Unit 01: Spinning Sky

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **12 weeks**
Status: **Published**

Stage I: Desired Results

Transfer/Overview/Rationale

Transfer / Overview / Rationale

Unit Rationale

The purpose of this unit…

This unit will help students develop the idea that the sun, moon, and stars change position in the sky in ways that are fun to watch and predict.

Meaning

Essential Questions

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Mystery 1: Could a statue's shadow move?

Mystery 2: What does your shadow do when you're not looking?

Mystery 3: How can the sun help you if you're lost?

Mystery 4: Why do you have to go to bed early in the summer?

Mystery 5: Why do the stars come out at night?

Mystery 6: How can stars help you if you get lost?

Enduring Understanding/Indicators of Understanding

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- Patterns of motion are all around us.
- Each day, the sun moves across the sky in an arch shape.
- The sun's movement across the sky is a pattern.
- Depending on the season, it takes different amounts of time for the sun to move across the sky.
- It seems that stars only come out at night, but they are actually always there. It's just that we can only see them at night.
- There are groups of stars in the sky that form a pattern; they are called constellations.

Acquisition (Student Learning Objectives)

Knowledge

Knowledge

Students will know…

Mystery 1: how a shadow changes as time passes, or as the sun moves across the sky.

Mystery 2: how to conduct an investigation to gather information about how their shadow changes throughout the day.

Mystery 3: how to develop a model of the sun's movement across the sky.

Mystery 4: how to obtain information about the seasonal patterns of sunrise and sunset.

Mystery 5: how to develop and use a model of the Big Dipper in the night sky.

Mystery 6: how to obtain, evaluate, and communicate information about the cardinal directions.

Skills

Skills

Student will be skilled at …

- Observing, investigate and interpreting shadow changes as time passes, or as the sun moves across the sky.
- Constructing an explanation about why shadows point in different directions.
- Using a model and the sun to help guide them during the day.
- Reading a text to to determine seasonal daylight patterns.
- Constructing an explanation about the stars being outshone by the sun in the daytime sky, and then being visible again when the sun sets.
- Determining which direction each part of their classroom is facing.

Standards Alignment

New Jersey Student Learning Standards

SCI.1-ESS1-1	Use observations of the sun, moon, and stars to describe patterns that can be predicted.
SCI.1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.
1-PS4-2	Make observations to construct an evidence-based account that objects can be seen only when illuminated.
1-PS4-3	Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
1-PS4-4	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

1-PS4	Waves and their Applications in Technologies for Information Transfer
1-PS4-1	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

Integration of Career Readiness, Life Literacies and Key Skills

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.

Technology / Integration of Computer Science and Design Thinking

CS.K-2.8.1.2.AP.5	Describe a program’s sequence of events, goals, and expected outcomes.
CS.K-2.8.2.2.ITH.4	Identify how various tools reduce work and improve daily tasks.

Interdisciplinary Connections: NJSLS for ELA, Social Studies, Science and/or Math Section

ELA.L.RF.1.1	Demonstrate mastery of the organization and basic features of print (including those listed under L.RF.K.1); recognize and understand the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
ELA.L.RF.1.2	Demonstrate mastery of spoken words, syllables, and sounds (phonemes) by using knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word.
ELA.L.RF.1.3.A	Know the spelling-sound correspondences for common consonant digraphs (two letters that represent one sound).
ELA.L.RF.1.3.B	Decode regularly spelled one-syllable words.

Integration of Diversity, Equity and Inclusion; Climate Change; Informational and Media LiteracyNew Section

see Crosswalks

21st Century Life and Careers

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Stage 3: Learning Plan

Resource and Mentor Texts

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- Mystery Science Online Read Alouds
- What Flies in the Sky? – Level B (https://www.readinga-z.com/books/leveled-books/book/?id=2237&lang=English)
- The Moon – Level C (https://www.readinga-z.com/books/leveled-books/book/?id=2897&lang=English)
- Space – Level C (https://www.readinga-z.com/books/leveled-books/book/?id=1553&lang=English)
- Five Seconds to Blast Off – Level E (https://www.readinga-z.com/books/leveled-books/book/?id=2388&lang=English)
- Friends in the Stars – Level F (https://www.readinga-z.com/books/leveled-books/book/?id=1176&lang=English)
- On the Moon – Level F (https://www.readinga-z.com/books/leveled-books/book/?id=2468&lang=English)
- The Disappearing Moon – Level J (https://www.readinga-z.com/books/leveled-books/book/?id=916&lang=English)
- Does the Sun Sleep?by Martha E. H. Rustad
- Nothing Sticks Like a Shadow by Ann Tompert
- Sunshine Makes the Seasons by Franklyn Branley

Formative Assessment Strategies

Formative Assessment Strategies

- Use observations to describe patterns in the natural world in order to answer scientific questions.
- Use observations of the sun, moon, and stars to describe patterns that can be predicted.

Learning Activities/Unit of Study

Learning Activities/Unit of Study

- attached Mystery Science Lessons 1-6

MS 1.1
MS 1.2
MS 1.3
MS 1.4
MS 1.5
MS 1.6

Modifications and/or Accommodations

Suggested Modifications (ELL, Sp. Ed, GIfted, At-risk of Failure)

English Language Learners

Native language support: The teacher provides auditory or written content to students in their native language.

Adjusted Speech: The teacher changes speech patterns to increase student comprehension. This could include facing the students, paraphrasing, clearly indicating the most important ideas, and speaking more slowly.

Visuals: The teacher uses graphics, pictures, visuals, and manipulatives. This helps ELL students better understand and comprehend the subjects at hand.

Front-Loading Vocabulary: The teacher front loads vocabulary. This means providing students with a list of important vocabulary words they will need to know for a book, lesson, etc. prior to the lesson being taught. Including pictures to go with the vocabulary words is also very beneficial for the students.

Special Education Students

Chunking: The teacher presents information in a way that makes it easy for students to understand and remember. Chunking is based on the presumption that our working memory is easily overloaded by excessive detail. The best way to deliver information is to organize it into meaningful units. Because students with special needs get overloaded easily, chunking is an effective strategy to use with them.

Checking for Understanding: It is important to constantly check for understanding, especially for students who have accommodations. Teachers want to make sure students understand the concepts being covered in a way that makes sense to them.

Extra time: The teacher provides students with special needs extra time to complete work or answer questions. It is important to give students enough time to process their thoughts.

Oral Reading: The teacher will read work orally to students. Class work such as tests and literature circles may need to be read aloud to the student.

Timers: The teacher will use timers as an instructional tool. The use of timers is beneficial for students who have trouble completing tasks. Timers can be helpful so the student is aware of how much time they have to complete an assignment.

Students with 504 Plans

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Gifted & Talented Strategies

Extensions/Enrichments: Teachers will provide gifted and talented students with extension/enrichment projects. Students will be challenged to further their understanding, to apply acquired knowledge, and/or to produce something in reference to acquired knowledge.

Modify/Change Activities: Teachers will monitor and modify activities to accommodate those students who need to be challenged further. Additional reading, problem-solving, writing, or project work is necessary for those students who are ready to move on at a rate more accelerated than their peers. In this way, G & T students are provided the same opportunity for support as special needs students.

Students at Risk of School Failure

Directions or Instructions: Make sure directions and/or instructions are given in limited numbers.

Give directions/instructions verbally and in simple written format. Ask students to repeat the instructions or directions to ensure understanding occurs. Check back with the student to ensure he/she hasn't forgotten.

Peer Support: Peers can help build confidence in other students by assisting in peer learning. Many teachers use the 'ask 3 before me' approach. This is fine, however, a student at risk may have to have a specific student or two to ask. Set this up for the student so he/she knows who to ask for clarification before going to you.

Alternate or Modified Assignments: Always ask yourself, "How can I modify this assignment to ensure the students at risk are able to complete it?" Sometimes you'll simplify the task, reduce the length of the assignment or allow for a different mode of delivery. For instance, many students may hand something in, the at-risk student may jot notes and give you the information verbally. Or, it just may be that you will need to assign an alternate assignment.

Increase One to One Time: When other students are working, always touch base with your students at risk and find out if they're on track or needing some additional support. A few minutes here and there will go a long way to intervene as the need presents itself.

Contracts: It helps to have a working contract between you and your students at risk. This helps prioritize the tasks that need to be done and ensure completion happens. Each day write down what needs to be completed, as the tasks are done, provide a checkmark or happy face. The goal of using contracts is to eventually have the student come to you for completion sign-offs.

Hands On: As much as possible, think in concrete terms and provide hands-on tasks. This means a child doing math may require a calculator or counters. The child may need to tape record comprehension activities instead of writing them. A child may have to listen to a story being read instead of reading it him/herself.

Tests/Assessments: Tests can be done orally if need be. Break tests down in smaller increments by having a portion of the test in the morning, another portion after lunch and the final part the next day.

Seating: Seat students near a helping peer or with quick access to the teacher. Those with hearing or sight issues need to be close to the instruction which often means near the front.