

Unit 3: Effects of the Sun

Content Area: **Science**
Course(s): **Science - Grade K**
Time Period: **3 weeks**
Length: **3 Weeks**
Status: **Published**

Unit Overview

During this unit of study, students apply an understanding of the effects of the sun on the Earth's surface. The crosscutting concepts of *cause and effect* and *structure and function* are called out as organizing concepts for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models*; *planning and carrying out investigations*; *analyzing and interpreting data*; and *designing solutions*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Transfer

Students will be able to independently use their learning to...

understand the sun and the effects that it has on the Earth.

Meaning

Understandings

Students will understand that...

- Scientists use different ways to study the world.
- Events have causes that generate observable patterns.
- Sunlight warms Earth's surface
- The shape and stability of structures of natural and designed objects are related to their function(s).
- Designs can be conveyed through sketches, drawings, or physical models. These representations are

useful in communicating ideas for a problem's solutions to other people.

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

Essential Questions

Students will keep considering...

How does sunlight affect the playground?

How would we keep the sand, soil, rocks, and water found on the playground cool during the summer?

Application of Knowledge and Skill

Students will know...

the effects of the sun/sunlight on the Earth

Students will be skilled at...

making observations, asking questions and gathering information

Academic Vocabulary

sun, Earth, cold, hot, ice, life, light, sunlight, cool, heat, temperature, warm

Learning Goal 1

Make observations to determine the effect of sunlight on Earth's surface.

- Make observations to determine the effect of sunlight on Earth's surface.

SCI.K-PS3-1

Make observations to determine the effect of sunlight on Earth's surface.

SCI.K-PS3-2

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Target 1

SWBAT determine how sunlight heats up the Earth's surface.

- SWBAT determine how sunlight heats up the Earth's surface.

Target 2

SWBAT decide on a solution to reduce the warming effect of sunlight.

- SWBAT decide on a solution to reduce the warming effect of sunlight.

Learning Goal 2

Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface

- Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface

SCI.K-PS3-1

Make observations to determine the effect of sunlight on Earth's surface.

SCI.K-PS3-2

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Target 1

SWBAT decide on solutions to limit the warming effect on the Earth's surface.

- SWBAT decide on solutions to limit the warming effect on the Earth's surface.

Learning Goal 3

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool

- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool

SCI.K-PS3-1

Make observations to determine the effect of sunlight on Earth's surface.

SCI.K-PS3-2

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Target 1

SWBAT understand what the effects of the sun are on the Earth

- SWBAT understand what the effects of the sun are on the Earth

Summative Assessment

Teacher observations.

Teacher created assessment.

21st Century Life and Careers

CAEP.9.2.4.A

Career Awareness

CAEP.9.2.4.A.1

Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

CAEP.9.2.4.A.2

Identify various life roles and civic and work - related activities in the school, home, and community.

CAEP.9.2.4.A.3

Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

CAEP.9.2.4.A.4

Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Formative Assessment and Performance Opportunities

Students who understand the concepts are able to:

- Observe patterns in events generated by cause-and-effect relationships.
- Make observations (firsthand or from media) to collect data that can be used to make comparisons.
- Make observations to determine the effect of sunlight on Earth's surface. (Assessment of temperature is limited to relative measures such as warmer/cooler.)
- Examples of Earth's surface could include: sand, soil, rocks and water

Students who understand the concepts are able to:

- Observe patterns in events generated by cause-and-effect relationships.
- Describe how the shape and stability of structures are related to their function.
- Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem.
- Use tools and materials to design and build a structure (e.g., umbrellas, canopies, tents) that will reduce the warming effect of sunlight on an area.

Develop a simple model based on evidence to represent a proposed object

- or tool.
- 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.
- Analyze data from tests of an object or tool to determine if it works as intended.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths

Accommodations/Modifications

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Collaborate with after-school programs or clubs to extend learning opportunities.

Unit Resources

<http://www.readwritethink.org/classroom-resources/lesson-plans/casting-shadows-across-literacy-1016.html?tab=4>

<http://sciencenetlinks.com/lessons/the-warmth-of-the-sun/>

<http://ngss.nsta.org/Resource.aspx?ResourceID=124>

Sid the Science Kid Video