EXPERIMENT

IT'S THE HUMIDITY

Introduction:

Humidity is the amount of water vapour in the air and it has a significant impact on the weather. When humidity is combined with hot temperatures, we experience heat waves.

The humidity plays an important part in climate change. Like carbon dioxide (CO_2), water vapour is a greenhouse gas. Greenhouse gases act like a blanket over the Earth, trapping heat and making the Earth warmer, and as the climate warms, the humidity can increase. Measuring the increase in global humidity, and the effects of this increase, presents a major challenge for scientists.

Experiment procedure:

You can complete a simple experiment using pinecones to figure out how humid it is outside. In dry air, pinecones open their scales to disperse seeds. In dampness and rain, they close them to protect the seeds. In this activity, pupils will use pinecones to create a hygrometer, a device that measures the moisture content of the air. Ask your pupils to complete the experiment below and fill in the HUMIDITY WORKSHEET.

What you need:

- Spray bottles
- Water
- Masking tape
- Box of toothpicks or cocktail sticks
- Small lumps of modelling clay
- 4 pinecones per group (preferably with scales that are open, long, and relatively lightweight. These are more sensitive to humidity than heavy, closed, and woody cones)
- 4 wide-mouthed jars with lids per group (they must be taller than the pinecones)

What to do:

1. Divide the lump of modelling clay into four pieces and put one piece in each jar. Attach the base of a pinecone to the clay at the bottom of the jar.
2. Use the spray bottle to mist the pinecones inside the jars. Screw the lids on tight, and turn the jars upside down. Monitor the pinecones for the next few hours, writing your observations on the following worksheet.
3. Once the cone has closed, open the jar. Leave all the jars open overnight. The next morning, record your findings on the worksheet.
4. When the cones are dry, fill one jar cap with water. Turn the jar upside down and screw it onto the lid. Be sure the cone does not touch the water. Leaving the other jar cap dry, screw it on the jar. Seal both with tape. These two jars serve as the control. Place them in a cool, dark place.
5. Repeat Step 4 with the remaining cones, but place both jars in a sunny window. Observe and compare them to the controls for the next four hours, recording your observations on the worksheet.
6. Can you find any other plants that respond clearly to changes in humidity? List them on the worksheet.

Name Date

HUMIDITY WORKSHEET

1. Monitor the pinecones in the jars, noting below how long it took for the pinecones to open their scales fully and then close again.

Jar	Number of minutes to open pinecone scales	Number of minutes to close pinecone scales
1		
2		
3		
4		

2. What happened to the pinecones in each jar after you left them open all night? Did the scales stay closed or reopen? What does that tell you about the humidity in your classroom?

3. What difference, if any, do you see between the control jars and the jars in the sunny window after one, two, three and four hours? Is there condensation on the sides of any of the jars?

Time	Comparisons and Observations
After 1 hour	
After 2 hours	
After 3 hours	
After 4 hours	

4. Can you find any other plants that respond clearly to changes in the humidity?