



Energy: Everyone Makes a Difference GET ENERGIZED ABOUT SAVING ENERGY!

Grade Level: K-3

Curriculum Links: Science, Social Studies, English Language Arts, Math, Technology, Art

Activity Overview: In this lesson, students learn that electricity doesn't just come from a wall outlet. They'll learn about its origins in nature and how they can do simple acts to reduce the amount of electricity they use in their homes, such as turning off lights etc. They'll create reminders/or posters to help their families remember to turn off lights and reduce hot water use.

They'll also research how climate change affects ice caps and their animal inhabitants.

Duration: 1 hour

Materials Required: Art materials

Objectives:

Knowledge: Students will learn how climate change is linked to energy efficiency and some simple ways they can reduce energy-use in their own homes or schools.

Skills: Analysis, discussion, writing, artistic skills

Affective: Students will be empowered to become a part of the climate change solution through their activities and efforts.

Prescribed Learning Outcomes:

The student will be able to:

- *describe ways to rethink, refuse, reduce, reuse, and recycle
- *relate consequences to actions and decisions
- *suggest purposes for a variety of images
- *explain why air, water, and soil are important for living things
- *describe features of their immediate environment
- *communicate their observations, experiences, and thinking in a variety of ways (e.g. verbally, pictorially, graphically)
- *ask questions that foster investigations and explorations relevant to the content

For more curriculum links, see B.C. Ministry of Education website: www.bced.gov.bc.ca/irp/lo.html

Lesson Introduction:

Climate change can be a scientifically complex topic for primary students. In this lesson, we'll focus less on the doom n' gloom scenario and more on how students feel a personal connection to the climate change issue in a positive way.

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Students will also learn about some of the effects of climate change, such as ocean warming.

Lesson Instruction:

Introduce basic concepts of electrical energy. Point out the lights in the classroom. Turn them on and off.

Ask: *What makes the light come on?*

Then: *How does the electricity get into our classroom?* Explain the generation of electricity in your community, drawing each step on the board, e.g.,



- A generator (burning diesel), or a hydroelectric project (using water power with water coming from dams in lakes for example), creates energy.
 - Transmission lines (held up by transmission towers) carry the energy to a substation, where the energy is divided up to send to homes, schools, etc.
 - Distribution lines (held up by power poles or buried underneath the ground) carry the energy into our homes and schools. Call BC Hydro at **1 800 BCHYDRO (1 800 224-9376)**. Ask if they'll send a classroom speaker to explain how our power is generated and ideas on how it can be saved.
 - The electricity travels through wires in your walls until it gets to the electrical sockets or lights controlled by switches.
 - To get the energy to turn on a light (or an appliance), usually we have to turn on a switch or plug an appliance into a socket. This is to make sure we are only using energy when we need it.
 - A meter measures the amount of electricity that goes into your home. Your parents pay for the amount of electricity your household uses.
2. Next, ask: *What things in our homes and schools use electricity?* Brainstorm a list of common electrical appliances and other energy-using devices. Make sure light and hot water (unless it's a gas heated hot water tank) are on the list. Look over the list you have developed and ask: *What would it be like if we ran out of electricity? (no lights, no fridge, no TV!, no stereo, no playstation or gameboy on your tv, no movies/dvds, no washing machine or dryer, no heat in many cases, no air conditioner, etc.*
3. Explain the problem relating to electricity use: When fossil fuels, such as diesel, burn, they emit a greenhouse gas called carbon dioxide (CO₂) into the air. This is bad for the earth, because carbon dioxide is a **greenhouse gas** and more of it in the atmosphere is making the earth hotter, called "global warming". For an easy definition of greenhouse gas, see <http://www.yourplanetearth.org/terms/details.php3?term=Greenhouse+Gases>.
- **Short Definition:** Greenhouse gases are a mixture of naturally occurring (water vapor, methane, carbon dioxide, nitrous oxide and ozone) and manmade (CFCs, HFCs) gases. They

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are responsible for trapping heat from the sun inside the earth's atmosphere. This term explains the abundance and importance of these gases. Scouts Canada also have a useful background sheet linking energy use to climate change. See: <http://www.scouts.ca/inside.asp?cmPageID=479>. We've also provided a printout from that website for your convenience.

- o Global warming may increase ocean temperatures and cause many fish and plants to die or become extinct as well. Encourage students to think about what would happen if the world's polar ice caps continue to melt? Would the polar bears and the penguins then disappear? Ask students if these animals could live in a hotter or tropical climate? (We've provided some websites for background information.) <http://www.nrdc.org/globalWarming/qthinice.asp>
<http://www.newsandevents.utoronto.ca/bin1/010221a.asp>
<http://north.cbc.ca/regional/servlet/View?filename=arctic-ice-29072005>
http://news.nationalgeographic.com/news/2004/11/1109_041109_polar_ice.html



*Depending on the knowledge level of your class, have them give a brief presentation of the greenhouse effect. They could act it out in the form of a play, a written report, photo collage, write a song, etc. Information on this topic is provided at Natural Resources Canada's website:

http://adaptation.nrcan.gc.ca/posters/articles/ac_03_en.asp?Region=ac&Language=en

4. Explain the good news: *We can help by using less electricity!*
Next, ask: *How can we help people in our school / family reduce the amount of electricity they use?* (Answers: turning lights off when not in use, using low-wattage lightbulbs, using less hot water (shorter showers, cold-water wash), etc.)
5. Discuss how to help your family reduce their electricity use, save money, and reduce climate change: Ask: *Do lights ever get left on at your house, even when there's no one in the room?* Then: *Why?* Brainstorm ways they could help their families reduce energy waste. One way is to post reminders, (try some sticky notes!) to help family members remember to turn lights off when not in use, and also to reduce their hot water use. Discuss where such reminders could be posted, e.g., on or next to light switches, next to showers, etc. Try hanging laundry outside on sunny days instead of using the dryer!
6. Design a number of different memory prompts. Examples of messages:
 - Beside light switches (or on light plates):
"Please turn me off when you leave?"
"Lights out?"
"Save energy! Turn me off."

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Beside the doors:

- "Let's walk today!" or,
- "Ride a bike"
- "Take the bus."
- "Leave the car at home!"

- Beside the shower:

- "Short showers save energy!"
- "Help the planet – shower quickly!"

7. Another option would be for students to **design a poster** for their home on the need to save energy.



Lesson Extensions:

Reducing Our Transportation

Greenhouse Gases (GHGs):

Extend the ideas in this lesson to a discussion of transportation, explaining that a major source of GHG emissions is transportation that burns fossil fuels: cars and trucks. Brainstorm ideas of how to reduce car use. For students interest in what business, industry and government are doing to reduce climate change, have them email or phone the Canadian Association of Petroleum Producers

http://www.capp.ca/default.asp?V_DOC_ID=648 or the Government of Canada <http://www.climatechange.gc.ca/> and other environmental

agencies. They can "interview" the people they contact, asking "What are you doing to reduce climate change?" Are electric or "hybrid" cars better for the environment? "What can we do together?" "Will someone from your business, government or group be able to come to my school and speak to my class about climate change?" Alternatively, students may also want to create posters including their ideas about reducing car use.

Puppets Against Climate Change: Using the information on the importance of reducing energy-use that they have learned through the class discussion, work with your students to create a puppet play. They can use old socks, buttons, wool etc. to simulate animals, people etc.

-Lesson plan prepared by Sandra Ulmer – Education Services Coordinator, FORED BC

