

SCHOOL ENERGY MAP

Adapted from the California Energy Commission

Overview: Students make a map of the school, chart the energy users on campus, and discuss energy use and potential ways to save.

Objective: Students will recognize the various energy users at school and infer potential energy saving actions.

Time: 50 minutes

Grouping: Four to six students

Subjects: Geography, Language Arts, Mathematics, Science, Social Studies

Suggested Grade Level: 3-5

Vocabulary: Budget, conserve, deferred, scale, utility

Materials: Tape measures, graph paper, Energy Users Worksheet

PREPARATION & BACKGROUND

According to the California Energy Extension Service, typical schools spend the bulk of their energy dollars on lighting (28%), heating (25%), and cooling (13%). Other energy uses are: air handling (15%), hot water (5%), and "other" (14%). Students and staff can have a huge impact on these costs. We often use energy without realizing it. We tend to take lights and copy machines for granted. In this exercise, the students will look carefully at the energy users in their school, and learn about how the school's energy budget is spent.

You will need to find out what the utility rates are (in cents/kilowatt-hour) and how much the school spends on energy. This information is all in the school

utility bills; the administration should be able to provide a copy of gas and electric bills for you. If gas and electric are combined, use the percentages given above to determine what your school spends on energy in each category. (For example: Lighting % x total energy bill = approximate amount spent on lighting for one month. Repeat for heating, cooling, etc.)

When students do the mapping, it is instructive to have access to water heaters, space heaters, and cafeterias. Check with your custodian or building engineer for a tour of the boiler room and to open doors where needed. This activity can be expanded to other buildings in the school district or contracted to individual wings or classrooms.

School Energy Map

To shorten and simplify the activity, you can make up blank school maps to be filled in. Simple sketches of the school will do also. Or, it might be instructive to use graph paper and discuss drawing to scale. Choose the option best for your class. YOU are the expert in that department!

PROCEDURE

1. Divide students into groups of 4 to 6. If you have ready-made maps, the smaller group is more appropriate. Tasks can be divided among the students. One student can translate input from others and draw the map. Another can record energy users, while two students scan the area and report the things they find that are using energy.
2. Assign a portion of the school to each group. If each group works in the same scale, an entire map of the school can be assembled.
3. Students will then tour the school with their paper for mapping. They are to record carefully every energy user they can find, and show on the map where they found each (for ex., lights, refrigerators, heaters, copy machines, etc.). Encourage students to be thorough. For example, have them note how many light fixtures, how many bulbs in each, and what kind of bulbs.
4. When the maps are done, have students summarize with a list of all the energy users in their area (if not already done).
5. Have the class reassemble and report on what they found.
6. Next, brainstorm with students how the school might save energy. You can list the ideas on the board as they volunteer thoughts like: close doors to keep heat in or out; turn off the lights next to the windows on bright days, weatherstrip the windows and doors; turn off light during recess and after school; and set thermostat to 68 (heating) or 80 (cooling).
7. Ask the class to select one or two ways to save. Ask them to make a plan to involve the whole school with their idea, and launch a school-wide energy efficiency activity.

FOR DISCUSSION

1. Do you think other people in the school realize how much energy they use?
2. Most homes use more energy for heating and cooling. Schools typically use more for lighting. Why do you think there is a difference? (Hint: Lots of bodies in a classroom help keep the room warm!)
3. How can individual students help save energy at school? At home?

School Energy Map

EXTENSIONS

1. Repeat the exercise, only have students do their own homes this time.
2. Have students write an essay about what they think the money saved should be spent on.
3. Students could prepare a pamphlet on simple ways to save energy at school and distribute it to all classes.
4. Make posters on how to save energy at school and post them around campus.

