



Credit: Getty Images

Lagging the boiler

This experiment looks at insulation and its role in reducing or preventing energy dissipation.

You will need

- 500 ml of water
- 6 plastic cups
- 3 lids
- 3 thermometers
- Microwave oven
- Some graph paper on which to record your results

Steps

- 1** Heat 500 ml of water to approximately 50 °C in a microwave oven.
- 2** Make a hole in each of the lids through which a thermometer can be pushed.
- 3** Place one plastic cup inside another to form a double-thickness cup. Place one cup inside another, and then another, in order to make a triple-thickness cup. (You should now be left with one single-thickness cup, one double-thickness cup and one triple-thickness cup.)
- 4** Place an equal amount of water in each of the three cups. Place the lids on the cups and insert the thermometers.
- 5** Wait 1 minute and then record the temperature for each cup on the graph paper.

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Continue to record the temperatures in each cup every 5 minutes for 30 minutes, recording any changes on the graph paper.

Analysis/ discussion

Which cup retained the most heat and which the least?

Why would one cup retain more heat than another?

Ask the children to think about items in their homes that rely on insulation or conduction for their effectiveness (e.g. hot-water boiler, central-heating radiator, etc.).