

A Student-Developed Lesson Plan for a 4th Grade Energy Module (Resource Exchange)

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SUSTAINABLE ENERGY MODULES (P12 RESOURCE EXCHANGE)

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LESSON 1—RENEWABLE/NONRENEWABLE ENERGY GUESS WHO GAME & WORD SORT

Target Grade: 4th Grade

Vocabulary:

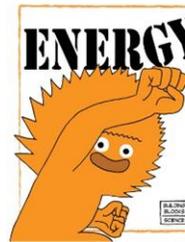
- Energy
- Fossil Fuels
- Natural Resources
- Nonrenewable Resources
- Renewable Resources

Next Generation Science Standard 4-ESS3-1: Obtain and combine information to describe that energy and fuels are derived from natural resources and their effect on the environment.

Learning Targets/Objectives: Students will be able to identify coal, natural gas, petroleum, wind, sunlight, and water by their energy uses and classify each resource as a renewable or nonrenewable resource.

MATERIALS NEEDED:

- Energy by: World Book



(pages 18-23 & 28-29)

-“Guess Who” Game Template (see below)

ACTIVITY

-Read and discuss the concepts and images on designated pages in Energy by: World Book with the class.

- o **Book summary:** Each page has its own topic which include: *How People Use Energy*, *Fossil Fuels*, *Renewable Resources*, and *The Future of Energy Use*. These topics provide simple illustrations and explanations of the main resources of energy (natural gas, petroleum, coal, wind, sunlight, and water) and how each resource is converted into energy.

-Students individually complete a “Guess Who” game to match each natural resource with its appropriate description. Then, students sort their matched “Guess Who” cards into piles of “Renewable” and “Nonrenewable”. This activity also serves as an assessment.

*Each Renewable Resource card is directly across from its correct description for the Educator’s convenience. Cards should be mixed up to challenge students.

Natural Gas	I am a gaseous fossil fuel that is found deep underground in rocks.
Coal	I am a solid fossil fuel that is burned to produce electricity in large power plants.
Petroleum	I am a liquid fossil fuel that can be made into gasoline to fuel cars, or can be converted into heating oil to heat homes.
Sunlight	I am a natural resource that is converted into energy by my light shining on solar panels.
Wind	I am a natural resource that creates energy by making turbines spin.
Water	I am a natural resource that creates energy by flowing through dams.

LESSON 2—SUSTAINABLE ENERGY CHECKLIST

Target Grade: 4th Grade

Next Generation Science Standard 4-ESS3-1: Obtain and combine information to describe that energy and fuels are derived from natural resources and their effect on the environment

Objective 1: Students should be able to demonstrate understanding of key terms such as energy conservation, energy efficiency, and environmental sustainability.

Objective 2: Students should be able to identify overuse of energy and apply energy saving strategies to their everyday lives.

Vocabulary:

- Energy Conservation
- Energy Efficiency
- Environmental Sustainability

MATERIALS NEEDED:

-BrainPop Video (& optional quiz) — <https://www.brainpop.com/science/energy/conservingenergy/>

- o **Video summary:** Tim and Moby demonstrate relatable scenarios of everyday encounters with things in students' lives that consume energy. They give statistics and tips on actions we can take to reduce energy consumption.

-Checklist Template (see below)

ACTIVITY:

-Ask Students to brainstorm things they see every day that consume energy. Create a list of student ideas (i.e. the refrigerator).

- Play BrainPop's Conserving Energy video and discuss key concepts. (Note: The quiz that goes along with the video can be taken as a pre-test and then retaken after the video as a means of assessment for objective 1.)

- Refer back to the list of student ideas of things that consume energy. Ask students to brainstorm ways in which we could use less energy with each item.

-Assign the Sustainable energy checklist to be completed at home that assesses several simple areas of energy efficiency. After completing the checklist, have students write a short reflection of ways they could improve their homes' energy efficiency (assessment #2).

Energy Conservation Checklist Name: _____

	Yes/All	Sometimes/Some	No/None
Are all of our appliances marked with an <i>Energy Star</i> label? (Appliances include: refrigerators, ovens, microwave ovens, washing machines, dryers, dishwashers, freezers, etc.)			
Are lights left on when no one is in the room?			
Do we use LED or Compact Fluorescent Light bulbs instead of incandescent light bulbs? (Look at the picture below to see what each lightbulb looks like.) *Incandescent light bulbs are less energy efficient than LED or Fluorescent light bulbs.			
Is the thermostat set on a heating/cooling schedule? (Is it set to heat/cool the home to different temperatures during different times of the day?) *Thermostats set on a heating/cooling schedule lead to a more energy efficient home.			
Do we have our thermostat set to efficient heating and cooling temperatures? (In Wisconsin, the efficient heating temperature is 68°F and efficient cooling temperature is 78°F).			

Energy Star appliances have this label:

