

Science
Shumei Hall and Gallery

Field Trip: Solar Energy: Beauty and Power

A Science Presentation About Solar Energy

Time Approximately 2 hours
8

Grades 7 and

Introduction to the beauty and power of solar energy – 20 minutes.

Explore solar cooking – 30 minutes

Collective power of solar energy using mirrors– 30 minutes

Reflection and discussion on the beauty and potential of solar energy – 20 minutes.

Examine displays – 20 minutes.

Total time: 2 hours

California Science Content Standards

Grade 7

Physical Science

6f. Students know light can be reflected, refracted, transmitted and absorbed by matter.

Grade 8

Physical Science: Earth in the Solar System

4a. Students know galaxies are clusters of billions of stars and may have different shapes.

4b. Students know that the sun is one of many stars in the Milky Way galaxy and that stars may differ in size, temperature, and color.

Indicators of Achievement:

- Student shows understanding the solar spectrum
- Student understands that the power of the sun has many applications.
- Student considers unique applications for solar energy.
- Student is able to describe the solar cooker process and solar concentrators.

Materials

Materials provided at field trip location; for classroom follow-up, teacher will supply materials according to activities selected

Preparation/Background

Basic understanding about solar energy appropriate to their grade level.

Understanding temperature, phase-change state of materials.

Visible light and lenses, pollution, electrical generation.

Vocabulary

Electromagnetic spectrum, solar flux, wavelength, infrared, ultra-violet, thermal, chimney effect, vaporization, phase-change, concentration, space heating, focusing, sustainability.

Activity

1. Students visit photography exhibition.

2. Students learn about the use of solar energy and what it can achieve.
3. Students experiment with a solar cooker.
4. Students participate in being part of a collective solar concentrator.
5. Students build targets to demonstrate solar energy.
6. Students reflect on the beauty and potential for solar energy use.
7. Back in class, students decide on a project to demonstrate their acquired knowledge.

Assessment

Evaluate the student's participation during the field trip and the related project. Does the project demonstrate that the student understands the solar spectrum; understands that the power of the sun has many applications; considers unique applications for solar energy; is able to describe the solar cooker process and solar concentrators?

Images For Lesson on Solar Energy

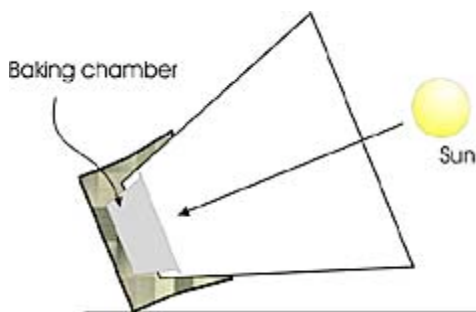


Diagram of a solar concentrator.



Solar cooker



Mirrors to demonstrate collective solar power.

Contact and Field Trip Information

Reservations: Jane Imai, janeimai@shumeiarts.org or 626-584-8841

Map: www.shumeiarts.org/map.html

Location: Shumei Hall, 2430 E. Colorado Blvd., Pasadena, CA 91107