LESSON PLAN: PLANT IDENTIFICATION PART 1- LEAF IDENTIFICATION ACTIVITY

Adapted from http://www.schooltocareer.tv/teachers/Science/leaf-identify.html by Mary Garvilles and Haldre Rogers

Lesson overview:

This is a hands-on activity in which the students will identify trees based on leaf structure and leaf arrangement.

Objectives:

1. Understand how leaf arrangement and structure can be used for tree identification.
2. Use observation and communication skills to identify leaf structure and arrangement.
3. Allow students to have fun using their bodies to "act out" the positions of various leaf arrangements and structures to enhance their cognitive recall of these concepts.

Time/duration: 50 min-1 hr

Materials needed:

1. A station set up with a variety of leaf samples from forest plants/trees
    a. *Note to teacher: to collect these, cut branches (about 10 leaves/branch) from as many different tree species as you can find.*
2. Leaf identification worksheet
3. Pencil/Pen
4. Plant books of the Mariana Islands or any limestone forest field guide

Background:

The teacher will need basic understanding of leaf shapes and plant identification. There are many online resources for this information.

Lesson Procedure:

1. *Anticipatory set:* Divide students into pairs and give them two different types of leaves. Have students describe the leaves verbally to each other. Have them record their observations on paper (try not to give them as much details). Have them present their findings to the class and create a chart as a class on how to describe leaf structures and arrangements.
2. *Teach* the following concepts:
    a. difference between alternate and opposite leaves,
    b. difference between simple and compound leaves
    c. difference between entire, serrated and lobed margins
    d. how to identify whorled leaf structure
3. Now the *kinetic* part of the lesson begins. Instruct the students to think of their arms as the petioles (leaf stems) and their bodies as the main twig. They must act out leaf arrangements and types. Alternatively, the instructor can position themselves in "opposite and alternate" or “simple” and “compound” positions and have the

students shout out the correct response. This helps them to process the information both ways from term to concept and from concept to term.

a. Arrangement: Alternate vs. opposite
    i. Ask them to first imagine and then show what a tree with opposite leaves would look like (arms thrust straight out from shoulders).
    ii. Next ask for a tree with alternate leaf arrangement. (One arm down closer to the waist and one near the shoulder).
b. Type: Simple vs compound
    i. Simple leaves have only one leaflet per petiole so we signify this by pointing (1) with the index fingers.
    ii. Compound leaves are shown with all of the fingers and thumb outstretched in an open hand since there are multiple leaflets per petiole making up a compound leaf.
c. Leaf margins: Entire, serrated and lobed
    i. Ask students to demonstrate entire (smooth), serrated (jagged) and lobed leaf margins with their hands
d. Whorled leaves
    i. For the grand finale teach them about whorled leaves (both arms outstretched and tongue sticking out).

4. *Hands-on:* Have students go through the Plant Lab station and record their answers on the leaf identification worksheet.
5. To test student's ability to identify species using leaf types, now they must match up species name with leaf arrangement and type
    i. Call out a plant/tree species from the samples you brought in to school and see if they can quickly get into the correct position for either leaf arrangement or leaf type.
    ii. Then, combine the two concepts by calling out plant/tree species and seeing how quickly students can get both the leaf arrangement and the leaf type (simple or compound) correct.

Evaluation:

1. Formative assessments: There will be immediate feedback as to the level of understanding of these basic concepts as the instructor calls out the various families of species names and watches the students put their arms and hands in the correct positions.
2. Summative assessment: A formal testing of the concepts learned on leaf structure and arrangement, as well as tree identification.