



## Temperature Monitoring Pack

This pack includes:

- A school set of thermometer cards (13)
- Background information on temperatures and comfort
- Class activities
- Thermometer cards for pupils to take home (30)

### Temperatures and comfort

It is important that the school is heated throughout in line with recommended temperatures for a healthy and energy efficient learning environment. Overheating is as common as under-heating in schools and can have adverse effects on health and concentration. Each 1°C increase in temperature can increase fuel cost by around 8%, so there are often opportunities to make significant savings by monitoring and appropriately controlling room temperatures.

The table below shows the recommended room temperatures throughout a school:

Room	Temperature
Classrooms/Teaching	18 °C
Dining Areas	18 °C
Sports Hall	13 °C
Staff/Admin	18 °C
Assembly/Multipurpose	16 °C
Cloakrooms/Corridors	15 °C

### Lesson support

Ultimately the biggest impact on reducing a school's energy consumption will be made by the energy practices of everyone who uses the buildings, as a result we encourage the involvement of pupils in the responsibility of managing energy use in their environment.

### Monitoring consumption

An important step is to ensure accurate measurement of the school's energy consumption on a regular basis. We recommend that pupils are involved with taking the meter readings at the school wherever possible and recording them into the Energy Diary spreadsheet provided. The spreadsheet formulas will do all the calculations for the pupils. Meter readings should be taken at least monthly.

The Energy Diary will provide information about cost and carbon emissions. It is advised that monitoring of meter readings becomes a permanent practice in the school. It is useful for spotting the impact of changes to the building or the practices of its users.

After a short period of data collection there will be enough information to make some comparisons. Meter reading information from the same period in previous years (found on bills) can be added to the Summary page of the Energy Diary for this purpose.

The graphs created by the Energy Diary will provide a good basis for analysis. A useful analysis for the pupils to carry out would be to look for changes in

consumption and begin to formulate explanations for these. These could be based around the level of usage of the building at different times of the year, changes in its layout or number of appliances, related to the outdoor climate, or even speculations about the accuracy of past readings (particularly in the case of estimated bills).

Useful information on climate averages for this region can be found on the Met Office website: <http://www.met-office.gov.uk/climate/uk/index.html> - the link for climate averages information is on the left and will give the data pupils will need to begin to suggest reasons for any fluctuations in the consumption.

### **Activity 1: short-term energy use monitoring**

It can be interesting to monitor changes over short periods of time and this can be a good way of illustrating the link between changing behaviour and rates of consumption.

This activity is designed to run over three weeks:

**Week 1:** Take meter readings at the beginning of the first week, then just carry on as normal. Take a second reading at the end of the week to see how much energy the school uses in a typical week.

**Week 2:** This is your bad practice week! Ask pupils to be as profligate as they like with leaving lights on, computers on, doors open and hot taps running (within reason!). Take another set of meter readings at the end of the week to get an idea of how much energy the school uses when things are being done badly.

**Week 3:** Now it's time to make an effort to save as this is good practice week. Ask pupils to be as careful as they can with energy, remembering to close doors and turn things off when not needed. Take another set of meter readings at the end of the week to see how much can be saved by doing things right.

This exercise should demonstrate what a difference simple energy saving behaviours can make – but be warned that other factors including the weather can deliver unpredictable results!

After week 3 is a good time to encourage pupils to continue their energy saving behaviour.

### **Monitoring temperatures**

Besides monitoring meter readings, the temperatures around the school building should also be kept in check. To assist with the ongoing monitoring of school temperatures a number of thermometer cards with temperature guidance are provided with this pack. These should be positioned in each room of the school and clearly visible.

### **Activity 2: temperature monitoring**

- Place a school thermometer card (provided) in each room or area of the school.
- Ask pupils to produce a large plan of the school with the guidance temperature for each room clearly marked (see the table on the first page).
- Display the plan in an area that everyone can see.
- Each day or each break time, appoint pairs of pupils to go and record the temperature from each thermometer card. See below for how to read the cards to 1 °C accuracy.
- A good way to record temperatures is to use 'post-it' notes clearly marked with the date, time, and temperature. These can be displayed on the plan for everyone to see, and then easily removed and filed to provide an ongoing analysis of school temperatures.

### **How to read thermometer cards**

The square round the number changes colour as the temperature increases from reddy-brown to green to blue so you can read the temperature to one degree accuracy.

For example:

When the number 21 is showing, if it is green the temperature is 21 °C, if it is reddy-brown the temperature is 20 °C and if it is blue the temperature is 22 °C.

By this process of recording, presenting and explaining the meter readings and temperature data, pupils will become well informed of the school's energy situation. They could present their knowledge to others in the school and start campaigning to bring about improved energy practices in the whole school community. Working on ways to promote energy efficient habits such as turning off lights and equipment through signs, posters and school assemblies will also be very useful.

Making pupils into Energy Monitors with responsibility for certain areas of the school is a good idea and once the older pupils have got to grips with it they could carry out a brief mentoring session to help younger pupils do the same.

Continuing the monitoring process over time is very important as the consumption of energy has a variety of influences which are subject to change. It will also enable pupils to report back on the progress of their work to peers, senior staff and governors.

**For more information and advice about energy issues,  
in school or at home, call the Gloucestershire  
Energy Efficiency Advice Centre on 0800 512 012**