CAT Education 2011

Energy use – home survey

Producing heat

Draw a quick plan of your home.

How is it heated?

(It could be with oil, gas, wood or electricity)

If there is a boiler -

How old is it?

Is it a condensing boiler?

If possible find out how much fuel or electricity is used per week or month through the year and bring the figures to school.

If you want to you could work out how much CO2 your heating produces in a year by using the figures below.

Carbon dioxide produced per kWh from different fuels/energy sources –

Oil – 280g

Mains gas – 190g

Wood – 50g

Electricity – 440g (this is from the average UK electricity generation which is mostly fossil fuels and only about 3% renewable energy)

And to calculate kWh if you buy the fuel in litres -

Heating oil - 10.27 kWh/litre

LPG - 7.4 kWh/litre

dry wood including pellets, - 5.36 kWh/kg

Details - http://www.coedcymru.org.uk/calculator.htm

How warm do the members of your family expect it to be?

 Do they want to go around in t-shirts in the winter?

 Do they put on a jumper before turning up the heating?

Distributing and controlling the heat

Is there a tank? Is it insulated?

Have you got radiators? What sort of radiators are they?

Where are they positioned in the rooms?

(could the heat escape out the windows without heating the room?)

Can you adjust the temperature on each radiator?

Have you got underfloor heating?

Where are the thermostats? Mark them on your plan of the home.

 (How many are there?)

What temperature are the thermostats set at?

Are they on timers? What time do they come on and go off?

Are rooms heated when they are not used?

Check out and write notes on these things –

 Are the windows single or double glazed?

Are the outside doors single or double glazed (if glazed at all)?

 What material are the window frames made from?

 What material are the door frames made from?

Are there any porches or can you walk straight from a heated area into the outside?

 Are there any draughts?

What are the walls made of?

How thick are they?

Have they got a cavity (many houses built in the 20th century had walls with 2 layers and a gap in between) ?

Is the cavity filled with insulation?

Is there any insulation in the roof?

What thickness?

What type?

Are there some rooms that get too hot or too cold?

Find out why people who use the rooms think this happens.

 Suggest things that could be done to prevent this happening.

In some places rooms get too hot and people cannot turn the heating down so they open windows which means that heat from radiators goes straight outside.

Electricity use

If you can, find out how much electricity is used per week, per month or per year in your home.

List all the things that use electricity. Put them in the table below.

How many hours is each thing on?

How many of these hours are actually necessary?

How much energy is used?

How much CO2 does that produce?

How much could be saved?

[With appliances like washing machines you can reduce the energy use by reducing the temperature that the wash is set at. Experiment with different settings].

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Appliance | Number of this appliance in the home | Rated electricity use | Hours on per day | Hours actually needed per day | kWh used | kWh that could be saved | CO2 that could be saved |
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What sort of lightbulbs are used?

Are lights on when they are not needed?

Can the lights be controlled well? Can you just turn on the ones you need?

Are the lights in the right places?

See <http://info.cat.org.uk/energy-conservation> and <http://www.energysavingtrust.org.uk/> for lots of background information.