

What costs Watt?

Summary



These easy-to-use devices, allow users to check the energy consumption of most electrical appliances and are widely available (exemplars are shown above) and retail at approximately €10-20 per meter. In this description we use the phrase "power-meter" although you may know them as Eco-Energy or Energy Saving monitors,

With knowledge of local electricity tariffs, most can be programmed to calculate the cost of running the appliance

Materials Needed

- 1 or more power meters
- Student home survey (downloadable from the library for the Extension activity)

Procedure

Refer to the detailed manufacturers instruction sheet provided with each device and before allowing your young people to work with the device ensure they understand fully how to use it. Individual teachers need to make their own decisions regarding the health and safety implications of this activity based upon their knowledge of their own pupils.

Pupils should be reminded of the general Health and Safety precautions to be taken when using electrical appliances, which may become hot during use. They should be aware of the importance of having dry hands when using the Power Meter and of switching off the electricity supply before the Power Meter is connected and disconnected. They should be

warned that if the Overload Protection LED light, marked OL, illuminates, the Power meter should be disconnected immediately because the appliance plugged into it is consuming more power than is allowed. Note: not all meters may possess this function.

Most meters work in the following way:

- Plug the Power Meter into an electrical socket
- Plug the appliance that you wish to investigate into the Power Meter.
- Switch on the Power Meter and the appliance
- Either run the appliance for a set length of time before switching off or wait until the appliance switches itself off.
- Find the total energy consumption and cost of running the appliance, both will probably be displayed on the device.

Calculations.

- To programme the power-meter, knowledge of the cost per unit of electricity is required. Young people may need to ask their parents or guardian for this information, or research it using the internet.



The Power Meter can be used to investigate the power consumption of lamps with low energy and conventional light bulbs, boiling a kettle of water compared with a cupful, recharging a mobile phone overnight compared with the minimum time needed, leaving computers on standby, using hairdryers and other gadgets.

Young people may be invited to bring in an appliance of their choice to the lesson, or the monitors distributed to the students for an overnight 'loan' to determine the running costs of 'essential' and 'non-essential' appliances.

Extension / Homework activity

Young people can be set the task of completing the home survey. Teachers may wish to adapt the survey provided to local situations.

As well as focussing upon money-saving, teachers may wish to use the opportunity to make the link between electricity use and CO₂ emissions.

From learning to action

With the information gathered from the home survey young people may commit to ensuring all electrical appliances in their room or the home are switched-off at the end of the day. Similar endeavours may be undertaken in the school at the end of the day.

Although the cost of leaving a single item on 'stand-by' overnight may seem trivial, young people should be encouraged to think about this in terms of monthly or annual consumption and the number of appliances that are left 'on stand-by' rather than genuinely switched-off. Then real energy savings will be realised.

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