

SLURP!

BENCHMARKS and TASK

SC.F.1.1.1 The student knows the basic needs of all living things.

SC.F.1.1.5 The student compares and describes the structural characteristics of plants and animals.

- The student observes and analyzes each part of a plant (seeds, roots, stems, leaves, flowers and/or fruit) and correlates it to a specific function.

KEY QUESTION

What is the main function of a plant stem?

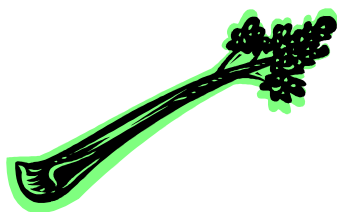
BACKGROUND INFORMATION

The main function of a stem is to support the leaves and flowers of a plant and to connect them with the roots, which supply water, minerals, and nutrients. Plants absorb water through their roots in the soil. As water evaporates from the leaves, a vacuum is created that pulls the root water upward through the stem to the leaves. This principle is the same as sipping through a straw. (The narrowness of the tubes through which the water travels also contributes to this **capillary action**.)

MATERIALS

Per pair of students

fresh celery stalk with leaves
clear cup of water
red food coloring
magnifier
drawing paper
plastic knife
straws
2 cups of drinking water (for students to sip with the straws)
3 *Slurp!* worksheets



Teacher
plant

TEACHING TIPS

1. The celery experiment should be started in the morning and observed during the day. Keep it overnight.
2. Discuss the physical features of celery so students know what to draw.

ENGAGE

1. Give each student a drink with a straw. Allow them to sip.
Ask:
What happens to the water when you drink from a straw?
Tell students there is a plant part that acts much like a straw.
2. Show a plant to the class.
Ask:
Which plant part do you think that might be? Why do you think so?

Tell students they will do an experiment to help them decide.

EXPLORE

1. Divide the class into pairs. Distribute materials to each pair.
2. Have groups fill a cup 2/3 full of water and add a few drops of red food coloring.
3. Show students how to use a plastic knife to cut off the bottom of a stalk of celery. (You may choose to do this ahead of time.)
4. Have the students examine the celery stalk including the bottom and discuss what it looks like.
5. Distribute and discuss the *Slurp!* record sheet #1. Allow time for students to draw what the celery stalk and the bottom of the celery look like now and to make predictions about what will happen to the celery stalk and record the predictions on the record sheet.
6. Have the students label the containers with their names and place the celery stalk in the cup. Set the cups out of the way, but in a location where they can be observed.
7. Students should observe the celery at given intervals during the day. Any movement of the color up the stem of the celery should be recorded by coloring the stalk of celery pictured on record sheet #2. (If feasible, record time to the nearest hour to support the math task analysis for first grade.)
8. When the observations are complete, have students cut off a small portion from the bottom of the stalk. Students can use a magnifier to see little dots of color. Have them draw a picture of the celery stalk and the cross-section of the celery stalk on the *Slurp!* record sheet #1.

EXPLAIN

1. Bring the class together to discuss their observations.
Ask:
What did you observe?
What are the little dots of color on the bottom of the celery stalk?
(These are the tubes that carry the water through the plant.)
2. Cut the celery lengthwise and allow students to try to follow a tube up the stalk to a leaf. Cut leaves off of the stalk. After students have observed the leaves, ask:
Has the color reached the plant leaves?
How did the water get pulled to the leaves?
How could the water going up the stem help the plant?
3. Ask students what other functions of the plant stems serve? (Stems support the leaves and flowers of the plant.)
4. Have students explain on the *SLURP!* record sheet #3 what happened to their celery after one day.

EXTEND/APPLY

1. Take students on a stem walk. Look for a variety of plants.
Ask:
Which part of the tree is the stem? (The trunk and the branches)
Can you find the stem on a vine? Grass?

2. Make a partial cut in a new celery stalk halfway up the stalk.
Place the stalk in colored water.
Leave overnight.
Discuss their observations.

EXTENSIONS

1. Leave a stalk of celery out of water overnight. Ask students to predict what will happen to the leaves and stem. Have them observe the celery the next morning. (It will be wilted.)
Ask:
Do you think we can freshen the celery again? How? (Add water and it will be fresh again.)
2. Provide students with pictures of foods. In small groups, have them decide which foods we eat that are obtained from stems or that are stems we eat. Examples include asparagus, potatoes, rhubarb, green onion, and sugar from stems of sugar cane. Potatoes are an example of an underground stem called a **tuber**.

ASSESSMENT

Use the *SLURP!* record sheets to determine if students understand the purpose of stems. Students should include that the stem carries water and nutrients to the leaves.

Student Scientists _____

Record Sheet #1

SLURP!

Draw a picture of your celery.

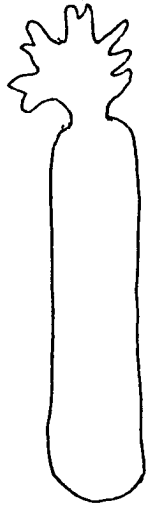
Draw a picture of the bottom of your celery.

Predict what will happen to the celery after it has been placed in the colored water.

Student Scientists _____

Record Sheet #2

SLURP!



Time _____



Time _____



Time _____



Time _____

Student Scientists _____

Record Sheet #3

SLURP!

Draw a picture of your celery stalk after one day.

Draw a picture of the bottom of your celery stalk after one day.

Explain what happened to your celery after one day in the colored water.
