



**Totowa Public Schools**

**Science**

**Grade K**

**Aligned to NJSL Standards**

**Revised and BOE Adopted: 08/31/2022**

### Units of Study & Pacing Guide

<u>Unit of Study</u>	<u>Timeline</u>	<u>Notes</u>
Unit 1: Forces and Interactions: Pushes & Pulls	12 Weeks	Science shares time with Social Studies.
Unit 2: Interdependent Relationships in Ecosystems: Animals and Plants in their environment	12 Weeks	Science shares time with Social Studies.
Unit 3: Weather and Climate	12 Weeks	Science shares time with Social Studies. Lessons in this unit satisfy the Climate Change Mandate
		<a href="#">Curricular Mandate List</a>

<b>Title</b>	Forces and Interactions: Pushes & Pulls
<b>Unit Duration</b>	12 Weeks
<b>Unit Summary &amp; Rationale</b>	<i>In this unit, students are introduced to pushes and pulls and how those affect the motion of objects. Students observe and investigate the effects of what happens when the strength or direction of those pushes and pulls are changed.</i>
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How do forces influence motion?</li> <li>• How can the principles of motion be put to use?</li> <li>• How does the weight of an object influence motion?</li> <li>• How does friction affect a moving object?</li> <li>• What is the effect of a push or pull when applied to an object?</li> </ul>
<b>Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• It takes energy to change the motion of objects.</li> <li>• The energy change is understood in terms of force.</li> <li>• Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.</li> <li>• Simple tests can be designed to gather evidence to support or refute student ideas about causes.</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>• Plan and conduct simple investigations/tests to determine how changing the speed and direction of an object can affect its motion.</li> <li>• Identify pushes and pulls as the way things move.</li> <li>• Gather evidence to support ideas about the causes of motion.</li> <li>• Explain the difference between pushes and pulls through demonstration and/or verbally.</li> <li>• Use simple nonstandard units to measure the distances that two different objects travel when pushed or pulled.</li> <li>• When using two objects, compare them using a measurable attribute, such as weight, to see which object has “more of” or “less of” the attribute.</li> <li>• Use the Design Process to make a ramp.</li> <li>• Talk about how the steepness of a ramp impacts speed.</li> <li>• Practice identifying cause and effect concepts throughout the unit.</li> <li>• Explore the career of a roller coaster designer</li> </ul>

<b>Assessment Evidence</b>	
<b>Formative</b>	Teacher observations, Class discussions, Lab Activities, Key concepts and vocabulary quizzes, Science Starter's/Do Nows, Open Ended Responses, Modeling, Simulations, Innovators Monthly Research, Lab Activities, Vocabulary Responses, Exit Questions, Interactive Digital Assessments embedded in Exploring Science Digital Book
<b>Summative</b>	<p>In correlation with the NGSS, students must demonstrate the following as summative assessments:</p> <ul style="list-style-type: none"> <li>• K-PS2-1. 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.</li> <li>• K-PS2-2. 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.</li> </ul> <p>Other summative assessments will include but are not limited to: projects, summative tests, lab skills demonstrations, and vocabulary quizzes.</p>
<b>Alternative and Benchmark</b>	<a href="#">Formative, Summative, Alternative and Benchmark Assessments</a>
<b>Resources to Promote Learning</b>	
<b>Resources &amp; Equipment Needed</b>	Smartboard, Computers, Websites and digital interactives/models, Multi-media presentations, Video Streaming, Brain Pop, Middle School Science, Generation Genius Digital Curriculum, Mystery Science Digital Curriculum, Amplify Digital Curriculum, Microsoft 365, Primary and Secondary Source Documents, Assorted lab materials. <a href="#">Approved Class Resource List</a>
<b>Content &amp; Interdisciplinary Standards</b>	
<b>NJ 2020 SLS: Science</b>	
<i>Standards</i>	
K-PS2-1., 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. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.]	

K-PS2-2., 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.\* [Clarification Statement: 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 Boundary: Assessment does not include friction as a mechanism for change in speed.]

K-2-ETS1-2., 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-ETS1-3., Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

*Science and Engineering Practices*

Developing and Using Models - Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

Analyzing and Interpreting Data - Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Analyze data from tests of an object or tool to determine if it works as intended. (K-2-ETS1-3)

*Disciplinary Core Ideas (DCI)*

PS2.A: Forces and Motion

- Pushes and pulls can have different strengths and directions. (K-PS2-1),(K-PS2-2)
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1),(K-PS2-2)

PS2.B: Types of Interactions

- When objects touch or collide, they push on one another and can change motion. (K-PS2-1)

PS3.C: Relationship Between Energy and Forces

- A bigger push or pull makes things speed up or slow down more quickly. (secondary to K-PS2-1)

ETS1.A: Defining Engineering Problems

- 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.

ETS1.B: Developing Possible Solutions

- 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. (K-2-ETS1-2)

*Crosscutting Concepts*

Cause and Effect

Simple tests can be designed to gather evidence to support or refute student ideas about causes. (K-PS2-1),(K-PS2-2)

Structure and Function

The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

**NJ: 2016 SLS: English Language Arts**

- RI.K.1, With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)
- SL.K.3, Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)
- RI.K.4. With prompting and support, ask and answer questions about unknown words in a text.
- RI.K.10. Actively engage in group reading activities with purpose and understanding.
- W.K.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
- W.K.7. Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
- W.K.8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- SL.K.1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion). B. Continue a conversation through multiple exchanges.
- SL.K.2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
- SL.K.3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

- SL.K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.
- SL.K.6. Speak audibly and express thoughts, feelings, and ideas clearly

**NJ: 2016 SLS: Mathematics**

- MP.2, Reason abstractly and quantitatively. (K-PS2-1)
- K.MD.A.1, Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)
- K.MD.A.2, Directly compare two objects with a measurable attribute in common, to see which object has “more of”/”less of” the attribute, and describe the difference. (K-PS2-1)

**2020 SLS: Computer Science & Design Thinking**

**NJSLS Performance Expectations (By the end of 2nd Grade)**

- 8.2.2.ED.1: Communicate the function of a product or device.
- 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
- 8.1.2.DA.4: Make predictions based on data using charts or graphs.
- 8.1.2.IC.1: Compare how individuals live and work before and after the implementation of new computing technology.

**2020 SLS: Career Readiness, Life Literacies, and Key Skills**

**NJSLS Performance Expectations (By the end of 2nd Grade)**

- 9.2.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
- 9.4.2.CI.2: Demonstrate originality and inventiveness in work.
- 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.
- 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g. inductive, deductive).

**Interdisciplinary/21st Century Connections**

**21<sup>st</sup> Century Connections**

- Critical thinking
- Collaboration and Teamwork
- Problem Solving

**Health/Physical Education**

- 2.1.2.EH.3: Demonstrate self-control in a variety of settings (e.g., classrooms, playgrounds, special programs).
- 2.1.2.EH.4: Demonstrate strategies for managing one's own emotions, thoughts and behaviors.

<b>SEL</b>	<ul style="list-style-type: none"> <li>• Responsible Decision-Making</li> <li>• Develop, implement, and model effective problem-solving and critical thinking skills.</li> <li>• Identify the consequences associated with one’s actions in order to make constructive choices.</li> <li>• Evaluate personal, ethical, safety, and civic impact of decisions.</li> </ul>
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<b>Title</b>	Interdependent Relationships in Ecosystems: Animals and Plants in their environment
<b>Unit Duration</b>	12 Weeks
<b>Unit Summary &amp; Rationale</b>	<i>Students will understand that animals and plants are all around us. Students will learn about animals and plants, distinguish between living and nonliving things and their needs. The students will identify what animals and plants look like and what they need to survive. Hibernation, animal babies and adaptation to their surroundings will be identified.</i>
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How do animals change and grow?</li> <li>• Where do animals live?</li> <li>• What do plants and animals need to survive?</li> <li>• What is the difference between living and non living things?</li> </ul>
<b>Enduring Understandings</b>	<ul style="list-style-type: none"> <li>• Animals change and grow as they age. the world surrounding animals contributes to their growth and changes.</li> <li>• Animals live in different habitats. Some live in burrows, trees, nests, logs, caves and forests. During the winter some animals hibernate or adapt.</li> <li>• Plants and animals need water, food, and sunlight(plants) to grow and survive.</li> <li>• A living thing can breathe, eat, drink, and grow. A nonliving thing does not need water or food to survive. Nonliving things do not breathe.</li> </ul>
<b>Learning Outcomes</b>	



- Use observations to describe patterns of what plants and animals (including humans) need to survive.
- Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.
- Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- Describe how a map can help design a zoo.

<b>Assessment Evidence</b>	
<b>Formative</b>	Teacher observations, Class discussions, Lab Activities, Key concepts and vocabulary quizzes, Science Starter's/Do Nows, Open Ended Responses, Modeling, Simulations, Innovators Monthly Research, Lab Activities, Vocabulary Responses, Exit Questions, Interactive Digital Assessments embedded in Exploring Science Digital Book
<b>Summative</b>	<p>In correlation with the NGSS, students must demonstrate the following as summative assessments:</p> <ul style="list-style-type: none"> <li>• K-LS1-1., Use observations to describe patterns of what plants and animals (including humans) need to survive.</li> <li>• K-ESS2-2., Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.</li> <li>• K-ESS3-1., Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</li> <li>• K-ESS3-3., Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</li> </ul> <p>Other summative assessments will include but are not limited to: projects, summative tests, lab skills demonstrations, and vocabulary quizzes.</p>
<b>Alternative and Benchmark</b>	<a href="#">Formative, Summative, Alternative and Benchmark Assessments</a>

## Resources to Promote Learning

### Resources & Equipment Needed

Smartboard, Computers, Websites and digital interactives/models, Multi-media presentations, Video Streaming, Brain Pop, Middle School Science, Generation Genius Digital Curriculum, Mystery Science Digital Curriculum, Amplify Digital Curriculum, Microsoft 365, Primary and Secondary Source Documents, Assorted lab materials. [Approved Class Resource List](#)

## Content & Interdisciplinary Standards

### NJ 2020 SLS: Science

#### *Standards*

K-LS1-1., Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]

K-ESS2-2., Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

K-ESS3-1., Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]

K-ESS3-3., Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.\* [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

#### *Science and Engineering Practices*

Developing and Using Models - Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions.

- Use a model to represent relationships in the natural world. (K-ESS3-1)

Analyzing and Interpreting Data - Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1)

Engaging in Argument from Evidence - Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).

- Construct an argument with evidence to support a claim. (K-ESS2-2)
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Obtaining, Evaluating, and Communicating Information - Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)

Scientific Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world. (K-LS1-1)

*Disciplinary Core Ideas (DCI)*

LS1.C: Organization for Matter and Energy Flow in Organisms

- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

ESS2.E: Biogeology

- Plants and animals can change their environment. (K-ESS2-2)

ESS3.A: Natural Resources

- Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)

ESS3.C: Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (K-ESS3-3)

ETS1.B: Developing Possible Solutions

- 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. (secondary to K-ESS3-3)

*Crosscutting Concepts*

Cause and Effect

Events have causes that generate observable patterns. (K-ESS3-3)

Structure and Function

Events have causes that generate observable patterns. (K-ESS3-3)

Systems and System Models

Systems in the natural and designed world have parts that work together. (K-ESS2-2),(K-ESS3-1)

**NJ: 2016 SLS: English Language Arts**

- RI.K.1, With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)
- SL.K.3, Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)
- RI.K.4. With prompting and support, ask and answer questions about unknown words in a text.
- RI.K.10. Actively engage in group reading activities with purpose and understanding.
- W.K.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
- W.K.7. Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
- W.K.8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- SL.K.1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion). B. Continue a conversation through multiple exchanges.
- SL.K.2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
- SL.K.3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- SL.K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.
- SL.K.6. Speak audibly and express thoughts, feelings, and ideas clearly

**NJ: 2016 SLS: Mathematics**

- MP.2, Reason abstractly and quantitatively. (K-PS2-1)
- K.MD.A.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- K.MD.A.2: Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

- K.CC.A.1: Count to 100 by ones and tens.
- K.CC.C.6: Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies

**2020 SLS: Computer Science & Design Thinking**

**NJSLS Performance Expectations (By the end of 2nd Grade)**

- 8.2.2.ED.1: Communicate the function of a product or device.
- 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
- 8.1.2.DA.4: Make predictions based on data using charts or graphs.
- 8.1.2.IC.1: Compare how individuals live and work before and after the implementation of new computing technology.

**2020 SLS: Career Readiness, Life Literacies, and Key Skills**

**NJSLS Performance Expectations (By the end of 2nd Grade)**

- 9.2.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
- 9.4.2.CI.2: Demonstrate originality and inventiveness in work.
- 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.
- 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g. inductive, deductive).
- 9.1.2.FP.2: Differentiate between financial wants and needs.
- 9.4.2.IML.1: Identify a simple search term to find information in a search engine or digital resource.
- 9.4.2.IML.3: Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults.
- 9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools.

**Interdisciplinary/21st Century Connections**

<b>Connections and Skills</b>	<ul style="list-style-type: none"> <li>• Critical thinking</li> <li>• Collaboration and Teamwork</li> <li>• Problem Solving</li> </ul>
<b>Health/Physical Education</b>	<ul style="list-style-type: none"> <li>• 2.1.2.EH.3: Demonstrate self-control in a variety of settings (e.g., classrooms, playgrounds, special programs).</li> <li>• 2.1.2.EH.4: Demonstrate strategies for managing one's own emotions, thoughts and behaviors.</li> </ul>
<b>Social Studies</b>	<ul style="list-style-type: none"> <li>• 6.1.2.GeoSV.1: Use maps to identify physical features (e.g., continents, oceans, rivers, lakes, mountains).</li> </ul>

	<ul style="list-style-type: none"> <li>6.1.2.Geo.SV.2: Describe how maps are created for a specific purpose (e.g., school fire-drill map, route from home to school, learning centers in a classroom).</li> </ul>
<b>SEL</b>	<ul style="list-style-type: none"> <li>Develop, implement, and model effective problem-solving and critical thinking skills.</li> <li>Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds</li> </ul>

<b>Title</b>	Weather and Climate
<b>Unit Duration</b>	12 Weeks
<b>Unit Summary &amp; Rationale</b>	<i>In this unit, students are introduced to pushes and pulls and how those affect the motion of objects. Students observe and investigate the effects of what happens when the strength or direction of those pushes and pulls are changed. Lessons in this unit satisfy Climate Change mandate.</i>
<b>Unit Goals</b>	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>How does weather and climate effect our daily lives?</li> <li>What resources are available to track weather for certain regions?</li> <li>How can we identify the different weather patterns and use them to guide us in our everyday lives?</li> </ul>
<b>Enduring Understandings</b>	<ul style="list-style-type: none"> <li>Weather and climate affect what we wear, places we go and everyday situations and events.</li> <li>Local weather forecasts and weather scientists track weather for a specific region to help determine an effect weather may have on our lives such as severe weather impacting a region.</li> <li>When we are aware of weather and climate it helps us to plan our daily activities.</li> <li>Things that people do to live comfortably can affect the world around them, but they can make choices that reduce their impacts on the land, water, air, and other living things.</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>Observe patterns in events generated by cause-and-effect relationships.</li> <li>Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.</li> <li>Ask questions based on observations to find more information about the designed world.</li> <li>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.)</li> </ul>

- 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.

<b>Assessment Evidence</b>	
<b>Formative</b>	Teacher observations, Class discussions, Lab Activities, Key concepts and vocabulary quizzes, Science Starter's/Do Nows, Open Ended Responses, Modeling, Simulations, Innovators Monthly Research, Lab Activities, Vocabulary Responses, Exit Questions, Interactive Digital Assessments embedded in Exploring Science Digital Book
<b>Summative</b>	<p>In correlation with the NGSS, students must demonstrate the following as summative assessments:</p> <ul style="list-style-type: none"> <li>• K-PS3-1., Make observations to determine the effect of sunlight on Earth's surface.</li> <li>• K-PS3-2., Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</li> <li>• K-ESS2-1., Use and share observations of local weather conditions to describe patterns over time.</li> <li>• K-ESS3-2., Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</li> </ul> <p>Other summative assessments will include but are not limited to: projects, summative tests, lab skills demonstrations, and vocabulary quizzes.</p>
<b>Alternative and Benchmark</b>	<a href="#">Formative, Summative, Alternative and Benchmark Assessments</a>
<b>Resources to Promote Learning</b>	
<b>Resources &amp; Equipment Needed</b>	Smartboard, Computers, Websites and digital interactives/models, Multi-media presentations, Video Streaming, Brain Pop, Middle School Science, Generation Genius Digital Curriculum, Mystery Science Digital Curriculum, Amplify Digital Curriculum, Microsoft 365, Primary and Secondary Source Documents, Assorted lab materials. <a href="#">Approved Class Resource List</a>

## Content & Interdisciplinary Standards

### NJ 2020 SLS: Science

#### *Standards*

K-PS3-1., Make observations to determine the effect of sunlight on Earth's surface. [Clarification Statement: Examples of Earth's surface could include sand, soil, rocks, and water.] [Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.]

K-PS3-2., Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.\* [Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.]

K-ESS2-1., Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.]

K-ESS3-2., Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.\* [Clarification Statement: Emphasis is on local forms of severe weather.]

#### *Science and Engineering Practices*

Asking Questions and Defining Problems - Asking questions and defining problems in grades K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.

- Ask questions based on observations to find more information about the designed world. (K- ESS3-2)

Planning and Carrying Out Investigations - Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Make observations (firsthand or from media) to collect data that can be used to make comparisons. (K-PS3-1)



Analyzing and Interpreting Data - Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)

Constructing Explanations and Designing Solutions - Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. (K-PS3-2)

Obtaining, Evaluating, and Communicating Information - Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2)

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world. (K-PS3-1)

Science Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world. (K-ESS2-1)

*Core Ideas (DCI)*

PS3.B: Conservation of Energy and Energy Transfer

- Sunlight warms Earth’s surface. (K-PS3-1),(K-PS3-2)

ESS2.D: Weather and Climate

- 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. (K-ESS2-1)

ESS3.B: Natural Hazards

- Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. (K-ESS3-2)

ETS1.A: Defining and Delimiting an Engineering Problem

- Asking questions, making observations, and gathering information are helpful in thinking about problems. (secondary to K-ESS3-2)

*Crosscutting Concepts*

Patterns	<ul style="list-style-type: none"> <li>Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1)</li> </ul>
Cause and Effect	<ul style="list-style-type: none"> <li>Events have causes that generate observable patterns. (K-PS3-1),(K-PS3-2),(K-ESS3-2)</li> </ul>
Interdependence of Science, Engineering, and Technology	<ul style="list-style-type: none"> <li>People encounter questions about the natural world every day. (K-ESS3-2)</li> </ul>
Influence of Engineering, Technology, and Science on Society and the Natural World	<ul style="list-style-type: none"> <li>People depend on various technologies in their lives; human life would be very different without technology. (K-ESS3-2)</li> </ul>

**NJ: 2016 SLS: English Language Arts**

- RI.K.1. With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)
- SL.K.3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)
- RI.K.4. With prompting and support, ask and answer questions about unknown words in a text.
- RI.K.10. Actively engage in group reading activities with purpose and understanding.
- W.K.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
- W.K.7. Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
- W.K.8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- SL.K.1. Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. A. Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion). B. Continue a conversation through multiple exchanges.
- SL.K.2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.

- SL.K.3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- SL.K.5. Add drawings or other visual displays to descriptions as desired to provide additional detail.
- SL.K.6. Speak audibly and express thoughts, feelings, and ideas clearly

**NJ: 2016 SLS: Mathematics**

- MP.2, Reason abstractly and quantitatively. (K-PS2-1)
- K.CC.A.1: Count to 100 by ones and by tens.
- K.CC.B.5: Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- K.CC.C.6: Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
- K.MD.A.1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
- K.MD.A.2: Correctly name shapes regardless of their orientations or overall size
- K.MD.A.3: Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

**2020 SLS: Computer Science & Design Thinking**

**NJSLS Performance Expectations (By the end of 2nd Grade)**

- 8.2.2.ED.1: Communicate the function of a product or device.
- 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
- 8.1.2.DA.4: Make predictions based on data using charts or graphs.
- 8.1.2.IC.1: Compare how individuals live and work before and after the implementation of new computing technology.

**2020 SLS: Career Readiness, Life Literacies, and Key Skills**

**NJSLS Performance Expectations (By the end of 2nd Grade)**

- 9.2.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
- 9.4.2.CI.2: Demonstrate originality and inventiveness in work.
- 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.
- 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g. inductive, deductive).

**Interdisciplinary/21st Century Connections**

**21<sup>st</sup> Century Connections**

- Critical thinking
- Collaboration and Teamwork

	<ul style="list-style-type: none"> <li>• Problem Solving</li> </ul>
<b>Health/Physical Education</b>	<ul style="list-style-type: none"> <li>• 2.1.2.EH.3: Demonstrate self-control in a variety of settings (e.g., classrooms, playgrounds, special programs).</li> <li>• 2.1.2.EH.4: Demonstrate strategies for managing one's own emotions, thoughts and behaviors.</li> <li>• 2.1.2.CHSS.4. Describe how climate change affects the health of individuals, plants and animals</li> </ul>
<b>Social Studies</b>	<ul style="list-style-type: none"> <li>• 6.1.2.GeoPP.1: Explain the different physical and human characteristics that might make a location a good place to live (e.g., landforms, climate and weather, resource availability).</li> <li>• 6.1.2.Geo.HE.1: Explain how seasonal weather changes, climate, and other environmental characteristics affect people's lives in a place or region.</li> </ul>
<b>SEL</b>	<ul style="list-style-type: none"> <li>• Responsible Decision-Making</li> <li>• Develop, implement, and model effective problem-solving and critical thinking skills.</li> <li>• Identify the consequences associated with one's actions in order to make constructive choices.</li> <li>• Evaluate personal, ethical, safety, and civic impact of decisions.</li> </ul>

<b>Accommodations &amp; Modifications</b>		
<b>Special Education Students, 504 students, English Language Learners, Students at-Risk Based on Students' Individual Needs</b>		
<b>Time/General</b>	<b>Processing</b>	<b>Comprehension</b>
<ul style="list-style-type: none"> <li>• Allow extra time</li> <li>• Repeat and clarify directions</li> <li>• Provide breaks in between tasks</li> <li>• Have student verbalize directions</li> <li>• Provide timelines/due dates for reports and projects</li> </ul>	<ul style="list-style-type: none"> <li>• Provide extra response time</li> <li>• Have student verbalize steps</li> <li>• Repeat directions</li> <li>• Provide small group instruction</li> <li>• Include partner work</li> </ul>	<ul style="list-style-type: none"> <li>• Provide reading material on student's level</li> <li>• Have student underline important points</li> <li>• Assist student on how to use context clues to identify words/phrases</li> <li>• Ensure short manageable tasks</li> </ul>

<b>Tests/Quizzes/Grading</b>	<b>Behavior/Attention</b>	<b>Organization</b>
<ul style="list-style-type: none"> <li>• Provide extended time</li> <li>• Provide study guides</li> <li>• Limit number of responses</li> </ul>	<ul style="list-style-type: none"> <li>• Establish classroom rules</li> <li>• Write a contract with the student specifying expected behaviors</li> <li>• Provide preferential seating</li> <li>• Re-focus student as needed</li> <li>• Reinforce student for staying on task</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor the student and provide reinforcement of directions</li> <li>• Verify the accurateness of homework assignments</li> <li>• Display a written agenda</li> </ul>

**ELL, Enrichment, Gifted & Talented Strategies**

Accommodations Based on Students' Individual Needs

ELL Strategies

- Provide explicit, systematic instruction in vocabulary.
- Ensure that ELLs have ample opportunities to talk with both adults and peers and provide ongoing feedback and encouragement.
- Expose ELLs to rich language input.
- Scaffolding for ELLs language learning.
- Encourage continued L1 language development.
- Alphabet knowledge
- Phonological awareness
- Print awareness
- Design instruction that focuses on all of the foundational literacy skills.
- Recognize that many literacy skills can transfer across languages.
- English literacy development by helping ELLs make the connection between what they know in their first language and what they need to know in English.
- Graphic organizers
- Modified texts
- Modified assessments

- Written/audio instruction
- Shorter paragraph/essay length
- Homogeneously grouped by level

#### Accommodations Based on Students' Individual Needs:

#### Enrichment Strategies

- Evaluate vocabulary
- Elevate Text Complexity
- Incorporate inquiry based assignments and projects
- Extend curriculum
- Balance individual, small group and whole group instruction
- Provide tiered/multi-level activities
- Include purposeful learning centers
- Provide open-ended activities and projects
- Offer opportunities for heterogeneous grouping to work with age and social peers as well as homogeneous grouping to provide time to work with individual peers
- Provide pupils with experiences outside the 'regular' curriculum
- Alter the pace the student uses to cover regular curriculum in order to explore topics of interest in greater depth/breadth within their own grade level
- Require a higher quality of work than the norm for the given age group
- Promote higher level of thinking and making connections.
- Focus on process learning skills such as brainstorming, decision making and social skills
- Use supplementary materials in addition to the normal range of resources.
- Encourage peer to peer mentoring
- Integrate cross-curricular lessons
- Incorporate real-world problem solving activities
- Facilitate student-led questioning and discussions

## Gifted & Talented Strategies

- More elaborate, complex, and in-depth study of major ideas, problems, and themes that integrate knowledge within and across systems of thought.
- Development and application of productive thinking skills to enable students to reconceptualize existing knowledge and/or generate new knowledge.
- Explore constantly changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
- Encourage exposure to, selection, and use of appropriate and specialized resources.
- Promote self-initiated and self-directed learning and growth.
- Provide for the development of self-understanding and the understanding of one's relationship to persons, societal institutions, nature, and culture.
- Flexible pacing
- Use of more advanced or complex concepts, abstractions, and materials
- Encourage students to move through content areas at their own pace. If they master a particular unit, they need to be provided with more advanced learning activities, not more of the same activity.
- Questions that require a higher level of response and/or open-ended questions that stimulate inquiry, active exploration, and discovery.
- Encourage students to think about subjects in more abstract and complex ways
- Activity selection based on student interests, that encourage self-directed learning
- Group interaction and simulations
- Guided self-management
- Encourage students to demonstrate what they have learned in a wide variety of forms that reflect both knowledge and the ability to manipulate ideas.
- Engage students in active problem-finding and problem-solving activities and research.
- Provide students opportunities for making connections within and across systems of knowledge by focusing on issues, themes, and ideas.