



Lesson Delivery Date: __/__/__
Lesson Delivered By: _____
Initial when complete:
Supplies Bought: _____
Materials Prepped: _____
Feedback Complete: _____

## SCALED LEARNING™ LESSON PLAN - SACC

Review this lesson plan at least 3 days prior to leading.

<b>LESSON NAME:</b> (What is the name of the activity?) Walking Rainbow	<b>TIME REQUIRED:</b> 20 minutes (+12 hrs)	<b>AGES:</b> All
<b>SCALED LEARNING FRAMEWORK ELEMENTS:</b> (STEM, Career Connected Learning, Arts, Literacy, Education, Diversity and Global Learning, etc.)		
<ul style="list-style-type: none"> <li>STEM</li> </ul>		
<b>STANDARDS ADDRESSED:</b> (Common Core State Standards; National Core Art Standards)		
<ul style="list-style-type: none"> <li><b>Science:</b> As a result of activities in grades K-4, all students should develop abilities necessary to do scientific inquiry; Understanding about scientific inquiry</li> </ul>		
<b>LESSON OBJECTIVE:</b> (What youth should get from this activity, what they should achieve?) Youth will be able to:		
<ul style="list-style-type: none"> <li>Explore the effects of adhesion and cohesion force while creating a Walking Rainbow.</li> </ul>		
<b>MATERIALS NEEDED:</b> Per group:	<b>PREPARE AHEAD OF TIME:</b>	
<ul style="list-style-type: none"> <li>6 pint-sized jars or clear cups</li> <li>Water</li> <li>Food Coloring (red, yellow, blue)</li> <li>Paper towels</li> <li>Measuring cups</li> <li>Paper</li> <li>Pencil and Coloring Tools</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	

### PART ONE:

**SAY:** Today we're going to create our very own Walking Rainbow.

**ASK & CONNECT** (prepare opening ideas to connect lesson to youth's prior experience or prior session)

- What do you imagine in your brain when I say "Walking Rainbow"? How do you think this will relate to our STEM activity today?
- Have you ever wondered how gigantic trees get water from their roots all the way up to their highest leaves and branches? Today, we will be able to create a model which will demonstrate how this happens.

### PART TWO:

(What are the steps for youth to complete this activity?) Highlight steps when youth have a choice.

- Divide youth into small groups and distribute the materials.
- Instruct youth to add 2 cup of water and 20 drops of red food coloring in one jar. Add 2 cups of water and 20 drops of yellow food coloring to another jar. Add 2 cups of water and 20 drops of

What key skills will I need to be prepared to model or teach?

- Demonstrate what one drop of food color looks like and how to count the drops accurately.

blue food coloring to a third jar.

3. Instruct youth to arrange the 6 jars in a circle so that there is an empty jar in between each full jar.
4. Tear off 6 paper towels. Fold each on a few times lengthwise so that it fits easily into the mouth of a jar.
5. Insert the paper towels so that one end touches the bottom of an empty jar and the other end touches the bottom of a full jar. You should have a circle where each jar has 2 paper towels coming into it.
6. Instruct youth to fold their paper into thirds. In the first column label the top "Beginning", the middle column with "Middle", and the third column with "End." Instruct youth to draw a sketch of the start of the experiment.
7. Water and observe what happens over the next few minutes and hours. Sketch the progress in the middle section.
8. The next morning/afternoon, check back and sketch in the final column. What happened?

9. Optional addition:  
Instead of leaving some jars empty, try filling all of the jars with 2 cups of water. Arrange them in the same circle, alternating the clear water with the dyed water. What happens? How does it compare to the dry version? What worked better? Why do you think?



**ASK DURING** (open-ended questions for during activity)

- How was a secondary color made in the empty jar? What do you think happened?

**SITE SPECIFIC** (complete prior to lesson delivery)

**Leadership** (How can youth help lead?)

**Choices** (What content or process choices are there?)

How will I promote exploration?

How will I nurture creativity?

**PART THREE:**

**REFLECT**

- Share and reflect. What happened in this experiment? What does this tell us about trees?
- Share: Paper towels are made from trees, which means they are made of plant fibers called cellulose. Water moves through cellulose because of two forces called adhesion and cohesion. Adhesion is the attraction between water molecules and cellulose fibers, while cohesion is the attraction between 2 water molecules. Water molecules are attracted to the cellulose fibers, which makes them move

through the fibers. However, water molecules are also attracted to one another and continue to pull one another up. Both of these forces working together makes a phenomenon called capillary action, meaning that water defies gravity and flows upward, like we saw happening with our walking rainbow!

**FAMILY AND PARENT ENGAGEMENT** (Select how activity will be shared)

- Invitation: During activity, invite families to join as they are picking up their child
- Conversation: Draw parent's attention to their youth's contribution at pick up and explain their child's positive contributions to the final product or process
- Communication (written): Photos or written Staff or Youth recap for upcoming newsletter or parent email