" of the leaf (ventral)?

~ Leaf Comparison Plus – Part B ~

Purpose: This exercise can add a research experience to **Part A** above. For an extra challenge, take away the leaf specimens you handed out for in **Part A** and instruct the participants to use only their drawings and field notes as reference.

Materials: Have several tree identification guides available for reference

Question: Do either of your 2 leaf specimens belong to a tree whose wood makes good furniture? (e.g., hardwoods like oak, maple, cherry, locust, or ash)

Online:

To prepare for exercise **Part A**, assign students in advance of class time to gather their own leaf specimens.

Method:

1. Have students hold up their 2 leaves to the camera to show their "specimens" to the class so that each student in class can see and compare with their own leaves.

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2. Consider assigning research online (or using available books at home) to identify to what tree each of their leaves belongs.
3. For younger elementary students learning about shapes, consider talking about their leaves.
4. Comparing different leaves will help them learn that different plants in nature have different leaf shapes.

Questions:

1. (Younger students) Which leaf was the most interesting to look at and to draw? Why?
2. If one leaf is bigger than the other, does that mean that the tree it came from is bigger than the other trees?
3. What color differences, if any, did students notice between the dorsal (top) and ventral (lower) surfaces of their leaves? What color differences did students notice between leaf specimens? Did they make note of this feature in their field notes?

