

Light Detective

Grade

4

Topic: Energy
Grade: 4
Duration: 45 minutes

Students will examine how electric lights are used in the school and determine if there are alternate sources of light that can be used in order to cut down on the amount of electricity being used.

Curriculum Expectations

- 4s40: Identify different types of light observed in the immediate environment and compare them
- 4s46: Investigate different ways in which light and sound are produced and transmitted, and design and make devices that use these forms of energy
- 4s47: Identify technological innovations related to light and sound energy and how they are used and controlled at home and in the community, and determine how the quality of life has been affected by these innovations
- 4s48: Identify a variety of natural and artificial light sources
- 4s62: Use appropriate vocabulary, including correct science and technology terminology, in describing their investigations and observations
- 4s64: Communicate the procedures and results of investigations for specific purposes and to specific audiences, using media works, oral presentations, written notes and descriptions, drawings, and charts
- 4e1: Communicate ideas and information for a variety of purposes and to specific audiences
- 4e6: Produce media texts using writing and materials from other media;
- 4e67: Use appropriate strategies to organize and carry out group projects (e.g., brainstorming, summarizing, reporting, giving and following instructions)
- 4e70: Create a variety of media works
- 4m101: Collect and organize data and identify their use
- 4m102: Predict the results of data collected
- 4m103: Interpret displays of data and present the information using mathematical terms
- 4m107: Before gathering data, predict the possible results of a survey based on their experiences
- 4m108: Conduct surveys and record data on tally charts
- 4m110: Explain how data were collected and describe the results of a survey
- 4a31: Produce two- and three-dimensional works of art that communicate ideas (thoughts, feelings, experiences) for specific purposes and to specific audiences

Background Information

There are several sources of light – some are artificial and some are natural. Our main source of artificial light uses electricity. Natural sources of light, such as the sun, can be used as light in many situations and this can help conserve energy.

Accountability

Students will appreciate that natural sources of light should be used where possible to reduce energy consumption.

Teacher Notes

1. Use a scenario approach to this activity. Present the following scenario to the students

Your class is trying to reduce the amount of electricity that is used in the school. Lights use a lot of electricity. Your class wants to create a campaign to encourage everyone at your school to turn off the light when not in use. You have been studying the properties of light in your class and you know that sometimes there are ways that you can still have light but it does not need to come from an electrical source.

2. Discuss the different sources of light – sun, electric lights, candles, etc. Talk about the most common sources of light used at school.
3. Estimate how many electric lights there are in the school. Record this information on a chart.
4. Get students to create a survey or tally sheet that can be used to record the information as they go through the school.
5. Divide the class into small groups or teams and take a walk through the school. Students can record the number of lights that they find. This may take a few trips. You can work in smaller groups and send some students off with an adult volunteer to examine one section of the school if you have a larger school.
6. On the survey, note the location in the school (e.g. room 23 or Library), the number of lights, and the time of day and whether or not the lights were turned on. Record whether or not it was a sunny day – they can use this later to decide if the lights needed to be on in the different locations.
7. An additional activity would be to take a trip at certain times of the day – at recess, over lunch and at the end of the day. Note whether or not the lights are on or off.
8. At the conclusion of their reporting, ask students to come up with a plan to encourage everyone to be more aware of the issues. Suggestions could include: keeping blinds open when sunlight can be used, sit near windows so that natural light can be used.
9. Create a campaign that can include the making of posters and signs that can be used to remind people about the wise use of lighting in the school.
10. Look at ways that motion detectors can be used to turn lights on and off when people are in a room.

Home Extension

Conduct a similar activity at home and see how lights are used there. Check for devices that control lights such as a light sensor on a door that turns lights on at certain times of the day or when a motion occurs.

Lesson Comments

1. Ask your custodian to talk to you about how much power lights consume energy each day.
2. What impact did the project have on the use of lights in the school? In the home?