

Forms of Energy

5th Grade

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Benchmark and SLC#:

SLC 9: A. Students will explore how energy changes (transforms) from one form to another within their surroundings. B. Students will communicate their knowledge of energy changes.

Objectives:

Students will learn the six different forms of energy and be able to explain how the sun's energy relates to lighting a light bulb with the energy bike through transformations.

Materials:

- Ohio Energy Project Energy Forms Poster
- Energy Bike

Initial Demonstration:

Ask a volunteer student to ride the energy bike. The bike will supply energy to light up a light bulb on the energy board. Ask the class if they can explain why riding the bike is lighting up the light bulb.

Target Observations:

- There is a wire connecting the bike to the light bulb
- The wire is connected to a generator which is converting the pedaling motion into electricity
- The pedals are moving because of mechanical energy

Target Model:

-Model from *Sources of energy* lesson:

-Energy is the ability to do work

-Energy is everywhere and is essential to life

-Energy has ten different sources: coal, propane, nuclear, natural gas, petroleum, wind, geothermal, hydropower, solar, and biomass

-Energy is always conserved

-Renewable sources include: wind, geothermal, hydropower, solar, and biomass

-Non-renewable sources include: coal, propane, nuclear, natural gas, and petroleum

-Energy can change forms from mechanical to electrical to radiant.

Procedure:

Ask the class to think about what forms of energy they think are used in the bike. Have the class describe each form of energy and generate a list on the board. Next to each form that is mentioned place the description of the form beside it for reference.

Nuclear: splitting or combining of atoms

Radiant: energy from light
Chemical: energy from food/photosynthesis
Mechanical: energy from motion
Electrical: energy from moving electrons
Thermal: energy from heat

Have the class work in pairs to diagram (draw or with words) the energy transformations that occurred while riding the Energy Bike (make sure they are using the proper terms for each energy form).

After they have had sufficient time to complete their diagram, ask a group to come to the front and arrange their diagram on the Energy Forms Poster. Use the rest of the class to help make corrections after the diagram has been assembled.

Target Revised Model:

-Model from the sources of energy lesson:

-Energy is the ability to do work

-Energy is everywhere and is essential to life

-Energy has ten different sources: coal, propane, nuclear, natural gas, petroleum, wind, geothermal, hydropower, solar, and biomass

-Energy is always conserved

-Renewable sources include: wind, geothermal, hydropower, solar, and biomass

-Non-renewable sources include: coal, propane, nuclear, natural gas, and petroleum

-There are six forms of energy: nuclear, radiant, chemical, mechanical, electrical and thermal

-All of these forms can be transformed into another form of energy