Energy and Sustainability at Home

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GRADE LEVEL

6

CONTENT TOPICS

Earth Science
Environmental Science
Science

DESCRIPTION

This multi-day lesson helps students understand how electrical energy is made and how important it is for us to conserve energy. The students will also be able to identify renewable and non renewable energy and make wise decisions in the consumption of energy in their homes. They will consider: How is my family using energy and what kinds of life-long changes can we make to ensure that that energy will be here for future generations?

SUGGESTED STANDARDS CONNECTIONS

NGSS	MS-PS3 Energy

Lesson Plan on Energy & Sustainability

Unit Goal
Students will understand how electrical energy is made and how important it is for us to conserve energy. The students will be able to identify renewable and non renewable energy and make wise decisions in the consumption of energy in their homes.

Big Question: How is my family using energy and what kinds of life-long changes can we make to ensure that that energy will be here for future generations.

Unit Objectives – The student will be able to:

- Know all 6 forms of energy and give examples of each.
- Know the 2 kinds of energy and give examples of each.
- Define energy.
- Know the difference between renewable and non-renewable energy.
- Know what is Renewable energy (alternative energy) in the forms of hydro, geothermal, solar, wind, biomass and ocean (wave).
- Understand the concept of their footprint on earth; their uses of energy and waste that they leave behind.
- Conduct an energy audit of their home and make just decisions concerning their families use of energy.
- Keep a 7 consecutive day log on the coming/going of the family car. (odometer reading) Evaluate the cars usage.
- Keep a 14 consecutive day log of the all electric usage in the family home and evaluate the experience.
- Use a watt meter to measure 3 appliances in their home and the usage of each.
- Will be able to make wise decisions about their energy consumption.

Vocabulary for the unit:
Alternative – a different choice
Biomass – energy that is made from plants and animals
Chemical energy – energy that holds matter together, the head of a match
Electrical energy – energy created by electricity
Electromagnetic energy – energy created in a microwave, x-ray, gamma rays
Energy – the ability to work
Geothermal – heat inside of the earth
Hydroelectric – electricity created by moving water
Hypothesis – an educated guess
Kinetic energy – energy in motion.
Mechanical energy – Machines, energy that an object has: energy in a wind up toy
Non-renewable energy – energy that can't be made by nature in a short period of time
Potential energy – stored energy
Renewable energy – energy that can be made by nature in a short period of time
Solar (nuclear) – energy from the sun
Sustainable – to able to keep existing
Thermal energy – energy created by heat: rubbing hands together

This unit study will take about 2 – 3 weeks depending on the teaching of science in your curriculum. I took 3 weeks to cover this material. The students were given 20 days to complete their assignment of the "Energy Project", audit of the families use of energy.

Day 1 – Pre-assess and introduce vocabulary/meaning
Day 2 – Kinds of energy and forms of energy
Day 3 – Examples of kinetic and potential energy and the forms. Play jeopardy
Day 4 - Quiz on the Different forms and kinds of energy.
Day 5 - Renewable and non-renewable energy. Give examples and play games to review have the students create questions and answers.
Day 6 – Introduce the watt meters and how to use them. Show video (power point) of energy and your footprint. (Home made slide show to music)
Day 7 – Show the students how to keep a log of their energy consumption. Go over Energy Project. Give the students the rubric.
Day 8 – Showcase the projects and have students share of their experiences. Award the Energy merit badges to those that successfully completed the "Energy Project".
Day 9 – Have the students make a Pledge regarding their energy consumption and footprint on earth.