

Energy Everywhere

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Overview: This lesson is designed to open a unit on energy

Objectives: Introduce the topic of energy and some vocabulary to be used in succeeding lessons

Subjects: Science

Suggested Grade Level: 2nd through 4th

California Standards Addressed:

2nd grade

- Physical science 1g- Students know sound is made by vibrating objects and can be described by its pitch and volume.
- Life Science 2e- Students know light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.
- Earth Science 3e- Students know rock, water, plants, and soil provide many resources, including food, fuel, and building materials, that humans use.
- Reading Comprehension
 - 2.2- State the purpose in reading.
 - 2.3 - Use knowledge of the author's purpose to comprehend informational text.
- Literary Response and Analysis 3.4 - Identify the use of rhythm, rhyme, and alliteration in poetry.

3rd grade

- Physical Science 1 a, b,c,d- Energy and matter have multiple forms and can be changed from one form to another.

4th grade

- Physical Science 1g- Students know electrical energy can be converted to heat, light, and motion.

- Life science 2a- All organisms need energy and matter to grow. Students know plants are the primary source of matter and energy entering most food chains.

Time: 1 hour

Materials:

- Energy Here, Energy There chant on chart paper
- Digital projector, or overhead transparency
- Copies of chant for each student
- K/W/L chart
- Forms of energy spiderweb graphic organizer
- Energy survey sheets (blank sheets of paper with either sound, light, motion, growth, heat, or electricity written at the top)
- Markers or crayons
- Pictures of different energy sources glued to large pieces of construction paper



Preparation and Background:

Energy comes in different forms: sound, light, motion, growth, heat, and electricity. Energy is generated using different resources. Some are renewable, such as solar, wind, hydropower, geothermal, and biomass. Others are non renewable like coal and other fossil fuels. This lesson helps students to start thinking about the forms and sources of energy used around them every day.



Ahead of time prepare the graphic organizers and the energy source pictures on construction paper. Post the energy source pictures around the room.

Procedure:

1. Gain student's attention by flipping the lights off and on or bouncing a ball. Explain that light and motion are examples of energy. Ask what they know about energy. Give students time to think and quietly share

- with a partner what they think energy is. Have them share their responses on an inquiry (K/W/L) chart.
2. Divide students into 6 teams for an energy survey. Each team is given a survey form to look for one of the 6 forms of energy. Working together they look around the classroom to find as many examples as they can for their assigned form of energy.
 3. Student teams take turns sharing their lists. Older students can have team members write and illustrate their examples on the chart as they share. For younger students, the teacher lists examples in the appropriate section of the chart (see example). Leave enough room in each section to add more examples as the unit progresses.
 4. Ask students to walk around the room looking at the posted pictures of energy sources. At each poster they are to write a comment about what they see in the picture or a question about it. They sign their name by what they write. Give students 10 to 15 minutes for this.
 5. Show the Energy Here, Energy There chant on the chart or overhead. Hand out student copies. Read the chant over together a couple of times. Students should come in together on the chorus. Ask students to highlight the names of the forms and sources of energy in the chant.
 6. On the overhead chant, draw a sketch to represent each energy source they will learn about in the upcoming unit. Ask students to draw their own sketches as you do.



For Discussion:

Introduce the topic of conservation by asking students why they think it might be important to save energy.

Extensions:

For a home school connection, have students do a home energy survey with their parents and list the forms of energy they observe in their home.

Let students use computers to visit the U. S. Dept. of energy web site:

<http://www.eere.energy.gov/education/lessonplans/>

And the Green Schools kid site:

http://www.ase.org/section/_audience/consumers/kids/

Resources:

Project NEED (<http://www.need.org>)

Project NEED has many resources to teach forms and sources of energy, including kits with materials, flipbooks, and student and teacher resource books. Many are downloadable from the web site. They materials include graphics for energy sources and forms of energy.

Energy Here Energy There Chant (see below)

ENERGY HERE ENERGY THERE

By Linda Gregory

Chorus: **Energy here, energy there**
 Forms of energy everywhere

Verse 1: Moving, growing at our school
 Forms of energy are cool
 Light and heat just can't be beat.
 Even sound is energy,
 And don't forget electricity!

Chorus: **Energy here, energy there**
 Forms of energy everywhere

Verse 2: Coal and gas are fossil fuels.
 They help us to use our tools.
 Non renewable fossil fuels
 Will some day be as rare as jewels.
 Non renewable means you can run out-
 No more fossil fuels about!

Chorus: **Energy here, energy there**
 Forms of energy everywhere

Verse 3: What's a renewable energy source?
 Solar energy is of course!
 It shines upon us every day.
 We can use it many ways.
 Renewable energy sources are great!
 Hydropower won't make us wait!

Chorus: **Energy here, energy there**
 Forms of energy everywhere

Verse 4: Wind doesn't just blow away.
 It's an energy source, another way,
 To make energy that's clean.
 Renewable energy is what I mean.
 Geothermal is another source.
 Use renewable of course!

Chorus: **Energy here, energy there**
 Forms of energy everywhere