# K Science Unit 4: Sunlight & Warmth (Sunny Skies)

Content Area: **Science**
Course(s):
Time Period: **Marking Period 2**
Length: **9 Weeks**
Status: **Published**

## Unit Overview

In this unit, students make observations to explore how sunlight warms the Earth's surface. The Sun's energy heats up the pavement, keeps us warm, and can even melt marshmallows. Using what they learn, students think about ways that shade and structures can reduce the warming effect of the Sun.

## Standards

### Scientific & Engineering Practices

- Students make observations to define the problem that Farmer Josie's cows need shade in order to stay cool. Then, through a series of steps, they design a solution to build a shade structure that can reduce the warming effect of sunlight for the cows.
- Students define the problem that Chill City, a valley town surrounded by mountains, does not get enough sunlight in the winter. Using various materials, they carry out an investigation to test which materials can redirect sunlight. Using this information, they design a solution to help bring sunlight to various locations in Chill City.
- Students construct an explanation for why marshmallows melt in one car and not in another car. Then, to test this explanation, they conduct a virtual investigation to determine that the warmth of the Sun is the cause of the melted marshmallows.

### Crosscutting Concepts

- Students consider the effect of direct sunlight on an area and how that causes surfaces to heat up. They also examine how shade structures can reduce the warming effect of the Sun.
- Students consider the cause and effect relationship between sunlight exposure and the temperature on Earth's surface.
- Students consider the effect of parking a car in a sunny area and how the heat of the Sun can cause things to heat up and melt.

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| K-2-ETS1-1 | Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool. |
| K-2-ETS1-2 | Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. |

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| K-PS3-1 | Make observations to determine the effect of sunlight on Earth's surface. |
| K-PS3-2 | Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. |

## Materials

### Core Materials:

- Mystery Science
    - How could you walk barefoot across hot pavement without burning your feet?
    - How could you warm up a frozen playground?
    - Why does it get cold in winter?

### Supplemental Materials:

- BrainPop resources
- GRC Lessons
- TBSAID
- Nearpod Activities

## Technology

**Technology Literacy**

• 9.4.2.TL.1: Identify the basic features of a digital tool and explain the purpose of the tool (e.g., 8.2.2.ED.1).

• 9.4.2.TL.2: Create a document using a word processing application.

• 9.4.2.TL.3: Enter information into a spreadsheet and sort the information.

• 9.4.2.TL.4: Navigate a virtual space to build context and describe the visual content.

• 9.4.2.TL.5: Describe the difference between real and virtual experiences.

• 9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).

**Technology - Data & Analysis**

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.

• 8.1.2.DA.3: Identify and describe patterns in data visualizations.

• 8.1.2.DA.4: Make predictions based on data using charts or graphs.

**Technology - Effects on the Natural World**

• 8.2.2.ETW.1: Classify products as resulting from nature or produced as a result of technology.

• 8.2.2.ETW.2: Identify the natural resources needed to create a product.

• 8.2.2.ETW.3: Describe or model the system used for recycling technology.

• 8.2.2.ETW.4: Explain how the disposal of or reusing a product affects the local and global

## Evidence of Learning/Assessment

**Formative Assessment**

- Teacher Observation
- Quizzes
- Exit Tickets
- Labs

**Summative Assessment**

- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

## Accommodations & Modifications

**Special Education**

*Follow IEP Plan which may contain some of the following examples…*

- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe

**504**

*Follow 504 Plan which may contain some of the following examples…*

- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud

- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe

**ELL**

- Translation device/dictionary
- In class/pull out support with ESL teacher
- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe

**At-risk of Failure**

- Extra time during intervention
- In class/pull out support with special ed teacher
- Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Study Guides
- Limit number of questions
- Scribe

**Gifted & Talented**

- Independent projects
- STEM Projects

## Interdisciplinary Connections

**Connections to NJSLS - English Language Arts**

• W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS-1)

**Connections to NJSLS - Mathematics**

• K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of/less of” the attribute, and describe the difference. (K-LS-1)

## Career Readiness, Life Literacies, and Key Skills

**Critical Thinking and Problem Solving:**

• 9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).

• 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).

• 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).

## Career Ready Practices

- CRP6. Demonstrate creativity and innovation.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.