

arctic science lesson plan 1

Test your arctic
science skills!



Science 1 - How to build an igloo

Learning Objectives

- To understand how materials and their properties can provide insulation.
- To consider how humans and animals living in the Arctic have adapted to extremely cold temperatures.

Key Vocabulary

Materials

Properties

Adaptation

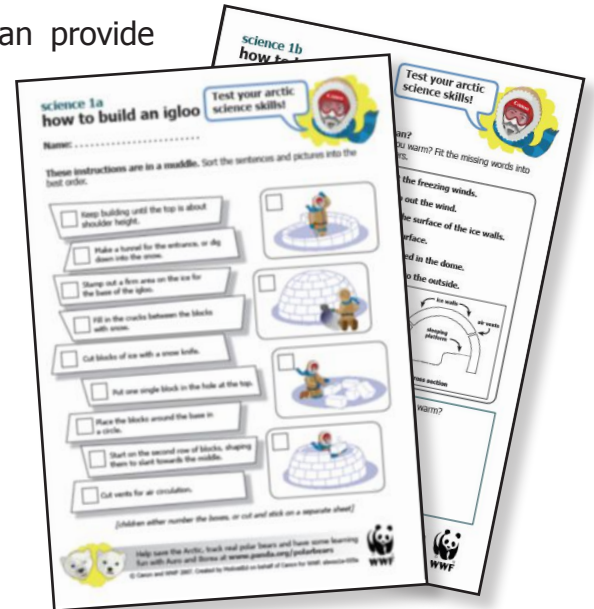
Interdependence

Insulation

Warmth

Resources

- Website – Arctic Science
- Science Activity Sheet 1
- Thermometer
- A range of materials for experimenting with heat retention and insulation
- Beakers or cups for hot water



Whole class introduction

- You might like to share the images and information from the Arctic Science section of the website with the whole class, and give them an opportunity to answer some of the questions about Arctic wildlife and science.
- What can the children tell you about what the climatic conditions are like in the Arctic?
- How different is the Arctic climate to that of the United Kingdom? Can the children help you to make a list of the major differences between a typical Arctic winter and British one?
- Show the children Activity Sheet 1. Talk about what an igloo is and how it is made. What materials are used in the construction? How do the inhabitants exclude the cold air?
- Establish that snow is used to fill in the gaps between the blocks of ice and that animal skins are used as insulation.
- What do the children understand by the word 'insulation?' Why is it important to insulate our own houses?
- Discuss both sides of the Activity sheet and make sure the children understand the tasks.

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Help save the Arctic, track real polar bears and have some learning fun with Auro and Borea at www.panda.org/polarbears

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Independent Activities

- The children can work individually or with a friend on first side one then side two of the activity sheet.
- A small group of children could use the Internet – beginning with the **www.panda.org/polarbears** site – to research how three different Arctic animals stay warm in the extremely cold winters in and around the North Pole.
- The children could draw two pictures of themselves – one wearing summer clothes, the other dressed up for a cold British winter. They should label their drawings to explain e.g. the different types of materials used (cotton, wool, thermal linings etc), the number of layers worn, what they wear on their feet, heads and hands etc.
- Ask them to write down three things they have learned about how animals in the Arctic have adapted in order to survive the extreme cold.

Plenary

- Can the children now tell you how an igloo is built and what sorts of materials are used to keep out the cold and draught?
- Ask them to describe some of the ways in which Arctic animals have adapted to cope in the Arctic climate, e.g. thick fur, splayed hooves and feet so they can walk on the snow, long shaggy coats etc.
- Who can tell you what the word 'insulation' means? Can they write a definition of the word and list three materials that are used for insulating houses and homes in Britain?

Extension Activities

- Ask the children to draw a picture of their own house. Now ask them to annotate the drawing with explanatory captions showing where heat may be lost (roof, doors, windows, floors.) How can we make sure energy is not lost from these areas (lagging/insulating roofs, curtains and double glazing, floor boards covered etc)
- You could conduct an experiment to test the insulating qualities of a range of materials. Collect a range of different materials such as cotton, wool, cardboard, fake fur, aluminium foil, tissue paper etc. Fill three or four beakers with hot water, wrap each one in a different material. Take the temperature of the water at the start of the experiment and at regular intervals for 10 minutes. Which material seems to be the most efficient at retaining the heat?
- The children could each bring in one item of winter and one item of summer wear and make a class display called perhaps, 'staying warm and keeping cool.' They could label the display and write short explanatory notes about the properties of the different materials used in the clothing and footwear.
- Explore the effects of global warming on the aboriginal peoples of the Arctic.



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