

The value of our electricity

Senior Phase (Grade 8)

Learner activity sheet

Natural Science





How to save energy



Dear Learner,

Electricity is produced from the fuel such as coal, water, diesel and uranium which are limited resources. Building new power stations to increase the supply of electricity is costly, time consuming and is only one of the possible solutions towards producing more electricity. Increased use of electricity means we use up our limited natural resources and means we pollute more.

An immediate solution is to change the way in which we use electricity – that is using electricity wisely without wasting.

Eskom kindly asks you, the learner, to please put into practice different ways of using electricity wisely. You are going to learn a lot in energy education. Some of the things you will learn are:

- the changes in technology (use energy-saving lights instead of the traditional old lights),
- how to use technology more wisely (using the switch to switch off remote controlled appliances instead of the remote),
- other energy-wise saving tips,
- and how using energy wisely helps to care for our environment – our earth.

Do not worry, the energy education will be part of your school work. Be alert and become an example of how to use energy wisely. Share all that you learn with your friends, family and community. Remember to be energy-wise wherever you are – at home, at school and in other places.

Thank you for taking care of our earth.

Strand: Energy and Change

Topic: Energy transfer in electrical systems

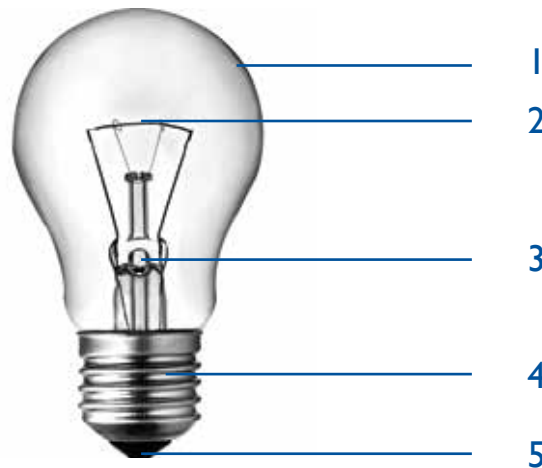
Content: Components of a circuit – Resistors

- Resistors are made from materials that resist/oppose the flow of electrical current in a circuit.
- Resistors in a circuit have an influence on the amount of electric current flowing in that circuit.
- Some resistors (including bulb filaments, heating wires, elements in kettles/heaters/geysers/stoves) can heat up to provide useful output energy (e.g. a light bulb).
- A light bulb such as a torch bulb contains a resistance wire called a filament. The filament heats up and becomes white hot when connected in a circuit. The resistance wire is connected to two contact points - the one end to the screw part (casing) and the other end to the solder knob at the bottom. The two contacts are separated by an insulator.

Activity 1: Components of a circuit – Resistors



Read the introductory notes given on resistors. Find a sample of an incandescent light (old light bulb). Study the sample of the incandescent light bulb and the picture of the incandescent light bulb below.



* Be careful when handling the light bulb as the casing is made of thin glass which can break easily. Do not dismantle the bulb and dispose by wrapping in paper and then in plastic before putting it into the bin. You can also drop the bulb at your nearest recycling centre.

1. Provide the following labels on the picture – filament, casing, solder knob, separating insulator, screw part. _____

2. What material is used to make the filament? _____

3. What is the purpose of the filament in the light bulb? _____

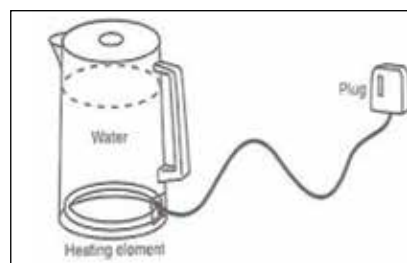
4. List the output energies provided by the filament. _____

5. In the case of the incandescent light bulb, the filament heats up to about 2000°C before heat energy can be transferred to light energy.

5.1 Why do you think that the incandescent light bulb is not an energy-saving product? _____

5.2 Which light bulbs should we use to save electricity?

6. Look at the different parts of the electrical kettle.



6.1 Which part of the electric kettle is a resistor?

6.2 State the output energy provided by this part (resistor).

6.3 How can one use the electric kettle in a way that saves energy?

This image shows a full page of blank white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, providing a guide for writing. There are no margins, text, or other markings on the paper.

This image shows a full page of blank, lined paper. It features approximately 28 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.



For more information on the schools programme, please visit www.eskom.co.za/idm.