



Watts On Your Mind?

Solar energy educational activities for schools

Activity Overview

Grade Level: 6-8

Activity: M-11

General Description

Students will conduct a simple experiment to recreate the greenhouse effect. The activity involves comparing the temperature of water in two jars, one of which is covered in plastic. The teacher will discuss the concept of the greenhouse effect, global climate change, and causes and effects of the greenhouse effect. The effects of renewable energy sources on global climate change should also be discussed.

Learning Outcome

Students will understand the concept of the greenhouse effect and relate it to global climate change.

Subjects

Science, social studies, English, math, technology

Process Skills

Observation, listening, reading, analyzing, communicating, grouping facts, conducting research, working in teams

Duration

Activity – 1 hour, Discussion – ½ hour

Key Vocabulary

Greenhouse effect, global climate change

Curriculum Standards

Texas (TEKS):

112.22.b.6.8, 112.22.b.6.9, 112.23.b.7.14

Louisiana (LSCS):

PS-M-C1, PS-M-C3, PS-M-C8, SE-M-A6

Arkansas (ASCF):

3.1.20, 3.1.25

National (AAAS Project 2016):

The Physical Setting – 8th,

The Designed World – 8th

Recreating the Greenhouse Effect

Materials

- Two identical glass jars
- 4 cups cold water
- 10 ice cubes
- One clear plastic bag
- Thermometer

Method

1. Take two identical glass jars each containing 2 cups of cold water.
2. Add 5 ice cubes to each jar.
3. Wrap one in a plastic bag (this is the greenhouse glass).
4. Leave both jars in the sun for one hour.
5. Measure the temperature of the water in each jar.

Background

The Earth's climate has changed many times in the past. Subtropical forests have spread from the south into more temperate (or milder, cooler climates) areas. Millions of years later, ice sheets spread from the north covering much of the northern United States, Europe and Asia with great glaciers. Today, some scientists believe human beings are changing the climate.

How can that be?

Over the past few centuries, people have been burning more amounts of fuels such as wood, coal, oil, natural gas and gasoline. The gases formed by the burning, such as carbon dioxide, are building up in the atmosphere. They act like



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greenhouse glass. The result some experts believe is the Earth heating up and undergoing **global warming**. How can you show the **greenhouse effect**?

Discussion

In bright sunshine, the air inside a greenhouse becomes warm. The greenhouse glass lets in the sun's light energy and some of its heat energy. This heat builds up inside the greenhouse.

You just showed a small **greenhouse effect**. What could happen if this **greenhouse effect** changed the Earth's climate?

Another version of a greenhouse is what happens inside an automobile parked in the sun. The sun's light and heat gets into the vehicle and is trapped inside, like the plastic bag around the jar. The temperature inside a car can get over 120 degrees Fahrenheit (49 degrees Celsius).

Assessment

Using the internet, identify one potential cause for global climate change and write a one page paper describing this activity. Include a possible solution to this problem, as well.

Source: **Energy Quest**™ California Energy Commission