



Where The Little Light Bulb Gets Its Juice Teacher's Guide

INTRODUCTION

Where the Little Light Bulb Gets Its Juice uses cartoons and activities to explain electricity-related science concepts and how to use electricity safely in daily life. This discussion guide contains questions and suggested activities for the entire booklet.

VOCABULARY

Introduce some or all of the vocabulary words in the Glossary on page 3 of this guide.

INITIAL ACTIVITY

Ask students to solve this riddle:

What am I?

- I can be found almost anywhere.
- I am probably being used right now in this room.
- I can be turned on and off.
- I make it easier for you to see.
- I am a light bulb!

LESSON DEVELOPMENT

Cover Page

Distribute the activity books and ask children to look over the cover. Ask them these questions:

- Why do you think the light bulb has arms, legs, and a face?
- What else is on the cover? (*utility pole, electrical substation, power plant, road, wires*)
- Which of these things have you seen in your neighborhood?

Page 2

- How many light bulbs are in the picture?
- Why do we need light bulbs?
- Where are light bulbs used?

Have the children tell you where all the light bulbs are in the classroom. Show the children the difference between a fluorescent and an LED bulb.

Page 3

Explain the activity to the children. Do the first one with the children. Make sure each student knows the “L” is the correct answer. Have children complete the activity with or without assistance.

Page 4

Read and explain the words on the light bulb. (See Glossary)

Page 5

Have students look at the picture as you explain it. Tell them electricity is made in the power plant, then it goes through the electrical substation, and then it is sent to our schools, homes, and businesses.

Go over the directions to the activity and check to see that they all get the answer. (*Electricity travels in wires.*)

Page 6

Tell the students that this is a picture of a generator at a power plant. The generator makes electricity.

Page 7

- Explain to students that this page shows nine different sources or forms of energy that can be used to create electricity. What is shown in the top left picture? (*flowing water*) Have students unscramble the word “WATER.” Explain that the power of the falling water is used to turn the generators in order to make electricity.
- What is happening in the middle picture? (*Steam is coming out of the kettle.*) Explain that when water is heated, steam is made. Like falling water, steam turns turbines, which turn generators and make electricity.
- What is happening in the picture at the top right? (*Wind is spinning the wind turbines, which also can turn generators and make electricity.*)
- What is happening in the picture at the middle right? (*Students may not be familiar with this less well-known form of renewable energy known as biomass. Biomass is plant matter or farm and lumber waste that can be harvested or collected to produce electricity. In the photo, the bulldozer is gathering waste that can be burned to heat water to produce the steam needed to turn turbines.*)

Explain that some of the energy sources on this page are called renewable and some are nonrenewable. Renewable means the energy source can be replenished; nonrenewable means it cannot—that some day it will run out.

- Ask students if they can name the energy forms on this page that are renewable. (*water, wind, biomass, sunlight*)

Pages 8 & 9

Explain that the two children must go from the power plant to their home. Reinforce the need to keep away from electrical substations.

Page 10

Explain to students that voltage is like water pressure in a hose. The higher the voltage, the greater and more dangerous the force.

Page 11

Tell students that transformers at substations raise the voltage of electricity so it can be sent long distances. The voltage is then lowered by transformers near our homes so we can use the electricity.

Page 12

Read the “little story” to the children. Explain how to do this activity.

Page 13

Review how we get electricity. Ask students these questions:

- Where is electricity made?
- Where does it go next?
- From the substation, how does it travel to your home?

Page 14

Discuss with students the electrical safety rules on this page. Why is it important to be careful with electricity?

Page 15

Discuss with students what conservation is and why it is important to use energy wisely. Go over each way electricity is conserved on this page.

Have students design posters to serve as reminders to people of ways they can use electricity wisely.

Page 16

Have students locate where the 13 words used in the word search can be found in this book.

Ask students what they have learned from doing the activities in this book. Suggest that they take the book home to share with their family.

GLOSSARY

- **ELECTRIC CURRENT** Electricity that runs through wires. *When a light bulb is on it shows that electric current is flowing through the wires.*
- **ELECTRICITY** One of the basic forms of energy. *Electricity can run electric motors and produce light and heat.*
- **ENERGY** The ability to do work. *Some forms of energy are light, heat, and electricity.*
- **FUEL** Things that are burned to provide heat or power. *Coal, wood, natural gas, and oil are fuels.*
- **GENERATOR** A machine that produces electricity when turned. *Turbines turn most generators.*
- **HYDRO-ELECTRICITY** Power produced by falling water. *Hydro-electricity is made at big waterfalls.*
- **LIGHT BULB** An object used to make light. *The light bulb in my lamp gives me enough light to see what I am doing.*
- **MAGNET** A material that has the power to attract iron or steel. *Magnets are often made in the shape of a horseshoe.*
- **METER** Something that shows how much electricity is being used. *The meter reader came to see how much electricity our family has used.*
- **OUTLET** A place to plug in electrical appliances. *The toaster was plugged into the outlet.*
- **POWER STATION** A place where electricity is produced. *We went on a class trip to see a power station.*
- **RENEWABLE ENERGY SOURCES** Energy sources that can be replenished. *Sunlight, wind, water, and biomass are all sources of renewable energy.*
- **SOCKET** A place to hold something. *A light bulb is screwed into a socket.*
- **SUBSTATION** A place where the voltage of electricity is changed. *A substation helps move electricity from the power plant to homes, schools, and businesses.*
- **TRANSFORMER** A device to change the voltage of electricity. *A transformer reduces the high voltage of transmission lines for household use.*
- **TURBINE** A device in which a wheel is made to turn by the force of water, steam, or air. *Steam or wind can be used to turn a turbine.*
- **VOLTAGE** The force of an electric current. *The overhead electric wires had a high voltage.*