Teacher's Resource sheet
Episode 3

Curriculum Strand - Environmental Awareness
Strand Unit – Environmental awareness and care

Aims and Objectives:
To investigate clouds and how they are formed and why we need them.

Class plan
Suggestions:

- ✓ Ask warm up questions with the class
- ✓ Watch the video
- ✓ Fill out the first two questions of the investigator's sheet (see resources below)
- ✓ Do experiments in class
- ✓ Complete the investigator's sheet

Resources contained in this print out:

- ✓ Curriculum questions explaining clouds
- ✓ Some warm up question suggestions
- ✓ The Science Investigators Clouds episode can be accessed here: https://scienceinvestigators.wordpress.com/about/episodes-and-resource-sheets/
- ✓ Experiments to do in class (resources and instructions are included)
- ✓ An investigator's sheet for pupils to discuss and fill out for each experiment

Curriculum Question Suggestions with answers. Explaining:

Clouds
Meteorology
The Water Cycle

Question 1
What are clouds and why are they in the sky?

Answer:
A cloud is a large collection of very tiny droplets of water or ice crystals. The droplets are so small and light that they can float in the air. All air contains water, but near the ground it is usually in the form of an invisible gas called water vapour. When warm air rises, it expands and cools. A cloud is a large group of tiny water droplets.

Interesting trivia: There are clouds on other planets too: Venus, Jupiter and Saturn. Jupiter's clouds aren't made of water, they are made of a gas called ammonia.

Question 2:
What is a meteorologist?

Answer
A meteorologist is an expert in meteorology, or the science of weather patterns. The weather forecasters on the television are meteorologists.

Question 3

What is the water cycle?

Answer:

Clouds are part of the water cycle, which is vital for our existence.

The earth has a limited amount of water. That water goes around and around and in what's called the "Water Cycle".

The science bit, or the meteorological explanation: (Here is your meteorological forecast!)

This cycle has 3 parts:

- ✓ evaporation (and transpiration)
- ✓ condensation
- ✓ precipitation

Evaporation (and transpiration): Sunlight heats water from the sea, lakes, river and vegetation turning some water into water vapour. This is known as evaporation. Transpiration is when plants sweat! It is the process by which plants lose water out of their leaves. So just your body perspires (sweats) to cool you down, plants transpire. As part of the water cycle, transpiration helps evaporation by getting water vapour back up into the air.

Condensation: Water vapour collects, cools down and forms clouds. This process is called condensation.

Precipitation: Air currents move and cool the water even further. Then it falls from the sky as rain, hail, sleet and snow. This process is called precipitation.

Question 4
Why do we need clouds?

Answer
Cloud do several things:

As we already found out, clouds help distribute water:
Rain, or precipitation, happens when so much water vapour condenses that the air cannot hold it anymore. The clouds get so heavy that some of the water must fall back down to Earth as rain or snow. Rain is an important part of the water cycle because it returns water to the Earth.

Clouds help regulate temperature:
At night, clouds reflect heat and keep the ground warmer. During the day, clouds make shade that can keep us cooler.

Interesting trivia: The desert gets really cold at night because there are no clouds to keep it warm.

Interesting trivia: NASA uses satellites in space to study clouds and help them understand Earth's weather

Clouds are big dusters!
When water vapour forms, it picks up dust particles. So the water cycle helps prevent dust from staying on the ground and accumulating. Clouds then move dust form one part of the world to the other.

Experiment : Making a cloud in a bottle

For this experiment you'll need:

- ✓ Blu-tack
- ✓ A large plastic bottle
- ✓ Duct tape
- ✓ A bicycle pump
- ✓ Rubbing alcohol (this can be purchased in a chemist, and should only be used under adult supervision)

TopTip: The bigger the bottle, the better the cloud!

Directions:

1. Make a hole in the lid of the bottle big enough to fit the bicycle pump valve
2. Pour some rubbing alcohol (about an inch) into the plastic bottle
3. Put the lid on and swirl the bottle
4. Wrap Blu-tack around the pump valve to form an airtight seal. If this doesn't work use some duct tape
5. Pump as much air as possible into the bottle
6. Watch the cloud form!

INVESTIGATORS SHEET

What are we going to do?

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What do you think will happen?

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What actually happened?

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Why do you think this happened?

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