

Walking Water Science Experiment

Safety!

- Be careful when **handling** the **glass containers** and if needs be make sure you get **help** from an **adult**.
- As the **food colouring stains** try not to stain your **clothes** through any **spillages**.
- If you do have any **spillages** do make sure to **clean** them up.

Apparatus

- 2 x pieces of kitchen roll
- 3 x glass containers - 300ml to 600ml in size roughly (preferably jam jars)
- **Blue** food colouring
- **Yellow** food colouring

Extra apparatus if you would like to mix more colours

- **Red** food colouring
- **Green** food colouring

Method

Summary

In this experiment, you will find out the process called capillary action and how this affects the mixing of different colours of water.

Steps

1. Place the 3 glasses side by side. Starting on the left hand side, fill that glass $\frac{3}{4}$ full with water. Add 2 drops (enough to colour the water) of **blue** food colouring into the water.
2. Leave the next glass empty.
3. Now fill the glass $\frac{3}{4}$ full on the far right hand side with water and add 2 (enough to colour the water) drops of **yellow** food colouring.
4. Fold 1 piece of kitchen roll in half lengthways and then roll it the width of a ruler so that it will fit into the neck of your glass easily. Now place one end of the kitchen roll into the **blue** water and bend the kitchen roll over the edge of the glass so that the other end sits in the empty glass in the middle.
5. Do the same on the other side: place one end of a paper towel into the **yellow** water, and bend it over so that the other end rests in the empty glass in the middle.
6. Watch initially to see what happens and then wait for around 30mins.
7. In about 30 minutes or so, the water will start 'walking' up the pieces of kitchen roll and over into the middle glass.
8. After about 2 hours you will have a mix of the two colours in the centre glass of which should be **green**.



Watch this video here, if you want a walkthrough of the experiment:
<https://tinyurl.com/y7smks8f>

Extra step if you would like to mix more colours

1. **Repeat** steps 1-8 above **but** use **red** food colouring and **green** food colouring instead.



Evaluation / Conclusion

The experiment works because of **capillary action**. The water moves up the tissue paper because the forces between the molecules of water are weaker than the forces between the molecules of water and the molecules in the tissue paper which pulls the water up the paper. This draws more water up the paper causing the water to travel across into the other glass.

Plants use this to get water from the soil up to their leaves and it can also be seen in very thin tubes.

For more information and an image for **capillary action** (used by plants), go through to this link: <https://tinyurl.com/ycljqnha>

FOLLOW UP SCIENCE

This experiment can be taken even further by:

You could try using three glasses or creating different patterns to have water flowing through i.e two glasses going into one empty one which as it then gets filled goes into a third or think of other interesting and fun things.

Another thing to try once you have done this is **Chromatography**. This is a pretty similar method however involves placing a spot of ink above where the tissue paper sits in the water and then as the water travels up the tissue paper you can see it separate into the different pigments that make up the ink. Black ink works best for this. Try using different types of black ink e.g a felt tip pen and a fountain pen to discover what different pigments make up the inks. You will need to use water without any food colouring in order to get the best results. This also works via capillary action.

Chromatography:

