

Water Cycle in a Jar

The water cycle is the continuous movement of water on Earth. As water moves through the cycle, it changes states and can be found naturally as a solid, liquid or gas. The stages of the water cycle include:

- **Evaporation:** water is heated by the sun and transformed into water vapour (or gas).
- **Condensation:** the cool air in the atmosphere changes the water vapour into tiny droplets that form clouds.
- **Precipitation:** water falls from the clouds when so much water has condensed that the air around the cloud cannot support it. This water falls to the ground as rain, snow, sleet or hail (precipitation), and seeps into the earth (infiltration).
- **Transpiration:** water absorbed by a plant's roots travels up through to the leaves before being released through the stomata into the atmosphere as water vapour.

Recreate the water cycle by making your own terrarium in this simple experiment.

WARNING: There are some risks associated with the use of bagged compost and potting mix. To reduce these risks, please:

- read the warning on the bagged compost/potting mix before use
- always wear gloves when handling soil, potting mix or compost
- avoid inhaling the mix by wearing a face mask
- carefully dampen the mix to reduce airborne particles
- wash hands thoroughly after using potting mix or compost, even if you've been wearing gloves.

Main Activity

Materials

- rocks
- soil
- small plant
- soft drink bottle cap
- plastic glove
- sand
- jar with lid (you could also use an old soft drink bottle cut in half and covered with plastic wrap)

Method

1. Place a layer of rocks over the bottom of the jar, approximately 0.5-1 cm deep.
2. Sprinkle a thin layer of sand over the rocks, approximately 0.5 cm deep.
3. Cover the sand with a thick layer of soil (3-4 cm). The rocks, sand and soil create a similar soil structure to that found on Earth.
4. Wearing a glove, use your finger to make a small hole in the soil for your plant.
5. Keep your glove on and put the plant in the hole. Pat the soil firmly around the plant's roots.
6. Fill the soft drink bottle cap with water and carefully place the cap on the soil.
7. Screw the lid on the jar (or use plastic wrap to seal the container) and place it in a sunny position.
8. Observe your experiment over the next seven days. Once you have finished your experiment, you may like to transfer the plant to your garden.

Note: If you are making your terrarium in groups or pairs, take turns for each of the steps.

► Engage

Draw and label your experiment on days 1, 2 and 7. Comment on the experiment on each of these days; write down what you notice happening. Present this information in a poster.

► Connect

Draw and label your experiment on days 1, 2 and 7. Explain how your terrarium acts like the water cycle. Use the **Detailed Lab Report template** to write a report on this experiment.

► Explore

Examine your terrarium over several days and compare the jar to a real ecosystem. Does the plant have everything it requires to continue to survive? Expand on this question by writing a short essay with your findings. You may like to record your responses over several days on a blog or wiki comment thread.

