



Solar Oven Experiment

GRADES 4 - 7

LESSON DESCRIPTION

Building a solar oven is a hands-on way of teaching students about reflection, absorption and the greenhouse effect. Encourage students to draw connections between the processes involved in a solar oven and how we can see the same warming effects happening in the Arctic as sea ice cover is lost.

SUGGESTED CURRICULUM LINKS

Science: 4-2-01, 4-2-02, 4-2-05, 4-2-07, 4-2-11, 4-2-14, 5-4-05, 5-4-13, 6-4-08, 7-2-02, 7-2-03, 7-2-07, 7-2-09, 7-2-10,

Social Studies: 4-KL-023, 7-KL-026, 7-KL-029, 7-VL-009

OTHER RESOURCES

[Solar Ovens and Sustainable Energy](#)

[National Snow and Ice Data Centre](#)

LESSON

Begin with an explanation that light from the Sun is either reflected (bounced off) or absorbed by a surface. Ask if students can give an example of a surface that is really good at reflecting light (mirror, window). See if students can tell you what happens when light is absorbed by a surface – the surface heats up! What things about a surface might affect how much light it can reflect? Colour, texture and what the surface is made of. Have students research the science behind solar ovens and use the design process to create their own prototypes.

Materials

- White surface (snow or white lids)
- A solar oven or a shoe box with dark paper inside, and a clear plastic lid
- 2 thermometers

Procedure

- Set up your experiment outside on a sunny winter day. Explain that the dark interior of the solar oven can represent dark-coloured earth or water and the white board can represent more reflective snow and ice*.
- Have the students read the thermometers. Ask the students which reflected more light. Ask the students to explain which surface became hotter from absorbing sunlight. The clear plastic lid on the oven is like the greenhouse gas layer in Earth's atmosphere: it traps the heat inside the dark box.
- Attempt to melt snow or warm up a snack inside the ovens. How could you use this technology to save energy?