FIZYKA PO ANGIELSKU
Forms of energy

Author: Paulina Klimek
Subject Area: physics
Grade Level: Middle School
Lesson Title: Forms of energy
Duration: 45 minutes

Suggested Prior Knowledge: concepts of energy , different types of energy

Purpose: To give students an understanding of energy exists and different forms of energy.

Key Vocabulary:
Energy- the capacity to do work.

Chemical energy - *energy stored within chemical bonds.*

Combustion- *the process of burning organic chemicals to release heat and light.*

Conservation- *careful use of resources with the goal of reducing environmental damage or resource depletion.*

Electrical energy *- energy made available by the flow of electric charge through a conductor. Electromagnetic energy A form of energy that is reflected or emitted from objects in the form of electrical and magnetic waves that can travel through space Examples include gamma rays, x rays, ultraviolet radiation, visible light, infrared radiation, microwaves and radio waves.* ***Energy Conversion*** *- transformation of one form of energy into another, usually to convert the energy into a more useful form*

Forms of energy: *thermal (heat), radiant (light), electrical, mechanical, nuclear, sound and chemical .*

Heat energy*(thermal) - a form of energy related to its temperature. More formally described as thermal energy.*

Kinetic energy- *Energy of motion, influenced by an objects mass and speed*

Mechanical energy *- a form of energy related to the movement of an object.*

Nuclear energy *- energy produced by splitting the nuclei of certain elements*

Potential energy *- energy that is stored and that comes from an object's position or condition.*

Radiant Energy *- energy transmitted to the Earth from the Sun by light (or by any source of light). Light is also a subset of electro-magnetic radiation.*

Sound energy *-the energy of vibrating sound waves.*

Objectives: Students:

- Define potential and kinetic energy.
- Identify real life examples of potential and kinetic energy.
- Describe various forms of energy.
- Define and Explain the Law of Conservation of Energy
- Explain the difference between potential mechanical energy and kinetic mechanical energy.

Materials:
- golf balls
- Worksheet
- Power Point presentation

Procedure:

Warm-up : Forms of Energy

1. Ask a puzzle: "What is Always Present But Never Visible?" Energy.

2. Write "What is Energy?" on the board. Have students raise their hands and give personal definitions to the word "energy." Write key words mentioned on the board.

3. Give the students a documented definition of energy such as "the capacity to do work."

Main part:

1. Introduce different types of energy at the power point presentation
2. Introduce the concept of potential energy (stored energy) (hold ball up) ,kinetic energy (energy in motion) (drop ball)
3. Ask some exploratory questions with demonstration:
- If I drop a bowling ball and a golf ball from the same height, which will have more potential energy? (the bowling ball)
-What about kinetic energy? (the bowling ball)
- If I drop 2 golf balls from different heights which will have more PE? (the higher one) - If I drop one golf ball, and throw the other one down from the same height, which has more KE? (the thrown one)

4. Give the equations for potential and kinetic energy reinforces that mass, height, and velocity affect the values :
PE= mass *gravity* height
KE = ½ *mass* velocity

5. Students fill out the worksheet

Conclusion :

- Energy is ability to do work.
- Energy exists in many forms.
- Energy can be moved from one object to another.
- Energy can be changed from one form to another.
- Energy cannot be created or destroyed.

Homework: Write examples of potential and kinetic energy from your walk home, ride home, house or apartment.

Additional Resources:

http://www.physicsclassroom.com/class/energy/Lesson-1/Mechanical-Energy
http://www.re-energy.ca/
"Breakthrough to CLIL for physics workbook", David Sang Timothy Chadwick, Cambridge University Press