

What's Included

The resources are in 3 sections:

1. This Teacher Resource

2. Student Activity Sheet

- Solar Oven Activity “Solar S’mores” (single day, approx. 1 hour) This activity can be used without the fact sheet and experiment for a lighter, more fun approach.
- Optional Experiment Sheet (2 days needed, 1+ hour per day)
 - Compare inside vs outside temperature
 - Compare cloud cover vs clear sky
 - Further experiments could be added;
 - Morning vs afternoon
 - Direct sunlight vs indirect sunlight
 - Material variations (design a solar oven using different materials)

3. Heat from Solar Energy Fact Sheet (See “Solar Thermal Energy Fact Sheet Basic”)

- Importance of Sunlight
- How Light Makes Heat
- How Color Makes a Difference
- Uses of Heat from Solar Energy
- More Information (for teachers and students to explore)

Overview

This is low cost activity with a relatively low time commitment that makes the learning experience fun!

The solar oven pizza box is a great opportunity to demonstrate solar thermal energy at work in a way students can see, feel and taste!

This is a great complimentary exercise if you and your students are exploring society’s impact on the environment in regards to greenhouse gases, with a solution based, hands on project.

This can also be used to connect the demonstration of solar thermal energy to other real-world low carbon technologies such as solar thermal space heating and solar thermal hot water technologies.



Curriculum Connections

There are multiple connections to the grades 4,5 and 6 science curriculum:

Grade 4 - Key Concepts

- Waste in Our World
 - Identify materials that can be reused or recycled.
- Light and Shadows
 - Demonstrate that light travels outward from a source and continues unless blocked by an opaque material.
 - Describing changes in the size and location of Sun shadows throughout the day.
 - Classifying materials as transparent, partly transparent (translucent) or opaque.
 - Recognize that light can be reflected and that shiny surfaces, such as polished metals and mirrors, are good reflectors.

Grade 5 – Key Concepts

- Weather Watch
 - Predicting where, within a given indoor or outdoor environment, one is likely to find the warmest and coolest temperatures.
 - Recording weather over a period of time.
 - Describe the effects of the Sun’s energy on daily and seasonal changes in temperature 24-hour and yearly cycles of change.

Grade 6 -Topic C: Sky Science

Skills - Science Inquiry & Problem Solving Through Technology

- Construct and use a device for plotting the apparent movement of the Sun over the course of a day; e.g., construct and use a sundial or shadow stick. Useful for positioning solar oven.
- Describe seasonal changes in the length of the day and night and in the angle of the Sun above the horizon. Again, useful knowledge for use of solar technology.

Video

This video covers many of the topics listed above:

Bill Nye the Science Guy - S01E15 Seasons

<https://www.youtube.com/watch?v=a9z-aGB3atg>

All curriculum connections were derived from <https://www.alberta.ca/programs-of-study.aspx>.

