

School Energy Audit

Fourth Grade

Activity: 11

Time: 1 Class Period

General Description

Students will gather data to complete a school energy audit and make recommendations to students, staff and maintenance personnel.

Objective

Students will gather and analyze data while conducting a school energy audit.

Students will present their findings and recommendations to students, staff and maintenance personnel.

Arizona State Standards

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

SC04 S1C3 PO1 Analyze data obtained in a scientific investigation to identify trends

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

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SC04 S1C4 PO3 Communicate with other groups or individuals to compare the results of a common investigation

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

W04 S1C1 PO1 Generate ideas through a variety of activities (e.g. Brainstorming, graphic organizers, drawing, writer's notebook, group discussion, printed material)

W04 S3C2 PO1 Record information (e.g. Observation, notes, lists, charts, map labels, and legends) related to the topic

M04 S2C1 PO3 Interpret graphical representations and data displays including single-bar/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., sq. feet or sq. miles)

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

LS E1 Prepare and deliver an organized speech and effectively convey the message through verbal and nonverbal communications with a specific audience

LS E2 Prepare and deliver an oral report in a content area and effectively convey the information through verbal and nonverbal communications with a specific audience

Teacher Background

A 1/4 inch crack under the front door will waste as much energy as a 2 x 2 inch hole in the wall. A building can retain its heat if it has good insulation, weather stripping and caulking.

Contact the school custodian, electrician or other staff who manages the school facilities to come in and talk to your students about their jobs. Also ask them to talk about where the school gets its energy, where the meter is, how to read it, how to troubleshoot electrical or other power problems, safety procedures. You may also want to contact your local utility company for a speaker to come out and talk about energy use and conservation.

Materials

Copies of Activity card 4-11

Thermometer

Procedure/Exploration

1. Student teams are assigned roles within their groups in order to complete the school energy audit.
2. Students brainstorm parameters, variables, and report findings.
3. Plan for further investigation.
4. Students generate recommendations on how to save energy and present those recommendations to students, staff and maintenance personnel.

Student's Name:

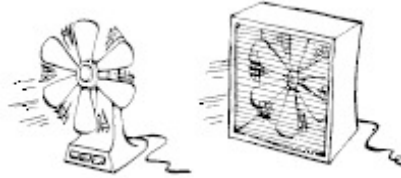
Date:

Heating and Cooling System

1. How is your school cooled?
 - evaporative cooling
 - refrigeration
 - other
2. Does each room control its own temperature or is there a central control for the entire school?
 - control its own
 - central controlIf there is a central control, where is it located?
3. If the temperature in your room is not accurate, record the temperature of your room, record the thermostat reading and figure the difference between the two.
4. What is the daytime temperature setting?
5. What is the nighttime setting?
6. Are filters clean?
 - yes
 - no
7. What type of fuel is used to heat the school?
8. List at least three kinds of things being done in your school that would be considered a wise use of energy.
 - a.
 - b.
 - c.
9. List at least three areas of energy waste. Include your recommendations on what changes will be needed to make the situation energy efficient.
 - a.
 - b.
 - c.

Kitchen and Cafeteria

1. What types of energy are used in the kitchen?
 - electric
 - natural gas
 - other
2. List appliances in the kitchen and the hours they are used.



3. Exhaust fans: record the number of fans, where they are located, their size and when they are used.
4. Water temperature: measure and record the temperature of the hot water in the following areas:
 - restrooms
 - cafeteria/kitchen
 - dishwasher
 - other rooms with sinks

(If most restrooms have sinks, pick three or four as a representative sample.)

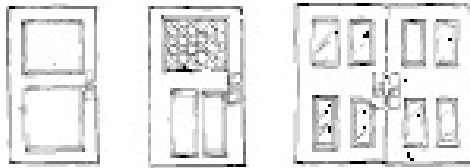
Windows, Doors, Walls (Remember not to bother other classes while you do this.)



Windows

1. Are there many windows?
 - many
 - some
 - few
 - none
2. How many windows face
 - east
 - south
 - north
 - west

3. Can you open these windows?
 all some few none
4. Are any windows in full sunlight during the hot months?
 yes no
5. Where?
6. How are windows protected from the sun?
7. Do any windows need repairing? (Include what the repairs should be.)
8. How many skylights are in the school?



Doors

1. Do the doors fit snugly?
 yes no
2. Is weather stripping required?
 yes no



Walls

1. List the types of materials used for the building's outside walls:
2. Are the walls insulated?
 yes no
3. Is the roof insulated?
 yes no