Science
Age 9-11

Hibernation: an insulation investigation

- Thermal insulators and conductors

Previous learning required

- What hibernation means
- How to use a thermometer correctly

Learning outcomes

- To understand the insulating properties of different materials
- To understand the difference between thermal insulators and thermal conductors

Equipment

- Water-tight containers with lids
- Sticky labels or permanent pens
- Warm water (~37°C)
- Thermometer
- Various natural or synthetic materials (e.g. foil, bubble wrap, fabric, straw, leaves)

Activity

1. Ask each pupil or group to decorate their container to look like an animal that hibernates throughout winter.
2. Ask them to build a 'nest' around the animal in the school grounds, replicating a place where animals might hibernate and using materials that they think will be the best to keep it warm.
3. Once the 'nests' are complete, fill each container with warm water.
4. Ask pupils to record the initial temperature of the water (their hibernating animal) and again at 2 minute intervals.
5. Record the temperatures of a control container with no 'nest'.

Check for understanding

1. Ask pupils to plot their temperature readings on a line graph.
2. Discuss the results with pupils. Which materials were the best insulators and how do they know?
3. Discuss thermal insulators and conductors, and ask pupils why they think radiators are made of metal.

Learning through Landscapes

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