Botany Bouquet

Activity Overview:
A warm-up activity to introduce various plant species from the same or different ecosystems which encourage observational, organizational, and taxonomic skills.

Objectives: Students will
- Use their observational skills
- Learn how plants differ structurally from one another
- Increase their understanding of plant diversity

Subjects Covered:
Science and Language Arts

Grades: 1 through 12

Activity Time: 30-45 minutes

Season: Any

Materials:
Sample plant cuttings from the same (or different ecosystems) that are representative of the native garden(s) you have planted (or plan to plant) on your school grounds.

State Standards:
Science:
People in science (B.4.2)
Changes in science concepts (B.8.2)
How science is shared (B.8.5)
Cultural & individual contributions to science (B.12.1)
Major themes & progress (B.12.3)
Language Arts:
Orally communicate (C.4.1, 8.1, 12.1)
Listen & comprehend (C.4.2, 8.2, 12.2)
Participate in discussion (C.4.3, 8.3, 12.3)
Use vocabulary (D.4.1, 8.1, 12.1)
Interpret uses of language (D.8.2, 12.2)
Conduct then communicate research (F.4.1, 8.1, 12.1)

Background

There are a variety of languages spoken around the world. In North America, you can find many different languages, ranging from English, Hmong, and French to Spanish, German, and indigenous languages such as Cayuga and Oneida, among others.

Scientific names are basically another language system, which uses Latin as the root source. Latin, which is often a combination of Latin and Greek, was historically the language used by educated people and is the reason why Latin was chosen to give scientific names to plants and animals.

For a long time scientists were confronted with the challenge that one plant or animal species could have many different names, depending on what language was spoken. This challenge created all sorts of language barriers when scientists from different parts of the world wanted to talk about their research. In 1758, a Swedish biologist, Carl Linnaeus, decided everyone should use the same name to describe a given species and proposed a universal naming system, now known as "binomial nomenclature" (bi = two, nomen = name, calo = call, so it translates as "two-name name-calling"). This naming system gives each species a surname and a personal name, just like people in North America have. If you are called Pat Jones then Jones is your surname, and Pat is your personal name. Scientists call the equivalent of a person's last name the "genus" or "generic name." The genus always has a capital letter as the first letter. The equivalent of a person's first name is called the "specific name" and is written entirely in lower case letters. Unlike people's names in North America, the generic name comes first and the personal (specific) name is second in this binomial system. For example, the Latin name for the tree species, red maple, is *Acer rubrum*. *Acer* is the Genus name. There are at least another dozen different maples found in North America that have the same genus name. This is just like you and your siblings, all of whom have the same last name. The species name *rubrum* is similar to your first name and tells you it is a red maple.

These Latin names have other meanings, too. For instance, "*rubrum*" means "red" in Latin, and red is generally the color red maple leaves turn in the fall season. Sometimes the scientific name is based on people's names, such as *Heuchera richardsonii*; *Heuchera* after Johann Heinrich von Heuchera, an early German medical botanist, and *richardsonii* after Sir John Richardson, a 19th century North American explorer. Some plants are given a name based on where the plant was first discovered, such as *Elymus virginicus*. *Virginicus* refers to the state of Virginia.

The following activity will help students understand the scientific naming process and familiarize them with the diversity and unique attributes of rain garden species they plant on their school grounds. Students will learn the variety of patterns and shapes of plant parts. The next step can be applying

names to what they observe in terms of plant structure (see Earth Partnership for Schools' activities, "Plant Families" and "Taxonomy and Field Guide Warm-up").

In addition, this activity is a good introduction to a plant unit, and/or it can be used as an "ice-breaker" among a group of students who do not know each other well. Likewise, this activity can sharpen participants' observation skills and build upon their creativity as they learn more about plant structure and diversity.

Activity Description

1. Prepare a bouquet of plant species, representing one or more ecosystems. The number of sample plants will depend on the size of the group and should be approximately a third to a quarter of the number in the group. For example, a group of 30 students will break into six groups of five, which will require five samples from six different plant species.
2. Have the bouquet well mixed and pass out one plant to each person.
3. Ask those who know names of the plants being passed out not to share that information until the end of the activity.
4. Allow group members to find others who have the same plant and then form a small group. If participants do not know one another, instruct them to introduce themselves to the other group members.
5. Ask groups to come up with a creative description of the plant based on their close observations that would help others identify that plant.
6. Then, ask them to come up with a creative name for their plant.
7. At this point, have representative(s) from each group present their plant's name and description.
8. Once a small group has shared their creative name and related plant description, ask the entire group if they know the common and scientific name of the plant. If the name is unknown, share common and Latin names and a further description (especially identifying ecological and human uses) of each plant.

Discussion

Ask group members why they think there are scientific names for plants, then review the history of why plants have scientific and common names. Have students visit the library to further research the plants used during this activity, the related habitat preferences, and human uses for the plants. Also, encourage them to expand on this activity to include different plants and animals that would be found in the habitat they are restoring on their school grounds.

Extensions

- Complete Earth Partnership for Schools activity, "Plant Families," to learn more about plant structure and identification.
- Collect other plant samples and complete this activity with additional plants representing either the same or a different ecosystem.
- Write a story that describes a plant and its characteristics and explains the related adaptations.

- Keep a phenology journal and record plant changes during different times of year (see Earth Partnership for Schools Activities, "Observations from a Single Spot").
- Create a phenology calendar that describes your plant observations throughout the year.
- Create a computer database to record seasonal observations of plants found in your school restoration site.

Additional Resources

- Densmore, F. (1974). How Indians use wild plants for food, medicine, and crafts. New York: Dover.
- Eggers, S. D. et al. (1997). Wetland plants and plant communities of Minnesota & Wisconsin. Second edition. St. Paul, Minn.: U.S. Army Corps of Engineers, St. Paul District.
- Foster, S. (1990). Field guide to medicinal plants: Eastern and central North America. Boston: Houghton Mifflin.
- Kindscher, K. (1992). Medicinal wild plants of the prairie: An ethnobotanical guide. Lawrence, KS: University Press of Kansas.
- Meeker, J.E., Elias, J.E., & Heim, J.A. (1993). Plants used by the Great Lakes Ojibwa. Odanah, WI: Great Lakes Indian Fish and Wildlife Commission.
- Newcomb, Lawrence. (1977). Newcomb's wildflower guide. Boston: Little, Brown & Co.
- Runkel, S.T. & Roosa, D. M. (1989). Wildflowers of the tallgrass prairie: the Upper Midwest. Ames, IA: Iowa State University Press.
- Stokes, Donald & Lillian. (1985). A guide to enjoying wildflowers. Boston: Little, Brown & Co.
- Harlow, W.M. (1957). Fruit key and twig key to trees and shrubs. New York: Dover.
- Wisconsin Department of Natural Resources. (1990). Forest trees of Wisconsin: How to know them. Madison: Bureau of Forestry (PUBL-FR-053 90REV)

Websites

- Vascular Plant Species of the Wisconsin State Herbarium: http://www.botany.wisc.edu/wisflora
- Basics of Tree ID: http://www.cnr.vt.edu/dendro/forsite/Idtree.htm

Assessments

- Name (common and scientific name) and describe at least two plant species.
- Write a short story describing the plant species used in this activity, the human uses of the plant (e.g., medicinal uses), and the root words of the plant's scientific name.
- Create a mobile with drawings illustrating various plants and their unique physical characteristics. Include the scientific and common names on the mobile.
- Research a plant species; describe its characteristics, the habitat where the species is most likely found, and common human uses. Make an oral report and conduct peer reviews.
- Develop a web page on the plant species using photos, drawings, and life history information.
- Students conduct research in their restoration site related to the plants identified and record observations for a specific time frame.

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