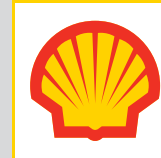


WHAT'S YOUR ENERGY BOTTOM LINE?



Grades 9–12

In this lesson, students will analyze their behaviors and usage related to three distinct energy categories and determine how they can reduce their environmental footprint by making reasonable modifications.

Lesson Printable: Personal Energy Audit

Objectives:

- Students will calculate and analyze their environmental footprint.
- Students will audit their personal use of energy related to household energy consumption, home energy efficiency, and transportation.
- Students will determine how they can reduce their environmental footprint by modifying use/behaviors in one or more energy-related categories

Alignment with National Standards: Science, Technology, Engineering, Math

Skills: Research and investigation, measurement, synthesis, reasonable prediction, data interpretation and analysis, evaluation

MATERIALS

- Internet access
- Printable, "Personal Energy Audit" (PDF), one per student
- Two sticky notes per student (in two different colors, if possible)
- Access to a monthly electric bill and several household appliances

Time Required:

Introductory activity: 30 minutes (includes 15 minutes for footprint quiz involving Internet access/research)

Audit: Up to one week (time outside of class)

Group work and personal plan: 60 minutes (and time outside of class)

DIRECTIONS

Note: Before students enter the room, draw a continuum on the board and write the number "1" at one end and "10 or more" at the other end. Write the numbers 2–9 between those numbers.

1. Distribute one sticky note of the same color to each student and tell them to write their name on

(cont.)

the sticky note. Write the following scenario on the board or read it aloud to students:

Imagine that everyone lived the same lifestyle as you. Think about your consumption of energy, food and resources and the emission of CO² into the environment related to that consumption. Do you think the existing resources on our planet Earth would be enough to meet everyone's needs? If so, place your sticky note by the number one to indicate "one Earth." However, if not, place your sticky note by the number of planet Earths you think it would take to support an entire planet of people who use resources as you do.

Give students time to place their sticky note by the appropriate number.

2. Have students justify their answers. Then share with students the statistic that if everyone lived the lifestyle of the average American, we would need five Earths. Does that change their original answer?
3. Tell students that the measurement of the environmental pressure they put on the planet, based on their lifestyle and choices, is their "environmental footprint." The larger the footprint, the more pressure their lifestyle puts on our environment. Therefore, their goal is to have a small footprint. Have students calculate their environmental footprint by going online to www.footprintnetwork.org/en. Direct students to individually answer the questions to determine how many planet Earths it would take to support their lifestyle.
4. Distribute the second sticky note (different color if available), one to each student, and have them write their name on the sticky note. Once all students are finished calculating their footprints from the Website, direct them to write the actual number of planet Earths it would take to support their lifestyle (based on the footprint calculator) on the second sticky note and place it on the continuum.
5. Ask:
 - Would you say that classmates were close to correct with their initial predictions?
 - Was the first or second set of numbers generally higher or lower?
 - For students whose actual answers were greater than their predictions, which categories/uses influenced the outcome most?
 - What do students think they could do to reduce their footprint? List answers on the board. Check off all answers that relate to energy.
6. Share with students that humanity uses the equivalent of 1.5 planet Earths to provide the resources we use and to absorb our waste. This means it now takes Earth one year and six months to regenerate what we use in a year. Moderate United Nations scenarios suggest that if current population and consumption trends continue, by the 2030s, we will need the equivalent of two Earths to support us. And, of course, we only have one. In addition, many of our decisions are permanently detrimental to our environment, particularly those that relate to energy. Additionally discuss with the students why the number is 1.5 and not 5 as previously stated before when talking about the average American, as not everyone in the world consumes energy like the average American.
7. Ask students whose responsibility they believe it is to reduce the pressure we are putting on our Earth. For example, if they knew it would be better for Earth, would they be willing to do any of the following:
 - Walk instead of drive or take the bus to school
 - Limit showers to five minutes
 - Limit television or computer use to 15 minutes per day
 - Give up their cell phones or personal music devices

(cont.)

8. Tell students that they are going to audit their personal use of energy in three distinct categories: household energy use, household efficiency, and transportation. Pick a time frame for the audit that will give students enough time to gather information. One week is suggested.
9. Distribute the "Personal Energy Audit" printable and review directions with students. Review any questions and give students ample time to record their results. Explain to students that the techniques and data in this exercise are simplified for student use. Professional energy audits are very precise and more complex. The goal of the audit is to increase students' awareness of how their personal actions can have a great impact.
10. Once students have gathered their information, ask them to form small groups. Direct them to compare results with other group members in each category. Encourage them to keep track of the areas where they see the greatest opportunities to save energy and resources.
11. After students have spent time in small groups, guide a class discussion using the following:
 - What most surprised you about your answers vs. your group's answers?
 - In which areas did you seem to be most energy-conscious?
 - In which areas did you seem to be least energy-conscious?
 - Which energy uses/behaviors from the list would be most difficult for you to change and why?
 - Which energy uses/behaviors from the list offer the greatest opportunity for you to personally save energy and resources?
12. Challenge students to use what they have learned to design a personal action plan for how they will save energy and resources over the next month. They can focus on one particular category within the audit or select several different uses/behaviors across categories. Their action plan should include the following:
 - Specific actions they will take to save energy and resources
 - What result they believe these actions will create. If possible, quantify answers.
 - How they will track their actions
13. Have students present their plan to a partner or to their small groups. At the end of the month, go back to the plans and measure results.

Visit www.shell.us/energizyourfuture to learn more about how alternative energy resources will help provide energy for the future..

© 2012 Shell Oil Company.