Play Resource Presents Science from Scrap

Keeping Warm

You will need:

At least three identical small plastic bottles.

Selection of materials, fabrics, socks etc (small amounts)

Elastic bands

Thermometers or data loggers

Warm water (no hotter than 60° C)

How to use these resources for enquiry in Science/Maths

This fair test investigation can be used when teaching topics related to materials and their properties or heat and insulation. The collected readings can be used in numeracy lessons which are focusing on data handling, in particular graph work. Children can be encouraged to plan their own activity and choose the materials they will test or extend it by comparing thicknesses or the benefit of having a lid.'

Instructions

- Wrap each bottle with a different material, securing them with elastic bands.
- Fill each with equal amounts of warm (or cold) water. The temperature of the water should not exceed 60 ° C
- Record the temperature of the water in each bottle at 2 minute intervals.

(Note. If holes are drilled in the bottle tops, thermometers can be inserted through these into the water. This reduces spillages and thermometer breakages)

Possible links to WAU topics

Clothes, Houses and Homes, Titanic/Shipwrecked, Victorians, Space, Materials, Food, Seasons

Background Knowledge

The temperature of warm water goes down as the water loses heat by conduction or radiation. Surrounding the bottles with insulating materials slows down this heat loss.

Key Questions

- What happens to the water temperature in each bottle?
- Which fabric would be best at keeping us warm?
- What do we notice about the temperatures if we leave the bottles for a long time?
- Why do they all end up at the same temperature?
- Do you think that clothes would keep you warm if you fall into cold water?
- How could we extend our investigation in order to find out?

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