



Water Cycle KS2, KS3 (year 7 & 8 only)

Duration: 1 hour, max capacity: 30 students

Students explore change of state by creating their own clouds in a model water cycle and testing the purity of their rain to demonstrate how evaporation and condensation makes rivers flow and provide us with fresh water. They also see an amazing cloud made from dry ice and investigate the effects of surface run-off.

Key Words:

Water cycle. Investigation. Precipitation. Dry ice. Run off. Salt & fresh water. Laboratory. Testing. States of matter. Solids. Liquids. Gases. Heating. Cooling. Melting. Freezing. Evaporation. Condensation. Sublimation. Deposition.

Learning objectives

Appreciate that water can exist in different states—as a solid, liquid and gas, and that changes between these states involves the transfer of heat energy
Understand the physical processes of melting, freezing, evaporation and condensation and the role they play in the water cycle
Recognise the four key stages of the water cycle and where they occur
Understand the significance of fresh water to life and the processes that produce it
To work safely and as instructed in a laboratory environment
Understand that chemical tests can be used to distinguish between fresh and salt water
Plan, make predictions and record measurements in an investigation into surface run-off
Working safely in a lab setting and use lab equipment

Content

See condensation in air in a dramatic demonstration of cloud formation using dry ice
Plan and construct a model water cycle and relate this model to the natural cycle
Test the water produced for salinity and understand that the water cycle results in fresh water
Investigate and measure the effect of ground surface and slope on the run-off resulting from rainfall and relate this to the natural and built environment

Curriculum Links:

KS2
Science: Working scientifically Setting up simple practical experiments
Using scientific evidence to answer questions
States of matter Observe that some materials will change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius
Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature
Properties and changes of materials Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution
Human and physical geography Describe and understand key aspects of the water cycle
KS3 (Year 7&8)
Science: Working scientifically Use appropriate techniques, apparatus and materials during lab work, paying attention to health and safety. Interpret observations and data and draw conclusions
Chemistry: The particulate nature of matter The properties of the different states of matter (solid, liquid and gas) in terms of the particle model
Changes of state in terms of the particle model

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Chemistry: Pure and impure substances The concept of a pure substance. Mixtures, including dissolving. Simple techniques for separating mixtures. Identification of pure substances

Physics: Physical Changes Conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation and dissolving. Similarities and differences, including density differences, between solids, liquids and gases

Human and physical geography Physical geography relating to: hydrology

Potential Hazards and accessibility

The workshop is based in a laboratory and all activities are conducted under careful supervision throughout. Dry ice is used by the presenter during a demonstration. Students will boil water using a portable heat filament. Students will work with glassware.