WALKING WATER

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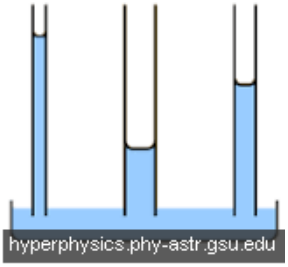
Overview and objective:

Students will use basic techniques to demonstrate capillary action.

Capillary action (sometimes capillarity, **capillary** motion, or wicking) is the ability of a liquid to flow in narrow spaces without the assistance of, and in opposition to, external forces like gravity.



WHAT YOU WILL NEED:

- 7 small jars or cups
- 6 paper towels
- Food coloring
- water

Procedure:

1. Line up seven canning jars or cups.
2. Starting with the first jar, fill every other jar half full with water.
3. Dye the water, choosing colors that you wish to mix (these mixed colors will 'walk' into the empty cups.)

4. Cut a paper towel in half and then fold it into quarters lengthwise.
5. Cut about an inch off the open ends of the paper towel so that it fits snuggly over the cups, as shown.
6. Repeat this process until you have six paper towels.
7. Stick one end of a paper towel into the colored water and the other half into an empty cup.
8. Continue this pattern for all the glasses. (your end glasses will only have one end of paper towel in them.)
9. Within a few minutes, you'll starting noticing the color traveling up the paper towels towards the empty cups.

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Major concepts:
The water uses this process to move along the tiny gaps in the fibre of the paper towels. It occurs due to the adhesive force between the water and the paper towel being stronger than the cohesive forces inside the water itself. This process can also be seen in plants where moisture travels from the roots to the rest of the plant.

Exercises:

1. Within 24 hours, you'll see that all glasses are filled to the exact same water level.
2. Why does the water level become equal among the cups?
3. Why don't all the colors fully mix to become seven glasses of muddy brown water?
4. Does varying the width of the cups have an impact on the process?
5. Does varying the thickness of paper towel impact your capillary action? Why?

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