



Solar Ovens

Solar Ovens Lesson 2: Frontload Vocab. And Preview Standards

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DESCRIPTION: Vocabulary and standards will be reviewed throughout all of the lessons, but this day is dedicated to front loading the vocabulary and previewing the standards. Students will use their energy workbook to keep track of vocabulary from this point forward through the rest of the unit.

GRADE LEVEL(S): 4 and 5

SUBJECT AREA(S): Science, energy, kinetic, potential, renewable, non-renewable, fossil fuels, global warming, climate change, solar energy, wind energy, hydroelectric power, sources of energy

ACTIVITY LENGTH: 00 hours, 45 minutes

LEARNING GOAL(S): Students will preview vocabulary and standards in order to better comprehend future lessons.

STANDARDS MET:

Next Generation Science Standards:

4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

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

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved

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Student Background:

Students will need to be familiar with the following terms: noun, verb, adjective, adverb, synonym and antonym.

Educator Background:

A student's native language is one of their most valuable tools. Students should always be encouraged to use their native language to aid them in their learning.

Materials List:

- Solar Energy Student Workbook
- Access to electronic dictionaries in student's native language (Examples: English-Spanish, English-Japanese, English-Persian). Google translate is a fairly reliable and free web app and tablet app.

Vocabulary:

- Energy: The ability to do work.
- Kinetic Energy: The energy of motion.
- Potential Energy: Stored energy.
- Forms of Kinetic Energy: heat, light, sound, motion, electrical kinetic
- Forms of Potential Energy: chemical, nuclear, gravitational potential, electric potential, elastic
- Sources of Energy: Oil, natural gas, coal, wind, sun, water, food, chemicals
- Fossil Fuels: Fuels that come from dead things that have been buried for millions of years.
- Non-Renewable Energy Sources: Sources of energy that cannot be quickly or easily made. (fossil fuels)
- Renewable Energy Sources: Sources of energy that can quickly or easily be made again, or do not run out. (wind, hydropower, solar)
- Pollution: Things that humans put into Earth's land, air, water and soil that are bad for it.
- Global Warming: The increase in Earth's temperature due to air pollution created by humans, mostly from the burning of fossil fuels.
- Energy Efficiency: Doing the same amount of desirable work as something else, but using less energy.

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- Solar Energy: Energy from the sun.
- Hydropower: Energy from moving water.
- Wind Energy: Energy from the wind.
- Solar Panel: A panel designed to absorb the sun's energy and convert it into electricity.
- Insulation: Material added to something to stop heat, electricity or sound from going into
- or out of it.
- Heat conduction: The movement of heat from one object to another.
- Hypothesis: An educated guess that explains why something happens and that can be
- tested.
- Prototype: The first model, used for testing a new design. .

Lesson Details:

- STEP 1: Read over the vocabulary words on pages 3-4 of the Student Solar Energy Workbook. Give students a chance to practice pronouncing the words and to become familiar with them. The goal should not be memorization or total mastery.
- STEP 2: Teach students the web strategy for vocabulary. Use the blank pages in the back of the Solar Energy Student Workbook. Go over 2-3 words as a whole group. More words will be done in each lesson. (Example in teacher's guide)
- ESL NOTE: ESL students should be encouraged to look up words in their native language and add information in their native language to their vocabulary webs.
- STEP 3: Read over the standards on page 2 of the Solar Energy Student Workbook. Refer back to these standards on a regular basis.

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