



Flower Power!

You've heard of STEM (Science, Technology, Engineering, and Maths)? Well, this experiment really puts the stem in STEM as we see how a plant draws and absorbs water from its surroundings.

For this experiment, you will need:

Some containers | Water | Food colouring | Some white flowers

What to do:

Step One:

Fill some containers with water. How many containers you use will depend upon how many different colours of food colouring you choose to experiment with, and also upon how many flowers you have to use.



Step Two:

Add drops of food colouring to the water. Only use one colour for each container. In the image to the right, I've used three strong colours (blue, yellow, red) so that the results of the experiment will (hopefully) be more evident.



Step Three:

Add a white flower to each container.

You can use any white flowers but try to use three of the same species. In a science experiment, using the same subject matter (I've used white lilies) is important when evaluating the outcome. Here, it will allow me to make a fair comparison of the effect of different coloured water upon the same type of flower.



Step Four:

What happens next?

Over the coming hours and days, study the flowers. See what changes occur.

The photo to the right was taken about 24hrs after I started my experiment.

What's happening to the white petals?



48 hours into the experiment:



72 hours into the experiment.

The tips and edges of some of the petals are even more darker in colour—the blue and yellow flowers are particularly noticeable.

Overall, the colours of all flowers have reached their maximum strength.

If someone asked you, how would you explain what has happened to the colour of the flowers? And why?



Explanation:

Like all living things, plants need a regular source of water to survive.

Plants 'breathe', using tiny pores in their leaves (and sometimes in their stems), called 'stomata'. This causes them to lose moisture, so they need to 'drink' again. Most plants drink by drawing moisture from the soil using their roots. This process of water loss and water uptake is known as 'transpiration'.

They drink using special plant tissue inside them, called *xylem*. Xylem attracts water (and nutrients) from the soil and causes the stem of each flower to act like a drinking straw, sucking-up and transporting the water and nutrients to other xylem located all over the plant.

The colour change of each flower in our experiment shows the process of transpiration in action! Even when the plant no longer has roots, the xylem in the stem are still able to transport water to the flower.

For further details, checkout:

<https://www.factmonster.com/dk/encyclopedia/science/transpiration>

