CLIMATE - Part 3 - Science

Objectives

L.O:

To Understand the Role of Weather Stations.

Building a Weather Station

GUIDANCE – This lesson is part one of a wider number of lessons in which you can find instructions to build different parts to a weather station. Each one is a stand alone project but they can be added together to create a complete weather station.

STARTING ACTIVITY – (10 minutes)
GROUP DISCUSSION – Begin the lesson by asking the class if they're familiar with the idea of a **Weather Station**. Explain that a **Weather Station** is a collection of instruments used to measure atmospheric conditions and to study weather and climate. Discuss what these instruments could be and what they may measure. Acknowledge any mention of rainfall, wind speed and direction, pressure, and humidity.

Tell the class that in this lesson they will be creating a **Psychrometer**, also known as a **Hygrometer**. Explain that a **Psychrometer** is a device used to measure **Relative Humidity**. Explain that **Relative Humidity** is a way of describing the amount of moisture in the air and that whilst **Humidity** doesn't directly affect heat it does affect how we perceive heat. Explain that this is because we use the evaporation of sweat to regulate our temperature but in environments with high **Humidity** the moisture of our sweat is less able to evaporate.

MAIN TEACHING – The Psychrometer We Need (45 minutes)
GUIDANCE – Depending on the age group of your class, step one may need to be done prior to this lesson.

1. Cut a hole in the side of the bottle about an inch from the bottom.
2. Cut the tips off the shoestring and cut about two inches of shoestring and slip it over the bulb (the bottom) of one of the thermometers. Secure it in place with thread.
3. Take the bulb of the thermometer attached to the shoestring and position it about 3mm or 1/8 inch over the hole. Be sure the top of the thermometer is aligned with the top of the bottle and tape the thermometer to the bottle. Tape the second thermometer parallel to the first one and about 6mm or 1/4 inch away. Put a strip of tape around the bottle and both thermometers to make sure they don't fall off.
4. Push the shoelace through the hole made in step 1 and put room temperature water in the bottle until it reaches just below the hole.

Extra Information

Materials Required:
- 2x Alcohol Filled Thermometers
- Tape
- 2 Litre Bottle
- Shoelace (Hollow Type)
- Distilled Water (Tap Water Will Do)
- Thread
- Relative Humidity Chart (Supplementary Worksheet)

Key Words:
- Weather Station
- Psychrometer
- Hygrometer
- Relative Humidity
- Humidity

Success Criteria:
- I can perform a simple experiment to demonstrate the relative humidity.
- I understand how to read the relative humidity from a chart giving experiment results.
- I understand the role humidity plays in effecting how I perceive heat.

Objectives	Building a Weather Station	Extra Information

5. Set aside for approximately 10 minutes, and read both thermometers. There will be a difference in the two. Use the chart included in the **Supplementary Worksheet** to calculate the relative humidity.

GUIDANCE – This **Psychrometer** can be kept in class and measurements recorded regularly as part of a longer lasting project in climate experiment.

PLENARY – (5 minutes)
GROUP DISCUSSION – Discuss with the class the importance of keeping a record of the weather. Explain that largely due to human causes the entire climate is changing in drastic ways and that detailed records are required to not just prove this but also to see where we can best focus our efforts to repair or limit the damage being done.

Building a Weather Station

Relative Humidity Chart

RELATIVE HUMIDITY (%)								
Dry Bulb Temp Minus Wet Bulb Temp	Dry Bulb Temperature (C)							
	15	18	20	22	25	27	30	33
1	90	91	91	92	92	92	93	93
2	80	82	83	84	85	85	86	87
3	71	73	75	76	77	78	79	80
4	62	65	67	68	70	71	73	74
5	53	57	59	61	64	65	67	69
6	44	49	53	54	57	59	61	63
7	36	42	45	47	51	53	55	58
8	28	34	38	41	45	47	50	53
9	21	27	31	34	39	41	45	48
10	13	20	25	28	33	36	40	43