

Pour Water Sideways

Science IDEAS Project
Teacher Science Demonstration

Goal:

Demonstrate the properties of **cohesion** and **adhesion** found in many liquids, including water.

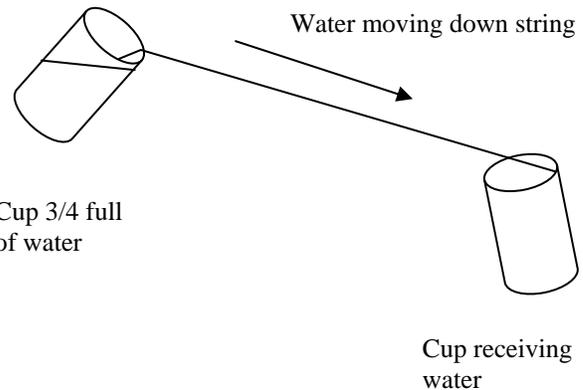
Materials:

- Two small paper cups.
- Water absorbent (cotton) string or twine
- Water
- Food coloring (optional)

Procedure:

1. Fill one of the cups about 3/4 full of water.
2. Cut off a length of the string about 40 cm long and drop it into the water. Stir it around and make sure that it is fully soaked with water.
3. Remove the string from the water, and leave about 4 cm in the cup of water. Hold it to the rim of the cup with your finger. Do the same to the empty cup.
4. Turn the empty cup 180° so that the string is stretched over the cup as in the illustration.
5. Raise the cup of water slightly higher than the empty cup, and tip it so that water trickles down the string. The water should continue down the string until it hits the other cup and drops in.

Note: After you have practiced this a bit, you can try it over someone else's head. Students are good subjects, administrators are better. Also, a small amount of food color added to the water will make it more visible as it moves down the string.



Journaling Opportunities:

- Write a step-by-step description of what they saw happen. If you had students try this activity, ask them to write a narrative of what they did.
- Why was it important to get the string wet first? What would have happened if the string had been dry when you tried it.
- Draw a super close-up view of the string. Make the water that wet the string down a different color from the water that transferred between cups.
- Explain why the water did what it did using the words **cohesion** and **adhesion**.

What Happened?

Water molecules attached themselves to the string when it was initially dunked in the water using **adhesion**, the property some matter has to be attracted to things other than itself. It is this adhesive force that makes water stick to the side of a wall or window, and to be absorbed in a towel. Once there was water all around the string, other water molecules were attracted to them through the force of **cohesion**. Cohesive forces exist between a type of matter and itself.

The cohesive force between water molecules is stronger than the adhesive force between the water and the string. In order for the moving water to be supported, the stronger cohesive force is needed. If you tried this with dry string, the adhesive force between the water and string would not be strong enough, and the water would spill.