

Lesson #10

Changing Our Ways

After charting their energy use for a twenty-four hour period, students look for ways to reduce it. They implement energy saving strategies, and then track their energy use for another twenty-four hour period. As they reflect on their experiences, students consider the challenges to change and then identify an action plan that they can commit to and chart for a full two weeks.

Subject Areas

Social Studies, Language Arts,
Personal Planning (BC), Science,
Visual Arts, Math

Student Skills

communication, discussion, data
collection, critical thinking

Developing Vocabulary

energy consumption, energy
waste, personal action, energy
reduction, energy solutions

RELATED BACKGROUNDERS



**Energy
Needs**



**Taking
Action**

Learning Objectives

- ◆ track and think critically about their own personal energy use
- ◆ clarify their concerns about energy use and waste in relation to themselves and their families
- ◆ establish their own opinions about energy use and waste
- ◆ reflect on their potential for changing both their behaviour and attitudes about energy use

Materials You Need

- ◆ two copies of the Charting Energy handout per student
- ◆ two EnerAction backgrounders (optional)—*Energy Needs: The Ways We Use Energy* and *Taking Action: Personal Choices About Energy Use*
- ◆ and/or other resources for student research

“All that I can, I will!”
 — French saying

Time Estimate

Lead In

Main Activity

Wrap Up

15 minutes

75 minutes

30 minutes

2
HOURS

Teacher Tips

Before teaching this lesson, track your energy use from the time you get up until the time you arrive at school. Identify both direct and indirect uses of energy. Examples of direct use include things like using a hair dryer, brewing coffee and burning gasoline in your car. An example of indirect use could be the energy required to transport a banana to your breakfast table.

What You Do

Lead In

15 minutes

Lead In

1. Tell students that you tracked your energy use from the time you woke up until you arrived in the classroom. Tell them how many ways you used energy in that time period. Ask them to consider the variety of energy uses they believe they used that morning. Invite volunteers to share examples of their energy use with the rest of the class. Record these on the board.
2. Lead a discussion about indirect uses of energy. For example, if a student had cereal for breakfast, ask them to consider the energy required to transport it to their breakfast table:
 - ◆ What energy is required to grow the cereal grains?
 - ◆ What energy is required to harvest the grains?
 - ◆ What energy is required to transport the grains to a factory to turn it into cereal?
 - ◆ What energy is required to operate the factory?
 - ◆ How does the cereal get to the grocery stores?
 - ◆ How do you get the cereal from the grocery store shelf to your table?

Main Activity

75 minutes

Main Activity

3. Explain to students that they are going to record their direct energy use for the next twenty-four hours.
4. Give each student a copy of the Charting Energy handout for their data collection. Ask students to mark "#1" at the top of the page.
5. In the next class, after students have completed their data collection, put them in pairs to compare and contrast their findings. Ask each student to identify an item on their list that is not on their partner's list.

What You Do

Main Activity (continued)

6. Create a master list on the board as each student reports an item. After all students have had a chance to contribute, invite them to share other items on their lists to complete the master list.
7. Ask students to select two items from their list and work with their partner to develop different ways they might conserve energy in each instance.
8. Ask the pairs to share their ideas with the class. As a class, brainstorm a list of many specific actions that students can take to reduce their energy use.
9. Ask students to prioritize their potential energy savings according to how difficult they expect the changes would be to make. Using pencil, rank energy items from easiest to change (1) to hardest to change (10) in the narrow empty column (column a) on the Charting Energy handout.
10. Ask them to think about the energy items also in terms of their necessity and functionality. When do we need energy as a matter of survival? When is our use optional, unnecessary? Pose questions to generate a discussion:
 - ◆ How many of you included cooking food as an energy item? Would this be a low or high priority item for you? Why?
 - ◆ How many of you included watching TV as an energy item? Would this be a low or high priority item?
 - ◆ How many of you included playing video games on the computer?
11. Challenge students to change their energy use for one day, by choosing to eliminate or reduce three or more of the least difficult low-priority energy items. Tell students to record the time used for these energy items for their next data collection day, in the next empty column — column b. (Students can write “Day” and “Time Used” into the spaces provided.)
12. In the next class period, ask students to write “Comparing before and after” at the top of the final column (column c) and then record the differences between their two data collection days. Data can be recorded in point form or by comparing actual numeric values (where savings are positive numbers and increased energy expenditures are negative).
13. Tell students to record a summary of their findings, to describe their energy saving efforts and to write about one experience in particular. Pose questions to help students summarize their key points:
 - ◆ How did the rest of the family respond to your energy saving efforts?
 - ◆ What was the easiest action to implement and why?
 - ◆ What was the biggest challenge?
 - ◆ What would help you overcome such challenges? How can we approach barriers to changing our ways?

What You Do

Wrap Up

30 minutes

Wrap Up

14. Invite students to reflect on their efforts and the results they achieved:
 - ◆ What was the most surprising information you uncovered when you tracked your own personal energy use?
 - ◆ How did your action plan work?
 - ◆ What was the easiest action to take? The hardest?
15. Tell students that they will continue to make the effort to save energy every day for the next two weeks. Ask them whether they want to revise their commitment based on what they learned from this energy saving experience:
 - ◆ How would you change your commitment? Why?
 - ◆ What kind of challenges would you face with your family members if you asked them to reduce their own personal energy use for a two-week period? How would you deal with those challenges?
 - ◆ Do you think most people in our community might find similar or different results if we asked them to do the same tracking exercise?
16. Ask students to write down how they will reduce their energy use for the next two weeks.
17. After two weeks, collect students' records of their energy savings. Display them somewhere in the classroom or elsewhere in the school to celebrate their successes.

Adaptations & Extensions

- **Use charts or graphs to display data.** Challenge students to represent their first two data collection days through a simple chart, table or graph. You can relate this activity to math learning outcomes for preparing, recording, displaying and interpreting results in a graph.
- **View *The Story of Stuff* as a class.** This 20-minute animated video narrated by Anne Leonard comments on our consumer society in a way that is accessible and compelling. Visit <http://www.storyofstuff.com>.
- **Chart the whole family's energy use.** Ask students to work with their family members to track the family's energy use over a twenty-four hour period. Contrast the families' energy use with the national statistics. Visit Natural Resources Canada at <http://www.nrcan.gc.ca/com> to see the basic data on Canadian household energy use. To reflect on this information, students could write in their journals or have a discussion about similarities and differences.
- **Incorporate an eLearning component.** Visit the EnerAction website at <http://eneraction.greenlearning.ca>. Invite students to use the Carbon Calculator to calculate energy savings involving lighting.

Assessment Rubric

These criteria can be expanded or adapted to emphasize different aspects of the lesson. You can use the rubric to help students self-assess their participation and experience, and then pose follow-up questions to the class encouraging them to reflect further on their challenges and insights.

Knowledge & Understanding	1	2	3	4
Describe in detail the topic, purpose and audience for the media texts they plan to create	Demonstrates limited understanding by providing minimal features	Demonstrates some understanding by providing a few features	Demonstrates considerable understanding by providing a variety of features	Demonstrates a thorough understanding by providing an extensive range of features
Thinking	1	2	3	4
Demonstrate an understanding of the information and ideas in oral texts by summarizing important ideas and citing a variety of supporting details	Demonstrates limited ability by not effectively summarizing ideas and citing two or fewer supporting details	Demonstrates some ability by summarizing a few ideas and citing four or fewer supporting details	Demonstrates considerable ability by summarizing a variety of important ideas and citing five supporting details	Demonstrates highly effective ability by summarizing a wide variety of important ideas and citing more than five supporting details
Communicate orally in a clear, coherent manner, presenting ideas, opinions and information in a readily understandable form	Limited effectiveness; communicates in a simple and fairly understandable form	Some effectiveness; communicates with a few supporting details and ideas	Considerable effectiveness; communicates with a variety of supporting details and ideas	High degree of effectiveness; communicates with a wide variety of supporting details and ideas
Application	1	2	3	4
Analyze human use of energy and natural resources and the impact of this use on society and the environment	Demonstrates limited effective use of application skills with unfinished analysis	Demonstrates limited effective use of application skills with partial analysis	Demonstrates effective use of application skills with complete analysis	Demonstrates a high degree of application skills with extensive analysis
Develop solutions to avoid wasting energy and resources both at home and at school	Limited effectiveness; makes some simple solutions	Some effectiveness; makes some simple, logical solutions	Considerable effectiveness; makes clear and logical solutions	High degree of effectiveness; makes complex and insightful solutions

Charting Energy

Date _____ Chart _____ Name _____

Instructions: Use this chart to track all of the ways that you use energy during your day. Also write down the amount of time for each energy use. Leave the other columns empty for now. If you need more space, use the back of this page.

		a	b	c
Energy item	Day: _____			
	Length of time used			
Example: TV				