LESSON

How Energy Is Fundamental to Our Lives

OBJECTIVES

To give students awareness of the many ways energy affects our lives, where that energy comes from and what the trends are in both the sources and uses of energy.

BRIGHT SOLAR FUTURES

SOLAR

TOPIC OF STUDY

Energy Systems

90 MINUTES

OVERVIEW

Think about the things that bring you pleasure in life and make life easier. Things like your phone and how it allows you to talk to anyone, listen to music and take pictures. Think about how cars make it possible to get places nearby or get to places that would have been many days away in the era of horse transportation. Or how about your air conditioner or refrigerator, or the lights that make it possible to see things at night. Forty percent of the energy we use is used in the home. But beyond the things we use personally we need to remember the planes, trucks, ships and trains that carry not only passengers but so many of the products we use and the materials to make those products. Even the making of basic products such as food, and steel is only possible because of our ability to use energy.

STANDARDS

PA

3.2.10.B6. Explain how the behavior of matter and energy follow predictable patterns that are defined by laws.

3.3.12.A1. Classify Earth's internal and external sources of energy such as **radioactive decay, gravity,** and solar energy.

3.4.12.A3. Demonstrate how technological progress promotes the advancement of science, **technology**, engineering and mathematics **(STEM).**

KEY TERMS

heat energy
chemical energy
atomic energy
fossil fuels
electrical energy
wind power
solar power
hydroelectric power

INSTRUCTIONAL

TEXTS/REFERENCES

Various internet sites.

MATERIALS NEEDED

Teacher Prep: Teacher to familiarize themselves with the various internet material used in advance.

Technology: Large monitor and computer

IMPLEMENTATION (LESSON PLAN)

- Show images of different energy sources and energy uses (using images in lesson plan). Ask students how energy has made our lives different from those of people who lived 5000 years ago. Ask questions that have the students see how energy is used in the entire cycle of a vital commodity. Start with food. How does energy help in the growing of food (fertilizers, tractors, shipment, refrigeration etc.)? What are the different types of fertilizers (petroleum based and organic) and how do we get them?

IMPLEMENTATION (LESSON PLAN) - CONTINUED

- Then talk about household heating and cooling. Where does the heat energy of fire come from (the sun via photosynthesis and then the chemical reaction of burning - destructive distillation, the breaking down of chemicals to more fundamental parts, in this case mostly carbon and oxygen).

BRIGHT SOLAR FUTURES

SOLAR

TOPIC OF STUDY

Energy Systems

90 MINUTES

IMPLEMENTATION (LESSON PLAN) - CONTINUED

- How many ways did students use energy on the day they came to class? How is energy used in transportation?

- How has energy made our lives different than it was 200 years ago? Have students name some of the types of energy we use commonly – heat, chemical, atomic, renewable (wind, solar, geothermal) and talk about how they work. Look around the classroom – what ways is energy being used?

BRIGHT SOLAR FUTURES

SOLAR

TOPIC OF STUDY

Energy Systems

90 MINUTES

MEETING INDIVIDUAL NEEDS

This lesson is almost entirely visual and conversational and so should be accessible to all types of learners.

HOMEWORK

List all the kinds of energy present in each student's home. Find out how much energy use will increase by 2050 in the world and in the U.S. Where will the greatest growth happen? What kinds of energy will be most in demand.

BRIGHT SOLAR FUTURES

SOLAR

TOPIC OF STUDY

Energy Systems

90 MINUTES