

D1: RETAINING HEAT ENERGY

Overview

Much of our heat energy is produced using costly and dwindling secondary sources of energy. Because it is believed to account for approximately 36% of domestic energy consumption, home heating is an important target in the European drive towards improved energy efficiency. Several legislative measures have been put in place to encourage energy efficiency when heating living spaces. In Ireland, for example, all residential buildings that are rented or sold must have a certificate called a [Building Energy Rating \(BER\)](#) that measures the energy consumption of the building.

This section looks at ways to reduce and prevent energy wastage in the home. The first lesson, **D1 ACTIVITY 1: COMPARING COFFEE CUPS**, is an introduction to insulation. Students test the insulation properties of disposable cups and then relate their findings to insulation in buildings. **D1 ACTIVITY 2: ICE MELTING** is a visual presentation of the insulating properties of a selection of materials such as wood, plastic, aluminium, and polystyrene.

D1 ACTIVITY 3: U-VALUES assesses how effective double-glazing is in preventing heat leakage through windows.

The next lesson, **D1 ACTIVITY 4: HEATING THE HOME**, shows how heat energy is transferred and transmitted around the house and illustrates the importance of insulating heating components.

Finally **D1 ACTIVITY 5: THE GOOD HOME**, is a project aimed at giving students a deeper understanding of BERs, and an opportunity to examine different types of building materials.

The activity introduces and examines terms such as **passive home** and **geothermal heating**.

Suggested approaches:

- Distribute **D1 WORKSHEET A: ENERGY USAGE BY SECTOR**. Ask the students to link the **consumer** (column A) to what they guess is their corresponding percentage of **energy usage** (column B). When this is completed, show them the pie chart printout and facilitate a short discussion comparing the students' results with the pie chart.
- Ask the students to list the various purposes that energy is used for in the average household, i.e. heating, lighting, water heating, cooking, using various appliances. Finally ask them to estimate how much of that energy list relates to 'heating for comfort living' (about 36%).
- Ask the students to list all the ways in which energy can be wasted at home or in school (i.e. doors left open). Then ask them to list ways that energy can be saved.

NOTE:

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