



Lesson Time: 15–20 minutes

Energy Audit

Objectives & Outcomes

Lesson Objectives: Students will assess their classroom in terms of electricity use and conservation.

Lesson Outcomes: *Students will be able to...*

- collect data about the electricity use in their classroom
- estimates electricity costs for their classroom and the school

Subject Area Connection: Science

Background

Many students take electricity for granted. In this lesson, students will undertake a real-world investigation of energy use by auditing the electricity use in their school. Students will also estimate these energy costs.

“Many students take **electricity for granted.**”

Introduction and Modeling

Begin the lesson by turning off the classroom light. Talk to the students about electricity use within the school. Tell them they are going to do an electricity audit by collecting data that will allow them to estimate electricity use and cost.

Getting Ready

Teacher Preparation: If possible, determine the wattage of the light bulbs in the classroom.

Materials Required:

- paper and pencil
- data collection sheet (attached)

Key Vocabulary

audit: an objective inspection of something.

kilowatt-hour: unit for electrical energy.

Procedure

1. Put students in teams of two.
2. Take a tour of the school looking for ways that electricity is being used.
3. On the attached data sheet, record both the number of rooms in the school and the number of rooms that have the lights on.
4. Note other places where electricity is in use.
5. Back in the classroom, have students count the number of light bulbs in use and record.
6. After students have collected their data, ask them to estimate the cost of the electricity using the information on the data sheet.

Discussion Questions

- What was the most surprising thing you found during the energy audit?
- Why is it important that schools and businesses pay attention to their energy use?
- What are some ways the school could reduce electricity use?

Evaluation

Ask students to work on the attached energy calculations.

Tips for Tailoring this Lesson

For Higher Grade Levels

- Students can create a digital presentation of their findings.
- The audit could be expanded to include values from the school's electric bill.

For Lower Grade Levels

- Students can work together to create a bulletin board of their findings.
- Students can create a "turn off the lights" campaign.

Alignment to Standards and Frameworks

Common Core State Standards:

College & Career Readiness

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Anchor Standards for Speaking and Listening

CCRA.SL.1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCRA.SL.5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

Next Generation Science Standards

Next Generation Science Standards: based on the Framework for K–12 Science Education developed by the National Research Council. Publisher: Achieve, Inc. on behalf of the twenty-six states and partners that collaborated on the NGSS. ©2013 www.nextgenscience.org

MS-ESS3-1

Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. *[Clarification Statement: Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock).]*

