



## A Stem Experiment Celery and Carnation

**Standard Addressed: Life Science**

Students know how to observe and describe similarities and differences in the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, insects).

**Lesson Objective:** Students will understand that plants have parts that absorb water.

**Materials:** food coloring, celery, carnations, and water

**Student Talk Strategies: (Descriptions at end of lesson)**

- Report to a Partner
- Think-Pair-Share

**Classroom Management:** Review classroom rules before the experiment. Put students into partners or small groups. Review the signal being used to get the students’ attention.

<i>Engage: Connect to Prior Knowledge and Experience, Create Emotionally Safe Learning Environment, Preview New Vocabulary      Estimated Time: 10 minutes</i>		
<b>Teachers Role</b>	<b>Teacher Questions</b>	<b>Students’ Role</b>
1. The teacher will establish a one-minute quiet time for the students to look at a picture of a child watering a plant on a sunny day.  2. Teacher will have students report to a neighbor about their ideas and findings.	1. The teacher will brainstorm with the students by asking them what a plant needs to survive/live.  2.Unlock Vocabulary: stalk stem absorb The teacher will introduce the vocabulary words for the lesson.	1. The students will silently examine the picture while thinking of the things that a plant needs to live.  2. The students will then report to a partner. Some student answers will be: <i>The plant needs sunlight.</i> <i>The plant needs water.</i>
<b>Explore: Hands-On Learning, Contextualize Language, Use of Scaffolding (Graphic</b>		

**Organizers, Thinking Maps), Cooperative Learning, Use of Multiple Intelligences, Check for Understanding** **Estimated time: 30 minutes**

Teacher's Role	Teacher Questions	Students' Role
<p>1. Introduce the “Stem Experiment” and encourage students to make predictions to answer the problems. Introduce the materials: food coloring, a stalk of celery, and white carnation.</p> <p>2. Review with the students some safety procedures when doing an experiment. Monitor small groups during the experiment.</p>	<p>1. The teacher will ask, “How does a plant get water?” and “What plant part gets water?”</p> <p>2. The teacher will ask questions about safety to make sure all students have an understanding of the procedures: Do we ever drink a liquid when we do science experiments, boys and girls?</p>	<p>1. Make predictions on how a plant gets water and what plant part is responsible to get water.</p> <p>2. Actively participate in discussing the safety procedures when doing an experiment. Follow the procedures in the experiment.</p>

**Explain: Listening, Speaking, Reading and Writing to Communicate, Conceptual Understanding** **Estimated Time: 10 minutes**

Teacher's Role	Teacher Questions	Students' Role
<p>1. Take the children to observe the experiment after 1 hour.</p>	<p>1. Review with the children the vocabulary words.</p> <p><b>Report to a partner- Each student reports his/her own answer to a peer. The students then listen to their partner’s response. Both will report what partner shared when prompted.</b></p> <p>What happened to the colored water?</p> <p>How did the stalk of celery change?</p> <p>How did the white carnation change?</p>	<p>1. Vocabulary word meanings are shown on drawings or in oral sentences.</p> <p>Students <b>Report to a Partner.</b></p> <p><i>The colored water moved up the stem.</i></p> <p><i>The stalk of celery turned the same color as the water.</i></p> <p><i>The white carnation absorbed the colored water.</i></p> <p>Students propose that the food</p>

coloring is going up the stem and the stem or stalk is responsible for carrying minerals up from the roots in the soil to the leaves on top.

***Evaluate: Thinking Maps, Summarize Lesson and Review, Variety of Assessment Tools, Games to Show Understanding*** ***Estimated Time: 20 minutes***

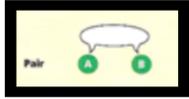
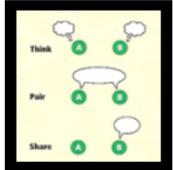
<b>Teacher's Role</b>	<b>Teacher Questions</b>	<b>Students' Role</b>
1. The teacher will guide the students to fill in their science journal with the facts taken out from the experiment.	1. The teacher will ask questions to help the students draw and write. What did you see? What happened and why?	1. Journal Writing: Draw what happened First, Next, and Last.  Write a short and simple sentence describing what happened. Then the students will share their journals with the small group and the class. The _____ turned _____ (color).  The stem _____ the color.

***Extend: Group Projects, Plays, Murals, Songs, Connections to Real World, Connections to Other Curricular Areas***

<b>Teacher' Role</b>	<b>Teacher Questions</b>	<b>Students' Role</b>
1. Help the students make a class pledge about planting a class tree in the schoolyard and watering their tree regularly. The teacher will write the class pledge onto chart paper for the class to revisit.	1. The teacher will ask the students what a pledge is. The teacher will ask questions to guide the students in creating the pledge.  <b><u>Think, Pair, Share: Share with the person next to you what we want to pledge and report to class.</u></b>	1. Participate actively in writing the class pledge. the ideas for the class pledge. <b><u>Think, Pair, Share</u></b>  Make a class Wheel of Responsibility to show who is responsible in watering the tree on a certain day.

## Student Talk Strategies

Adapted from *Avenues*, Hampton Brown, 2007.

<p><b>Report to a partner</b></p> 	<ul style="list-style-type: none"> <li>• Each student reports his/her own answer to a peer.</li> <li>• The students listen to their partner's response. ("Turn to a partner on your left." "Now turn to a partner on your right" etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• This allows students to talk to different students in the class and gives each student an opportunity to share and listen to various answers and language structures.</li> <li>• Talking one-on-one with a variety of partners gives risk free fluency practice.</li> <li>• Students practice speaking and listening.</li> </ul>
<p><b>Think, Pair, Share</b></p> 	<ul style="list-style-type: none"> <li>• Students think about a topic suggested by the teacher.</li> <li>• Pairs discuss the topic.</li> <li>• Students individually share information from their discussion with the class.</li> </ul>	<ul style="list-style-type: none"> <li>• The opportunity for self-talk during the individual think time allows for the student to formulate thoughts before speaking.</li> <li>• Think time allows students to think about the concepts and the language before producing.</li> <li>• Discussion with a partner reduces performance anxiety and enhances understanding.</li> </ul>

### Teacher Background Knowledge

Stems contain tube-like structures called phloem. The food coloring in the water travels upward in the stem and the phloem changes color as a result. If you cut the celery stem horizontally, you will see where the phloem structures are –they will appear to be colored dots in the stem.

The food coloring travels upward in the white carnation stem until the coloring reaches the white petals. They change color because the food coloring has travelled up the stem to them.

This investigation shows how nutrients can travel up a plant stem through the phloem to reach all the other parts of the plant.