



A Bright Idea

How much energy and money different light bulbs can save us.

By: Sherry Nikbakht

Abstract

Students explore an easy way of conserving energy while they do some comparison between two types of light bulbs. Students calculate the cost advantage of replacing an incandescent bulb with a compact florescent bulb.

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Nikbakht, Sharareh. (2016). A bright
idea.



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Introduction:

In this activity you explore an easy way of conserving energy by just replacing the incandescent light bulbs with compact fluorescent bulbs. The incandescent light bulb is a source of electric light that works by incandescence, which is the emission of light caused by heating a filament. Incandescent bulbs are the original form of electric lighting and have been in use for more than 100 years. On the other hand, Fluorescent lamps produce light by exciting the atoms of a gas such as neon, mercury vapor, and sodium vapor. Fluorescent lamps on average use 25% of the energy used by an incandescent bulb to provide a similar amount of light. Also, Fluorescent lamps last about 12 times longer than incandescent lamps. To make a comparison between the energy usage and cost of each type of light bulbs, work on the following problems.

Activity:

1. How much would you save by replacing a 80-watt incandescent bulb with a compact florescent bulb which has a lifetime of 12,000 hour? Assume that electricity cost 0.09\$ per kwh (kilowatt hour)
2. If the florescent bulb was turned on for 12 hours a day, how many months before it needs to be replaced?
3. If an incandescent bulb cost \$1 and lasts 1,000 hours, and a compact fluorescent bulb costs \$8 and lasts 12,000 hours, which bulb has the cost advantage and by how much?