Grade 1 Unit 1 Day and Night Patterns

Content Area: **Science**
Course(s): **Science 1**
Time Period: **September**
Length: **Trimester 1**
Status: **Published**

Unit Overview

In this unit of study, students make observations of the Sun and shadows throughout the day and across the seasons. Students explore the Moon and stars. Students will observe and record the appearance of the Moon to determine its cyclical pattern. They will determine why stars are only visible at night. The crosscutting concepts of patterns, cause and effect, interdependence of science, engineering, and technology, and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for the disciplinary core ideas. Students are expected to demonstrate age appropriate proficiency in asking questions, analyzing and interesting data, and obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas. Students will also be introduced to the Philadelphia Zoo UNLESS contest for the year and discuss the impacts environmental issues can have on wildlife.

NJ Student Learning Standards - Science

1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.
1-ESS1-1	Use observations of the sun, moon, and stars to describe patterns that can be predicted.

Disciplinary Core Ideas

ESS1.A: The Universe and its Stars

Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. (1-ESS1-1)

ESS1.B: Earth and the Solar System

seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2)

Science and Engineering Practices

Planning and Carrying Out Investigations

Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1-2)

Analyzing and Interpreting Data

Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1)

Crosscutting Concepts

Patterns

Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-ESS1-1, 1-ESS1-2)

Scientific Knowledge Assumes an Order and Consistency in Natural Systems

Science assumes natural events happen today as they happened in the past. (1-ESS1-1)

Many events are repeated. (1-ESS1-1)

Learning Targets (Student Language)

- I can observe the sun,moon,and stars to describe patterns that can be predicted.
- I can make observations at different times of the year to relate the about of daylight and darkness.
- I can understand shadows and their movements.
- I can understand what it takes to get a stationary object's shadow to move.
- I can explore why a shadow changes over the course of a day at the beach.
- I can create a model of the sun's daily path across the sky.
- I can understand why the sun stays up longer on certain days.
- I can observe and predict the location of the sun in the sky at different times of the days.
- I can predict why the moon changes.

- I can explore different shapes of the moon on different nights.
- I can investigate why stars are visible at night and disappear during the day.
- I can predict when the sun, moon, and stars will be visible in the sky using knowledge over the unit.

Essential Questions

What patterns of change can be predicted when observing the sun, moon, and stars?
What is the relationship between the amount of daylight and the time of year?

Materials and Resources

Mystery Science Lessons

Read Alouds

Cross Cut Weather Reading Activities

Mystery Labs

Additional Hands on Activities

Teacher Devised or Created Worksheets

Assessments

Anecdotal notes during whole group , small group and individual

Conferences

Sharing Strategies

Turn and Talk

Lab Activities

Lesson Assessments

Teacher Observation and Feedback

Open-ended responses

Unit Assessments

Individual and Group Assessments

Class Participation in skill development

Performance Task

- BrainPop Jr.
- Mystery Science Formative Assessments
- Mystery Science Summative Assessments
- Philadelphia UNLESS Contest
- Student Participation
- Teacher Observations

Learning Plan (Pacing Guide)

Topic	# of Days (30 min Sessions)	Student Learning Targets (Objectives)
Anchor Phenomenon: Sun, Shadows, & Daily Patterns	1	1. Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.] (1-ESS1-1) 2. Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not
Lesson 1: Could a statue's shadow move?	4	
Read-Along Lesson 2: What does your shadow do when you're not looking?	3	
Lesson 3: How can the Sun help you if you're lost?	4	
Read-Along Lesson 4:	3	

Why do you have to go to bed early in the summer?		quantifying the hours or time of daylight.] (1-ESS1-2)
Performance Task: Where will the Sun be tomorrow?	1	
Anchor Phenomenon: Moon Mysteries	1	
Lesson 1: When can you see the full moon?	5	
Lesson 2: Why do the stars come out at night?	4	
Read-Along Lesson 3: How can stars help you if you get lost?	3	
Performance Task: When can we see the Sun, Moon, and stars?	1	

Interdisciplinary Connections

NJSLS ELA

- W.1.7 Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given
  topic and use them to write a sequence of instructions). (1-ESS1-1, 1-ESS1-2)
- W.1.8 With guidance and support from adults, recall information from experiences or gather information from
  provided sources to answer a question. (1-ESS1-1, 1-ESS1-2)

NJSLS Math

- MP.2 Reason abstractly and quantitatively. (1-ESS1-2)
- MP.4 Model with mathematics. (1-ESS1-2)
- MP.5 Use appropriate tools strategically. (1-ESS1-2)
- 1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to,
  taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using
  objects, drawings, and equations to represent the problem. (1-ESS1-2)
- 1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about
  the total number of data points, how many in each category, and how many more or less are in one category
  than in another. (1-ESS1-2)

English Language Arts/Literacy

In this unit of study, students need opportunities to participate in shared research and writing projects about patterns of change in the sky. For example, students can use online resources or books to research the patterns of change that are visible over time when we observe the objects in the sky. With guidance from adults, students could create books that describe and illustrate the different patterns of change observed in objects in the sky. They could also describe and illustrate the relative amount of daylight in relation to the season using a sequence of journal entries or in a sequence-of-events foldable.

Mathematics

Students need opportunities to represent and interpret data and to use addition and subtraction. The following examples from NGSS Appendix L could provide guidance for instruction and should be done with teacher support:

- Science example 1: There were 16 hours of daylight yesterday. On December 21, there were 8 hours of daylight. How many more hours of daylight were there yesterday than on December 21?

- Science example 2: Based on the data collected and posted on the bulletin board so far, which day has been the longest of the year so far? Which day has been the shortest?

Climate Change

Students will learn about the Philadelphia Zoo UNLESS Contest. They will discuss how their school is participating, ways they can support the cause, and how the project will address an environmental issue that is impacting wildlife.

Accommodations and Modifications (Interventions. Special Education, ELL, Enrichment)

- Collaborate with after-school programs or clubs to extend learning opportunities.
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding.
- Follow all modifications and accommodations as outlined in IEPs and 504s.
- Provide ELL students with multiple literacy strategies.
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tools such as Zoom/Google Meets, experts from the community helping with a project, journal articles, and biographies).
- 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).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Structure the learning around explaining or solving a social or community-based issue.
- Use project-based science learning to connect science with observable phenomena.

Career Readiness, Life Literacies, and Key Skills

TECH.9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
TECH.9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
TECH.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).
TECH.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).
TECH.9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
TECH.9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).