



Energy All Around Us Solar

Overview

Solar energy is only one form of energy that we encounter in the universe. It is one of the most important because without it we would not exist. Understanding that sunlight is the major source of energy for the majority of ecosystems is a key concept in which other ideas are built on. Energy unfortunately can not always be seen but the effects can be identified. This short activity in combination with others is designed to help students recognize the importance of the sun as a source of energy in our daily lives.

Arizona State Standards

SC06 S4C3 PO1 Explain that sunlight is the major source of energy for most ecosystems.
SC06 S5C3 PO 2 Identify several ways in which energy may be stored.
SC06 S5C3 PO 4 Compare the following ways in which energy may be transformed.

Objectives

The student will identify how solar energy impacts the environment around us.

Background Information

Everything that occurs in the universe occurs due to the exchange and transformation of energy. It is difficult for students to understand this since we do not “see” energy. This activity is designed to help students construct their own understanding of energy and how it behaves.

Materials

Stop watch
2 thermometers
6 aluminum pie tins (paint the inside of one black)
Solar calculator
Desk Lamp

Procedures

1. Brainstorm with students what they think energy is. Ask them why they can not see energy? If they can not see energy how do they know it exists?
2. Let the students know that they will be doing a series of activities to deepen their understanding of energy and now it behaves.
3. Take a simple solar calculator and go outside. Turn it on.
4. What happens when you cover up the solar cells?
5. While outside set out an unpainted aluminum pie tin and painted pie tin. Fill both pans with exactly the same amount of water. Take the starting temperature.



6. After 10 minutes take the temperature again. What is the difference? Why did that occur?

	Starting Temp	After 10 minutes
Painted		
Unpainted		

7. Using two other pans (both unpainted) place one in the sun and one in the shade. Take both starting temperatures. After 10 minutes take the temperature of both again. Which is warmer? Why?

	Starting Temp	After 10 minutes
Sun		
Shade		

8. Using two other pans (both unpainted) place one under a lamp and the second one away from the lamp. Take both starting temperatures. After 10 minutes take the temperature of both again. Which is warmer? Why?

	Starting Temp	After 10 minutes
Lamp		
No Lamp		

9. What did you learn about solar energy? What affects the effectiveness of solar energy?



10. What would happen if solar energy were to decrease or cease to exist all together?
Explain what would happen to life as we know it here on earth.

11. Knowing what you know now about solar energy design a device that will heat water to the highest temperature using only solar energy. Use simple household/classroom materials.