



Overview

In this lesson students will investigate how the sun changes air temperature.

Theme Learning Goal

On successful completion of all units in Theme 1 (Changing Weather & Climate), students will be able to answer the following question with detail and specific examples appropriate to their age group: How are weather and climate changing in our area?

Objectives

On successful completion of this unit, students will be able to:

- A. Understand what heat is.
- B. Use scientific processes and inquiry

Targeted Alaska Science Standards

- [SA1] Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.
- [SB3] Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems.

Targeted Alaska Cultural Standards:

- [E] Culturally knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them

Alignment to BSSD Scope & Sequence

- 1st grade sequence #2: Heat, Light, & Sound





Vocabulary

heat	energy that makes things hot. Heat from the sun warms land, soil and water all around you. You can feel heat from other things like lamps, stoves, and fire. Moving things can give off heat too.
temperature	the measure of how hot or cold something is.
thermometer	a tool to measure the temperature.

Whole Picture

Students will explore how heat from the sun affects air temperature by measuring it with a thermometer in a sunny and a shady area outside. A class discussion will take place after the investigation about how the sun affects melting of ice and snow in their local area.

Materials

- Chart paper or white board with marker. Per small group:
- Data sheet
- 2 thermometers
- 2 paper plates
- Watch or timer

Additional Resources

- HSP I: Ch. 11, Lesson 1
- 'Energy Makes Things Happen' by Kimberley Brubaker Bradley
- 'Energy from the Sun' by Allan Fowler
- 'Energy is Everywhere' by June Young

Activity Preparation

1. Students will need to have knowledge of how to use and read a thermometer before doing this activity. They will need an older student or adult/elder to help them with the investigation and to complete the data sheet.





2. This investigation should be done in early Fall on a sunny day before the snow falls.

Activity Procedure

1. Ask students where heat comes from. Write student responses on the chart paper or white board. Some possible answers may be: sun, stove, fire, lights, and rubbing hands, feet or objects together (friction). Discuss that heat comes from the sun's energy and makes things hot or warmer.
2. Tell students that they are going to explore how the sun warms the air outside in different areas around the school. Explain that in a small group of 2-4 they will choose a sunny place and a shady place somewhere close to the school to place a thermometer on a paper plate and take the temperature every 15 minutes for 30 minutes. They will record the temperatures on their data sheet by having at least one person (with an older student or adult helper) be in each place to record the temperature.
3. Give each small group a data sheet, thermometers, and paper plates. Have them go outside and choose the places they will place their thermometers and plates. The helper should have a timer or watch to keep track of the time.
4. When the data has been collected bring the students back to the classroom to discuss the data. Ask the following questions:
 - What did you observe about the temperatures in the sunny place? In the shady place?
 - How much did the temperature change from the beginning to the end of the hour in the sunny place? In the shady place?
 - What would happen if you took the temperature near your home in a sunny place? In a shady place?
 - What would happen to snow or ice in a sunny place in your community? In a shady area?
 - Where will the ice or snow melt first, in a sunny or shady area? How could we find out?
 - What would happen if it was sunny in your community all the time?



WHERE DOES HEAT COME FROM?

UNIT 1: Energy & Heat INSTRUCTIONS



5. Have an Elder or person who has lived in the area a long time come to the classroom and discuss how the sun has affected the melting of snow and ice in the spring over the years.

Answers

Answers will vary to the questions asked during the activity procedure.



WHERE DOES HEAT COME FROM?

UNIT 1: Energy & Heat STUDENT WORK



Student Worksheet

Group members _____

Date _____

Location (circle which place you are investigating): Sunny Shady	
Time	Temperature
15 minutes	
30 Minutes	

