the green energy uk guide to saving energy in school: heating

40%

Nearly 40% of the money schools spend on energy is for heating. That's a lot of money, and although we need heat to keep warm and comfortable, it's also important to control heating costs and save energy. This project shows you how...

the project

Start by assigning different areas of the school to teams. One team should be responsible for classrooms, another for offices, another for corridors and toilets, and another for the assembly hall, canteen and library. By the end of the project, you should find that you are using up to 10% less electric energy to heat the school.

Each team should have a thermometer to measure and record the temperature of their areas at different times of the day - before school, during lessons and breaks, and after school. After each team has collected its data, the next stage is to produce simple charts for each area, because we are going to compare these findings to what should be the optimum temperature.

learn about optimum temperature

The optimum temperature is the level of heat we need in order to feel comfortable, so this is what we should be aiming for in each area. In classrooms and offices, where people are gathered for long periods, the optimum temperature we are striving for is 18°C. In the assembly hall, canteen and library the optimum temperature is between 15-18°C, and in corridors and toilets it should be 15°C. Areas above or below their optimum temperatures, or which are using heat when no one is present, are wasting energy, so the teams need to identify the causes for this and recommend solutions. You will need to work with the caretaker or facilities manager to carry out the solutions.

each team will:

- make a note of the optimum temperature for their room/area
- make a note of what the actual temperature is before the project
- find out how to save energy and improve the school's heating
- look at some of the causes of wasted heat and see what can be done to prevent them
- suggest what they think can be done to make their room/area more heat-efficient
- after a few weeks, once you have had a chance to make some changes, come back and note the temperatures again to see if there is a difference.

how to save energy and improve the school's heating
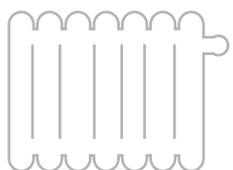
- Prevent heat escaping through pipes by insulating them with a foam
- Every so often, bleed the radiators to release trapped air.
- Put aluminium foil behind radiators attached to external walls so that heat reflects back into the room instead of escaping outside.
- Fit draught excluders to gaps around doors and windows.
- Clear obstacles from in front of radiators so heat can fill the room.
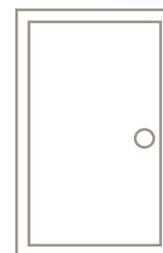
causes of wasted heat …and how to prevent them

Students should work with the school's caretaker or facilities manager to carry out the solutions.

the problem	the cause	what to do about it
Areas reach optimum temperature before school starts, so waste energy, OR areas only reach optimum temperature after lessons have begun.	If before school: the boiler is firing up the heating system too early. If during lessons: the boiler is firing up the heating system too late.	If before school: adjust the timer control for the boiler so that it starts later and begins heating the school when people start arriving. If during lessons: adjust the timer control, setting it earlier. It might take a few attempts to find the right time to set the boiler to start.
Areas are always above the optimum temperature, so waste energy.	The boiler's thermostat is set too high for the heating system.	Turn down the thermostat until the right level is found.
Some areas have optimum temperature, but others are too hot, OR some areas reach optimum temperature, but others are too cold.	If too hot: individual radiator thermostats are not fitted or incorrectly set. If too cold: thermostats are incorrectly set. Heat is being lost through open windows or doors.	If too hot: if you have individual radiator thermostats, turn them down in the areas that are too hot until the optimum temperature is found. If you do not have individual radiator thermostats, fit them, as the thermostats will help you achieve optimum temperature and save you energy and money. If too cold: if you have thermostats, turn them up in cold areas until the optimum temperature is found. If doors and windows are left open, create 'close this door' and/or 'close this window' posters.
Areas are consistently below the optimum temperature.	Heat is being lost through open windows or doors, or there could be a problem with the heating system.	Again, as above, use 'close this door' and/or 'close this window' posters where needed. An engineer may need to check that the boiler is working properly.
Areas are below the optimum temperature before school finishes, OR areas are still at the optimum temperature after school.	If before school: the boiler is shutting down too early. Heat is being lost through an open window. If after school: the boiler is keeping the system running too long.	If before school: adjust the boiler's timer for later so that it turns off at the right time for when people are leaving. Also, again make sure doors and windows are closed, creating posters if necessary. If after school: adjust the timer so that the boiler shuts down earlier. It may take a few attempts to discover the right times to set it for.

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recording sheet: heating

Team member:

Class: **School:**

Which part/s of school we looked at:

Temperatures we recorded

room/area	optimum temperature	temperature at start of project	temperature at end of project
		before school: during lessons/breaks: after school:	before school: during lessons/breaks: after school:
		before school: during lessons/breaks: after school:	before school: during lessons/breaks: after school:
		before school: during lessons/breaks: after school:	before school: during lessons/breaks: after school:

causes and recommendations
What do you think caused the temperature to be higher or lower than it should have been, and what recommendations did you make?

the differences we notice (at the end of the project)

Thank you for making a difference!
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