Saving energy

Lesson plan and teacher's notes · Grade 2 Science · 1 period of 40 minutes

School	(write school name)	**Teacher**	(write name)
Date	(date)	**Class**	Grade 2
Subject	Science	**Enrolment**	Boys ___ Girls ___ Total ___
Time	40 minutes	**Topic**	Saving energy

Learners identify energy-saving devices, compare an ordinary bulb or brazier with an energy-saving one, and practise habits such as switching off lights and using natural light. One period of 40 minutes.

Specific outcomes

By the end of the lesson, learners should be able to:

1. Identify energy-saving devices and say what they are used for
2. Say why saving energy is important
3. Show good habits for saving energy

Prior knowledge

- Learners know that lights, stoves and radios use energy
- Learners know what a bulb and a brazier are
- Learners can work in groups

Teaching and learning materials

- Pictures or real samples: LED bulb, solar lamp, rechargeable lamp, improved stove
- An ordinary bulb and an energy-saving bulb, if available
- An ordinary brazier and an energy-saving brazier, if available
- Chalk and board
- Worksheet of switch on or switch off situations

References

Ministry of Education (CDC) Grade 2 Science syllabus and module; 25Schools learners' note: Saving energy.

Lesson development

Stage and time	Teacher activities	Learner activities
Hook: the careless community 6 min	Say: People in the community are using energy carelessly. You have been asked to teach them ways of saving energy. What will you talk about. Take answers. Ask: How can energy be saved.	Think, share ideas and answer.
Energy-saving devices 12 min	Show pictures or real samples of LED bulbs, solar panels, solar lamps, improved stoves and rechargeable lamps. Point at one device at a time and ask: What is this used for. Why is it important for saving energy. If you have both bulbs, switch them on together and let learners compare brightness and say which uses more energy. Compare charcoal use in an ordinary brazier and an energy-saving one.	Identify devices, compare and give reasons.
Group work: devices at home and school 8 min	Put learners in groups to name energy-saving devices used at home or school and say how they help. Stress the four ideas: they reduce electricity use, save money, protect the environment and reduce pollution.	Discuss and report.
Energy-saving habits 10 min	Say: You are about to go to school and you are the last person to leave the house. What will you do. Ask: What is energy used for at home or school. What happens if we leave lights or appliances on. Explain that energy conservation means using energy carefully and not wasting it. Let learners act out switching off lights, unplugging chargers, opening curtains for natural light, and walking short distances. Teach the reminder: use energy wisely, switch off when not in use.	Act out habits and say the reminder.
Worksheet and conclusion 4 min	Give the worksheet. For each situation learners say whether to switch on or switch off. Summarise and give the homework.	Complete the worksheet.

Teacher's content notes

Read these before the lesson. They are what you need to know, not what to copy onto the board.

Why energy matters

Energy helps us light rooms, cook food and keep warm. It must be used wisely and not wasted.

Devices

Energy-saving bulbs, improved braziers, solar panels, solar lamps, improved stoves and rechargeable lamps help save energy.

Key ideas

Energy-saving devices reduce electricity use, save money, protect the environment and reduce pollution.

Habits

Switch off lights, unplug chargers, use natural light, cook on improved stoves, turn off generators when not needed, dry clothes on the line and walk or cycle short distances.

Questions to ask during the lesson

Question	Expected answer
The teacher shows two bulbs and switches both on together. One bulb is an LED and the other is ordinary. The class compares them. (a) What do learners compare. (b) Which bulb uses less energy. (c) Why is that useful.	(a) How bright each is. (b) The LED bulb. (c) It saves electricity and money.
A girl wants to help her community save energy. She sees people leaving lights on all day and chargers plugged in. She makes a list of habits. (a) What will she say about lights. (b) What will she say about chargers. (c) What reminder can she teach.	(a) Switch them off when not in use. (b) Unplug them. (c) Use energy wisely, switch off when not in use.
A family uses an ordinary brazier and finishes a bag of charcoal quickly. A neighbour uses an energy-saving brazier and her charcoal lasts longer. The class discusses it. (a) Which brazier is better for saving energy. (b) What does the family save. (c) How does this protect the environment.	(a) The energy-saving brazier. (b) Charcoal and money. (c) It reduces pollution.

Worked examples for the board

Comparing two bulbs

Step 1: Switch on both bulbs together. Step 2: Compare how bright each is. Step 3: Say which uses more energy. Step 4: Give a reason.

Switch on or off

Step 1: Read the situation, for example bedroom light when going to school. Step 2: Ask if it is needed. Step 3: Decide to switch it off. Step 4: Say why.

Board plan

Write the title. List devices on the left: LED bulb, solar lamp, improved stove. Write four reasons on the right: less electricity, saves money, protects environment, reduces pollution. Write the reminder at the bottom.

Device	How it helps
LED bulb	Uses less electricity
Solar lamp	Uses the sun
Improved stove	Uses less fuel

The finished board

Mistakes to expect

Learners often think	Put it right
Leaving a light on does no harm.	Ask what happens if lights stay on when not in use. Show that it wastes energy and money.
Energy saving means going without.	Explain that we still use energy but carefully, for example by using natural light in the day.
Only big machines use energy.	Ask learners to list small things such as chargers, radios and torches that use energy.

Differentiation

Learners who struggle

Use only two devices at first, an ordinary bulb and an LED bulb. Let learners point to the one that saves energy and say the reminder together.

Learners who finish early

Ask learners to plan three rules for a class energy-saving team and say who checks the lights at break time.

Hearing or visual impairment

For learners with a visual impairment, let them handle the real devices and say the reminder aloud. For learners with a hearing impairment, face them, use pictures and write the reminder on the board.

No projector, no printing

Draw the devices on the board or on paper. Use a torch and a candle to talk about brightness. Compare two cooking fires by how much wood or charcoal each uses in a story.

If time is short

Keep the device display, the four key ideas and the reminder. Move the group work and the worksheet to the next lesson.

Evaluation

Question or task	A correct answer shows

A teacher displays an LED bulb, a solar lamp and an improved stove on a table. She calls each learner to the table. (a) Name one device. (b) Say what it is used for. (c) Say why it saves energy.	(a) Any correct device. (b) Lighting or cooking. (c) Uses less electricity or fuel, or uses the sun.
Kondwani is the last to leave for school. The kitchen light is on, the radio is playing and the sun is shining through the window. (a) What will he do to the light. (b) What will he do to the radio. (c) How can he use the sun.	(a) Switch it off. (b) Switch it off. (c) Open the curtains for natural light.

Homework

Njavwa notices at home that the television is left on and nobody is watching it. Her little brother also leaves chargers plugged in all day. She decides to help. (a) What will she do to the television. (b) What will she do to the chargers. (c) Say one reason why this helps.

Extra practice with answers

Question	Answer
1. Mwamba comes into the room at midday. The curtains are closed and the lights are on although it is bright outside. His teacher asks him what to do. (a) What should he do to the curtains. (b) What should he do to the lights. (c) What does this save.	(a) Open them. (b) Switch them off. (c) Electricity and money.
2. A shop shows pictures of a solar lamp, a candle and an LED bulb to the class. The teacher asks which devices save energy. (a) Name one that saves energy. (b) Say how it helps. (c) Say one more device that saves energy.	(a) Solar lamp or LED bulb. (b) Uses the sun or less electricity. (c) Improved stove or rechargeable lamp.
3. Two boys live a short walk from school. One walks every day and the other gets a lift in a vehicle. The teacher asks the class about their habits. (a) Who is saving energy. (b) Why. (c) Name another habit that saves energy.	(a) The boy who walks. (b) A vehicle uses fuel. (c) Switch off lights or dry clothes on the line.
4. The class completes a worksheet about when to switch on and switch off. One line says security lights during the day. Another says when you want to listen to the radio. (a) Should the security lights be on or off. (b) Should the radio be on or off when you want to listen. (c) Say why.	(a) Off. (b) On. (c) Do not waste energy when it is not needed.

Answers to the learners' check-yourself questions

1. Name one energy-saving device.
   LED bulb, solar panel, solar lamp, improved stove or rechargeable lamp.
2. Name one thing energy is used for at home.
   Lighting, cooking or keeping warm.
3. What should you do to a light when you leave the room.
   Switch it off.

4. Why is saving energy good for the environment.
   It protects the environment and reduces pollution.
5. Mutale is the last person to leave the house for school. The bedroom light is on, a phone charger is plugged in and the curtains are closed. (a) What will she do to the light. (b) What will she do to the charger. (c) What will she do on the next sunny day instead of using the light.
   (a) Switch it off. (b) Unplug it. (c) Open the curtains to use natural light.
6. Two families cook with charcoal. One uses an ordinary brazier and the other uses an energy-saving brazier. After one week the first family has used up more charcoal. (a) Which brazier uses charcoal faster. (b) Which one saves energy. (c) Name one other device that saves energy.
   (a) The ordinary brazier. (b) The energy-saving brazier. (c) An LED bulb or a solar lamp.

Teacher's reflection

What went well:

What I will change next time:

Learners who need follow-up: