TRAVELING WATER

Next:
Materials and Explanations

Then:
Step-by-Step Photo Sequence
TRAVELING WATER

Think you can pour water from one cup to another using a string? Whereas most people normally pour water from one cup to another… how about pouring the water from one cup to another using a string and holding the cups apart from each other? Are you up to the challenge?

Materials
• Plastic cups
• White cloth string
• Water
• Scissors
• Tape

EXPERIMENT
1. Using the scissors, cut a length of string roughly two to three feet long.
2. Tape one end of the string to the bottom of one of the cups. Any type of tape will work, just make sure the bottom of the cup is dry when you tape the string down.
3. Fill another cup with water and put the other (not taped) end of the string in the water.
4. Hold the cups with one above the other, but not directly over each other. Hold the cups far enough apart that the string is as close to taut as you can make it. Be careful not to pull the string out of your top cup.
5. Slowly begin pouring the water out of the top cup. Pour the water out of the side of the cup with the string.
6. You'll begin to see the water travel down the string towards the other cup. At first, the water won't make it all the way down, but eventually you'll be able to pour the water straight from your top cup to your bottom cup.

HOW DOES IT WORK?
You have probably heard water referred to as H2O. That means that each molecule of water is made up of two hydrogen atoms and one oxygen atom. Water as you know it, the liquid you drink or the liquid you swim in, consists of thousands upon thousands of water molecules that are held together by molecular bonds. The bonds in this case are called hydrogen bonds and are quite strong. These strong hydrogen bonds make water molecules stick together very well.

While performing this experiment, you are able to see these hydrogen bonds in action. Through a physical property called cohesion, the action of like molecules sticking together, water molecules are able to stick to other water molecules on their way to the lower cup.

But what about the water that poured out at first? It didn't have any water to stick to. Molecules aren't only able to stick to like molecules (water to water). Molecules of water can stick to other materials, too. This is a property called adhesion. In this case, water molecules are able to stick to the string. The reason you see some water fall off the string is because adhesion is not as strong as cohesion.

ADDITIONAL INFO
Now that you know about cohesion and adhesion, try performing this experiment with other materials. Try different liquids like milk or soda and try different "strings" like fishing line or a shoelace. Which liquids have the best cohesion? Which materials have the best adhesion?

OBSERVATIONS
Try performing this experiment a second time, but this time wet the entire string before beginning to pour the water. How does that work in comparison to the dry string?
TRAVELING WATER

HERE IS WHAT YOU NEED

STRING
TWO CUPS
WATER
FOOD COLORING
SCISSORS
TAPE
1. Cut a piece of string.

2. Dip the string in water.
TO MAKE THE WATER MORE VISIBLE ADD SOME FOOD COLORING
Hold the loose end of the string in the water, lift the cup, and slowly pour the water down the string.