

Plants and Roots

by Mary Larson and Tami Morrison

Grade level 3 - 4

Time required

Experiment setup =
30 minutes

Several hours or overnight
for experiment to work
Observation and discussion
of results = 30 mins

Materials/Technology

Celery stalks
Food coloring
Clear plastic glasses
Knife
Science log/journal
Magnifying glasses

Summary

In this lesson, students will discuss the parts of the plant and perform an experiment in which they observe a plant's water transportation system. Students will become familiar with several local plants used for utilitarian purposes.

Objectives

The student will:

- 1) understand the plant transportation system of roots, stems and leaves.
- 2) become aware of how important plants are in the lives of many Indian peoples.

Montana Science standards addressed

- 1) Students design, conduct, evaluate and communicate scientific investigations.
- 2) Students demonstrate knowledge of characteristics, structures, and functions of living things, the process and diversity of life, and how living organisms interact with each other and their environment.
- 3) Students understand historical developments in science and technology.

Procedure

1. Review the parts of a plant. Remind students of the many sizes and shapes of stems. Ask students to give examples of different plants and describe their stems. For example, students might name tree trunks, bushes, flowers, beans, and/or vegetables.
2. Discuss the characteristics of stems. Stems are used to support a plant and for water transportation. Draw a diagram on the board to model the water transportation system and plant parts. Ask students to help label the parts.
3. Let students observe a celery stalk in small groups. Ask students to draw a diagram of their celery stalk and label the plant parts in their science log/journal.
4. Discuss the need for a water transportation system in plants. Explain the procedure and materials for the experiment to help students understand the water transportation system in celery stalks.
5. Instruct each small group to fill four glasses halfway with water. Add different colors of food coloring to each glass, trying to make a dark bold color.
6. Cut off approximately one inch of the celery stalk. Instruct students to examine and observe the bottom of the celery stem. Ask students to draw a quick sketch of the stem. "What do you think the tiny holes are used for?"
7. Instruct students to put one celery stalk into each glass. Ask students to record their predictions of what will happen in their science logs/journals.

8. Leave the celery stalks several hours or overnight. Observe the changes that take place. Cut the celery in half and observe the color inside the stalk.
9. Ask students to answer these questions in their journals:
 - How did the color move throughout the celery stalk?
 - Describe the water transportation system of plants.
 - What did you learn from this experiment?
10. As a whole class, discuss the observations and conclusions made.
11. Salish, Pend d'Oreille and Kootenai people have an extensive knowledge of the medicinal, nutritional and utilitarian value of trees and plants in the Northwest. A variety of trees were used for utilitarian items such as bows, arrows, lodge poles, canoes and baskets. The tuberous roots of bitterroot are used not only as an important food, but also as a medicine. The bulbous camas root is baked in an earthen oven with tree moss and has a delicious licorice like taste. Camas bulbs that were baked and dried have known to keep indefinitely. The seasonal round of plant gathering among the Salish begins with the Bitterroot feast in late April or early May. The bitterroot is gathered ceremonially and used for a community feast. Thanksgiving and prayers offered to insure a plentiful harvest of food and medicine plants for the upcoming season for the next generations. Native Americans are careful not to waste any part of the plants and trees in their areas. Show students examples of Native American pieces, such as bark baskets and canoes, as shown at the People's Center or at the Salish and Kootenai Culture Committees. Try to set up an educational visit with an elder or other knowledgeable tribal member.

Assessment

Evaluate students using class discussion and their answers to the above questions in their science logs/journals.

Further information

For further information about these lessons, contact Tami Morrison or Mary Larson via electronic mail at linderln@digisys.net.

References

Plants - Macmillan early science activities. (1991): Newbridge Communications, Inc.