

Chippewa Valley Montessori Lesson Plan

Standard: A.4.4, C.4.1, D.4.2, C.8.4
Level: E1
Subject Area: Science
Lesson title: My Leaf Key
Lesson created by: Karen Bejin

Overview of lesson:

Students collect leaves in either the spring or fall, press them, then develop a dichotomous key according to characteristics they observe on the leaves. Students share their completed key with the rest of the class, explaining their reasoning for selecting categories on the key. Keys can then be displayed so students can view the variety of methods used for development.

Materials and Resources Needed:

Leaves, collected by students or the teacher, large pieces of paper, pencils, colored pencils, or crayons. A sample key, prepared in advance. Other materials such as flowers, seeds, fruits or vegetables, objects that fasten, sports equipment, etc. can also be used to sort for a key.

Details of the Lesson:

Getting Started:

Either the teacher, the students, or both should collect leaves. If students are helping with the collection send a note home, so parents can better help with the project. If possible, 6 to 8 leaves of each kind collected is a good idea so they can be shared with others. It is best for this project to use leaves from trees instead of leaves from shrubs or flowers. As they collect, the leaves should be placed in an old phone book or magazine to protect them and facilitate pressing them. At home or at school, children can place books or other heavy objects on the phone books to flatten the leaves. This is also a good way to transport the leaves to the classroom.

Next Step:

Give each group a set of 8 different kinds of leaves from the leaves that were collected. Students can work alone, in pairs, or in small groups to create the keys.

Explain to the whole group that scientists look at different properties of the leaves and other parts of a tree when they are naming a tree or sorting it into a group. Today they will act like scientists as they look for characteristics and create a key of their own. Ask the students to look at their leaves and tell some characteristics. Make a list of the characteristics they name, which may include shapes, colors, the edges go in and out or are pointy, etc. Scientists and

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students use these characteristics to divide leaves into smaller and smaller groups, until finally each leaf is in its own group and can be named.

Have the students fold the drawing paper in half the long way, and then in half again to make fourths. Use a ruler to draw lines along the folds. The top section does not get divided, the second section is divided in half, the third section is divided into fourths, and the bottom section is divided into eighths.

In the top section students will draw all of the leaves. If they can, they should label this section, "All the Leaves." Then they should think of two categories for the leaves so they can divide the leaves into 2 groups of 4 leaves each (in a real dichotomous key it might not be divided evenly, but this should give students an idea of how to make a key without being too confusing.) Groups might be "Leaves that are rounded" and "Leaves that are pointy," or whatever the students choose. A good idea is to allow them to sort the leaves on a table before they sort them on paper. When they know the leaves for each group for the second section, they should draw them again in the correct boxes. For the third section each box from the second row is divided into 2 groups, and for the bottom section, when the third section is divided, there will be one leaf in a box. The example below just uses words. Some students may just use pictures, some words, and some may use both.

All My Leaves							
Leaves that are flat				Leaves that are in needles			
Leaves that are rounded		Leaves that are pointy		More than one needle		Single needles	
Many rounded parts	Less than 3 rounded parts	Small points like teeth	A few large pointed sides	5 needles	2 needles	Rounded needle	Flat needle

Assessment:

To assess student understanding, have a "walk-around" where the whole group goes to each child or small group, who gives a presentation telling the characteristics he/she/they used to make the key and divide the leaves. A student who is not a presenter should be able to take a leaf and follow the key to the bottom.

Taking it further:

For students who finish early or for the entire group, use tree books (some are in the form of a dichotomous key) to find the names of the leaves. Or, have keys for students to look through; they are available for trees, flowers, rocks, etc. A variety of objects found in the home, school, etc. can be used in place of the natural items.