

Project BudBurst

Classroom Activity
www.budburst.org

Classroom Activity: Using a Key to Classify Plants

Time: One to two 45-minute class periods

Level: Grades 9-12

Overview: Students learn how dichotomous keys work by classifying their classmates. Then students go outside to observe plants and make a dichotomous key for 5-10 plants and test their keys with other students.

Materials:

- Blank paper
- Cardboard or clip board (one per student) or pair of students
- Pens or pencils
- Rulers
- Magnifying lenses

Education Standards: Available in the *Teacher Implementation Guide (Grades 9-12)*

Preparation

Identify an area to observe wildflowers, grasses, shrubs, and trees. If this isn't possible, collect plant samples or provide photographs of plants for students to use in this activity.

Introduction

Making a dichotomous key can be easily done for a group of living or nonliving things that you want to organize by physical traits. This is a good method for helping students make observations and helping them understand how some physical traits are important for learning how to classify things. When making a key, start by observing the group of things to be used in the key. Next, list the most general traits that can be used to divide the organisms into categories

Activity

1. Before creating a dichotomous key for plants, instruct students to make a key for their fellow classmates using various human or non-human characteristics. Some of these characteristics include gender, hair color, height, type of clothing, whether or not they wear glasses, etc. Have the students list the distinguishing features along the top of a table. Number the specimens and list them on the rows of the table. Fill in the blanks of the table by closely observing the specimens, and use the table to construct a key. See Figures 1 and 2 for an example of a table and key.
2. Once students are familiar with the mechanics of developing a key to their fellow classmates, they can now attempt to construct a key to other objects or organisms.
3. Take students outside to an area that has different types of plants. Instruct students to work in pairs. They need to find 5-10 plants (flowers, grasses, shrubs, or trees) that have some similarities, list the distinguishing traits for each plant in a table, and then design a key for the plants. If it isn't possible to do this activity outdoor, provide plants or photographs of plants the students can use.
4. Working in pairs, students can test the effectiveness of their key by giving it to another group in the class and see if they can follow through with the proper identification of the plants.

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Name	Gender (M/F)	Hair Color	Glasses (Y/N)	Pants/Shorts
Susan	Female	Red	Yes	Pants
Anna	Female	Blonde	No	Shorts
Emma	Female	Brown	Yes	Pants
Sylvia	Female	Brown	No	Pants
Max	Male	Brown	No	Pants
James	Male	Black	No	Shorts
Julio	Male	Brown	No	Shorts

Figure 1: This table lists identifying characteristics of seven students.

1	Sex female	Go to number 2
	Sex male	Go to number 5
2	Hair color red	Susan
	Hair color brown or blonde	Go to number 3
3	Hair color blonde	Anna
	Hair color brown	Go to number 4
4	Glasses worn	Emma
	Glasses not worn	Sylvia
5	Wearing pants	Max
	Wearing shorts	Go to number 6
6	Hair color black	James
	Hair color brown	Julio

Figure 2: This table shows a dichotomous key made from the observations listed in Figure 1.

Background Information

One way of identifying unknown plants is by using a dichotomous key. Dichotomous keys are designed to assist with the identification of all types of living things from plants to microbes. The word dichotomous comes from dichotomy meaning branching, contrasting or opposite ideas. A dichotomous key gives a series of steps with a set of choices, called characters, which are opposite or contrasting in nature that are initially very general and become more specific as one proceeds through the steps. By analyzing the physical characteristics of the object/organism in question and using the steps and choices given in the key, the observer can identify an object/organism based upon established traits.

Source: Adapted from the Chicago Botanic Garden's *Project BudBurst Activity Guide* (<http://www.chicago-botanic.org/>) and the American Museum of Natural History's *Hall of Biodiversity Educator's Guide: Dichotomous Keys* (<http://www.amnh.org>)

This teacher resource was made possible, in part, by support from the National Geographic Education Foundation.

