

Ice cream conundrum

Energise Anything!

Did you know?

Insulation isn't just for staying warm, we also use thermal insulation to keep things cool. Before the invention of fridges, people used to have ice boxes to keep food cold. Large mansions had ice houses in the garden that would be filled with ice or snow in the winter. If they were well insulated, they could keep cool right through the summer.

Science scene-setter

Thermal insulation keeps things warm or cool by trapping heat energy. Materials that are poor conductors of heat are good insulating materials. The best insulators in nature are waterproof like fur; thick like whale blubber; or like the penguin huddles in our animation, made of more than one layer.

The challenge

Can your students crack the ice cream conundrum?
How can they keep a cold treat from melting too quickly?

Learning outcomes

- Forming a hypothesis
- Practical skills, making and recording observations
- Graph drawing and data analysis.



11-18

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Key activity steps

1 Research



Watch our animation **The nature of insulation**: eonenergy.com/secondary

- Discuss what makes materials good or bad insulators
- Give groups of students a selection of materials and ask them to put them in order of the best insulators
- Can groups suggest other materials that would make good insulators?

2 Design

Tell students they are going to conduct an experiment to test which material(s) will keep the ice cream coldest.

- Ask them to create a table to record their results
- Discuss how they could introduce controls into their experiments
- Hand out glass beakers and ask the students to cut the materials to fit them.

3 Test

Test which materials make the best insulators.

- Give each group a scoop of ice cream to place into their beakers – and a thermometer
- If necessary, different groups can test different insulating materials and collate results afterwards
- Ask the students to measure temperature reduction over time and create graphs of the results.

4 Reflect

- Which material or combination of materials worked best?
- Were your predictions correct?
- Design and test the ultimate insulating ice cream receptacle.

Equipment and resources

- ✓ Identical glass beakers (at least 2 for each group)
- ✓ Ice cream (or ice cubes)
- ✓ Thermometers/temperature sensors
- ✓ Various materials that could be insulators: paper, bubble wrap, cloth, wool, foam, feathers, polystyrene, etc.

E.ON's Energise Anything has already engaged over 25,000 young people. We asked some of their teachers to describe it in three words. Here's what they said most often!



Interested in this? They could be...

- A textile engineer or materials scientist – develop new materials for insulation
- A sustainability officer or consultant – work on projects tackling fuel poverty and improving energy efficiency
- A scientist – carry out experiments to answer questions.

Share our careers page and film to show where a love for STEM could take your students:
eonenergy.com/stickwithstem