

Unit 4: Sun Warms Earth

Content Area: **Science**
Course(s): **Science Gr K**
Time Period: **MarApr**
Length: **6 weeks & K**
Status: **Published**

Title Section

Department of Curriculum and Instruction



Belleville Public Schools

Curriculum Guide

Science, GRADE K

Unit 4: Sun Warms Earth

Belleville Board of Education

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Board Approved: August 30, 2017

Unit Overview

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

Performance Expectations:

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

Unit Vocabulary:

1. light
2. heat
3. shade

Unit Project: The Sun Heats Up Land and Water

Lesson 1: How Does the Sun Warm Earth?

Lesson 2: Engineer It- How Can I Protect Myself from the Sun?

Enduring Understanding

- Light is what lets us see things.
- The sun gives off light.
- The sun gives off heat.
- Heat makes things warmer.
- People need to know how to protect themselves from the heat and light of the sun.
- Shade is coolness caused by shelter from the sun's heat.
- Engineers can build things that give shade to protect people from the sun.

Essential Questions

Lesson 1:

- How does the sun warm Earth?

Lesson 2:

- How can I protect myself from the sun?

Unit Project:

- How hot do soil and water get in the sun?
- How can you find out which heats up faster: land or water?
- What evidence can be collected to show which heats up faster?
- What cause and effect relationship will occur when you put land and water in the sun?

Exit Skills

By the end of Grade K Unit 4, the student should be able to:

- tell what the sun warms on Earth
- tell some ways people can protect themselves from the sun

New Jersey Student Learning Standards (NJSLS-S)

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.

Interdisciplinary Connections

Math

Language Arts

LA.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).

MA.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.

Learning Objectives

Lesson 1:

- SWDAT analyze how sunlight affects land and water on Earth's surface

Hands-On Activity 1: SWDAT determine the effects of the sun's heat on Earth's surface.

Lesson 2:

- SWDAT design and build a structure to reduce the effect of sunlight on an area of Earth's surface.

Hands-On Activity 2: SWDAT design and build a shelter that provides shade for an object.

You Solve It:

- SWDAT generate observations about the temperature of different materials throughout the day.
- SWDAT make comparisons between temperatures at different times of the day to identify patterns in data to decide when to go outside.
- SWDAT determine the effect of sunlight on Earth's surface.

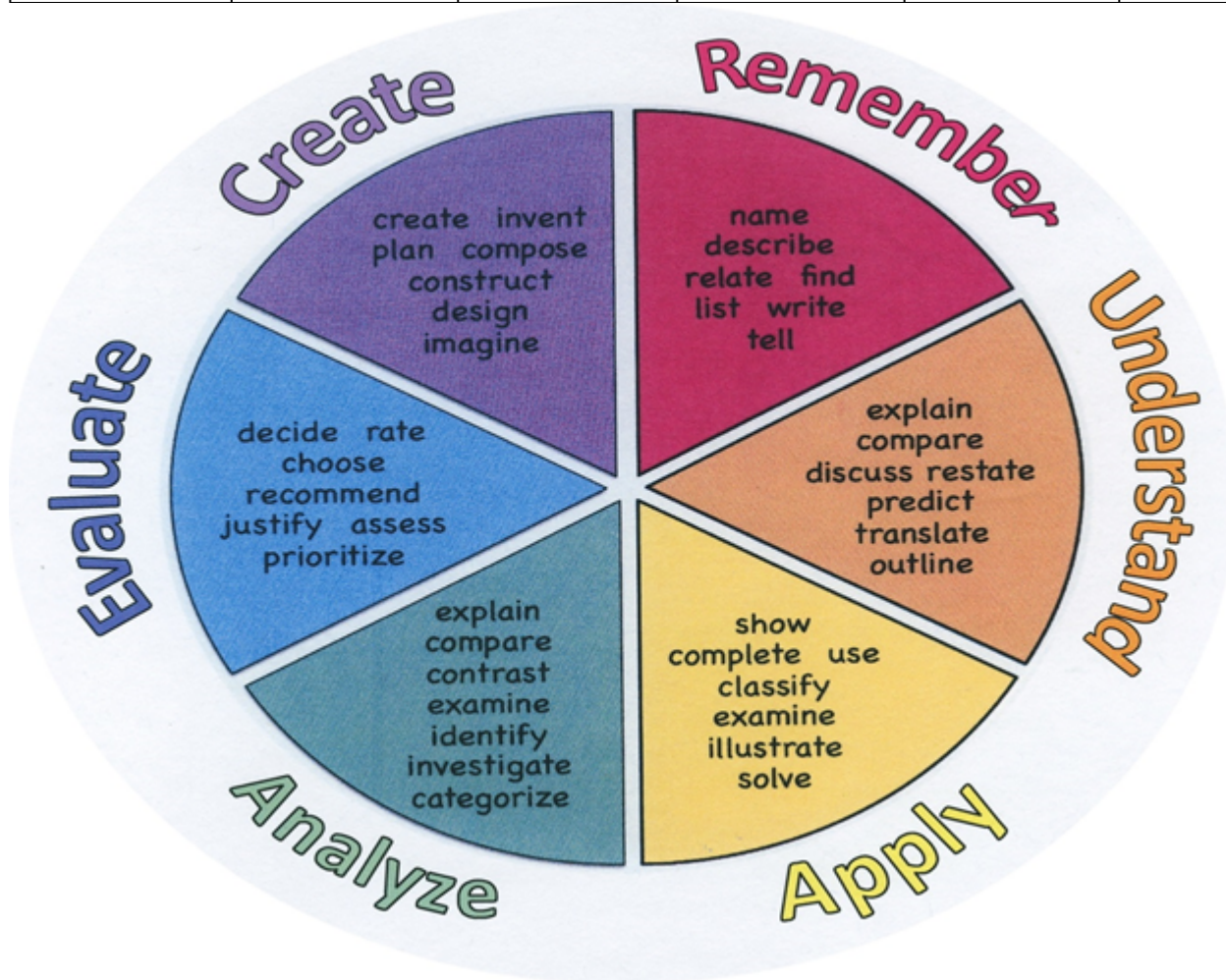
Unit Project:

- SWDAT determine whether land or water heats up faster by planning and conducting an investigation.
- SWDAT construct an argument using evidence to support a claim.

Action Verbs: Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe

Recognize Repeat Reproduce	Show Summarize Tell Translate Associate Compute Convert Discuss Estimate Extrapolate Generalize Predict	Compute Discover Divide Examine Graph Interpolate Manipulate Modify Operate Subtract	Point out Separate		Propose Reconstruct Revise Rewrite Transform
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Suggested Activities & Best Practices

Vocabulary Game - Word Hints

Hands-On Activities - The Sun's Heat; Design Shade

You Solve It Virtual Lab - Going Outside to Play!

Unit Project - The Sun Heats Up Land and Water

Performance Task - Build a Model Shelter

Take it Further - Careers in Science and Engineering: Solar Energy Plant Operator

Assessments

- Pre-Assessment
- Formative: interactive workbook, apply what you know, lesson check/self check
- Summative: assessment guide, lesson quizzes, unit test
- Online Assessment

Evidence of Student Learning - Checking for Understanding (CFU)

- Admit Tickets
- Anticipation Guide
- Common benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- Define

- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit tests

Primary Resources & Materials

HMH Science Dimensions- Teacher Edition, Student workbook, online resources (including professional development videos)

HMH Online Handbook

Equipment Kits

Safety Kit

HMH Science Dimensions leveled readers

Ancillary Resources

online resources

Science Weekly

Scholastic News

National Geographic Kids

Technology Infusion

HMH Science Dimensions digital component

Computer based assessments



Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;
- Visual and Performing Arts.

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration

- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

21st Century Skills

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

Differentiation

Leveled Readers (On Level, Extra Support, Enrichment)

Reinforce Vocabulary- Help students connect vocabulary to real world examples.

RTI/Extra Support- Provide additional opportunities for hands-on discovery.

Extension Activity for enrichment

ELL- Provide hands-on examples of important concepts (ELL support resources include a glossary in English and Level Readers in Spanish and English)

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas

- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Intervention Strategies

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of work presented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test

- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Special Education Learning

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multiple test sessions
- multi-sensory presentation
- preferential seating
- preview of content, concepts, and vocabulary
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

English Language Learning (ELL)

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarify
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of work presented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

Sample Lesson
