



Stem Exploration

Goal

Teach students about the parts of plants and their functions and use the garden to teach a hands-on plant based activity.

Curriculum Alignment

Find a list of which Common Core State Standards and NC Essential Standards this lesson plan aligns with on the lesson plan page at www.growing-minds.org.

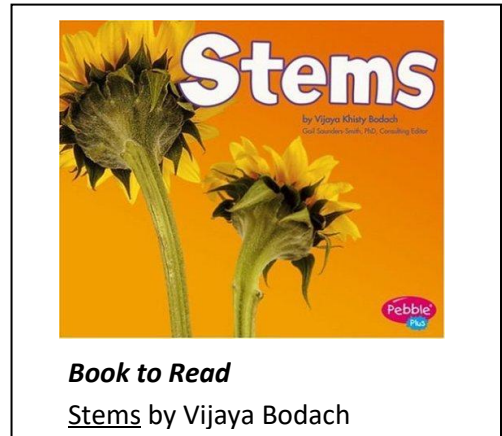
Materials

- Jars
- Celery stem, plastic straw, wooden dowel, carnation flower, carrot
- Food coloring
- Magnifying glasses
- Ruler

Activities

Read a Book

Read Stems by Vijaya Bodach. This simple but informative book about plant stems guides the reader through a comprehensive overlook of their function and importance in the lives of plants. It uses close-up photographs to illustrate examples of different types of stems, from tree trunks to celery stalks. Also included are a glossary and a diagram of the parts of an oak tree, which provide vocabulary words and additional information about plant parts.



Book to Read

Stems by Vijaya Bodach

Stem Exploration

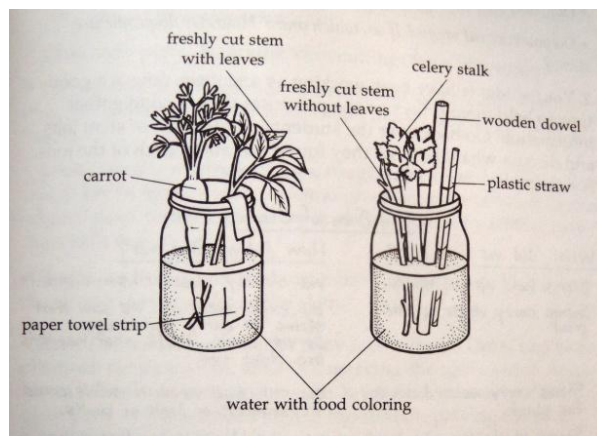
Just as people have different jobs to do in the community, each part of a plant has a different job to do to help the plant grow and stay healthy. Stems have several jobs, including transporting water from the soil to the rest of the plant. In this activity, students will put plant stems and other objects in water with food coloring and will observe how they absorb water by following the absorption of the color.

Steps:

1. **Have students generate a list of the possible functions (jobs) of stems.** Accept all ideas. For example: Teacher asks "What jobs does a plant stem have?" Students answer: Stems hold up the leaves. Stems carry water up the plant. Stems carry water down the plant. Stems help shade the plant so it doesn't get too hot. If students did not include that stems transport water, ask: If you water a thirsty plant (with wilted leaves) what happens to the plant? How do you think water starts in the roots and ends up in the leaves?

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2. **Show the students the jar and the various items you'll use for the experiment (celery, carrot, straw).** Add water and several drops of food coloring to each jar. Add the items to the jar, making sure their ends are fully submerged.
3. **Ask the students to predict how the colored water will affect the objects overnight.** Optional: Have students make drawings of the set-up, including the objects in the jars. Let the objects sit in the water overnight
4. **The next day, take the objects from the water and in small groups, ask the students to observe the changes.** Students will see whether the colored water traveled through or up the objects. They can use a ruler to measure how far up the object the color water traveled.
5. **Record the results of the project.** If the students made drawings of the object in the jar, ask them to use a colored pencil to record how the colored water traveled through the objects. **Make a bar graph to compare water movement in different objects.**



Possible discussion questions:

1. Look closely at each object and discuss why the colored water did or did not travel through it.
For example:
Why do you think the wooden dowel carried the colored water? (Hint: what plant is the dowel made of?)
What function does the tree trunk serve on the tree (it's a stem!)
2. How does the water you drink reach the rest of your body?
3. Do you ever eat stems? If so, which ones?

Garden Exploration

Take students to the garden and ask them to name or point to as many different stems as they can both in and around the garden. Which stems are edible? Which are not? Is there an easy way to tell the difference? Encourage students to notice that stems come in many shapes and sizes, but they all serve essentially the same function to the plant.