Jan. K Unit 4: Sun Warms Earth

Content Area: **Science**
Course(s):
Time Period: **January**
Length: **6-8 Weeks**
Status: **Published**

Unit Overview

In this unit, students explore the relationship of the sun and the earth.

Enduring Understandings

The sun is the source of warmth on the earth and makes life possible.

Essential Questions

What is the sun and how does it warm the earth?

Instructional Strategies & Learning Activities

- Unit 4: Sun Warms Earth
- Student Edition

  Sun Warms Earth: Unit Opener

  The Unit Opener for "Sun Warms Earth" introduces the unit project, The Sun Heats Up Land and Water. During this unit project, children will:
  - Explore whether land or water heats up faster by planning and conducting an investigation.
  - Collect data to use as evidence to answer a question.
  - Construct an argument to support a claim.

- Unit 4: Sun Warms Earth
  Student Edition

  Sun Warms Earth: Unit At a Glance

  Unit at a Glance for "Sun Warms Earth" includes the unit table of contents, unit vocabulary words, and the vocabulary game, Word Hints. In this unit, children will:
  - make observations to construct an evidence-based account of the effect of sunlight on Earth's surface;
  - make observations to collect data that can be used to make comparisons;

- use tools and materials provided to design and build a device that protects people from the sun;
- describe the causes that create observable patterns associated with the effect of sunlight on Earth's surface.

Unit 4: Sun Warms Earth
Teacher Edition

Sun Warms Earth: Integrating the NGSS* Three Dimensions of Learning

This section details the Performance Expectations covered in the unit "Sun Warms Earth."

Unit 4: Sun Warms Earth
Teacher Edition

Sun Warms Earth: 3D Unit Planning

Planning resources are available for each lesson and hands-on activity in the unit "Sun Warms Earth."

Unit 4: Sun Warms Earth
Teacher Edition

Sun Warms Earth: Differentiate Instruction

This page provides differentiated support for this unit's Science & Engineering Leveled Readers, "What Can We Learn About Matter?" and "Patterns in the Sky."

Unit 4: Sun Warms Earth
Teacher Edition

Sun Warms Earth: Connecting with NGSS

These opportunities for informal science learning provide local context and extend and enhance concepts from the unit "Sun Warms Earth."

Unit 4: Sun Warms Earth
Teacher Edition

Sun Warms Earth: Unit Project: The Sun Heats Up Land and Water

During the unit project "The Sun Heats Up Land and Water," children will:
- Explore whether land or water heats up faster by planning and conducting an investigation.
- Collect data to use as evidence to answer a question.
- Construct an argument to support a claim.

Unit 4: Sun Warms Earth
Teacher eBook

Sun Warms Earth: Unit Opener

The Unit Opener introduces the unit "Sun Warms Earth" and the unit project, The Sun Heats Up Land and Water.

- Unit 4: Sun Warms Earth
- Online Assessment

Sun Warms Earth: Unit Pretest

The interactive Unit Pretest for "Sun Warms Earth" focuses on prerequisite knowledge. The test is composed primarily of DOK 1 items that evaluate student preparedness for the upcoming content.

- Home Letter

  Sun Warms Earth: Home Letter

  This is the home letter for the unit "Sun Warms Earth."

- Unit 4: Sun Warms Earth
  Student Edition

  Sun Warms Earth: Unit Performance Task: Engineer It - Build a Model Shelter

  During the Performance Task "Engineer It - Build a Model Shelter," children will design a model shelter from the sun and analyze test results to determine its effect on the pattern of sunlight on Earth's surface.

- Unit 4: Sun Warms Earth
  Student Edition

  Sun Warms Earth: Unit Review

  The Unit Review assesses student understanding of key ideas and concepts from the unit "Sun Warms Earth."

- Unit 4: Sun Warms Earth
- You Solve It

  Going Outside to Play!

  In Going Outside to Play, students learn about the effect of sunlight on Earth's surface by collecting temperature data of different materials in an outdoor yard. They analyze the data to construct an argument about the best times for outside human activity.

- Unit 4: Sun Warms Earth
- Student eBook

  Sun Warms Earth: Unit Performance Task: Engineer It - Build a Model Shelter

  During the Performance Task "Engineer It - Build a Model Shelter," children will design a model shelter from the sun and analyze test results to determine its effect on the pattern of sunlight on Earth's surface.

Launch

- Unit 4: Sun Warms Earth
  Leveled Readers - Blue

  On-Level: What Can We Learn About Matter?

  The leveled reader "What Can We Learn About Matter?" is designed for on-level readers and can be used to enrich key concepts from the unit "Sun Warms Earth."

- Unit 4: Sun Warms Earth
  Leveled Readers - Green

  Enrichment: Cooking Matter Changes It

  The leveled reader "Cooking Matter Changes It" is designed for above-level readers and can be used to extend key concepts from the unit "Sun Warms Earth."
- Unit 4: Sun Warms Earth
  Leveled Readers - Red

  Extra-Support: What Can We Learn About Matter?

  The leveled reader "What Can We Learn About Matter?" is designed for below-level readers and can be used to reinforce key concepts from the unit "Sun Warms Earth."
- Unit 4: Sun Warms Earth
  Leveled Readers Teacher's Guide

  Topic 3: Matter

  The Leveled Readers Teachers Guide provides teaching strategies and support (as well as reproducible English and Spanish worksheets) for the Unit 4 readers "What Can We Learn About Matter?" and "Cooking Matter Changes It." On-Level and Extra-Support worksheets focus on vocabulary development, while Enrichment worksheets reinforce and enrich content.

- Unit 4: Sun Warms Earth

- Assessment Guide

  Sun Warms Earth: Unit Test

  The Unit Test for "Sun Warms Earth" assesses students' ability to apply knowledge to solve problems and explain phenomena in relation to the Performance Expectations associated with the unit. In this unit, children:
  - make observations to construct an evidence-based account of the effect of sunlight on Earth's surface;
  - make observations to collect data that can be used to make comparisons;
  - use tools and materials provided to design and build a device that protects people from the sun;
  - describe the causes that create observable patterns associated with the effect of sunlight on Earth's surface.

Unit 4: Sun Warms Earth

- Unit Project Worksheet

Sun Warms Earth: Unit Project: The Sun Heats Up Land and Water (Editable)

This is the editable Unit Project worksheet for "The Sun Heats Up Land and Water." During this project, children will:

- Explore whether land or water heats up faster by planning and conducting an investigation.
- Collect data to use as evidence to answer a question.
- Construct an argument to support a claim.

Unit 4: Sun Warms Earth

- Unit Performance Task Worksheet

Sun Warms Earth: Unit Performance Task: Engineer It - Build a Model Shelter (Editable)

This is the editable Unit Performance Task worksheet for "Engineer It - Build a Model Shelter." During this task, children will design a model shelter from the sun and analyze test results to determine its effect on the pattern of sunlight on Earth's surface.

Integration of Career Exploration, Life Literacies and Key Skills

	Different types of jobs require different knowledge and skills.
9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
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).
CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Technology and Design Integration

Smartboard lessons and technology.

Online Student Textbook

Online Student Simulations

8.2.2.ED.1	Communicate the function of a product or device.
8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
8.2.2.ED.4	Identify constraints and their role in the engineering design process.
TECH.8.2.2.D	Abilities for a Technological World: The designed world is the product of a design process that provides the means to convert resources into products and systems.
TECH.8.2.2.D.1	Collaborate and apply a design process to solve a simple problem from everyday experiences.
TECH.8.2.2.D.CS1	Apply the design process.

Interdisciplinary Connections

LA.RI.K.1	With prompting and support, ask and answer questions about key details in a text.
LA.RI.K.2	With prompting and support, identify the main topic and retell key details of a text.
MA.K.OA.A.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
LA.RI.K.3	With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
LA.RI.K.4	With prompting and support, ask and answer questions about unknown words in a text.
LA.RI.K.5	Identify the front cover, back cover, and title page of a book.
LA.RI.K.6	Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.
LA.RI.K.7	With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
LA.RI.K.8	With prompting and support, identify the reasons an author gives to support points in a text.
LA.RI.K.9	With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).
LA.RI.K.10	Actively engage in group reading activities with purpose and understanding.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.

- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

See differentiation suggestions in Instruction above, for struggling and advanced learners.

Modifications & Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

IEP and 504 accommodations will be utilized.

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

Additional Benchmarks used in this unit:

Pre-test followed by interactive assessments

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

See assessments embedded in Instruction above.

Summative Assessments

summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

See assessments embedded in Instruction above.

Instructional Materials

HMH Science Demensions program materials

Misc. items for hands on labs

Standards

K-PS3-1	Make observations to determine the effect of sunlight on Earth's surface.
	Assessment of temperature is limited to relative measures such as warmer/cooler.
	Planning and Carrying Out Investigations
	Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
	Make observations (firsthand or from media) to collect data that can be used to make comparisons.
K-PS3-2	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
	Constructing Explanations and Designing Solutions
PS3.B	Conservation of Energy and Energy Transfer
	Sunlight warms Earth's surface.
	Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.
ESS2.D	Weather and Climate
	Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.