

Overview

Students will make the connection between everyday items and the consumption of fossil fuels.

Student Learning Objectives

- List coal, oil, and, natural gas as the major fossil fuels.
- Explain that burning fossil fuels generates most of our electricity and that electricity is used in the manufacture of products.
- Identify items in the home and classroom that contain plastic, (synthetic) rubber, synthetic fiber, and wax as derived from petroleum (oil and natural gas).
- List several ways to reduce fossil fuel consumption.

Student Worksheet

The student worksheet includes questions to check understanding, instructions for how to use the Exploration, and a section for recording Exploration data. Why do the questions come first? In following best practices for teaching science, students are asked to review questions before participating in an activity. When the questions come first, students are more focused on the intended content of the activity. Then they can respond to the questions during the activity or after completion of the activity.

Exploration Procedure

Explain that the purpose of this Exploration is to consider the many ways we depend on fossil fuels in our everyday activities and the products we use. Follow the appropriate procedure below.

Student Performs Exploration

1. Tell students how much time they will have to complete the Exploration and the student worksheet.
2. Explain how students should proceed:
 - Read the questions before starting the Exploration.
 - Follow the instructions on the worksheet to perform the Exploration.
 - Record their findings.
3. Respond to the questions in writing.
4. Explain that you will be available to help any students who need assistance.
5. Address any questions that the students might have.
6. Tell students to begin the Exploration.
7. When time is up, ask students to share their results.
8. Talk about the Discussion Question.

Teacher Performs Exploration

1. Display the questions from the student worksheet and ask students to tell you what they think they will learn from the Exploration based on its questions. Highlight key words.
2. Read the Introduction and click the Continue button.
3. Read the column titles describing the connection to fossil fuels. Ask students to identify the category to which an item belongs and drag there.
4. Read the information, noting the many ways we rely on fossil fuels. Close the information box.
5. Continue dragging the remaining items to the correct categories.
6. When all the items are matched, a Congratulations box appears. Read and discuss. Press the
7. Close button when finished.
8. Pose each of the questions below and ask for answers from the class. Replay parts of the Exploration as necessary to illustrate the answers.
9. Talk about the Discussion Question below.

Optional: Use this Exploration as a small-group activity at a computer station. Assign it to students who need specific reinforcement of the concept.

Questions

1. What are the three major fossil fuels?

Answer: coal, oil, and natural gas

2. What are the advantages of using fossil fuels as energy resources?

Answer: Fossil fuels are rich in energy, easy to store and use, and relatively inexpensive compared to other energy resources.

3. What are the disadvantages of using fossil fuels as energy resources?

Answer: Fossil fuels are nonrenewable, and are being used up at a rapid rate. Coal and oil cause much pollution, both when they are mined and when they are used. All fossil fuels release carbon dioxide, a greenhouse gas, when they are burned.

4. What are some items in your classroom and home that are connected to the consumption of fossil fuels?

Answer: tissues, sports drink containers, compact disks, computers, cotton T-shirts, sneakers, fans, track pants, and light bulbs.

Discussion Questions

You've learned in this Exploration that we greatly depend on fossil fuels—both through the use of electricity and the many products we consume. You have also learned that fossil fuels are non-renewable, meaning we will run out of them in the future. Also, the use of fossil fuels is a source of environmental problems. What can we do to reduce the use of fossil fuels?

Possible answers

- Take public transportation when available.
- Walk or ride a bicycle.
- Reduce the use of electricity: turn off electronic devices or unplug them for even more reduction, or adjust the thermostat so the furnace or air conditioner does not come on as often.
- Buy recycled products.
- Recycle more.
- Change from incandescent light bulbs to compact florescent lights.