

# Lesson Plan: A Day without Energy

## Note

This activity builds on January/February **Green Star! Enviro- Activity Newsletter**.

## Age

Grades 4-7

## Subjects

Science, Art, Language Arts

## Skills

Analysis, application, research

## Duration

Homework time plus one 45 minute class

## Setting

Indoors

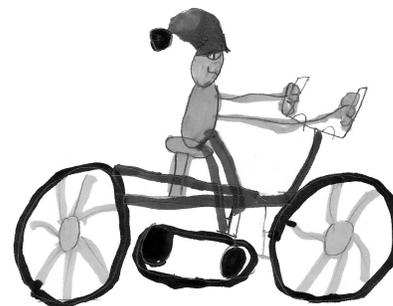
## Materials

- Writing materials
- For extension activities: library references, internet access, drawing materials, old magazines, glue, cardboard, and other art materials

## Objectives:

Students should be able to:

1. Identify situations that use energy in their daily life.
2. Describe how energy can be used more efficiently.
3. Research and identify some alternative energy sources for daily use.



## Method

This lesson introduces students to the idea that everything uses energy and the more energy we use, the more pollution we create. It also introduces students to the importance of energy efficiency and conservation as ways to reduce our energy use and pollution creation. Students will become familiar with their daily energy consumption, recording every item that uses energy through their day, and will contrast that to a day without energy (and decide whether this is even possible!). Students can express their ideas using visual reproductions, including writing, drawing, and collage. With further class discussion, reading and library or Internet research, the class will then decide on some ways to reduce their daily energy use.

## Background

On a daily basis, we use a tremendous amount of energy without thinking about the amount, the sources, the need or the consequences of that use.

Imagine a day spent without using any energy unless it was direct from a natural source. These natural sources are called *renewable sources*, and often are the most environmentally-friendly sources of energy. They have little or no direct pollution associated with their use; to use them on a large scale though, we have to create infrastructures to convert their energy into useable forms. However, even with these infrastructures, energy sources like sunlight, fresh running water, wind, and people are virtually "clean" sources when compared to non-renewable energy sources. Using non-renewable energy sources, especially fossil fuels like oil, coal, and natural gas, creates an abundance of greenhouse gas emissions – carbon dioxide, carbon monoxide, sulphur dioxide and many other gases are created when we process and use these energy sources. With high consumer needs and global use, greenhouse gas emissions from a reliance on fossil-fuel powered factories, transportation and

home uses have become a huge concern. A thicker layer of greenhouse gases in our atmosphere is the direct cause of the earth's higher heat retention – and of the shifts in our climate that are occurring as a result.

### Procedure

1. In class, give a homework assignment where each student will record every different way that they use energy for an entire day. Use student journals or worksheets to record their energy use, and include any activities from the time your students wake up until they go to bed. The records should include heat, light, food storage, transportation, water use, and any other ways students can think of.
2. The next day, start a class brainstorm of the many different ways students used energy. Once you have a list on the board, ask students about the ways that they could use less energy or natural sources of energy to go through an entire day without using any. To prompt students, read the following passage:

*“Imagine how you would spend a day without using any energy. When you wake up (to your wind-up alarm clock), find some breakfast that doesn't need heating, cooling or energy to make it. You could mix some water with powdered milk to have with your dry cereal. (Whoops. How much energy does it take to make cereal and powdered milk?) Maybe, instead, you could hand squeeze some oranges for juice. (But how did the oranges get into your house?) Remember, no electricity to watch TV or use lights; read only by daylight. No gas for the car; walk or bike everywhere. It's OK to use free, natural energy like sunshine to dry your clothes, but be sure to wash them by hand in cold water. What other ways do you use energy? What foods require energy to cook or keep fresh? (Remember, ice cream needs electricity to keep it frozen.) How will you get to school? Does your classroom have enough windows to provide light? Will the temperature be comfortable without air conditioning or heat? Would meeting outside under a tree be better? Think how you will get through a day without energy. What you will do all day to use less energy?”*

3. Have the students write a story about their day spent without energy. Ask them to include as much detail as possible.

### Extensions

1. Spend a class in the library and on the Internet, researching natural, alternative sources of energy. Have each student identify where the alternative sources of energy could be used instead of conventional, non-renewable energy.
2. Have each student make a collage of renewable versus non-renewable energy sources, and identify how those sources could be incorporated into their daily lives.

### Evaluation

1. Ask students to identify at least three different sources of energy that don't create greenhouse gases when we use or process them.
2. Have students rank the different kinds of energy they use daily, organizing the energy from the most harmful to the environment through to the least.

