

Naturally Occurring Sources of Energy

Overview Students research information about use of naturally occurring energy sources, including ways each is used to make electricity.

Related Standards of Learning 3.11b

Objectives

The students should be able to

- analyze the advantages and disadvantages of using different naturally occurring energy sources;
- identify sources of energy and their uses;
- describe how solar energy, wind, and moving water can be used to produce electricity.

Materials needed

Per student:

- Encyclopedias
- Books with information about naturally occurring sources of energy
- Materials for making posters
- Pictures from old magazines

Per group of students:

- Internet access

Instructional activity

Content/Teacher Notes

Sunlight, moving water, and wind are naturally occurring sources of energy. Solar energy is captured directly from the sun by plants to make food. Solar energy can also be converted to electricity by solar cells. The force of moving water and moving air (wind) can also be used to generate electricity. See *NEED Energy Infobooks* at <http://www.need.org/infobooks.htm> for more information about the various naturally occurring sources of energy. These booklets can be downloaded and printed for students to use as resources. The secondary resources may be helpful for teacher background information.

Introduction

1. Use a KWL chart to find out what students already know about sources of energy, specifically, sun, water, and wind. (For a description of the KWL reading strategy, see the VDOE's *English Standards of Learning Enhanced Scope and Sequence for Grades K–5*, p. 120, at <http://www.doe.virginia.gov/VDOE/EnhancedSandS/english.shtml>.)

Procedure

1. Have students identify the three naturally occurring sources of energy — sunlight, moving water, and wind. Write these terms on the board, overhead, or a large chart. Explain that energy from the sun is also referred to as “solar energy.” Write this term below “sunlight.” Continue this discussion with water and wind energy.
2. Divide students into three groups, and assign each group one of the three naturally occurring energy sources. Explain that each group will do research about uses of its assigned, naturally occurring energy source and then make a poster to present their finding.

3. Have each group collaboratively research ways the energy source is used, including how it is used to produce electricity. Allow time for each team to brainstorm what its task is, how to go about performing the task, and how to present what is learned. Have the groups meet together to share their plans, and make plan modifications as necessary. Make encyclopedias, other books, and the Internet available to the students, and assist with identifying key terms to use to access information.
4. After finishing their research, have the groups prepare their poster showing three to five ways the energy source is used. They should include how it is used to produce electricity, as well as any other important information they found. The posters should be neatly and clearly titled and should be illustrated with pictures. Encourage the groups to be creative.
5. Have the groups present the posters to the class. In a class discussion, have the students compare the information presented to determine which sources of energy are used in the same ways and which are used in different ways.

Observations and Conclusions

1. Discuss reasons why one naturally occurring energy source is used instead of the others in specific places and for specific purposes. For instance, waterpower is more frequently used to produce electricity in the Pacific Northwest because there are many lakes and rivers there.

Sample assessment

Name a way that a source of energy is used, and the students identify the energy source. Use examples from the presentations. Examples might include “growing crops” (sunlight), “moving a paddleboat” (water), and “moving a sailboat” (wind).

Have students make a four-column chart by folding paper in half lengthwise, and then in half lengthwise again. Have them open the paper and use the fold lines to draw pencil lines. Label the first column “Use,” the second “Solar Energy,” the third “Water Energy,” and the fourth “Wind Energy.” Have them then write in the Use column at least seven uses, based on the group presentations, and put check marks in the energy-source column(s) that provide this use. For instance, the use “Produce electricity” would get checks in all energy-source columns.

Follow-up/extension

Have each group design and create a model to demonstrate how its energy source is used to make electricity.

Have the groups research other natural sources of energy.

Resources

Connections: Connecting Books to the Virginia SOLs. Fairfax County Public Schools and The College of William and Mary. <http://www.fcps.edu/cpsapps/connections>. Presents a database of more than 1,000 works of children’s literature and their connection to the Virginia Standards of Learning.

NEED Energy Infobooks: Curriculum Guides and Activities: National Energy Education Development (NEED) Project. <http://www.need.org/infobooks.htm>.

Outstanding Science Trade Books for Students K–12. National Science Teachers Association (NSTA). <http://www.nsta.org/ostbc>.

Search for Literature: Literature for Science and Mathematics. California Department of Education. <http://www.cde.ca.gov/ci/sc/ll/ap/searchlist.asp>. Offers a searchable database.