

What's Watt?

Fourth Grade

Activity: 4

Time: 2 Class Periods

General Description

Students will survey rooms to chart usage of lights at home. Students will determine total wattage of lights used and determine how they can reduce usage.

Objectives

Students will assess the wattage of incandescent and fluorescent bulbs in their homes.

Students will develop a plan to reduce the usage of electricity in their homes.

Arizona State Standards

SC04 S1C2 PO4 Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (e.g., metric, U.S. customary)

SC04 S1C2 PO5 Record data in an organized and appropriate format (e.g., t-chart, table, list, written log)

SC04 S1C4 PO1 Communicate verbally or in writing the results of an inquiry

SC04 S4C3 PO3 Analyze the effect that limited resources (e.g., natural gas, minerals) may have on an environment.

SC04 S4C3 PO4 Describe ways in which resources can be conserved (e.g., by reducing, reusing, recycling, finding substitutes)

W04 S3C4 PO1 Write persuasive text (e.g., advertisements, paragraph) that attempts to influence the reader

M04 S2C1 PO3 Interpret graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data

M04 S4C4 PO1 Identify the appropriate measure of accuracy for the area of an object (e.g., square feet or square miles)

M04 S4C4 PO3 Select an appropriate tool to use in a particular measurement situation

Teacher Background

An incandescent bulb, invented by Thomas Edison and most commonly used in the home, glows when its filament is heated to a high temperature by the electricity flowing through it thereby getting very hot when turned on. It has changed very little in the last 100 years. Incandescent lighting is very inefficient - only about 10% of the energy input becomes light and the rest is wasted energy.

In a fluorescent light, electrical energy is used much more efficiently, lasts much longer and uses much less energy to produce the same amount of light. Electrons emitted by an electrode in the conventional fluorescent light excite atoms, producing ultraviolet light. This ultraviolet light

causes the phosphor layer, which coats the inside of the fluorescent tube, the fluorescent, to emit light ... but very little energy. There are now also compact fluorescent bulbs which can screw directly into most lamps and ceiling fixtures. Students should have their parents help them with this activity.

Teacher Materials

Sample incandescent light bulb and a fluorescent bulb

Activity Card 4-4

Graph paper

Procedure/Exploration

1. Students brainstorm items containing light bulbs of any kind. (Remember microwave oven, refrigerator, sewing machine, stove, dryer etc.)
2. Explain that wattage is a measure of electrical power. Show students how to find the wattage of an incandescent light bulb and a fluorescent light bulb.
3. Model for students how to complete the wattage chart. Remind them to ask their parents for help.
4. Share results of wattage surveys. Graph student results.
5. Students record in logs what they have learned.
6. Students will create an advertisement encouraging consumers to purchase one light bulb over another.

Bulb Wattage

Fourth Grade
Activity 4
Activity Card: 4-4

Student's Name:

Date:

Record the number of bulbs of each level of wattage in your home; have your parents help you. Then complete the total wattage in the table below.

Answer the following questions:

1. Are there fixtures or lamps in your home that have more than one light bulb?
2. Are all the bulbs on when the fixture is in use?
3. Are they all necessary?
4. Do any rooms have both overhead lighting and lamps?
5. Did you find any rooms where both were on at the same time?
6. What can you do at home to conserve energy using what you have learned in this activity?

Total wattage is calculated by the bulb size times the number of bulbs (Bulb size x # of bulbs)

Bulb size	Number of Bulbs	Total Wattage Bulb size x number of bulbs
25		
40		
60		
75		
100		
150		
3-way		