

## Visualise the Water Cycle: Make a model

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Try this experiment to make a simple, miniature model of the natural water cycle.

### The natural water cycle

The natural water cycle is the continuous movement of water around the world through the processes of evaporation, transpiration, condensation, precipitation, run-off, infiltration and percolation.

Try one of these models to see if you can replicate what happens in nature.

#### Model 1 – a water cycle terrarium

##### What you'll need:

- Large soft drink bottle or glass jar with lid
- Seeds or small plant
- Potting mix
- Layer of pebbles, gravel and sand
- Gloves
- Water



*Image source: UnSplash*

##### ACTIVITY:

1. Cut a two-litre soft drink bottle in half about eight centimetres from the base.
2. Add a layer of pebbles, gravel and sand then the potting mix to your jar.
3. Plant seeds or a small plant in potting mix in the bottom half of the bottle.
4. Water the plant (or seeds) enough to moisten the soil but not so much as to flood the container. Place the lid on the jar or squeeze the top half of the bottle inside the bottom to make a dome. You can also just tape the two pieces back together with clear packaging tape.
5. Put the terrarium beside a window - not too sunny or you'll bake the plants.
6. What do you think will happen in our mini Earth? Will water disappear? Will it rain? Does the plant play a role in the terrarium? What's your prediction?
7. You should notice, as time goes by, that the inside of the dome gets misty and the plants will continue to grow without additional water.
8. Did you see the changes as the terrarium warmed and cooled? Why or why not?
9. If you didn't see condensation or precipitation or your plants look wilted or dry add more water to your terrarium. If there's too much water open the lid and let some of the water vapour out.
10. As a control, you could create two terrariums and leave the lid off one. Think about what the difference will be. What would happen if your terrarium didn't have sunlight? Make a prediction about what will happen.
11. Observe the results and discuss what is happening to the water in the terrarium.

# WATER IN THE WORLD: THE WATER CYCLE

## Model 2- Water cycle in a bag

### What you'll need:

- 2 clear plastic bags – a zipper (sandwich size) style works best
- Tablespoon
- Rubber band or twist-tie
- Blue food colouring (optional)
- Masking tape



### ACTIVITY:

1. Draw the water cycle on two zip lock bags.
2. Pour six tablespoons of water into each clear plastic bag. Add a few drops of food colouring.
3. Blow air inside the bag with your mouth and quickly seal the bag closed with a rubber band twist-tie or zipper-closure.
4. Place one bag on a sunny window ledge or tape directly to the window pane and another one in the shade.
5. Observe and compare the two bags over several days and record the changes.
6. Did they react the same? What was different and why?

### Variation

For instant results, make two bags. Put cold water in the first bag and warm water in the second bag. Compare the two bags.



Image source: Clem Onojeghuo, Unsplash

## What's happening?

You should be able to watch water change state as it heats up in your model.

When the sun shines on the water and heats it, it will turn into a gas called water vapour which rises. This is called **evaporation**.

When the sun stops shining on the water and it cools, the water vapour turns back into tiny liquid water droplets. This is called **condensation**.

When the water droplets are heavy enough, they will run down your bottle or bag, like rain. This is called **precipitation**.

In your terrarium, the water will soak down into the soil. This is called **infiltration**.

When the sun comes up the next day, the whole cycle starts all over again!