

Got Sun?

Standards of Learning

Science 6.2

Objective

Students will:

- describe energy changes from one form to another recognizing that the sun can be traced to the origin of all things.

Materials

- A large picture of the sun
- Pictures of various items found on a farm

Background Knowledge

It always starts in the sun, where matter is changed into electromagnetic energy and zips out into space. The energy a person uses to jump always comes first from the sun. A tiny bit of the sun's energy falls onto earth. On earth some of the solar energy is changed by photosynthesis into chemical energy stored in the carbohydrate molecules in plant cells. A human eats a plant. Or a human eats an animal that ate a plant. The chemical energy stored in the plant (or animal) cells is moved into the cells of the human's body. All of the body processes, like digestion, pumping blood, breathing, are powered by cells converting the stored chemical energy into work and heat, in a process called respiration. Respiration takes place in every cell in your body. Inside the muscle cells of the human (or any animal), the chemical energy is transformed (changed) into mechanical work and heat. The muscle contracts, the legs push, and the body leaps into the air. Some of the chemical energy has now been changed into the kinetic energy of a body flying up into the air. The rest of the original chemical energy has been used to raise the temperature of your jumping body. If you keep jumping for long you'll get pretty hot.

The purpose of this lesson is to review the various forms of energy and the need for sunlight to charge up photosynthesis.

Procedure

1. Discuss the various forms of energy (thermal, radiant, electrical, chemical)
2. Remind students that energy can neither be created, nor destroyed but only changed from one form to another.
3. Use the common example of the sun's radiant energy being changed into chemical energy by green plants. (PHOTOSYNTHESIS)
4. Pass out a picture to each student, and place the large picture of the sun at the front (or you can hold it if you wish). Have each student describe an energy change or changes as it relates to the sun.
5. Discussion Questions
 - What energy change occurs as a tractor is plowing a garden?
 - What energy change occurs as a farmer is tossing hay up onto a wagon?
 - What energy change occurs as a chicken scratches for feed?

Extension

Trace all energy changes in discussion questions back to the sun.

