

Grade One Science Curriculum

Unit 1: Space Systems: Patterns & Cycles

Course Description: In this unit of study, students will study the movement of the sun, moon, and stars and that they can be observed and predicted. When we observe and predict the movements in the sky we understand how the sun and moon rise and set, how the stars travel across the sky, and how daylight differs depending on the position of the sun and earth. Students will be planning and carrying out investigations as well as analyzing and interpreting data.

Big Ideas:

- Objects in the sky move based on the rotation of the earth
- Changes of patterns in the sky are predictable
- Stars, other than the sun, can only be seen at night.
- The sun does not move, instead Earth’s movement causes day and night.
- Many events are repeated
- The sun rises in the east and sets in the west.
- A compass rose is a tool used to show direction (north, south, east, west).
- Because the sun is so close, its brightness keeps us from seeing other stars during the day
- Seasons are caused by the Earth’s tilt
- Sun appears to be higher in the sky during the summer and lower in the winter
- Earth’s tilt causes the season

<p>Essential Questions</p> <ul style="list-style-type: none"> - What patterns of change can be predicted when observing the sun, moon, and stars? - How does the sun impact how we live? - How can we use a compass rose to track and predict where the sun will be during the day? 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> - Objects in the sky move based on the rotation of the earth - Changes of patterns in the sky are predictable - Stars, other than the sun, can only be seen at night. - The sun does not move, instead Earth’s movement causes day and night. - Many events are repeated - The sun rises in the east and sets in the west. - A compass rose is a tool used to show direction (north, south, east, west).
<p>Areas of Focus: Proficiencies (Cumulative Progress Indicators) Students will: ESS1-1 Use observations of the sun, moon,</p>	<p>Examples, Outcomes, Assessments Instructional Focus:</p> <ul style="list-style-type: none"> - The sun, moon, and stars look different at different times of the day,

and stars to describe patterns that can be predicted.

ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year.

therefore we do different activities in our daily lives.

- When sun and objects interact they make shadows and patterns.
- The earth and the moon rotate around the sun.
- The motion of the sun can be observed and predicted.
- The sun has a pattern and you can use the pattern to tell time.
- How the sun and moon rotate around the sun in a pattern.
- The moon moves in a pattern and is predictable.
- When light and an object interact they make shadows and patterns.
- When light and an object interact they make shadows and patterns.
- You need a form of light to create a shadow.

Sample Assessments:

- Create a model to show the earth's rotation around the sun
- Create a compass rose and use it to use to track the sun at different times of the day on the paper plate.
- Show how a sundial can be used to tell time by making a journal entry
- Create a model to show how a shadow can change over time

Instructional Strategies:

- Draw what they would do at that time of day after observing pictures of

moon, sun, stars, and seasons.

- Students go out three times a day to measure sun height and shadow height in the same location using nonstandard measurement
- The sun rises and sets in the same place everyday. Students use a compass rose to track the sun's pattern.
- Observe the moon at night. Noticing what it looks like and where it is located in the sky.

Interdisciplinary Connections

ELA/Literacy

- **W.1.7-** participate in shared research and writing projects
- **W.1.8-** with guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question

Math

- **MP.2-** reason abstractly and quantitatively
- **MP.4-** model with mathematics
- **MP.5 -**use appropriate tools strategically
- **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 answer questions
- **1.MD.C.4-** organize, represent, and interpret data with up to three categories; ask 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.

	Technology Integration Global Perspectives
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NOTE re: Examples, Outcomes and Assessments

The following skills and themes should be reflected in the design of units and lessons for this course or content area.

21st Century Skills:

Creativity and Innovation

Critical Thinking and Problem Solving

Communication and Collaboration

Life and Career Skills

21st Century Themes (as applies to content area):

Financial, Economic, Business, and Entrepreneurial Literacy

Civic Literacy

Health Literacy

Unit 2: Waves- Light & Sound

Course Description: In this unit of study, students will be exploring light and sound around us. Students will learn that light is created by both natural and artificial sources. Light travels in a straight line and is energy we can see. Students will also learn that shadows are areas of darkness behind an object that is being illuminated. The students will be able to define the terms opaque, transparent, translucent, refraction, and reflection. While exploring sound, students will learn that sound is another type of wave. Sound waves are created by vibrations.

Big Ideas:

- Illuminate means to light up
- Opaque surfaces absorb light and reflect the color or colors back to our eye (ex. table)
- Transparent surfaces allow light to easily pass through (ex. A window)
- Translucent surfaces allow some light to pass through (ex. Wax paper)
- Reflect means to bounce as seen when light hits a mirror and some metal objects.
Depending on how the light hits, depends on what kind of image is formed

<p>Essential Questions</p> <ol style="list-style-type: none"> 1. How does sound impact the way we live? 2. How does light impact the way we live? 3. Why is it important to know about light and sound energy? 	<p>Enduring Understandings</p> <p>Students will understand that...</p> <ul style="list-style-type: none"> ● Sound & light can travel ● We are able to see things due to light ● Light travels in a straight line ● Natural sources include the sun while artificial sources include light bulbs and tv. ● Sound is another type of wave and these wave allow us to hear music, people and noise.
<p>Areas of Focus: Proficiencies (Cumulative Progress Indicators)</p> <p>Students will:</p> <p>1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</p> <p>1-PS4-2 Make observations to construct and evidence based account that objects in darkness can only be seen when illuminated.</p> <p>1-PS4-3 Plan and conduct investigations to determine the effect of placing objects made</p>	<p>Examples, Outcomes, Assessments</p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> - When objects collide sound is created from vibrations - Sound travels in waves due to vibrations. - Certain objects absorb and reflect light - Sound can make matter vibrate, and vibrations can create sound

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.

Sample Assessments:

- Create model to support that the sound is created from the end of the tuning fork where vibration is taking place
- Create model to support that sound is made from movement or vibrations
- Create model to support high and low pitch sounds from both tuning forks
- Observe and describe why objects can only be seen when illuminated with light source

Instructional Strategies:

- Rock and Water Experiment
 1. Students will drop rock in water and observe the vibrations and movement of the water
 2. Jot down findings into science notebook using a model to explain thinking
 - a. Draw picture before, during, and after experiment
- Hit tuning forks against various objects
- Tuning Fork in Water Experiment
 1. Students hit tuning fork against object and place into water (make sure to use pie pan)
 2. Students will jot down findings in notebook using a model to explain thinking
- Human Voices Experiment
 1. Students place finger on throat to observe **vibration** when whispering, humming, talking, and yelling
 2. Students place finger on throat to observe **sound** when whispering, humming, talking, and yelling
 3. Explain that vocal chords vibrate and

create sound in throat

- Glass Water Experiment
 1. Place various amounts of water in same sized glasses
 2. Hit spoon against each glass to compare pitch

- Phone String Lab
 1. Use cups and string to create telephone
 2. Observe vibrations and sounds

- Put lightsource on opaque, translucent, transparent, and reflect

Interdisciplinary Connections

ELA/Literacy

- **RI.2.1** Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text
- **W.2.6** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
- **W. 2.8** Recall information from experiences or gather information from provided sources to answer a question.
- **SL.2.5** Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts and feelings.

Math

- **2.MD.D.10** Draw a picture graph and a bar graph to represent a data set with up to four categories. Solve simple put-together, take-apart and compare problems using information presented in a bar graph

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Media Literacy

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Civic Literacy

Health Literacy

Unit 3: Plants and Animals

Course Description:

Students are also expected to develop understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs as well as how behaviors of parents and offspring help the offspring survive. The understanding is developed that young plants and animals are like, but not exactly the same as, their parents..

Big Ideas:

- Plants and animals have similarities and differences
- Plants and animals have structures to help them survive

<p>Essential Questions</p> <ul style="list-style-type: none"> • How do animals use their external parts to help them survive, grow, and meet their needs? • How do plants use their external parts to help them survive, grow, and meet their needs? • How do the behaviors of parents and offspring help the offspring survive? • How are young plants and animals alike, but not exactly the same, as their parents? • What can humans learn from plants and animals in order to help us survive? 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. • Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. • Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents.
<p>Areas of Focus: Proficiencies (Cumulative Progress Indicators) 1-LS-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and</p>	<p>Examples, Outcomes, Assessments</p> <p>Instructional Focus:</p> <ul style="list-style-type: none"> - Explore the structure and function of plant and animal parts - Investigate how camouflage and color helps plants and animals survive - Observe how plants respond to stimuli - Investigate how plants and animals survive <p>Sample Assessments:</p> <ul style="list-style-type: none"> - Create models

<p>ears.]</p>	<ul style="list-style-type: none"> - Make and discuss observations <p>Instructional Strategies:</p> <ul style="list-style-type: none"> - Plan investigations - Solve design challenges - Discuss exploration and discovery <p>Technology Integration</p> <p>Global Perspectives</p>
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