SOMERS POINT
SCHOOL DISTRICT
the learning starts here!℠

Curriculum

Science

Grade K

Board Approved: August 2017

SOMERS POINT SCHOOL DISTRICT

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Somers Point Schools

This document reflects the collaboration of teachers, staff, students, parents, and the Board of Education to define our mission, vision and beliefs to guide our work.

Our Mission

Empower each student to make responsible choices, meet challenges, achieve personal success, and contribute to a global society as they apply the New Jersey Core Curriculum Standards to become autonomous, lifelong learners who are literate problem solvers across all disciplines. This is accomplished through:

- *Offering diverse, challenging, effective and progressive programs in a safe, nurturing environment*
- *Providing optimal facilities and resources*
- *Mastering the skills and tools needed for success*
- *Facilitating an educational partnership with home, school and community*

Our Beliefs

Beliefs: We believe that our empowered learners:

- Participate in educational programs that are designed to meet the needs of learners while providing challenging activities in the context of real life situations
- Are aware of community issues and take part in activities to better their community
- Acquire basic skills in obtaining information, thinking critically, solving problems and communicating effectively
- Develop intellectual curiosity and the ability to access information as needed
- Become reflective learners who have an understanding of their own strengths and weaknesses
- Develop the aptitudes and skills to adjust to a changing world and an unpredictable future
- Are lifetime learners who value and accept learning as a continuing and dynamic process affecting all aspects of life
- Value the integrity of all individuals and recognize their own ability to progress academically, socially, and emotionally

Our Vision

The students of the Somers Point School District will demonstrate personal growth over time in relation to individualized goals aligned to the New Jersey Core Content Curriculum Standards. Achievement is evident when students:

- Take academic risks
- Transfer or extend content area knowledge
- Are intrinsically motivated life-long learners
- Are global learners who collaborate beyond the confines of the classroom or school
- Demonstrate social growth
- Are meta-cognitive thinkers
- Solve real-world problems

To foster student achievement Somers Point Educators:

- Promote student-centered learning
- Explicitly communicate the purpose of the lesson and how it fits into students' broader learning
- Provide hands-on learning activities
- Encourage collaboration
- Cultivate a safe environment and a strong classroom community
- Differentiate instruction
- Know the content area, curriculum, and their students
- Integrate technology
- Uncover and capitalize on student interests
- Use assessment data to make instructional decisions
- Commit to life-long learning to improve their practice

INTRODUCTION, PHILOSOPHY OF EDUCATION, AND EDUCATIONAL GOALS

Philosophy

Somers Point Schools will help students understand their past and present to become responsible and productive citizens in a democratic society and a globally interdependent world. Through an integrated study of social studies our mission is to provide learners with the knowledge, skills and attitudes they need to be active, informed citizens and contributing members of local, state and world communities.

Educational Goals & Beliefs

• All students learn through a variety of relevant experiences. Therefore, we will provide interactions that activate and build on prior knowledge and promote higher level thinking skills.
• Research shows active learning is essential. Therefore, we will provide students with a variety of active, student-centered, multisensory learning opportunities.
• Instruction should be relevant, meaningful, and based on student needs. Therefore, we will provide opportunities for students to make connections to their own lives using a variety of instructional strategies.
• The world is constantly changing. Therefore, we will provide the opportunities for students to understand that the present connects to the past and affects the future.
• We live in a culturally diverse, global society. Therefore, we will develop student understanding of diverse cultures that honors equality and human dignity.
• Assessment should be ongoing, diagnostic, and aligned with instruction. Therefore, we will provide multiple authentic assessment tools.
• The use of community resources is essential for effective instruction. Therefore, we will use the rich history and ethnic diversity of our community to enhance learning.
• Active and informed citizen participation is essential to democracy. Therefore, we will provide instruction and curriculum designed to develop students who will be informed, active problem solvers, and willing participants in the democratic process.
• Students are citizens of a connected, digital society. Therefore they will utilize technology as a tool to solve problems and build relationships.

New Jersey State Department of Education
New Jersey Student Learning Standards

Science Education in the 21st Century

"Today more than ever before, science holds the key to our survival as a planet and our security and prosperity as a nation" (Obama, 2008).

Scientific literacy assumes an increasingly important role in the context of globalization. The rapid pace of technological advances, access to an unprecedented wealth of information, and the pervasive impact of science and technology on day-to-day living require a depth of understanding that can be enhanced through quality science education. In the 21st century, science education focuses on the practices of science that lead to a greater understanding of the growing body of scientific knowledge that is required of citizens in an ever-changing world.

Mission: Scientifically literate students possess the knowledge and understanding of scientific concepts and processes required for personal decision-making, participation in civic and cultural affairs, and economic productivity.

Vision: A quality science education fosters a population that:

- **Experiences the richness and excitement of knowing about the natural world and understanding how it functions.**
- **Uses appropriate scientific processes and principles in making personal decisions.**
- **Engages intelligently in public discourse and debate about matters of scientific and technological concern.**
- **Applies scientific knowledge and skills to increase economic productivity.**

Then New Jersey Student Learning Standards for science can be accessed at: http://www.state.nj.us/education/aps/cccs/science/
Assessment Note:

All 4th & 8th grade students take the state end of year assessment the NJ ASK.

Unit One Title: Weather
Grade Level: K
Timeframe: 10 days and ongoing

Essential Questions

What is the weather like today and how is it different from yesterday?

In this unit of study, students develop an understanding of patterns and variations in local weather and the use of weather forecasting to prepare for and respond to severe weather. 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 grade-appropriate proficiency in *asking questions*, *analyzing and interpreting data*, and *obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards

Standards/Cumulative Progress Indicators (Taught and Assessed):

-(K-ESS2-1)
-(K-ESS3-2)
-(K-2-ETS1-1)

Highlighted Career Ready Practices:

CRP1. Act as a responsible and contributing citizen and employee
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.

CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP12. Work productively in teams while using cultural global competence.

Instructional Plan				Reflection
Pre-assessment				
SLO	**Student Strategies**	**Formative Assessment**	**Activities and Resources**	**Reflection**
-Use and share observations of local weather conditions to describe patterns over time (K-ESS2-1)	• Weather is the combination of sunlight, wind, snow, or rain and temperature in a particular region at a particular time. • People measure these conditions to describe and record the weather and to notice patterns over time. • People look for patterns in the weather data when they organize and order when making	What patterns do you observe in our Weather Chart? a) Have we had more sunny days or cloudy days? What is your evidence? b) When was it warmest this week? What is your evidence? c) Is this week sunnier or cloudier than last week? What	Watching Weather: Students will make their own weather station consisting of actual and simplified versions of real weather equipment. The weather station will consist of a thermometer and a student-made weather vane. They will use that equipment to make observations about the local weather. Weather Patterns: This lesson is the first in a two-part series on the weather. The study of the weather in these early years is important because it can help students understand that some events in nature have a repeating pattern. It also is important for students to study the earth repeatedly	

	observations about the world. Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.	is your evidence? d) Has the weather gotten warmer or cooler over the past two weeks? What is your evidence?	because they take years to acquire the knowledge that they need to complete the picture. The full picture requires the introduction of such concepts as temperature, the water cycle, and other related concepts. In the second activity, What's the Season, students identify the seasonal patterns in temperature and precipitation. Weather Walks: Students learn about weather by taking walks during various weather conditions over the course of time. Walks take place during sunny, rainy, windy, or snowy conditions. The lesson is divided into four sections with activities assigned to each of the weather conditions being observed. Suggested activities include appropriate investigations to help students observe and describe weather phenomenon through first hand experiences. Science- Weather: This is a free interactive learning activity designed for individual students and can easily be used as a whole class interactive whiteboard activity. This particular title explores weather in relationship to season and temperature. Students learn to use a thermometer as a	

			tool for recording temperature and identify the four seasons through measurable changes in the thermometer readings. About the Weather: This lesson is about using local weather to make observations, measure, collect, and record data to describe patterns over time. Students will count types of outdoor clothing worn by classmates and use the data to look for patterns in weather over months and seasons.	
-Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. (K-ESS3-2)	• Some kinds of severe weather are more likely than others in a given region. • Weather scientists forecast severe weather so that communities can prepare for and respond to these events. • Events have causes that generate observable patterns. • People encounter questions about the natural world every day. • People depend on various technologies in their lives; human life	• Observe patterns in events generated by cause-and-effect relationships. • Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. • Ask questions based on observations to find more information about	**Connections Between Practices in *NGSS*, Common Core Math, and Common Core ELA:** The presenter was Sarah Michaels from Clark University. In this seminar Dr. Michaels talked about connecting the scientific and engineering practices described in A Framework for K–12 Science Education with the Common Core State Standards in Mathematics and English Language Arts. **Weather and Climate Basics:** This is a resource from the National Center for Atmospheric Research and the National Science Foundation that explains the basics of weather and climate. This article is designed as background information for the teacher.	

	would be very different without technology. • Before beginning to design a solution, it is important to clearly understand the problem. • Asking questions, making observations, and gathering information are helpful in thinking about problems. A situation that people want to change or create can be approached as a problem to be solved through engineering.	the designed world. • Ask questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather. (Emphasis is on local forms of severe weather.) • Define a simple problem that can be solved through the development of a new or improved object or tool. Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.	Dr. Wertheim began the presentation by introducing a framework for thinking about content related to Earth systems. She then showed learning progressions for each concept within the Earth's Systems disciplinary core idea and shared resources and strategies for addressing student preconceptions. Dr. Wertheim also talked about changes in the way *NGSS* addresses these ideas compared to previous common approaches.	

-Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)	• Some kinds of severe weather are more likely than others in a given region. • Weather scientists forecast severe weather so that communities can prepare for and respond to these events. • Events have causes that generate observable patterns. • People encounter questions about the natural world every day. • People depend on various technologies in their lives; human life would be very different without technology. • Before beginning to design a solution, it is important to clearly understand the problem. • Asking questions, making observations, and gathering information are helpful	• Observe patterns in events generated by cause-and-effect relationships. • Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. • Ask questions based on observations to find more information about the designed world. • Ask questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather. (Emphasis is on	**Earth and Sky: Grades K-4**: SciGuides are a collection of thematically aligned lesson plans, simulations, and web-based resources for teachers to use with their students centered on standards-aligned science have been intrigued by the objects in our sky and beyond. Take a voyage into space science where you will travel through the Internet to connect your classroom with content and activities designed to teach concepts related to these objects and changes in the sky over time. ***NGSS* Core Ideas: Earth's Systems:** The presenter was Jill Wertheim from National Geographic Society. The program featured strategies for teaching about Earth science concepts that answer questions such as "What regulates weather and climate?" and "What causes earthquakes and volcanoes?"	

	in thinking about problems. A situation that people want to change or create can be approached as a problem to be solved through engineering.	local forms of severe weather.) • Define a simple problem that can be solved through the development of a new or improved object or tool. Ask questions, make observations, and gather information about a situation people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.		
Benchmark Assessment: Teacher Created Unit Assessment				
Summative Written Assessments				
Teacher Created Unit Assessment				
Summative Performance Assessment				
Teacher Created Unit Assessment				

Unit Two Title: Pushes and Pulls
Grade Level: K
Timeframe: 15 Days

Essential Questions

What happens if you push or pull an object harder?

During this unit of study, students apply an understanding of the effects of different strengths or different directions of pushes and pulls on the motion of an object to analyze a design solution. The crosscutting concept of *cause and effect* is called out as the organizing concept for this disciplinary core idea. 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.

Standards

Standards/Cumulative Progress Indicators (Taught and Assessed):

(K-PS2-1)
(K-PS2-2)
(K-2-ETS1-3)

Highlighted Career Ready Practices:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP12. Work productively in teams while using cultural global competence.

Instructional Plan				Reflection
Pre-assessment				
SLO	**Student Strategies**	**Formative Assessment**	**Activities and Resources**	**Reflection**
Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. (K-PS2-1)	• People use different ways to study the world. • Simple tests can be designed to gather evidence to support or refute student ideas about causes. • Pushes and pulls can have different strengths and directions. • Pushing or pulling on an object can change the speed or direction of its	• With guidance, design simple tests to gather evidence to support or refute ideas about cause-and-effect relationships. • With guidance, plan and conduct an investigation in collaboration with peers. • With guidance, collaboratively plan	In this unit of study, students plan and carry out investigations in order to understand the effects of different strengths and different directions of pushes and pulls on the motion of an object. Students will also engage in a portion of the ***engineering design process*** to determine whether a design solution works as intended to change the speed or direction of an object. Scientists often design simple tests in order to gather evidence that can be used to understand cause-and-effect relationships.	

	motion and can start or stop it. • When objects touch or collide, they push on one another and can change motion. A bigger push or pull makes things speed up or slow down more quickly.	and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. *(Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include noncontact pushes or pulls such as those produced by magnets.)* Some examples of pushes and pulls on the motion of an object could include: ✓ A string attached to an object	In this unit's progression of learning, kindergarteners need adult guidance to collaboratively plan and conduct simple investigations to discover and compare the effects of pushes and pulls on the motion of an object. Students will need opportunities to push and pull a variety of objects, such as balls, toy cars, pull toys, cans, tops, and boxes. Students should push/pull these objects first with varying strengths, and then in a variety of directions. They should also explore the effects of pushing objects into one another, as well as into walls and other stationary objects. Students should record their observations using pictures and words, and should participate in class discussions on the effects of varying the strength or direction of a push or pull on an object. As students engage in these types of simple force and motion investigations, they will learn that: ✓ Pushes and pulls can have different strengths and directions. ✓ Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.	

		being pulled. ✓ A person pushing an object. ✓ A person stopping a rolling ball. Two objects colliding and pushing on each other.	✓ When objects touch or collide, the object's motion can be changed. ✓ The force of the push or pull will make things speed up or slow down more quickly. To enhance students' experiences, teachers can schedule time for students to investigate these force and motion concepts using playground equipment, such as swings, seesaws, and slides. Teachers can also use trade books and multimedia resources to enrich students' understanding. As students participate in discussions, they should be encouraged to ask questions, share observations, and describe cause-and-effect relationships between forces (pushes and pulls) and the motion of objects. As students come to understand the force and motion concepts outlined above, they should engage in the ***engineering design process*** as follows. • Students are challenged to design a simple way to change the speed or direction of an object using a push or pull from another object.	

			• As a class, students determine what the design should be able to do (criteria). For example:	
Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull. (K-PS2-2)	• Simple tests can be designed to gather evidence to support or refute student ideas about causes. • Pushes and pulls can have different strengths and directions. • Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. • A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions.	• With guidance, design simple tests to gather evidence to support or refute ideas about cause-and-effect relationships. • Analyze data from tests of an object or tool to determine if it works as intended. • Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	✓ An object should move a second object a certain distance; ✓ An object should move a second object so that the second object follows a particular path; ✓ An object should change the direction of the motion of a second object; and/or ✓ An object should knock down other specified objects. • Students determine the objects that will move/be moved (balls, ramps, blocks, poker chips) and the types of structures (ramps or barriers) and materials (rubber bands, paper tubes, cardboard, foam, wooden blocks) that can be used to meet this challenge. • Groups of students then develop a simple drawing or diagram and use given materials to build their design. Groups should be given a predetermined amount of time to draw and build their designs.	

			• Groups share their designs with the class, using their drawings or diagrams, and then test their designs. • Students make and use observations to determine which of the designs worked as intended, based on the criteria determined by the class. While engaging in this process, students should use evidence from their observations to describe how forces (pushes and pulls) cause changes in the speed or direction of an object. In this unit of study, students learn that problem situations can be solved through engineering, and that because there is always more than one possible solution to a problem, it is useful to compare and test designs. Students will use what they have learned about the effect of pushes and pulls of varying strength and direction on the motion of an object to determine whether a design solution works as intended. This process is outlined in greater detail in the previous section.	
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and	Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	• Analyze data to determine whether a design solution works as intended to change the	✓ An object should move a second object a certain distance; ✓ An object should move a second object so that the second object follows a particular path;	

weaknesses of how each performs. (K-2-ETS1-3)		speed or direction of an object with a push or a pull. • Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn. *(Assessment does not include friction as a mechanism for change in speed.)*	✓ An object should change the direction of the motion of a second object; and/or ✓ An object should knock down other specified objects. • Students determine the objects that will move/be moved (balls, ramps, blocks, poker chips) and the types of structures (ramps or barriers) and materials (rubber bands, paper tubes, cardboard, foam, wooden blocks) that can be used to meet this challenge. • Groups of students then develop a simple drawing or diagram and use given materials to build their design. Groups should be given a predetermined amount of time to draw and build their designs. • Groups share their designs with the class, using their drawings or diagrams, and then test their designs. • Students make and use observations to determine which of the designs worked as intended, based on the criteria determined by the class. While engaging in this process, students should use evidence from their observations to describe how forces (pushes and pulls)	

			cause changes in the speed or direction of an object. In this unit of study, students learn that problem situations can be solved through engineering, and that because there is always more than one possible solution to a problem, it is useful to compare and test designs. Students will use what they have learned about the effect of pushes and pulls of varying strength and direction on the motion of an object to determine whether a design solution works as intended. This process is outlined in greater detail in the previous section.	
Benchmark Assessment: Teacher Created Unit Assessment				
Summative Written Assessments				
Teacher Created Unit Assessment				
Summative Performance Assessment				
Teacher Created Unit Assessment				

Unit Three Title: Effects of the Sun **Grade Level: K**

Timeframe: 15 Days

Essential Questions

How can we use science to keep a playground cool in the summertime?

During this unit of study, students apply an understanding of the effects of the sun on the Earth's surface. The crosscutting concepts of *cause and effect* and *structure and function* are called out as organizing concepts for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models*; *planning and carrying out investigations*; *analyzing and interpreting data*; and *designing solutions*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards

Standards/Cumulative Progress Indicators (Taught and Assessed):

(K-2-ETS1-2)
(K-2-ETS1-1)
(K-PS3-2)
(K-PS3-1)

Highlighted Career Ready Practices:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11. Use technology to enhance productivity.

Instructional Plan				Reflection
Pre-assessment				
SLO	**Student Strategies**	**Formative Assessment**	**Activities and Resources**	**Reflection**
Make observations to determine the effect of sunlight on Earth's surface. (K-PS3-1)	• Events have causes that generate observable patterns. • Sunlight warms Earth's surface. • Events have causes that generate observable patterns. •	• Observe patterns in events generated by cause-and-effect relationships. • Make observations (firsthand or from media) to collect data that can be used to make comparisons. • Make observations to determine the effect of sunlight on Earth's surface. (Assessment of temperature is limited to relative measures such as warmer/cooler.) • Examples of Earth's surface could include: ✓ Sand ✓ Soil ✓ Rocks	• Students brainstorm a list of objects that reduce the warming effects of the sun (e.g., shade trees, umbrellas, large hats, canopies). • As a class, students determine what the design should be able to do (criteria). For example: ✓ The structure must reduce the warming effects of the sun. ✓ The structure should be built using materials provided by the teacher. ✓ The structure should be easy to carry and fit through the doorway of the classroom. • Groups of students then use simple drawings or diagrams to design a structure, and use given tools and materials to build their design. Groups should be given a predetermined amount of time to draw and build their designs.	

		Water	• Groups share their designs with the class, using their drawings or diagrams, and then test their designs outside. (Groups can place their structures in a sunny area, then compare the relative temperature of the ground under the structure and the ground in direct sunlight.).	
Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface. (K-PS3-2)	• Scientists use different ways to study the world.	• Observe patterns in events generated by cause-and-effect relationships. • Make observations (firsthand or from media) to collect data that can be used to make comparisons. • Make observations to determine the effect of sunlight on Earth's surface. (Assessment of temperature is limited to relative measures such as warmer/cooler.) • Examples of Earth's surface could include:	• Students are challenged to design and build a structure that will reduce the warming effects of the sun. While engaging in this process, students should use evidence from their observations to describe how their structures reduced the warming effect of sunlight.	

		✓ Sand ✓ Soil ✓ Rocks Water		
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)	• The shape and stability of structures of natural and designed objects are related to their function(s). • Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	*Students who understand the concepts are able to:* • Observe patterns in events generated by cause-and-effect relationships. • Describe how the shape and stability of structures are related to their function. • Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. • Use tools and materials to design and build a structure (e.g., umbrellas, canopies, tents)	• Students make and use observations to determine if the designs worked as intended, then compare the strengths and weaknesses of how each design performed. While engaging in this process, students should use evidence from their observations to describe how their structures reduced the warming effect of sunlight.	

		that will reduce the warming effect of sunlight on an area.		
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. (K-2-ETS1-2)	• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. • Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	*Students who understand the concepts are able to:* • Observe patterns in events generated by cause-and-effect relationships. • Describe how the shape and stability of structures are related to their function. • Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. • Use tools and materials to design and build a structure (e.g.,	• Groups of students then use simple drawings or diagrams to design a structure, and use given tools and materials to build their design. Groups should be given a predetermined amount of time to draw and build their designs. • Groups share their designs with the class, using their drawings or diagrams, and then test their designs outside. (Groups can place their structures in a sunny area, then compare the relative temperature of the ground under the structure and the ground in direct sunlight.).	

		umbrellas, canopies, tents) that will reduce the warming effect of sunlight on an area.		
Benchmark Assessment: Teacher Created Unit Assessment				
Summative Written Assessments				
Teacher Created Unit Assessment				
Summative Performance Assessment				
Teacher Created Unit Assessment				

Unit Four Title: Basic Needs of Living Things
Grade Level: K
Timeframe: 20 Days

Essential Questions

Where do plants and animals live and why do they live there?

In this unit of study, students develop an understanding of what plants and animals need to survive and the relationship between their needs and where they live. Students compare and contrast what plants and animals need to survive and the relationship between the needs of living things and where they live. The crosscutting concepts of *patterns* and *systems and system models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models*, *analyzing and interpreting data*, and *engaging in argument from evidence*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards

Standards/Cumulative Progress Indicators (Taught and Assessed):
(K-LS1-1)
(K-ESS3-1)
(K-ESS2-2)

Highlighted Career Ready Practices:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11. Use technology to enhance productivity.

Instructional Plan				Reflection
Pre-assessment				
SLO	**Student Strategies**	**Formative Assessment**	**Activities and Resources**	**Reflection**
Use observations to describe patterns of what plants and animals (~~including humans~~) need to survive. (K-LS1-1)	With guidance, students organize the given data from observations (firsthand or from media) using graphical displays (e.g., pictures, charts), including: i. Different types of animals (including humans). ii. Data about the foods different animals eat. iii. Data about animals drinking water. iv. Data about plants' need for water (e.g., observations of the effects on plants in a classroom or school when they are not watered, observations of natural	✓ *How can you tell if something is alive?* ✓ *What do animals and plants need to survive?* ✓ *Where do organisms live and why do they live there?*	Read-Aloud Lesson: Where Do Polar Bears Live? Students identify and recall characteristics that allow polar bears to survive in the extremely cold Arctic environment. "Good Night" & Where Do Polar Bears Live? This is a Paired Text activity that uses the "Where Do Polar Bears Live" read aloud and the non-fiction text "Good Night" which addresses hibernation. The Needs of Living Things This lesson plan has one level for Grades K-2 and another level for Grades 3-5. Students will learn about what plants and animals need to survive and how habitats support	

	areas that are very dry). v. Data about plants' need for light (e.g., observations of the effect on plants in a classroom when they are kept in the dark for a long time; observations about the presence or absence of plants in very dark places, such as under rocks or porches). Students identify patterns in the organized data, including that: i. All animals eat food. 1. Some animals eat plants. 2. Some animals eat other animals. 3. Some animals eat both plants and animals. 4. No animals do not eat food. ii. All animals drink water. iii. Plants cannot live or grow if there is no water. iv. Plants cannot live or grow if there is no light Students describe* that the patterns they identified in		those needs. They will also learn about how organisms can change their environment. Living Things and Their Needs: This is an excellent resource that provides a Teacher Guide, videos, reading resources, and student activity sheets. The objective of the lessons is for students to learn about living organisms and what they need to survive. These lessons can easily be taught as an interdisciplinary set of learning experiences. How do living things Interact: This unit plan is about unit plan about living things and environmental interactions 5E Science Lesson Plan: This Prezi presentation describes lesson ideas that support students' understanding of living organisms. Lessons also provide an opportunity for students to identify patterns that help them determine similarities and differences between plants and animals.	

	the data provide evidence that: i. Plants need light and water to live and grow. ii. Animals need food and water to live and grow. iii. Animals get their food from plants, other animals, or both.		Curious George: Paper Towel Plans: This video from Curious George shows students helping bean seeds sprout outside of soil by meeting their essential needs for moisture, temperature, air, and light. The children place the beans and a wet paper towel inside a zippered plastic bag and leave them undisturbed in a warm, well-lighted place. After two weeks, the students return and observe that the beans have sprouted and, like apple seeds, will one day grow to be fully developed plants. From Seed to Fruit | Everyday Learning: Seed to Fruit takes children through the resource is part of the KET Everyday Science for Preschoolers collection. This video is available in both English and Spanish audio, along with corresponding closed captions.different stages of growth in the life of a cherry tomato plant. Planting a seed in a cup and watching it grow over time is a wonderful way to introduce the life cycle to young children. This resource is part of the KET Everyday Science for Preschoolers collection. This video is available in both English and Spanish	

			audio, along with corresponding closed captions.	
Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. (K-ESS3-1)	Students use the given model to represent and describe relationships between the components, including: i. The relationships between the different plants and animals and the materials they need to survive (e.g., fish need water to swim, deer need buds and leaves to eat, plants need water and sunlight to grow). ii. The relationships between places where different plants and animals live and the resources those places provide. iii. The relationships between specific plants and animals and where they live (e.g., fish live in water environments, deer live in forests where there are buds and leaves, rabbits live in fields and woods where there is grass to eat and space for burrows for	✓ *How can you tell if something is alive?* ✓ *What do animals and plants need to survive?* ✓ *Where do organisms live and why do they live there?*	Think Garden: The Importance of Water: This video from KET's Think Garden collection explores why plants need water to survive, and how they tell us they're thirsty. Learn about the signs plants give when they've had too much or too little water and the part water plays in the process of photosynthesis. See a quick, easy-to-understand animation explaining the water cycle and transpiration process. Also find out how to improve water quality with rain gardens and how to conserve water with rain barrels. This video is available in both English and Spanish audio, along with corresponding closed captions.	

	homes, plants live in sunny and moist areas, humans get resources from nature [e.g., building materials from trees to help them live where they want to live]).			
Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. (K-ESS2-2)	Students identify and describe* the given evidence to support the claim, including: i. Examples of plants changing their environments (e.g., plant roots lifting sidewalks). ii. Examples of animals (including humans) changing their environments (e.g., ants building an ant hill, humans clearing land to build houses, birds building a nest, squirrels digging holes to hide food). iii. Examples of plant and animal needs (e.g., shelter, food, room to grow). Students describe how the examples do or do not support the claim.	✓ *How can you tell if something is alive?* ✓ *What do animals and plants need to survive?* ✓ *Where do organisms live and why do they live there?*	Think Garden: Plant Structure: This video from KET's Think Garden collection examines plant structure by taking a closer look at the root and shoots systems. Learn about roots, stems, leaves, flowers, seeds, and fruit through engaging illustrations and animations.	
Benchmark Assessment: Teacher Created Unit Assessment				

Summative Written Assessments	
Teacher Created Unit Assessment	
Summative Performance Assessment	

Teacher Created Unit Assessment

Unit Five Title: Basic Needs of Humans
Grade Level: K
Timeframe: 15 days

Essential Questions

How do people impact the environment as they gather and use what they need to live and grow?

In this unit of study, students develop an understanding of what humans need to survive and the relationship between their needs and where they live. The crosscutting concept of *cause and effect* is called out as the organizing concept for the disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *asking questions* and *defining problems,* and *in obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards

Standards/Cumulative Progress Indicators (Taught and Assessed):
(K-ESS3-3)
(K-2 ETS1-1)
Highlighted Career Ready Practices:

CRP1. Act as a responsible and contributing citizen and employee.

CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11. Use technology to enhance productivity.

Instructional Plan				Reflection
Pre-assessment				
SLO	**Student Strategies**	**Formative Assessment**	**Activities and Resources**	**Reflection**
Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.* (K-ESS3-3)	• Events have causes that generate observable patterns. • Things that people do to live comfortably can affect the world around them. • People can make choices that reduce their impacts on the land, water, air, and other living things. • Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas	• Observe patterns in events generated due to cause-and-effect relationships. • Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. • Communicate solutions that will reduce the impact of humans on the land,	As students come to understand that things people do to live comfortably can affect the world around them, they are ready to engage in the engineering design process. The process should include the following steps: ✓ As a class or in groups, students participate in shared research to find examples of ways that people solve some of the problems created by humans' use of resources from the environment. For example, people in the community might choose to:	

	for a problem's solutions to other people.	water, air, and/or other living things in the local environment.	○ Recycle plastic, glass, paper, and other materials in order to reduce the amount of trash in landfills; ○ Plant trees in areas where trees have been cut down for lumber to renew regional habitats for local wildlife; or ○ Set up rainwater collection systems so that rainwater can be used to maintain landscaping instead of using water from local reserves. While engaging in this process, students should learn that even though humans affect the environment in many ways, people can make choices that reduce their impacts on the land, water, air, and other living things in the environment.	
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2 ETS1-1)	• A situation that people want to change or create can be approached as a problem to be solved through engineering. • Asking questions, making observations, and gathering information are helpful in thinking about problems. Before beginning to design a solution, it is important to clearly understand the problem.	• Ask questions based on observations to find more information about the natural and/or designed world. • Define a simple problem that can be solved through the development of a new or improved object or tool. Ask questions, make observations, and gather information	✓ Groups of students then develop a simple sketch, drawing, diagram, or physical model to illustrate how the solution reduces the impact of humans on land, water, air and/or other living things in the local environment. ✓ Groups need the opportunity to communicate their solutions with the class in oral and/or written form, using their sketches, drawings, diagrams, or models to help explain how the solution reduces the human impact on the environment.	

		about a situation that people want to change in order to define a simple problem that can be solved through the development of a new or improved object or tool.		
Benchmark Assessment: Teacher Created Unit Assessment				
Summative Written Assessments				
Teacher Created Unit Assessment				
Summative Performance Assessment				

Teacher Created Unit Assessment