

Englewood Public School District

Science

Grade 1

First Marking Period

Unit 1: Patterns of Change in the Sky

Overview: In this unit of study, students observe, describe, and predict some patterns in the movement of objects in the sky. The crosscutting concept of *patterns* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *analyzing and interpreting data*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Time Frame: 15 – 20 days

Enduring Understandings:

The predictable position of the earth in the solar system affects the cycles of day and night.

The predictable movement of the moon accounts for the apparent changes in its appearance when viewed from earth.

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?

Standards	Topics and Objectives	Activities	Resources	Assessments
(1-ESS1-1) Use observations of the sun, moon, and stars to describe patterns that can be predicted.	Topics Earth's Place in the Universe Twenty-First Century Themes and Skills include: <ul style="list-style-type: none"> • Environmental Literacy • The Four C's 	The Dynamic Trio: In this lesson, students will learn about the stars, planets, and moons found in our solar system and how they relate to one another. The video segment enhances the learning. After a non-fiction read aloud, students work in groups to create models of the Solar System. (8.2.2.C.1), (8.1.2.B.1)	Text: The Planets in our Solar System by Franklyn M. Branley The Solar System Printable by Amanda Post Materials: <ul style="list-style-type: none"> • Bulletin Board Paper • Cups of varying sizes to represent the Sun, Earth, Moon, eight planets, and minor planets: • 1 large Cup (Sun) • 1 Medium Cup (Earth) 	Formative Assessment: Students will observe and use patterns in the natural world as evidence and to describe phenomena. Benchmark Assessment: Exact Path Summative Assessment: Students will complete the Dynamic Trio assessment. Alternative Assessments: Students will respond to oral
(1-ESS1-2) Make observations at different times of year to relate the amount of daylight to the time of year.	Objectives Students will use observations of the sun, moon, and stars to describe			

	<p>patterns that can be predicted.</p>	<p>Research astronauts who walked on the Moon. https://www.space.com/17317-nasa-apollo-moon-astronauts.html (9.2.4.A.1), (9.2.4.A.3)</p>	<ul style="list-style-type: none"> • 1 Small Cup • Spherical objects that parallel the size of the cups listed above • Yellow, blue, and white construction paper • Masking tape • Black markers • Full sticky notes • Three long sheets of Bulletin Board Paper • Handout of the Solar System 	<p>questioning and retell the events that took place in the video.</p> <p>Students will tell how they created the model and then justify the approach they chose to use.</p> <p>Students will verbally compare each group's model and draw pictures while labeling the phases.</p> <p>Students will present their models to the class.</p>
	<p>Topics</p> <p>Earth's Place in the Universe</p> <p>Twenty-First Century Themes and Skills include:</p> <ul style="list-style-type: none"> • Environmental Literacy • The Four C's <p>Objectives</p> <p>Students will use observations of the sun, moon, and stars to describe patterns that can be predicted.</p>	<p><u>Our Super Star:</u> This is a three part lesson where students use observations, activities, and videos to learn basic facts about the Sun. Students also model the mechanics of day and night and use solar energy to make a tasty treat. One of the videos is a time-lapse video of a sunrise and a sunset. (1.MD.C.4)</p> <p><u>Enrichment Activity:</u> Students work in pairs, identify one fact regarding the sun, and write their fact on one "ray" that will add to the class Sun Facts image. (NJLSA.R2)</p> <p><u>Enrichment Activities:</u> Integrate song and movement into this unit by singing a space song. (NJLSA.R.7)</p>	<p><u>Videos:</u> Observe Sunrise and Sunset http://az.pbslearningmedia.org/resource/ess05.sci.ess.eiu.riseset/observe-sunrise-and-sunset/</p> <p>Galileo: Sun-Centered System http://az.pbslearningmedia.org/resource/ess05.sci.ess.eiu.galileosystem/galileo-sun-centered-system/</p> <p>Characteristics of the Sun http://az.pbslearningmedia.org/resource/ess05.sci.ess.eiu.sunbasics/characteristics-of-the-sun/</p> <p>Cooking Cookies with Solar Power http://az.pbslearningmedia.org/resource/phy03.sci.phys.mfe.zsolar/cooking-cookies-with-solar-power/</p> <p><u>Materials:</u></p> <ul style="list-style-type: none"> • 1 directional compass • 1 calendar (optional) • 1 lamp with exposed light 	<p>Formative Assessments:</p> <p>Do Now/Ticket to Leave</p> <p>Journal Entry</p> <p>Summative Assessments:</p> <p>Students will use observations of the sun, moon, and stars to describe patterns that can be predicted. Examples of patterns could include:</p> <ul style="list-style-type: none"> • The sun and moon appear to rise in one part of the sky, move across the sky, and set. • Stars other than our sun are visible at night but not during the day. <p>Alternative Assessments:</p> <p>Students will use observations (firsthand or from media) to describe patterns in the natural world</p>

			<ul style="list-style-type: none">bulb1 extension cordStyrofoam balls -- one for each studentSmall sticker dots -- two for each studentPencils to mount Styrofoam balls -- one for each student	in order to answer scientific questions.
			<ul style="list-style-type: none">For each solar cooker:2 large sheets of poster board, preferably black1 sheet of black construction paper1 medium-sized cardboard boxAluminum foilTapeFor each student's s'more:2 graham crackers1 large marshmallow1 chocolate square1 re-sealable plastic sandwich bag	Enrichment Activities
			Sun Facts Image: <ul style="list-style-type: none">MarkersYellow strips of paperYell Sun Facts circleTape	
			Space Songs – Pasco School District #1	
			Worksheet: Moon Phase Calendar	
	Topics Earth’s Place in the Universe Twenty-First Century Themes and Skills include: <ul style="list-style-type: none">Environmental LiteracyThe Four C’s	<u>Keep a Moon Journal:</u> The National Wildlife Federation's "Keep a Moon Journal" page allows students to get acquainted with the phases of the moon by keeping a moon journal to record their nightly observations for one month. The page has links to	Formative Assessments: Do Now/Ticket to Leave Journal Entry	
	Objectives		Lesson Plan: Keep a Moon Journal https://www.nwf.org/kids/family-fun/outdoor-activities/moon-journal.aspx Web Resources:	Summative Assessments: Keep a Moon Journal

	<p>Make observations at different times of year to relate the amount of daylight to the time of year.</p>	<p>diagrams, a student printable, and activities connecting the journal to other content. The page is set up as a "family activity" and could be used as nightly homework for students then discussed weekly in class. (8.1.2.E.1), (CRP8), (W.1.7), (W.1.8)</p> <p><u>Enrichment Activity:</u> Students create the phases of the moon cycle using Oreo Cookies. (MP.4), (MP5), (8.2.2.C.1)</p>	<p>Moon Phase Calculator https://stardate.org/nightsky/moon</p> <p>Moon Chart https://www.timeanddate.com/moon/phases/</p> <p>readworks.org https://www.readworks.org/article/Saturn-a-Planet-with-Rings/ef531ffd-1d61-4b6a-9a69-9eb48a234cd1#!articleTab:content/ Phases of the Moon Oreo Cookie Model</p> <ul style="list-style-type: none"> • Paper Plate • Oreo Cookies • Markers 	<p>Activity</p> <p>Alternative Assessments: Students will make observations (firsthand or from media) to collect data that can be used to make comparisons. Rubric will be used to access journal.</p> <p>Enrichment Activity</p>
	<p>Topics</p> <p>Earth's Place in the Universe</p> <p>Twenty-First Century Themes and Skills include:</p> <ul style="list-style-type: none"> • Environmental Literacy • The Four C's <p>Objectives</p> <p>Make observations at different times of year to relate the amount of daylight to the time of year.</p>	<p><u>Observing the Sun:</u> This lesson is an activity where students create a sun tracker and monitor the sun's position over the course of a day. Examples of student journals and connections within a larger unit are provided. (CRP6), (6.1.4.B.9)</p>	<p>Observing the Sun Lesson Plan</p> <p>Observations of the Sun Record</p> <p>Additional Text: Planet Name Game (Dr. Seuss/Cat in the Hat -- Step into Reading Level 2) by Tish Rabe Preschool - 1st grade <u>Postcards from Pluto</u> A Tour of the Solar System 1st grade - 3rd grade <u>There's No Place Like Space</u> All About Our Solar System by Tish Rabe Kindergarten - 1st grade <u>The Magic School Bus Space Books</u> (6 books total) by Joanna Cole 1st grade - 3rd grade <u>Dogs in Space</u> by Nancy Coffelt</p>	<p>Formative Assessments: Do Now/Ticket to Leave</p> <p>Journal Entry</p> <p>Summative Assessments: Students will complete the sun tracker form and identify the sun's position over the course of the day. Graphic organizer will be used to track the sun.</p> <ul style="list-style-type: none"> • Was the student able to accurately make and record observations? • Was the student able to record data?

Kindergarten - 2nd grade
Me and My Place in Space
 by Joan Sweeney
 preschool - 2nd grade
You Are the First Kids
on Mars
 by Patrick O'Brien
 Kindergarten - 3rd grade

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders.

Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

ELL/ESL students: Students will be supported according to the recommendations for “can do’s” as outlined by WIDA – https://www.wida.us/standards/CAN_DOs/ This particular unit has limited language barriers due to the physical nature of the curriculum.

Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations. More time and will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges related to the complexity in planning and carrying out investigations and analyzing and interpreting data.

English Language Learners	Special Education	At-Risk	Gifted and Talented
<ul style="list-style-type: none"> ● Speak and display terminology ● Teacher modeling ● Peer modeling ● Provide ELL students 	<ul style="list-style-type: none"> ● Utilize modifications & accommodations delineated in the student’s IEP ● Work with 	<ul style="list-style-type: none"> ● Using visual demonstrations, illustrations, and models ● Give directions/instructions verbally and in simple written format. Oral 	<ul style="list-style-type: none"> ● Curriculum compacting ● Inquiry-based instruction ● Independent study ● Higher order thinking skills ● Adjusting the pace of lessons

- with multiple literacy strategies.
- Word walls
 - Use peer readers
 - Give page numbers to help the students find answers
 - Provide a computer for written work
 - Provide two sets of textbooks, one for home and one for school
 - Provide visual aides
 - Provide additional time to complete a task
 - Use graphic organizers

- paraprofessional
- Use multi-sensory teaching approaches.
 - Work with a partner
 - Provide concrete examples
 - Restructure lesson using UDL principals (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA).
 - 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).

- prompts can be given.
- Peer Support
 - Increase one on one time
 - Teachers may modify instructions by modeling what the student is expected to do
 - Instructions may be printed out in large print and hung up for the student to see during the time of the lesson.
 - Review behavior expectations and make adjustments for personal space or other behaviors as needed.
 - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
 - 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).

- Interest based content
- Real world scenarios
- Student Driven Instruction
- 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.
- Collaborate with after-school programs or clubs to extend learning opportunities.

Interdisciplinary Connections:

ELA - NJSL/ELA:

NJLSA.R2: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

NJLSA.R7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

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)

Mathematics:

MP.4 Model with mathematics. (1-ESS1-2)

MP.5 Use appropriate tools strategically. (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)

Social Studies:

6.1.4.B.9: Relate advances in science and technology to environmental concerns, and to actions taken to address them.

Career Ready Practices:

CRP6: Demonstrate creativity and innovation.

CRP4: Communicate clearly and effectively and with reason.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Integration of Technology Standards NJSL 8:

8.1.2.E.1: Use digital tools and online resources to explore a problem or issue.

8.1.2.B.1: Illustrate and communicate original ideas and stories using multiple digital tools and resources.

8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.

Integration of 21st Century Standards NJSL 9:

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.

9.2.4.A.3: Investigate both traditional and nontraditional careers and related information to personal likes and dislikes.

Key Vocabulary:

Solar System – The solar system includes the Sun and everything that orbits it. This includes eight planets and their natural satellites such as Earth’s Moon; dwarf planets such as Pluto and Ceres; asteroids; comets and meteoroids.

Sun – a star made up of 92% hydrogen and 7.8% helium, which is at the center of our solar system.

Moon – Earth’s natural satellite, it is composed of a rock. It has a surface that is cratered and pitted from impacts of space debris.

Earth – a rocky planet, also known as a terrestrial planet, with a solid and dynamic surface of mountains, valleys, canyons, plains, which is covered primarily by water and inhabited by human beings

Star – a fragment of gas and dust that has overtime (millions of years) become so hot and dense that a chemical reaction causes its substance to change and form (into the stars we see)

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations <ul style="list-style-type: none"> Plan and conduct investigations collaboratively to produce evidence to answer a question. (1-PS4-1),(1-PS4-3) Planning and Carrying Out Investigations <ul style="list-style-type: none"> Make observations (firsthand or from media) to collect data that can be used to make comparisons. (1-ESS1-2) Analyzing and Interpreting Data <ul style="list-style-type: none"> Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (1-ESS1-1) 	ESS1.A: The Universe and its Stars <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (1-ESS1-2) 	Patterns <ul style="list-style-type: none"> Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-ESS1-1),(1-ESS1-2) <p>-----</p> <p><i>Connections to Nature of Science</i></p> <p>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</p> <ul style="list-style-type: none"> Science assumes natural events happen today as they happened in the past. (1-ESS1-1) Many events are repeated. (1-ESS1-1)