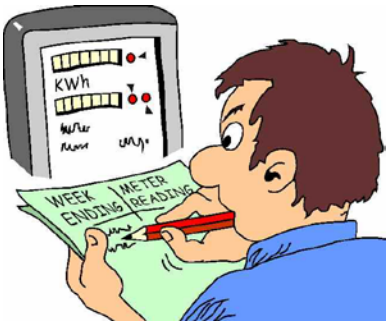
ENERGY SURVEY



- Grade Level: 4-6
- Subjects: Science, Social Studies, Language Arts
- Suggested Time: 3 hours, split into 2 sessions, with several days between to complete surveys

Create and administer a survey on energy awareness in your school and / or home.

Materials

Chalkboard or whiteboard, paper and pencils, computers with word processing program, colored pencils, rulers.

National Standards

Language Arts:

- Communication skills.
- Communication strategies.
- Evaluating data.
- Developing research skills.
- Participating in society.
- Applying language skills.

Social Studies:

- Environment and society.
- Roles of the citizen.
- Human systems.

Science:

- Science as inquiry.
- Transfer of energy.

Ohio 2010 Standards

Language Arts:

- Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (4, 5)
- Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (4-6)

- Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4, 5)
- Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate. (6)
- Engage effectively in a range of collaborative discussions. (4-6)
- Write informative/explanatory texts to examine a topic and convey ideas, concepts and information through the selection, organization, and analysis of relevant content. (6)

Social Studies:

- People have modified the environment since prehistoric times. There are both positive and negative consequences for modifying the environment in Ohio and the United States. (4)
- Civic participation requires individuals to make informed and reasoned decisions by accessing and using information effectively. (4)
- Variations among physical environments within the Eastern and Western hemispheres influence human activities. Human activities also influence the physical environment. (5, 6)
- The choices people make have both present and future consequences. (5, 6)

Science:

- Science inquiry and applications.
- Heat results when substances burn, when certain kinds of materials rub against each other, and when electricity flows through wires. (4)
- Light and sound are forms of energy that behave in predictable ways. (5)
- There are two categories of energy: kinetic and potential. (6)

Objectives

The student will be able to:

- List different types of energy.
- Identify examples of how each type of energy is used.
- Write a survey asking questions about energy usage.
- Administer survey to people in the school, home, and community.
- Summarize and graph results of survey.

Introduction

- Explain that homeowners, schools, and businesses receive utility bills each month. People are charged for using resources which are provided by companies. These resources include water, electricity, and natural gas. Individuals also pay for oil to fuel their cars—what we call gas or petroleum.
- Explain students will be creating and conducting a survey about energy usage in the community.

Activities

Day One:

- One at a time, name examples of ways energy is used (see below). Ask students to write the example next to the type of energy it uses (explain that many examples use more than one type of energy). Examples can include:
  - Heating
  - Cooling (A/C)
  - Lighting
  - Cooking
  - Showering
  - Watching television
  - Driving a car
  - Washing a car
  - Riding the bus
  - Making plastic
- Explain the goal of the energy survey: to help people think about how they use different types of energy and other resources, and how they could conserve resources. Identify who will take the survey: school employees, family members, and neighbors/friends.
- As a class, help students write questions for the survey. See an example here:

Example School Survey Questions


School Survey

- Encourage students to think of questions regarding each type of energy. Make the survey as general or detailed as you find appropriate for your class. Some more detailed questions might include:
  - At what temperature do you keep your thermostat in the winter/summer?
  - What is the maximum temperature your hot water is set to reach?
  - Do you have a programmable thermostat? (explain or demonstrate if there is one in the classroom).
  - What types of light bulbs do you use? (show students pictures or examples of incandescent and LEDs).
  - Do you have high efficiency appliances? Which appliances?
  - Do you have efficient water fixtures? Which fixtures?

After 1st class session:

- Type or assign a student to type the questions in a computer word processing program. Print and make copies, 2 per student. Email surveys to school employees in your building. If desired, email to employees of other buildings in the district.

- Assign students to take home 2 copies of the survey. One should be completed by a member of their household. The second should be completed by a trusted neighbor, relative, or friend (remind students not to go door to door approaching strangers).

Day Two:

- After students have conducted the survey, go through the survey answers as a class, including the answers from school employees. Write the questions on the board or display with a projector.
- Ask students for response frequencies and assign a student to record on the board. For example, "38 people use LEDs and 27 use incandescent." Or they may raise hands to represent frequencies, and then summarize. For example, "most people do not have a programmable thermostat."
- Students should write "Community Energy Profile" at the top of a clean piece of paper. Help students select data which is best represented by a graph. Each student should draw a graph of data from one question, using a ruler and colored pencils.
- Students should write a paragraph summarizing how resources are used, and how resources could be conserved in the community.

Extensions

- Students may create a poster representing the community energy profile. They may present it to school and/or community employees.
- Post the students' graphs in the classroom or in the school hallway under a sign saying "Community Energy Profile."

Closing

Ask students how they can help people in the school, at home, and in the community conserve resources. How can they motivate others and offer practical tips?