

Toms River Science Curriculum

Board Approved: April 2016

Course: Earth Science
Grade Level: 1

Title of Unit: Space Systems: Patterns and Cycles

Stage 1 - Desired Results

Understandings:

Students will understand that.....

- Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
- Seasonal patterns of sunrise and sunset can be observed, described, and predicted.

Essential Questions:

1. What objects are in the sky and in what pattern do they seem to move?
2. What is the relationship between the earth, the sun, and the moon?
3. What is the relationship between seasons and the amount of daylight hours?

Knowledge:

Students will know.....

- The sun and moon appear to rise in one part of the sky, move across the sky, and set.
- The shape of the moon appears to change over a period of time in a predictable pattern.
- Stars, other than our sun, are visible at night but not during the day.

Skills:

Students will be able to.....

- Make observations of the sun, moon and stars and predict their interaction.
- Make observations to identify the difference in daylight hours at a particular time of year.
- Draw a sequence of pictures to show the relationship between a shadow's length and the position of the sun throughout the day.

Standards: (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

NGSS:

1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.

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

PS2.A: Forces and Motion: Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion.

The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (1-ESS1-1);

PS2.B Objects in contact exert forces on each other; electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other (1-ESS1-1),(1-ESS1-2) 5-ESS1.B (1-ESS1-1),(1-ESS1-2)

CCSS:

ELA/Literacy

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.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

Stage 2- Assessment Evidence:

Performance Tasks and other evidence:

- Associated Unit Assessment
- Engineering Based Projects.
- “What Stuck With You?” Tickets

Stage 3 – Learning Plan

Learning Activities: See *Space: Patterns and Cycles Interactive Notebook*

Unit 1:

- Compare and contrast what we see in the sky during the day vs. night/the amount of daylight hours in a given season.
- Relationship (pattern) between sun and earth
- [Revolving activity for sun and earth](#)
- Sunrise and sunset (pattern)

Unit 2:

- Relationship (pattern) between earth and moon
 - add moon to revolving activity for sun and earth
- Relationship between sun, earth and moon
- [Why Is There Day and Night?](#)

Unit 3:

- Phases of the Moon
 - [Oreo Cookie Activity](#)
 - [Moon Journal](#)
- Stars and Constellations
 - Create your own constellation, write a myth about your constellation
 - [Handy Constellations lesson plan](#) (students make constellations using their hands)

On-line Resources:

BrainPop, Jr: (Login Information: **Username:**tomsriveresl **Password:** pop1

- Keywords to Search: Moon phases ([Moon Phases](#)), The Sun ([The Sun](#)) , Sky Patterns ([The Solar System](#)).

Sample Lessons:

- <http://thebrownbagteacher.blogspot.com/2015/05/teaching-about-sound-1st-grade-science.html>

Read Alouds:

Day and Night (Patterns in Nature) by Margaret Hall

Phases of the Moon (Patterns in Nature) by Gillia M. Olson

The Moon Book by Gail Gibbons

Stargazers by Gail Gibbons

Our Stars by Anne Rockwell

The Sun: Scholastic News Non-fiction Readers: Space Science

Notes: Indicate any special considerations as well as materials, resources (online, print, video, audio) or equipment.

Course: Physical Science Grade Level: 1	Title of Unit: Waves: Light and Sound
Stage 1 - Desired Results	
Understandings: <i>Students will understand that.....</i> <ul style="list-style-type: none"> ● Sound can make matter vibrate, and vibrating matter can make sound. ● Objects can be seen if light is available to illuminate them or if they give off their own light. ● People use a variety of devices to communicate (send and receive information) over long distances. 	Essential Questions: <ol style="list-style-type: none"> 1. What is the relationship between sound and vibrating materials? 2. What is the effect of different materials in the path of a beam of light? 3. How does the appearance of an object change when when different amounts of light are applied?
Knowledge: <i>Students will know.....</i> <ul style="list-style-type: none"> ● when objects vibrate, a sound is created ● sound will cause objects to vibrate ● an object can be seen when light reflected from its surface enters the eye ● mirrors can be used to redirect a light beam ● light travels from place to place ● some materials allow light to pass through them and others block all light 	Skills: <i>Students will be able to.....</i> <ul style="list-style-type: none"> ● plan and conduct investigations to collect evidence that shows that vibrating materials can make sound and that sound can make materials vibrate ● make observations and demonstrate accounts that objects can be seen only when illuminated ● observe shadows and determine how shadows are produced by a light source and another object, which blocks the light. ● plan and conduct an investigation to determine the effects of placing objects made of different materials in the path of a beam of light ● create a model to demonstrate how light or sound can be used to communicate over a distance
Standards: (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21 st -century life and careers.) NGSS: <ul style="list-style-type: none"> ● PS4.A-Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1) ● PS4.B-Objects can be seen only when light is available to illuminate them. (1-PS4-2) (1-PS4-3) ● PS4.C-People use devices to send and receive information. (1-PS4-4) CCSS: ELA/Literacy	

W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)

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-PS4-1),(1-PS4-2),(1-PS4-3),(1-PS4-4)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1),(1-PS4-2),(1-PS4-3)

SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1),(1-PS4-2),(1-PS4-3)

Mathematics

MP.5 Use appropriate tools strategically. (1-PS4-4)

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)

1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)

Stage 2- Assessment Evidence:

Performance Tasks and other evidence:

- Associated Unit Assessment
- Engineering Based Projects.
- [“What Stuck With You?”](#) Tickets

Stage 3 – Learning Plan

Learning Activities: See *Waves: Light and Sound Interactive Notebook*

- Construct an instrument
- Construct a telephone

Unit 1: Sound Waves

- Sound Walk/discuss sound and what it is.
- Model/explore different types of waves (dominoes/jump rope/yarn/doing the wave) transferring energy from one thing to another.
- Vibration Station
 - 1st day: define vibration (it starts as a disturbance) radio with a cup of water/kids bumping into each other/model and explore
 - 2nd day: instrument activity
- What is in a sound? Identify high/low/soft/sounds.
- Sound Waves can be used for communication
 - create telephone model with partner

Unit 2: Light Waves

- What is light (waves)? What are examples of objects that give off light?
- Illuminated/not illuminated
- Shadows/blocking light
 - shadow activity, work with partner to trace shadows outside
- Different materials allow different amounts of light to pass through
 - camera activity (transparent, wax paper, tin foil), flashlight activity (transparent, translucent, opaque)

On-line resources:

- [Sound and Music Craft Activities](#): Harp, guitar and panpipes mini-projects
- [PBS Sound vibrations lessons](#) with video clips
- [Light and Sound Unit Resource](#)
- BrainPop Jr. (**Username:** tomsriveresl **Password:** pop1)
Keywords to search: Light, sound.
 - [Sound](#)
 - [Light](#)

Read Alouds for Sound and Light:

All About Sound by Lisa Trumbauer

All About Light by Lisa Trumbauer

Fireflies by Julie Brinckloe

My Five Senses by Alik

The Listening Walk by Paul Showers

Light is All Around Us by Wendy Pfeffer

Nothing Sticks Like a Shadow by Ann Tompert

Shadows by Carolyn B. Otto

Notes: Indicate any special considerations as well as materials, resources (online, print, video, audio) or equipment.

Course: Life Sciences Grade Level: 1	Title of Unit: Structure, Function and Information Processing (Characteristics of Living Things)
Stage 1 - Desired Results	
<p>Understandings:</p> <p><i>Students will understand that.....</i></p> <ul style="list-style-type: none"> ● All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them grow. ● Adult plants and animals can have young. In many animal families, parents and the offspring themselves engage in behaviors that help the offspring to survive. ● Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. ● Young animals are very much, but not exactly, like their parents. Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. 	<p>Essential Questions:</p> <ol style="list-style-type: none"> 1. How are young plants and animals alike and different from their parents? 2. How have animals and plants adapted to their environment to meet their needs for survival? 3. What types (patterns) of behavior can be observed among parents that help offspring survive?
<p>Knowledge:</p> <p><i>Students will know.....</i></p> <ul style="list-style-type: none"> ● Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. ● Scientists look for patterns and order when making observations about the world. ● Adult plants and animals can have young. ● In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring survive. 	<p>Skills:</p> <p><i>Students will be able to.....</i></p> <ul style="list-style-type: none"> ● Use materials to create a model to demonstrate how plants and/or animals use their external parts to help them survive, grow and meet their needs. ● Read texts and use media to determine patterns in the behavior of parents and offspring that help offspring survive. ● Make observations to compare and contrast how young plants and animals are alike, but not exactly like, their parents.

Standards: (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

NGSS:

1-LS1-1. 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.

1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

CCSS:

ELA/Literacy:

RI.1.1 Ask and answer questions about key details in a text. (1-LS1-2),(1-LS3-1)

RI.1.2 Identify the main topic and retell key details of a text. (1-LS1-2)

RI.1.10 With prompting and support, read informational texts appropriately complex for grade. (1-LS1-2)

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-LS1-1),(1-LS3-1)

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)

Mathematics:

MP.2 Reason abstractly and quantitatively. (1-LS3-1)

MP.5 Use appropriate tools strategically. (1-LS3-1)

1.NBT.B.3 Compare two two-digit numbers based on the meanings of the tens and ones digits, recording the results of comparisons with the symbols .(1-LS1-2)

1.NBT.C.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning uses. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. (1-LS1-2)

1.NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. (1-LS1-2)

1.NBT.C.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (1-LS1-2)

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)

Stage 2- Assessment Evidence:

Performance Tasks and other evidence:

- Associated Unit Assessment
- Engineering Based Projects.
- “What Stuck With You?” Tickets

Stage 3 – Learning Plan

Learning Activities: See *Grow Survive Thrive Interactive Notebook*

Unit 1: How are young plants and animals alike and different from their parents?

- Genes-offspring inherit genes from their parents (plants, animals, us) making them similar but not the same
- Mr. Potato Head
- Inherited traits in plants [Lesson Unit](#)
- [Animal Traits Activities/Lessons](#)
- [Inherited Traits Minion Maker](#)
- [Monster Genetics](#)
- [National Geographic Polar Bear Parent/Offspring Bundle](#)

Unit 2: How have animals and plants adapted to their environment to meet their needs of survival.

- *Who has these feet/this tail/this nose

-Discuss different adaptations of various animals and the focus on a specific animal. (write an animal report)

[Adaptations Video](#)

-Brain Pop Jr. videos ([Animal Camouflage](#)) ([Plant Adaptations](#))

Example of Growing Plants in different places to see how they adapt:

- <http://www.naturalbeachliving.com/wp-content/uploads/2014/04/earth-day-pin-1-2.jpg>

Unit 3: Behaviors for survival

-Brain Pop Jr. videos (Brain Pop Jr. login information: **Username:** tomsriveresl **Password:** pop1

- Animal/plant adaptations for survival: hibernation ([Animal Hibernation](#)), ([Animal Migration](#))

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