



Energy Changes Form

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DESCRIPTION: Students read informational text about the forms of energy and energy transformation. They use a graphic organizer in the form of a concept map to take notes on details and examples. Optional – using solar beads, solicit ideas about what energy transformation might be occurring that cause the beads to change color.

GRADE LEVEL(S): GRADE LEVEL(S): 3, 4, 5

SUBJECT AREA(S): Science, ELA

ACTIVITY LENGTH: 1 hour

LEARNING GOAL(S):

- Students will understand that energy changes form.
- Students will be able to name different forms of energy and give examples of some of the transformations of energy that commonly occur.
- Students will find details and examples in informational text.

STANDARDS MET:

Common Core:

4.RI.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

Next Generation Science Standards:

- 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Student Background:

This lesson is intended to be the third in a solar energy unit, so my students will already have completed the follow lessons:

- Introducing Solar Energy: Hypothesizing on Why Solar Beads Change Color
- What is Renewable Energy and Why is It Important?

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Educator Background:

- **Acknowledgement:** This lesson is based on a book from the Seeds of Science / Roots of Reading curriculum unit on Light Energy. Using the Strategy Guide available on-line from Seeds of Science Roots of Reading, students map the content of the book, It's All Energy.
- Teachers can download a graphic organizer for this lesson and a detailed lesson plan for the book from the Seeds of Science Roots of Reading web site (see materials list). Science content background on forms of energy for the Teacher is included in the Strategy Guide from the Seeds of Science/Roots of Reading curriculum.

Science Kit Materials:

- Solar Beads

Other Materials List:

- ½ class set of the Seeds of Science/Roots of Reading book It's All Energy
- A graphic organizer for the book is available online at <http://www.scienceandliteracy.org/units/le#5>

Vocabulary:

- Chemical energy – the form of energy that is in food, fuel and batteries
 - Electrical energy – the flow of electrical charges called electrons the form of energy that travels in wires
 - Energy – the ability to change something, for example: by making it warmer or making it move
 - Kinetic energy – energy associated with movement. Electrical energy (the movement of electrons), motion (the movement of objects) and thermal energy (the movement of molecules) are all examples of kinetic energy.
 - Motion – the movement of objects
 - Light – the form of energy that we can see
 - Sound – the form of energy that we can hear
 - Thermal energy – the form of energy that has to do with changing temperature
 - Transform – to change from one form to another
 - Transformation – when something changes from one form to another
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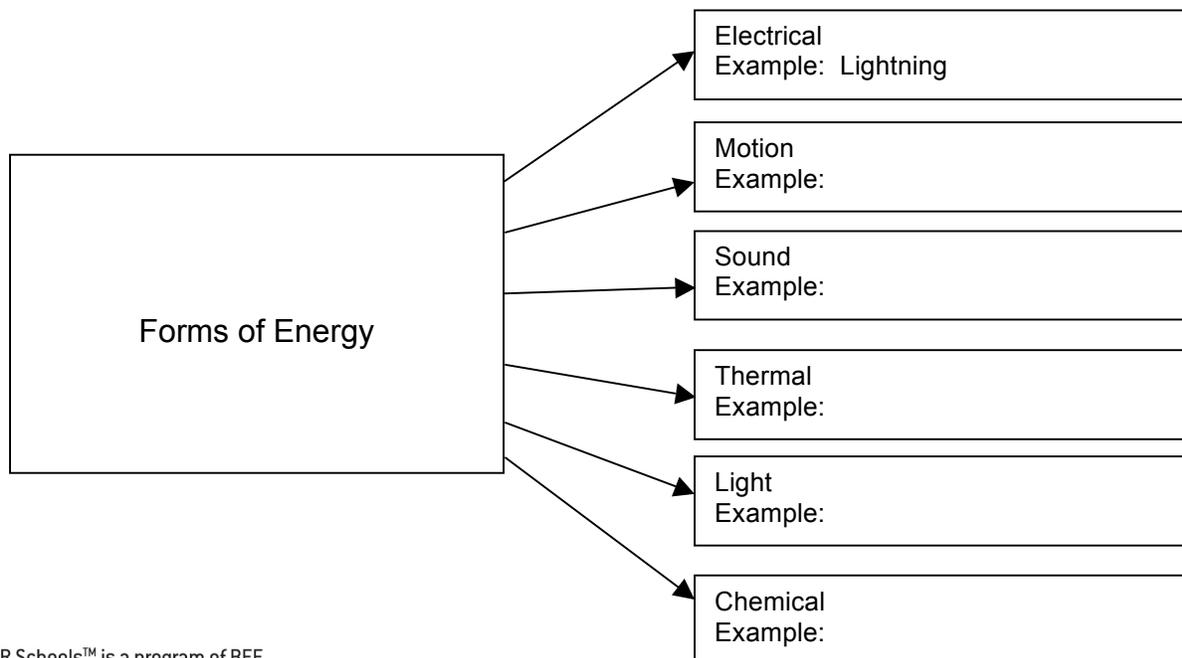
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Lesson Details:

Teachers can download a graphic organizer and lesson plan from Seeds of Science/ Roots of Reading. The following is a brief summary of the lesson and how it might be implemented if you have a half-class set of the book, It's All Energy.

- Ask the students what they already know about the forms energy takes.
- Pass out one copy of the concept map to each student.
- Explain that the concept map helps readers organize what they learn from a text and to remember details.
- Explain that we are going to fill in two concept maps today, one for different forms of energy and the second for energy transformations. We will do the first together as a class and the second with a partner. Instruct everyone to write “Forms of Energy” in the large box on the concept map.
- Shared reading: Pass out the books so that there are enough for each pair of students to share. (Note: if you have only one copy of the book, the entire lesson can be done as a whole group based on the read-aloud of the text). As you read, list the 6 forms of energy and write each in a space on the concept map. Have students suggest examples as the group reads pages 10-13.
- Independent reading: Give students a second blank concept map. Fill in the title “Energy Transformations” on the second concept map and write it in the big box. With a partner, students read pages 14 -23 and complete the second concept map identifying different energy transformations and examples of each.
- Closure – Students review aloud the energy transformations they learned.
- Optional – Show the students the solar beads. Solicit ideas about what energy transformation might be occurring that cause the beads to change color.

Figure 1. Example concept map for shared reading.



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