

Heating

Primary Lesson Plan



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Source

They Don't Tell the Truth About the Wind

Learning area

Science

Level

Lower primary (Years K–3)

Context

This activity could be a part of a unit on heat or energy. It is taken from a unit in *They Don't Tell the Truth About the Wind* called 'How do you make hard vegetables soft?' on heating.

Purpose

To develop the idea that heat is a form of energy which moves from hot objects to cold ones.

Description

The class design and carry out experiments to find out how to make hot objects cold.

Duration

1–2 sessions

Possible outcomes

In relation to *Science 151; a curriculum profile for Australian schools*, this activity leads towards achievement of outcomes in the following strands:

- Working scientifically
- Planning investigations
- Conducting investigations
- Processing data
- Evaluating findings
- Energy and change
- Transferring energy

Materials required

- thermometers
- containers such as mugs, jars, ice cream containers and bowls
- jelly crystals
- metal spoons
- stones
- blocks
- hot and cold water

Procedure

1 How do you turn something hot into something cold?

In a large group children offer ideas and suggestions. They may make suggestions such as leave things to sit, pour cold water over them, wrap them in an ice-pack, put them in the fridge. The teacher helps the students to tease out their ideas by asking, for example, where they have seen someone use a method like that.

Using these ideas the group plans a set of experiments such as the three below.

Making and setting jelly

The hot dish was put in the freezer and students timed how long it took to cool.

Note that only a small number of young children may know the name and role of a 'freezer' (as against a fridge).

The teacher should introduce new language by saying that energy had gone from the hot jelly to the cold freezer.

Adding cold objects to hot water and hot objects to cold water

Students add cold spoons, stones and blocks to hot water and measure the temperature change. They also put hot object into cold water and measure the temperature change.

Students are asked to predict the temperature changes before taking the readings. Students are encouraged to use the language that energy went from the hot thing to the colder thing and both changed temperature.

Mixing hot and cold water

Students mix hot and cold water in different proportions and measure the temperature changes. They make predictions about how far the temperature will change and then measure the temperature. Students realise that a large amount of hot water contains more energy than a small amount of hot water.

2 Discussion

The teacher leads a discussion which focuses on the results of experiments like the second and third experiments above in order to draw out the following ideas.

- When a hot thing is near a cold thing the hot one cools and the cold one warms.
- The hot thing and the cold thing eventually get to the same temperature and then the heating and cooling stop.
- Something called energy passes from the hot thing to the cold thing as the temperatures change.

The discussion may be as follows:

Teacher: Does it ever happen that you put a cold spoon in hot water and the spoon gets colder and the water gets hotter?

Students: No!

Teacher: If you put a hot rock beside a cold rock would you ever see the hot rock cool down, way down, until it's much colder than the other rock?

Students: No! That would be silly.

Teacher: What happens then?

Student: They come to the same and then they stop.

Teacher: Which one of your experiments said that?

Related products

They Don't Tell the Truth About the Wind is one of a series of books on teaching science produced as part of the Science Curriculum and Teaching project (SCTP).

They Don't Tell the Truth About the Wind (K–3 science program)

[*There's an Emu in the Sky*](#) (Years 4–7)

[*What Happens When You?*](#) (Years 7–9)

[*Could We? Should We?*](#) (Year 10)